INTERNATIONAL PACIFIC HALIBUT COMMISSION

IPHC–2020–AM096–00

96th Session of the IPHC Annual Meeting (AM096) – *Compendium of meeting documents*

3 – 7 February 2020, Anchorage, AK, USA

Commissioners

Canada	United States of America
Paul Ryall	Chris Oliver
Neil Davis	Robert Alverson
Peter DeGreef	Richard Yamada

Executive Director

David T. Wilson, Ph.D.

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INTERNATIONAL PACIFIC HALIBUT COMMISSION

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IPHC–2020–AM096–R

Report of the 96th Session of the IPHC Annual Meeting (AM096)

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IPHC Secretariat

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ACRONYMS

CB	Conference Board
CSP	Catch Sharing Plan
DFO	Fisheries and Ocean Canada
FCEY	Fishery Constant Exploitation Yield
HANA	Halibut Association of North America
IPHC	International Pacific Halibut Commission
MSAB	Management Strategy Advisory Board
NMFS	National Marine Fisheries Service, NOAA
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
PAB	Processor Advisory Board
PFMC	Pacific Fishery Management Council
RAB	Research Advisory Board
SB	Spawning Biomass
SRB	Scientific Review Board
SPR	Spawning Potential Ratio
TCEY	Total Constant Exploitation Yield

DEFINITIONS

A set of working definitions are provided in the IPHC Glossary of Terms and abbreviations: https://www.iphc.int/the-commission/glossary-of-terms-and-abbreviations

HOW TO INTERPRET TERMINOLOGY CONTAINED IN THIS REPORT

This report has been written using the following terms and associated definitions so as to remove ambiguity surrounding how particular paragraphs should be interpreted.

Level 1: **RECOMMENDED**; **RECOMMENDATION; ADOPTED** (formal); **REQUESTED; ENDORSED** (informal): A conclusion for an action to be undertaken, by a Contracting Party, a subsidiary (advisory) body of the Commission and/or the IPHC Secretariat.

Level 2: **AGREED**: Any point of discussion from a meeting which the Commission considers to be an agreed course of action covered by its mandate, which has not already been dealt with under Level 1 above; a general point of agreement among delegations/participants of a meeting which does not need to be elevated in the Commission's reporting structure.

Level 3: **NOTED/NOTING**; **CONSIDERED**; **URGED**; **ACKNOWLEDGED**: General terms to be used for consistency. Any point of discussion from a meeting which the Commission considers to be important enough to record in a meeting report for future reference. Any other term may be used to highlight to the reader of an IPHC report, the importance of the relevant paragraph. Other terms may be used but will be considered for explanatory/informational purposes only and shall have no higher rating within the reporting terminology hierarchy than Level 3.

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EXECUTIVE SUMMARY

The 96th Session of the International Pacific Halibut Commission (IPHC) Annual Meeting (AM096) was held in Anchorage, Alaska, USA, from 3-7 February 2020. A total of 22 (16 in 2019) members (6 Commissioners; 16 (10 in 2019) advisors/experts) attended the Session from the two (2) Contracting Parties, as well as 200 (182 in 2019) members of the public in person and 128 (142 in 2019) via the webcast (total of 350 (340 in 2019) meeting participants). The list of participants is provided at Appendix I. The meeting was opened by the Chairperson, Mr Chris Oliver (USA) and Vice-Chairperson, Mr Paul Ryall (Canada) who welcomed participants to Anchorage, Alaska, USA.

The following are a subset of the complete recommendations and requests for action from the AM096, which are provided at Appendix VIII.

IPHC PACIFIC HALIBUT FISHERY REGULATION 2020

IPHC Fishery Regulations: Fishery Limits (Sect. 4)

The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropA1, which aimed to improve clarity and transparency of fishery limits in the IPHC Fishery Regulations, and to provide the framework for mortality limits adopted by the Commission. (para. 90)

The Commission **ADOPTED** the distributed mortality limits for each Contracting Party, by IPHC Regulatory Area, (Table 6) and sector, as provided in Appendix IV. [**Canada**: In favour=2, Against=1][**USA**: In favour=2, Against=1] (para. 91)

Table 6. Adopted TCEY mortality limits for 2020

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (metric tonnes)
2A	1.65	748
2B	6.83	3,098
2C	5.85	2,654
3A	12.20	5,534
3B	3.12	1,415
4A	1.75	794
4B	1.31	594
4CDE	3.90	1,769
Total (IPHC Convention Area)	**36.60**	**16,601**

The Commission **ADOPTED**: (para. 97)

a) a coastwide mortality limit (TCEY) of 36.6 million pounds; and

b) a fixed TCEY for IPHC Regulatory Area 2A of 1.65 million pounds is intended to apply for a period from 2019-2022, subject to any substantive conservation concerns; and

c) a share-based allocation for IPHC Regulatory Area 2B. The share will be defined based on a weighted average that assigns 30% weight to the current interim management procedure's target TCEY distribution and 70% on 2B's recent historical average share of 20%. This formula for defining IPHC Regulatory Areas 2B's annual allocation is intended to apply for a period of 2019 to 2022. For 2020, this equates to a share of 18.2% before accounting for U26; and

d) an accounting for some impacts of U26 non-directed discard mortality from US IPHC Regulatory Areas on available harvest in IPHC Regulatory Area 2B. The accounting increases the 2B TCEY by 50% of the estimated yield lost due to U26 non-directed discard mortality in Alaskan waters and is intended to apply for the period 2020-2022. For 2020 this

calculation equates to 0.21 million pounds and reduces all Alaskan IPHC Regulatory Area TCEYs to maintain a coastwide TCEY of 36.6 million pounds; and

e) the use of a rolling three-year average for projecting non-directed fishery discard mortality by IPHC Regulatory Area; this is also intended to apply for a period of 2020 to 2022.

IPHC Fishery Regulations: Commercial fishing periods (Sect. 9)

The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropA2, which specified fishing periods for the commercial Pacific halibut fisheries. (para. 98)

Commercial fishing periods

The Commission **ADOPTED** fishing periods for 2020 as provided below, thereby superseding the relevant portions of Section 9 of the IPHC Pacific halibut fishery regulations and specifying that: (para. 100)

f) All commercial fishing for Pacific halibut in all IPHC Regulatory Areas may begin no earlier than 14 March and must cease on 15 November;

g) The IPHC Regulatory Area 2A non-tribal directed commercial fishery may take place during specific fishing periods of 3 days' duration, beginning on the fourth Monday in June, with fishing period limits (vessel quota) to be determined and communicated by the IPHC Secretariat.

IPHC Fishery Regulations: minor amendments

The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropA3, which proposed amendments to ensure clarity and consistency in the IPHC Fishery Regulations, with minor modification as identified during AM096. (para. 101)

IPHC Fishery Regulations: Vessel Clearance in IPHC Regulatory Area 4 (Sect. 16)

The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropA4, which proposed amendments to address the need for clearances when a National Oceanic and Atmospheric Administration (NOAA) Fisheries observer or electronic monitoring device is present. (para. 102)

Charter management measures in IPHC Regulatory Areas 2C and 3A

The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropB1, which proposed IPHC Regulation changes for charter recreational Pacific halibut fisheries in IPHC Regulatory Areas 2C and 3A, in order to achieve the charter Pacific halibut allocation under the North Pacific Fisheries Management Council's (NPFMC) Pacific halibut Catch Sharing Plan. (para. 105)

Revising definition of IPHC Regulatory Area 2A-1

The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropB2, which proposed an update to IPHC regulatory language regarding the usual and accustomed fishing areas of Indian tribes with treaty fishing rights to Pacific halibut, with the addition of the geographic reference for Point Chehalis (46° 53.30' N. lat.). (para. 106)

RECOMMENDATIONS

Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data

AM096–Rec.01 (para. 31) The Commission **RECOMMENDED** that for the 2020 FISS season, the IPHC Secretariat shall employ the proposed subarea design for Regulatory Areas 2A, 4A, 4B, 4CDE, and an enhanced randomised subsampling FISS design in Regulatory Areas 2B, 2C, 3A, and 3B to meet the primary design objective, while also considering secondary and tertiary objectives (Table 2). The IPHC Secretariat shall determine the number of

skates at each FISS station with the secondary objective in mind (Table 2). A demonstration of this design is provided at Fig. 2.

AM096–Rec.02 (para. 32) The Commission **RECOMMENDED** the following specific additions to the new 2020 FISS design, on the basis of the tertiary objective specified in Table 2 on a cost recovery basis. Any other tertiary sampling objective shall be at the discretion of the IPHC Secretariat unless specifically directed by the Commission:

h) Regulatory Area 2A: Washington Department of Fish and Wildlife - rockfish sampling;

i) Regulatory Area 2B: DFO-Canada - rockfish sampling.

REQUESTS

Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data

AM096–Req.01 (para. 33) The Commission **REQUESTED** the 2020 consultation process in preparation for the 2021 FISS and beyond be enhanced to include input from the IPHC subsidiary bodies, particularly the Research Advisory Board and the Scientific Review Board, as well as from stakeholders who have performed survey work for the IPHC, with a view to finalizing the FISS sampling design for the coming year as early as possible in the annual planning cycle.

Stock Assessment: Data overview and stock assessment (2019), and harvest decision table (2020)

AM096–Req.02 (para. 52) The Commission **REQUESTED** that the IPHC MSE process continue to evaluate status quo management related to discard mortality for non-directed fisheries (bycatch) under the current program of work for delivery of full MSE results at AM097 in 2021, noting that this source of mortality is currently modelled as a fixed component of the total (with variability).

Reports of the 13th and 14th Sessions of the IPHC Management Strategy Advisory Board (MSAB013 and MSAB014)

AM096–Req.03 (para. 89) The Commission **REQUESTED** the MSAB to confirm the proposed topics of work beyond the 2021 deliverables in time for the Interim Meeting (IM096), including work to investigate and provide advice on approaches for accounting for the impacts of bycatch in one Regulatory Area on harvesting opportunities in other Regulatory Areas.

Stakeholder statements

AM096–Req.04 (para. 110) The Commission **REQUESTED** that the IPHC Secretariat organise and synopsize stakeholder statements by topic, in order to insert the stakeholder written inputs into public comment at appropriate points in the agenda for the Commission's consideration.

Contracting Party National Reports - United States of America

AM096–Req.05 (para. 113) The Commission **NOTED** that the NOAA Fisheries Observer Program has increased observer fees and has received increased government funding, and **REQUESTED** that NOAA Fisheries provide a synopsis of observer coverage rates over time and how coverage rates are expected to change in 2020 and beyond.

1. OPENING OF THE SESSION

1. The 96th Session of the International Pacific Halibut Commission (IPHC) Annual Meeting (AM096) was held in Anchorage, Alaska, USA, from 3-7 February 2020. A total of 22 (16 in 2019) members (6 Commissioners; 16 (10 in 2019) advisors/experts) attended the Session from the two (2) Contracting Parties, as well as 200 (182 in 2019) members of the public in person and 128 (142 in 2019) via the webcast (total of 350 (340 in 2019) meeting participants). The list of participants is provided at Appendix I. The meeting was opened by the Chairperson, Mr Chris Oliver (USA) and Vice-Chairperson, Mr Paul Ryall (Canada) who welcomed participants to Anchorage, Alaska, USA.

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

2. The Commission **ADOPTED** the Agenda as provided at Appendix II. The documents provided to the AM096 are listed in Appendix III.

3. UPDATE ON ACTIONS ARISING FROM THE 95TH SESSION OF THE IPHC ANNUAL MEETING (AM095) AND THE 95TH SESSION OF THE IPHC INTERIM MEETING (IM095)

3. The Commission **NOTED** paper IPHC-2020-AM096-03 which provided an opportunity to consider the progress made during the inter-sessional period, in relation to the recommendations and requests of the 95th Session of the IPHC Annual Meeting (AM095, January 2019), and 95th Session of the IPHC Interim Meeting (IM095; November 2019).

4. The Commission **AGREED** to consider and revise as necessary, the actions arising from the AM095 and IM095 meetings, and for these to be combined with any new actions arising from the AM096.

4. REPORT OF THE IPHC SECRETARIAT (2019)

5. The Commission **NOTED** paper IPHC-2020-AM096-04 which provided the Commission with an update on activities of the IPHC Secretariat in 2019 not detailed in other papers before the Commission.

6. The Commission **NOTED** that the IPHC funds several Merit Scholarships to support university, technical college, and other post-secondary education for students from Canada and the USA who are connected to the Pacific halibut fishery, with a single new four-year scholarship valued at US$4,000 per year awarded every two years.

7. The Commission **NOTED** that the next scholarship announcement will occur in early 2020, and that the IPHC Secretariat intends to publicise it widely among the stakeholder community.

8. The Commission **CONGRATULATED** the IPHC Secretariat for the extensive communications, outreach, and educations activities carried out in 2019, which ranged from public outreach events, attending conferences and symposia, contributing expertise to the broader scientific community through participation on boards and committees, and seeking further education and training.

9. The Commission **ACKNOWLEDGED** the ongoing efforts by the IPHC Secretariat to publish its research in peer-reviewed journals. In 2019, the IPHC Secretariat published five (5) peer-reviewed journal articles, four (4) that have been submitted and are currently undergoing peer review. Another ten (10) are currently in preparation for submission throughout 2020.

10. The Commission **ENCOURAGED** the movement towards increased peer-reviewed journal publication of IPHC science activities, and in particular those where the IPHC Secretariat are the lead author.

11. The Commission **NOTED** the continued improvements in functionality added to the IPHC website in 2019, and that these initiatives will continue to be enhanced during 2020, with the overall aim of further improving the transparency of the IPHC's operations and data collected (http://www.iphc.int/):

    a) Fishery-Independent Setline Survey (FISS) data interactive
    b) Landings Report

c) Mortality projection tool
d) Commercial Fisheries data interactive (in development)
e) Time-series datasets

5. FISHERY STATISTICS (2019)

12. The Commission **NOTED** paper IPHC-2020-AM096-05 Rev_2 which provided an overview of the key fishery statistics from fisheries catching Pacific halibut during 2019, including the status of landings compared to fishery limits implemented by the Contracting Parties of the Commission.

13. The Commission **NOTED** the Pacific halibut that were landed in Canada in a head-off fresh condition and that the IPHC Secretariat continues to follow up with the relevant Contracting Party agency to address these regulatory breaches.

14. The Commission **NOTED** the following issues in regard to mortality exceeding projected mortalities, and overages (for commercial sectors) in the following Contracting Party sectors/fisheries in 2019 (Table 1):

Table 1. Fishery sectors with mortality overages in 2019. ^Projection

Sector	IPHC Regulatory Area	Mortality limit/ projection^		2019 Mortality		Percent
		t	Mlb	t	Mlb	
Directed commercial	2B – discard mortality	59	0.13	64	0.14	**108**
	2A – Incidental sablefish	32	0.07	36	0.08	**113**
	2A – discard mortality	9	0.02	13	0.03	**145**
	2C – discard mortality	27	0.06	36	0.08	**133**
	3A – discard mortality	141	0.31	160	0.35	**114**
	4A – discard mortality	41	0.09	47	0.10	**116**
	4B – discard mortality	9	0.02	17	0.04	**190**
	4CDE/Closed – discard mortality	18	0.04	34	0.08	**188**
Recreational^	3A – guided	857	1.89	916	2.02	**107**
	4A	5	0.01	6	0.01	**140**
Subsistence^	3B	5	0.01	8	0.02	**166**
	4A	5	0.01	6	0.01	**132**
	4B	0	0.00	<1	<0.01	**n/a**
Non-directed commercial O26 discard mortality^	2C	14	0.03	41	0.09	**303**
	3A	581	1.28	623	1.37	**107**
	3B	163	0.36	189	0.42	**116**
	4A	82	0.18	91	0.20	**111**
	4CDE/Closed	848	1.87	1,090	2.40	**129**

15. The Commission **NOTED** that the non-directed commercial fishery discard mortality projections were exceeded in numerous IPHC Regulatory Areas.

16. **NOTING** the uncertainty associated with various estimates of removals, as listed below, the Commission again **RECALLED** its previous recommendation that each Contracting Party address these uncertainties in a report to the Commission at its next Session (noting that no report of this nature was provided at AM096). The intention is to provide greater detail on how each removal category is quantified and verified:

Canada

a) self-reporting of lodges for recreational estimates;

b) subsistence estimates;

United States of America

a) self-reporting of lodges for recreational estimates (in Alaska);

b) subsistence estimates;

c) estimates for the Pacific halibut commercial fishery discard mortality (in Alaska), due to the estimates calculated by the IPHC Secretariat differing from those provided by NOAA Fisheries, due primarily to the way coverage is measured (by landed weight, versus fishing trip);

d) the estimates for Pacific halibut non-directed commercial fishery discard mortality in the U.S.A, for the same reasons identified in the previous point.

6. STOCK STATUS OF PACIFIC HALIBUT (2019) AND HARVEST DECISION TABLE (2020)

6.1 IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2019

17. The Commission **NOTED** paper IPHC-2020-AM096-06 which provided an overview of the IPHC fishery-independent setline survey (FISS) design and implementation in 2019.

18. The Commission **RECALLED** that the IPHC Secretariat employs objective (non-subjective) methods to determine whether a FISS station is ineffective due to whale depredation. A fishery-independent setline survey station is deemed to be ineffective as a result of toothed whale depredation, when sperm whales are sighted within 3 nm during the haul-back of the gear (this was an improved protocol for the 2018 and 2019 FISS seasons). Ineffective stations are also recorded for killer whales when greater than or equal to two (2) hooks are returned with Pacific halibut lips attached.

19. The Commission **NOTED** that few expansion stations were deemed ineffective in 2019, and that because those stations that were deemed ineffective are spatially close to effectively fished stations, the space-time model provided good-quality predictions at those locations. Three percent of the FISS stations were considered ineffective due to whale depredation in 2018 and less than 3% in 2019.

6.2 Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data

20. The Commission **NOTED** paper IPHC-2020-AM096-07 which provided alternatives for FISS sampling in 2020 to 2022, ranging from the full grid to randomized subsampling and subarea options.

21. The Commission **NOTED** that the IPHC has now completed a six year series of FISS expansions from 2014-19 (following a 2011 pilot in IPHC Regulatory Area 2A). The expansion program was undertaken as follows:

a) 2014: IPHC Regulatory Areas 2A and 4A

b) 2015: IPHC Regulatory Area 4CDE eastern Bering Sea flats

c) 2016: IPHC Regulatory Area 4CDE shelf edge

d) 2017: IPHC Regulatory Areas 2A and 4B

e) 2018: IPHC Regulatory Areas 2B and 2C

f) 2019: IPHC Regulatory Areas 3A and 3B

22. The Commission **RECALLED** that the purpose of the expansion series has been to fill in the often large gaps in the FISS spatial sampling grid to build a complete picture of Pacific halibut density throughout its

known range in Convention Area waters, and thereby anticipated to reduce bias while improving precision in density indices and other quantities calculated from the FISS data gathered.

23. The Commission **NOTED** that with the expansion series completed in 2019, the intention is to use our improved understanding of the Pacific halibut distribution to re-design the annual FISS spatial sampling grid by sub-sampling the entire range of 1,890 fishable stations at a level sufficient to maintain precision targets. As a result, it is likely that stations that were previously fished annually may require less frequent sampling, and it may be efficient to annually fish some expansion stations that have been sampled just once to date.

24. The Commission **RECALLED** that preliminary results for Regulatory Area 4B were presented at the 14th Session of the IPHC Scientific Review Board (SRB014) in June 2019, and also to the Commission at its 2019 Work Meeting (WM2019; September 2019) for initial feedback, a sampling design for 2020 was subsequently presented at the 95th Session of the IPHC Interim Meeting (IM095 in November 2019) followed by a sampling design for 2020-22 at the 96th Session of the IPHC Annual Meeting (AM096 in January 2020) for agreement.

25. **NOTING** that the primary purpose of the annual FISS is to sample Pacific halibut to provide data for the stock assessment and estimates of stock distribution, the Commission **AGREED** that once those minimum data standards are met, then additional design criteria should be considered as long as they do not undermine the scientific data collection needs.

26. The Commission **AGREED** that the priority of a rationalised FISS sampling design is therefore to maintain or enhance data quality (precision and bias) by establishing minimum sampling requirements in terms of station count, station distribution and skates per station. Potential considerations that could add to or modify the design are logistics and cost (secondary design layer), and FISS removals (impact on the stock), data collection assistance for other agencies, and IPHC policies (tertiary design layer). These priorities are outlined in Table 2.

Table 2. Prioritization of FISS objectives and corresponding design layers.

Priority	**Objective**	**Design Layer**
Primary	Sample Pacific halibut for stock assessment and stock distribution estimation.	Minimum sampling requirements in terms of: • Station distribution; • Station count; • Skates per station.
Secondary	Long-term revenue neutrality.	Logistics and cost: operational feasibility and cost/revenue neutrality.
Tertiary	Minimize removals, and assist others where feasible on a cost-recovery basis.	Removals: minimize impact on the stock while meeting primary priority; Assist: assist others to collect data on a cost-recovery basis; IPHC policies: ad-hoc decisions of the Commission regarding the FISS design.

27. The Commission **NOTED** that historical sampling, combined with the FISS expansion program undertaken from 2014-19, has determined that there are 1,890 fishable stations within the IPHC Convention Area from San Francisco Bay (California) to the Bering Sea shelf edge with Russia (Alaska) on a 10 nmi grid in the depth range of 10–400 fm (18 to 732 m) in the Gulf of Alaska and Aleutian Islands, and in the depth range of 75-400 fm (137 to 732 m) in the Bering Sea (Fig. 1).

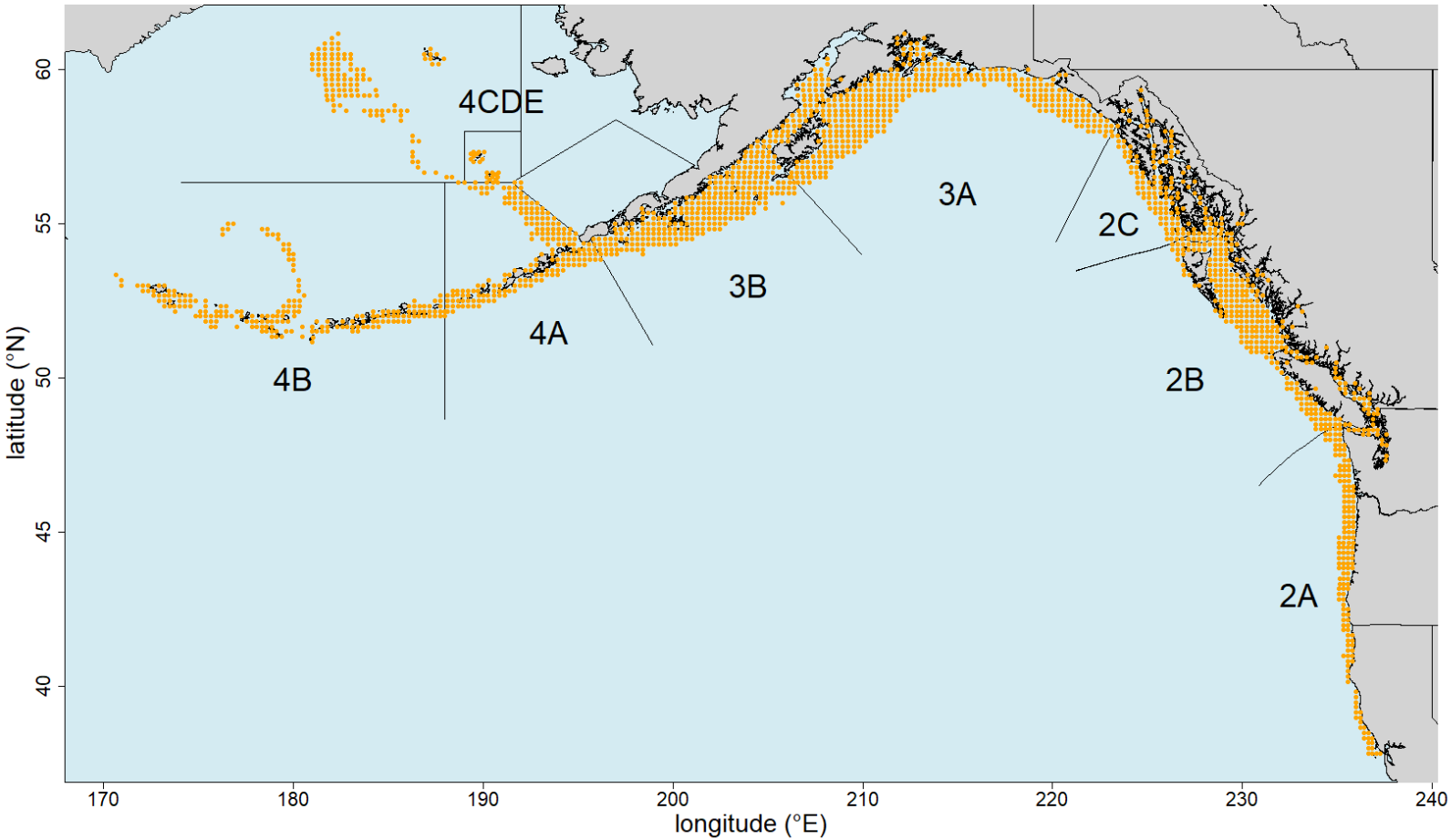

Fig. 1. The IPHC Fishery-Independent Setline Survey (FISS) sampling grid within the IPHC Convention Area (1,890 fishable stations), from San Francisco Bay (California) to the Bering Sea shelf edge with Russia (Alaska) on a 10 nmi grid in the depth range of 10–400 fm (18 to 732 m). Each orange circle represents one FISS station.

28. The Commission **AGREED** that from a scientific perspective, more information is always better; however, sampling the full FISS grid (Fig. 1) on an annual basis is unnecessary as the scientific objectives can be achieved with substantial subsampling. While a fully randomised subsampling design (or a randomised cluster subsampling design) with sufficient sample size will still meet scientific needs, in several Regulatory Areas where Pacific halibut are concentrated in a subset of the available habitat, such a design can be statistically and operationally inefficient.

29. The Commission **NOTED** the range of FISS design options provided by the IPHC Secretariat, including a completely randomized sampling design within each Regulatory Area, and a randomized cluster sampling design.

30. The Commission **NOTED** that:

    a) the 2000 otolith per Regulatory Area sampling target, and that this target is sufficient to maintain the quality of the age data for stock assessment purposes at the Regulatory Area level;

    b) where a FISS station is not fished in a given year, prediction at that station is informed by data obtained there in prior years and data obtained at nearby stations in the current year;

    c) that a fully randomised subsampling design may incur additional FISS charter costs relative to other designs, but that there is the potential to add additional stations to mitigate these costs;

    d) the FISS design proposals have considerable flexibility, e.g. stations can be added, the order in which subareas are fished can be changed, and sampling rates can be increased in randomised subsampling designs; the core area sampling rate in the proposed Compromise Design was selected to target a FISS station total that was somewhat lower than the pre-2014 total, producing a potentially less costly annual FISS while still meeting the Primary Objective.

Recommendations

31. The Commission **RECOMMENDED** that for the 2020 FISS season, the IPHC Secretariat shall employ the proposed subarea design for Regulatory Areas 2A, 4A, 4B, 4CDE, and an enhanced randomised subsampling FISS design in Regulatory Areas 2B, 2C, 3A, and 3B to meet the primary design objective, while also considering secondary and tertiary objectives (Table 2). The IPHC Secretariat shall determine the number of skates at each FISS station with the secondary objective in mind (Table 2). A demonstration of this design is provided at Fig. 2.

32. The Commission **RECOMMENDED** the following specific additions to the new 2020 FISS design, on the basis of the tertiary objective specified in Table 2 on a cost recovery basis. Any other tertiary sampling objective shall be at the discretion of the IPHC Secretariat unless specifically directed by the Commission:

    a) Regulatory Area 2A: Washington Department of Fish and Wildlife - rockfish sampling;

    b) Regulatory Area 2B: DFO-Canada - rockfish sampling.

33. The Commission **REQUESTED** the 2020 consultation process in preparation for the 2021 FISS and beyond be enhanced to include input from the IPHC subsidiary bodies, particularly the Research Advisory Board and the Scientific Review Board, as well as from stakeholders who have performed survey work for the IPHC, with a view to finalizing the FISS sampling design for the coming year as early as possible in the annual planning cycle.

34. The Commission **NOTED** the IPHC Secretariat's intent to follow up with Fisheries and Oceans Canada regarding the possibility of sampling, at least on a periodic basis, those stations in the FISS design that lie within protected areas in IPHC Regulatory Area 2B that the IPHC has been prevented from sampling in recent years.

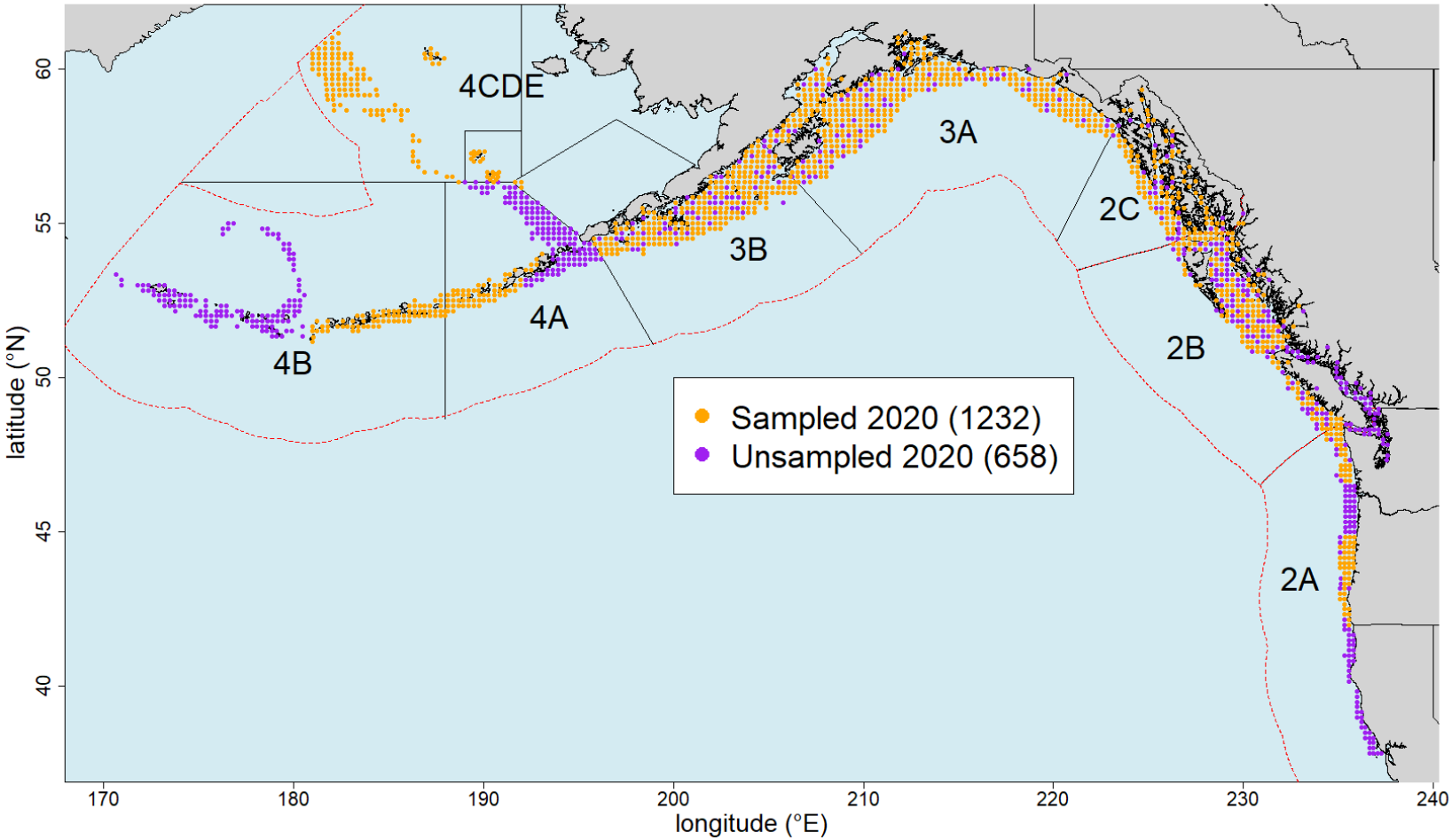

Fig. 2. The proposed "enhanced" IPHC Fishery-Independent Setline Survey (FISS) design for 2020, based on a compromise of meeting Primary, Secondary and Tertiary objectives (Table 2).

6.3 Stock Assessment: Independent peer review of the Pacific halibut stock assessment

35. The Commission **NOTED** paper IPHC-2020-AM096-08 which provided the Commission with an opportunity to further consider the independent peer review of the IPHC Stock Assessment for Pacific halibut.

36. The Commission **NOTED** that the report by the independent peer reviewer, Dr Kevin Stokes, available on the Stock Assessment page of the IPHC website under the 'Peer Review' tab for transparency and accountability purposes: https://www.iphc.int/management/science-and-research/stock-assessment. A direct link to the pdf is also provided below: https://www.iphc.int/uploads/pdf/sa/2019/stokes_2019-independent_peer_review_for_the_2019_iphc_stock_assessment.pdf.

37. The Commission **NOTED** that:

    a) the SRB will continue to act as the primary peer review mechanism for the Pacific halibut stock assessment (and associated data input series) on an annual basis;

    b) the stock assessment will be undertaken in full every 3-4 years, with stock assessment updates being undertaken in the intervening years. Ideally, an external peer review would occur each time a full assessment is undertaken, with the SRB involved to the extent identified by the Commission.

6.4 Stock Assessment: Data overview and stock assessment (2019), and harvest decision table (2020)

38. The Commission **NOTED** paper IPHC-2020-AM096-09 Rev_2, which provided the Commission with a summary of data, the 2019 stock assessment and the harvest decision table for 2020.

39. The Commission **NOTED** that the 2019 stock assessment represents the first full analysis since 2015 incorporating new data sources, improved model structure, and comments from both Scientific Review Board and external peer reviews.

40. The Commission **NOTED** the following scientific advice from the IPHC Secretariat:

    a) ***Fishing intensity:*** *The IPHC does not have an explicit coastwide fishing intensity target or limit reference point, making it difficult to determine if current levels of fishing intensity are consistent with the interim harvest strategy policy objectives. The 2019 mortality corresponded to a point estimate of SPR = 42%; there is a 59% chance that fishing intensity exceeded the IPHC's reference level of 46% Although the stock is projected to decline over the next three years, the estimated probability of dropping below the $SB_{20\%}$ limit reference point remains less than 23% for all levels of mortality less than or equal to the status quo, the stock is therefore classified as* ***not subject to overfishing****. However, at current catch limits, there is a 1 in 2 chance that the stock will be below the $SB_{30\%}$ fishery trigger in each of the next 3 years, and a 1 in 5 chance of being below the $SB_{20\%}$ biological limit in 2023.*

    b) ***Spawning biomass****: Based on the dynamic reference point calculations, female spawning stock biomass of Pacific halibut at the beginning of 2020 was estimated to be 32% (22–46%) of the SB_0 (unfished levels) (Table 1). The probability that the stock is below the $SB_{30\%}$ level (IPHC trigger) is estimated to be 46%, with less than a 1% chance that the stock is below $SB_{20\%}$ (IPHC limit reference point). Thus, on the weight-of-evidence available, the Pacific halibut stock is determined to be* ***not overfished*** *($SB_{2020} > SB_{20\%}$).*

    c) ***Outlook.*** *The stock is projected to decrease over the period from 2021-23 for all TCEYs greater than 18.4 million pounds (~8,350 t), corresponding to a Spawning Potential Ratio (SPR) of 63%. At the reference level (SPR of 46% and a TCEY of 31.9 Mlbs or ~14,500 t) the probability of a decrease in stock size decreases over time from 89% (2021) to 75% (2023). There is a 43%*

chance that the stock will decline below the threshold reference point ($SB_{30\%}$) in one-year at the reference level of fishing intensity and a 49% chance at the status quo TCEY.

41. The Commission **NOTED** that stock projections were conducted using the integrated results from the stock assessment ensemble, summaries of the 2019 directed fisheries and other sources of mortality. The harvest decision table (Table 3) provides a comparison of the relative risk (in times out of 100), using stock and fishery metrics (rows), against a range of alternative harvest levels for 2020 (columns).

42. The Commission **NOTED** that:

    a) the harvest alternatives (columns) provided in the harvest decision table include several extreme levels of mortality (set aside in the left and right sections of the table) intended to provide for evaluation of stock dynamics:
        i. No fishing mortality (useful to evaluate the stock trend due solely to population processes);
        ii. A 10 million pound (~4,500 t) 2020 Total Constant Exploitation Yield (TCEY[1])
        iii. A 60 million pound (~27,200 t) 2020 TCEY

    b) A finer grid of alternative TCEY values is provided around the column corresponding to the reference level of fishing intensity (SPR=46%; for 2020 a TCEY of 31.9 million pounds, ~14,500 t):
        i. The 'replacement yield' for the next three-year period (a 18.4 million pound, ~8,350 t, TCEY) corresponding to a 50/100 chance of stock decrease. This column represents the maximum yield available that will provide a equal chance that the spawning stock is above or below its current level at the end of the projection.
        ii. The status quo TCEY (38.61 million pounds; ~17,500 t) from 2019.
        iii. A grid of TCEY values corresponding to SPRs from 47-40% in 1% increments.

Table 3. Harvest decision table for 2020. Columns correspond to yield alternatives and rows to risk metrics. Values in the table represent the probability, in "times out of 100" (or percent chance) of a particular risk.

2020 Alternative					3-Year Surplus				*Reference SPR=46%*						Status quo	
Total mortality (M lb)			0.0	11.6	20.0	23.6	27.6	32.3	33.5	34.6	35.7	36.8	37.8	38.9	40.2	61.6
TCEY (M lb)			0.0	10.0	18.4	22.0	26.0	30.7	31.9	33.0	34.1	35.2	36.2	37.3	38.6	60.0
2020 fishing intensity			$F_{100\%}$	$F_{78\%}$	$F_{63\%}$	$F_{58\%}$	$F_{53\%}$	$F_{47\%}$	$F_{46\%}$	$F_{45\%}$	$F_{44\%}$	$F_{43\%}$	$F_{42\%}$	$F_{41\%}$	$F_{40\%}$	$F_{27\%}$
Fishing intensity interval			--	39-87%	44-73%	39-71%	35-67%	31-62%	30-61%	29-60%	28-59%	28-58%	27-57%	26-56%	25-56%	17-43%
Stock Trend (spawning biomass)	In 2021	Is less than 2020	1	29	61	71	79	87	89	91	93	94	95	96	97	>99
		Is 5% less than 2020	<1	<1	11	23	30	42	46	50	54	58	61	64	67	98
	In 2022	Is less than 2020	<1	16	50	60	68	77	79	81	83	85	87	89	90	>99
		Is 5% less than 2020	<1	1	23	33	45	59	61	64	66	68	69	71	74	99
	In 2023	Is less than 2020	1	22	50	58	65	73	75	77	79	81	83	85	87	>99
		Is 5% less than 2020	<1	6	33	43	53	62	64	66	67	69	71	73	75	99
Stock Status (Spawning biomass)	In 2021	Is less than 30%	35	39	43	44	46	47	48	48	48	48	48	49	49	51
		Is less than 20%	<1	<1	<1	<1	<1	1	1	1	2	2	2	3	3	16
	In 2022	Is less than 30%	26	31	40	43	46	48	48	49	49	49	49	50	50	54
		Is less than 20%	<1	<1	<1	1	2	6	7	8	9	11	12	14	15	27
	In 2023	Is less than 30%	18	27	37	41	45	48	49	49	49	49	50	50	50	60
		Is less than 20%	<1	<1	<1	2	6	13	15	17	18	20	21	22	23	40
Fishery Trend (TCEY)	In 2021	Is less than 2020	0	<1	11	24	36	50	51	52	54	57	59	63	67	>99
		Is 10% less than 2020	0	<1	1	12	25	40	44	46	48	50	51	52	53	>99
	In 2022	Is less than 2020	0	<1	11	25	39	50	51	52	54	56	59	62	66	>99
		Is 10% less than 2020	0	<1	2	14	27	43	46	48	49	50	51	52	54	>99
	In 2023	Is less than 2020	0	<1	13	27	41	50	51	52	54	56	58	61	65	>99
		Is 10% less than 2020	0	<1	4	16	30	45	47	48	49	50	51	52	54	>99
Fishery Status (Fishing intensity)	In 2020	Is above $F_{46\%}$	0	<1	7	22	31	48	50	51	53	55	57	60	64	>99

Terms: *Constant Exploitation Yield (CEY)*: A specific concept from the IPHC's interim management procedure: the Total CEY (TCEY) is the current basis for Commission mortality limits. Includes all sources and sizes of mortality, except discard mortality in non-directed fisheries less than 26 inches in length (66cm; U26). The Fishery CEY (FCEY) is the amount of yield for directed Pacific halibut fisheries as defined by IPHC Regulatory Area-specific catch agreements, where applicable. *Spawning Potential Ratio (SPR)*: A commonly used metric of fishing intensity. SPR is the ratio of the equilibrium spawning biomass per recruit given some level of fishing and the equilibrium spawning biomass per recruit in the absence of fishing. Sometimes referred to as SBR, relative Spawning Biomass per Recruit.

[1] The TCEY corresponds approximately to the mortality comprised of Pacific halibut greater than 26 inches (66 cm) in length.

43. The Commission **RECALLED** that the 2019 mortality limits implemented by the Contracting Parties corresponded to a projected SPR of 47%. Estimates provided at AM095 indicated that a mortality at this level corresponded to an 84% probability that the spawning biomass would decline from 2019 to 2020.

44. The Commission **NOTED** the differences among the results from the four stock assessment models related to the treatment of indices of abundance as separate time-series (Areas-As-Fleets models) or aggregate coastwide trends (coastwide models) as well as the scaling of recruitment estimates due to differences in natural mortality estimates.

45. The Commission **NOTED** that the change from historical static reference points, to dynamic reference points based on current biology and recent recruitment, revised the Commission's understanding of the relative effects of fishing, now indicating the stock to be at a lower relative biomass level (32% in 2020), and having been below the $SB_{30\%}$ trigger from 2009-2015, but increasing since that period due to reduced effects of fishing, despite continued absolute stock decline due to environmental factors.

46. The Commission **NOTED** that the dynamic reference point approach was reviewed by the SRB and independent peer reviewer and determined to be an improvement over previous methods.

47. The Commission **NOTED** that the uncertainty in estimates of fishing intensity (SPR) are highly asymmetric, reflecting the differences among the stock assessment model estimates and the information content of the fishery data, ruling out extremely high levels of fishing intensity, but not those associated with lower fishing intensity and higher biomass.

48. The Commission **NOTED** paper IPHC-2020-AM096-10, which provided the Commission with a set of options and a discussion of those options in response to:

> "AM095–Rec.04 (para. 66) *The Commission RECOMMENDED evaluating and redefining TCEY to include the U26 component of discard mortalities, including bycatch, as steps towards more comprehensive and responsible management of the resource, in coordination with the IPHC Secretariat and Contracting Parties. The intent is that each Contracting Party to the Treaty would be responsible for counting its U26 mortalities against its collective TCEY. This change would be intended to take effect for TCEYs established at the 2020 Annual Meeting.*"

49. The Commission **NOTED** that U26 discard mortality in non-directed fisheries is a source of mortality not currently included in the TCEY; however, it is included in all stock assessment and harvest strategy calculations.

50. The Commission **NOTED** that the terms FCEY and TCEY are used in domestic catch sharing agreements/plans, and that retaining these terms would be efficient for these processes.

51. The Commission **NOTED** that the effects of U26 mortality differs from O26 mortality in its effect on fishing intensity due to the small size and young age of U26 fish.

52. The Commission **REQUESTED** that the IPHC MSE process continue to evaluate status quo management related to discard mortality for non-directed fisheries (bycatch) under the current program of work for delivery of full MSE results at AM097 in 2021, noting that this source of mortality is currently modelled as a fixed component of the total (with variability).

53. The Commission **NOTED** paper IPHC-2020-AM096-INF06, which provided the Commission with a response to: AM095–Rec.05 (para. 67)

> *"The Commission RECOMMENDED that the IPHC Secretariat expand upon the analysis completed in IPHC-2019-AM095-INF08 "Treatment and effects of Pacific halibut discard mortality (bycatch) in non-directed fisheries projected for 2019", to be reviewed by the SRB at its next meeting. The objective of this work is to estimate lost yield from bycatch of Pacific halibut in non-directed fisheries for the years of 1991-2018."*

54. The Commission **NOTED** that the effects of non-directed fishery discard mortality depend on the biology and age-structure of the stock, the selectivity of the various fisheries, the relative level of fishing intensity and other factors, such that there is no single 'exchange rate' of directed fishery yield and non-directed fishery discard mortality.

55. The Commission **NOTED** that the commercial fishery yield gain rate (pounds gained per pound of non-directed fishery discards) has varied among historical analyses. Over the time series included in this paper, the rate has averaged 1.15 ranging from a low of 0.86 to a high of 1.39 and the estimated cumulative lost yield of over 350 million pounds.

6.5 Pacific halibut mortality projections using the IPHC mortality projection tool

56. The Commission **NOTED** that the IPHC's web-based mortality projection tool (https://www.iphc.int/data/projection-tool) for decision making purposes. This tool provides all user groups the ability to create alternative projection tables as necessary for discussion and decision-making.

57. The Commission **NOTED** the summary of IPHC Regulatory Area-specific mortality projections for 2020 based on the interim management procedure and other alternatives.

58. The Commission **NOTED** that the 'interim management procedure' uses the O32 modelled stock distribution and relative harvest rates (1.0 for Regulatory Areas 2A-3A and 0.75 for Regulatory Areas 3B-4CDE; consistent with the method from recent years), along with the reference level of fishing intensity ($F_{46\%}$) to generate the starting point for mortality projections. This starting point is then modified to reflect agreements from AM095 setting the TCEY for IPHC Regulatory Area 2A to a value of 1.65 million pounds and using a percentage of the total TCEY to calculate the value for IPHC Regulatory Area 2B based on 20% (with a weight of 0.7) and the O32 stock distribution and relative harvest rate (as above; with a weight of 0.3). Finally, at IM095 (Req.03, para 49) an additional adjustment was added to IPHC Regulatory Area 2B for the purposes of the default calculations for populating the mortality projection tool to include accounting for estimated yield lost due to U26 discard mortality in non-directed fisheries ('bycatch') in Alaskan waters. This adjustment was equal to 0.42 million pounds at the reference level of fishing intensity.

59. The Commission **NOTED** that the reference projection results in a 2019 TCEY of 31.9 million lbs, (~14,500 t; Table 4). This represents a decrease of 20% from the reference level calculated based on the 2018 stock assessment, and 17% from the catch limits adopted for 2019. Because components within the TCEY have changed since 2018, the Fishery Constant Exploitation Yields (FCEYs), and allocations to specific fisheries based on domestic catch agreements have also changed.

60. The Commission **NOTED** that although the 2018 reference TCEY was similar (31 million pounds), the 2020 results indicated a substantially different distribution among IPHC Regulatory Areas. The large proportional reduction in IPHC Regulatory Area 3A from the 2019 to 2020 reference levels was a result of both the reduced total and large drop (17%) in 2019 modelled O32 survey results.

Table 4. Comparison of TCEY values (Mlbs) among IPHC Regulatory Areas from 2019 and projected for 2020 using the reference SPR (SPR46%) along with the current management procedure for TCEY distribution, and the adopted limits from 2019.

	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
2019 Reference SPR (46%)	0.78	4.91	6.26	16.35	2.97	2.21	1.95	4.59	40.00
2019 Adopted SPR (41%)[1]	1.65	6.83	6.34	13.50	2.90	1.94	1.45	4.00	38.61
2020 Reference SPR (46%)	1.65	6.22	4.88	9.63	2.89	2.22	1.25	3.16	31.90

[1] This SPR value represents the current estimate, which is subject to uncertainty and is based on the 2019 stock assessment. At the time the 2019 catch limits were adopted, they were predicted to result in an SPR of 47%.

61. The Commission **AGREED** that the Pacific halibut mortality projections for 2020 based on the attainment of full Protected Species Catch (PSC, a.k.a. bycatch) by the non-directed fleets fishing in Alaska, while maintaining the reference SPR of 46% (Table 5, and as reported in the mortality projection tool), was not

acceptable, as it would result in zero or substantially lower catch limits for directed fleets operating in a number of Regulatory Areas.

62. The Commission **NOTED** that the three-year average discard mortality in non-directed fisheries (bycatch) was somewhat lower than that estimated in 2019 (particularly for IPHC Regulatory Area 4CDE).

Table 5. Pacific halibut mortality projected for 2020 based on the reference SPR (46%) and *interim management procedure* for TCEY distribution, with adjustments for 2A, 2B and U26 accounting. All values reported in millions of net pounds.

	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
Commercial Discard Mortality	0.03	0.12	NA	NA	0.15	0.12	0.04	0.03	0.48
O26 Non-Directed Discard Mortality	0.12	0.22	0.09	1.37	0.42	0.20	0.15	2.40	4.97
Non-FCEY Recreational	NA	0.04	1.15	1.66	0.00	0.01	0.00	0.00	2.87
Subsistence	NA	0.41	0.37	0.19	0.02	0.01	0.00	0.04	1.03
Total non-FCEY	0.15	0.78	1.61	3.22	0.59	0.35	0.19	2.47	9.36
Commercial Discard Mortality	NA	NA	0.05	0.21	NA	NA	NA	NA	0.26
FCEY Recreational	0.60	0.80	0.60	1.21	NA	NA	NA	NA	3.21
Subsistence	0.03	NA	NA	NA	NA	NA	NA	NA	0.03
Commercial Landings	0.86	4.64	2.62	4.99	2.30	1.87	1.06	0.69	19.04
Total FCEY	1.50	5.44	3.28	6.41	2.30	1.87	1.06	0.69	22.54
TCEY	1.65	6.22	4.88	9.63	2.89	2.22	1.25	3.16	31.90
U26 Non-directed discard mortality	0.00	0.02	0.00	0.27	0.06	0.15	0.01	1.09	1.61
Total Mortality	1.65	6.24	4.88	9.91	2.95	2.37	1.25	4.26	33.51

7. IPHC 5-YEAR RESEARCH PROGRAM

7.1 IPHC 5-year Biological & Ecosystem Sciences research program: update

63. The Commission **NOTED** paper IPHC-2020-AM096-11 which provided a description of progress on Biological and Ecosystem Science Research by the IPHC Secretariat.

64. The Commission **NOTED** the primary biological research activities at the IPHC that follow Commission objectives are identified and described in the IPHC 5-Year Biological and Ecosystem Science Research Plan (2017-21). These activities are summarized in five broad research areas designed to provide inputs into stock assessment and the management strategy evaluation processes, as follows:

1) **Migration**. Studies are aimed at further understanding reproductive migration and identification of spawning times and locations as well as larval and juvenile dispersal.

2) **Reproduction**. Studies are aimed at providing information on the sex ratio of the commercial catch and to improve current estimates of maturity in female Pacific halibut.

3) **Growth and Physiological Condition**. Studies are aimed at describing the role of some of the factors responsible for the observed changes in size-at-age and to provide tools for measuring growth and physiological condition in Pacific halibut.

4) **Discard Mortality Rates (DMRs) and Survival**. Studies are aimed at providing updated estimates of DMRs in both the longline and the guided recreational fisheries.

5) **Genetics and Genomics**. Studies are aimed at describing the genetic structure of the Pacific halibut population and at applying genetics and genomics to improve our current understanding of migration and distribution.

65. The Commission **NOTED** the Pacific halibut workshop co-organized by the IPHC Secretariat within the 2019 PICES Annual Meeting to bring together scientists from countries invested in the Pacific halibut resource and to establish plans to engage in international data sharing and collaborative research activities. These efforts will be continued with the organisation of a second Pacific halibut workshop that will be held at the 2020 PICES Annual Meeting and that will include topics related to climate variability and potential changes in the distribution of flatfish species in the North Pacific Ocean.

8. REPORT OF THE 20TH SESSION OF THE IPHC RESEARCH ADVISORY BOARD (RAB020)

66. The Commission **NOTED** the Report of the 20th Session of the IPHC Research Advisory Board (RAB020) (IPHC-2019-RAB020-R) which was presented by the Co-Chairperson, Dr Josep Planas.

67. The Commission **NOTED** that the RAB020 made two (2) recommendations to the Commission as follows:

IPHC Closed Area

RAB020-Rec.01 (para. 10) *The RAB AGREED that the IPHC Closed Area (Pacific Halibut Fishery Regulations 2019, Sect. 11) is not currently meeting its intended objective of protecting juvenile Pacific halibut when it is open to non-directed fisheries, and RECOMMENDED, in coordination with the NPMFC, that the IPHC Secretariat examine alternative management regimes for the Closed Area, and for these to be presented at the 96th Session of the IPHC Annual Meeting (AM096) in 2020.*

Hook standardisation

RAB020-Rec.02 (para. 33) *The RAB RECOMMENDED that the IPHC consider standardising the FISS to use a particular model hook and to encourage each vessel to begin its FISS contract work each year with all new hooks.*

68. The Commission **CONSIDERED** the recommendations made by the RAB020 and **AGREED** to take them into consideration when deliberating on relevant agenda items throughout the meeting.

9. REPORTS OF THE 14TH AND 15TH SESSIONS OF THE IPHC SCIENTIFIC REVIEW BOARD (SRB014 AND SRB015)

69. The Commission **NOTED** the Reports of the 14th and 15th Sessions of the IPHC Scientific Review Board (SRB014 - IPHC-2019-SRB014-R; SRB015 - IPHC-2019-SRB015-R) which were presented by the Chairperson, Dr Sean Cox (Simon Fraser University, Vancouver, Canada), one of the five (5) SRB members.

70. The Commission **CONSIDERED** the recommendations made by the SRB015 and **AGREED** to take them into consideration when deliberating on relevant agenda items throughout the meeting.

71. The Commission **NOTED** that the SRB015 made seven (7) recommendations to the Commission as follows:

Discard mortality in non-directed fisheries

SRB015–Rec.01 (para. 10) *The SRB RECOMMENDED that the analysis of the effects of historical discard mortality in non-directed fisheries ('bycatch'), be interpreted with caution, as there are multiple methods for evaluating how bycatch in non-directed fisheries impact stock productivity and biomass over time. The estimated rates of bycatch impact on directed fishery changed over time in part due to the variability in recruitment and/or sublegal abundance*

relative to the vulnerable stock. The choice of the appropriate method will depend on how the results feed into management advice.

SRB015–Rec.02 (para. 11) *The SRB RECOMMENDED that, if a bycatch management strategy is a priority for the Commission, then the MSE process would be a more appropriate venue for evaluating methods of bycatch accounting for reasons outlined at SRB012:*
"NOTING the request for "replay" analyses, the SRB AGREED that "what if" questions about past behaviour are not appropriate for stock assessment models because those analyses do not adequately reflect the information available at the time or information feedbacks to future decision over time. An MSE analysis, on the other hand is specifically designed to answer "what if" questions under particular future scenarios while properly accounting for stock assessment errors in response to changing information." (IPHC-2018-SRB012-R, para. 23)

Independent external peer review of the IPHC stock assessment

SRB015–Rec.03 (para. 19) *The SRB RECOMMENDED that as was the case in the 2019 external peer review, any future external review would also benefit from an in-person review component. The biannual peer review that the SRB undertakes should continue as a complimentary element, thereby providing ongoing verification for the Commission.*

Pacific halibut stock assessment: 2019

SRB015–Rec.04 (para. 34) *NOTING the discussion of recommendations arising from the external peer review of the IPHC stock assessment (Section 4), the SRB RECOMMENDED that the IPHC Secretariat:*

a) Update data weighting for the 2019 assessment;

b) For SRB016:

i. evaluate the types of weightings (e.g., Dirichlet-multinomial) for compositional data;

ii. advise on the impact of data re-weighting as new information arises. This could be more sensitive as new sex-composition data are included;

iii. keep apprised of new software developments (e.g. CAPAM meeting in NZ) and report on potential future directions (e.g. if alternatives provide improved Bayesian integration or adaptations for simulation testing etc.).

Management Strategy Evaluation: Goals, Objectives and Performance Metrics

SRB015–Rec.05 (para. 41) *The SRB RECOMMENDED that if the original objective to have annual mortality limits related to local abundances was of broad interest to the Commission, then candidate management procedures be developed and tested in which regional mortality limits are set annually in proportion to modelled survey abundance trends by IPHC Regulatory Area (noting that splitting regions into Regulatory Areas would require assumptions about within-region abundance proportions).*

Management Strategy Evaluation: Dynamic reference points

SRB015–Rec.06 (para. 45) *The SRB RECOMMENDED that the MSAB define objectives independently of the management procedures used to achieve them and, instead, focus on the outcomes/consequences they wish to avoid (e.g. low catch, fishery closures, large drops in TCEY, public perceptions of poor stock status).*

Management Strategy Evaluation: Updates to MSE framework and closed-loop simulations

SRB015–Rec.07 (para. 51) *The SRB RECOMMENDED that the Commission develop a standard criterion for achieving a limited set of (or one over-arching) objectives. This would ensure that*

any candidate management procedure achieves common goals with differences in trade-offs between risks and benefits. Doing so will improve the efficiency of the iterative approach that is required for MSE.

72. The Commission **NOTED** the departure of Dr Marc Mangel from the SRB in 2019 after completing six (6) years of outstanding contributions to IPHC scientific activities. As a founding member of the Board, Dr Mangel's contributions and advice have played a very large part in shaping IPHC science.

73. The Commission **CONSIDERED** the need to hold a joint meeting with the SRB members once a year to discuss and highlight matters of importance for Commissioners, and for this to be explored as a possibility.

74. The Commission **NOTED** that the IPHC Secretariat will be making a call for expressions of interest to replace applicable SRB members in the coming months. This will involve both a public announcement, and a targeted recruitment based on the expertise needs of the board.

10. MANAGEMENT STRATEGY EVALUATION

10.1 IPHC Management Strategy Evaluation: update

75. The Commission **NOTED** paper IPHC-2020-AM096-12 which provided the Commission with an update on the IPHC MSE process including defining objectives, developing management procedures for scale and distribution, a framework for distributing the TCEY, and a program of work.

76. The Commission **RECALLED** the IPHC interim Management Procedure (https://www.iphc.int/the-commission/harvest-strategy-policy) includes the following components:

    a) A biological limit ($SB_{20\%}$), the minimum relative spawning biomass needed to meet conservation objectives;

    b) A fishery trigger ($SB_{30\%}$), the relative spawning biomass below which the reference level of fishing intensity is reduced to avoid reaching the $SB_{20\%}$ biological limit;

    c) A reference level of fishing intensity, $F_{46\%}$, corresponding to a Spawning Potential Ratio (SPR) of 46%;

    d) A control rule, reducing the fishing intensity linearly from the reference level at $SB_{30\%}$ to no directed fishing at $SB_{20\%}$.

77. The Commission **NOTED** that non-directed fishing discard mortality is currently treated as a scenario in the MSE with a simulated level representing a reasonable range of potential non-directed fishing discard mortality based on recent observations and **RECALLED** paragraph 37 of IPHC-2017-AM093-R:

    *"The Commission **NOTED** the presentation of an SPR-based harvest policy to update the current harvest policy, and that MSE will be used to evaluate alternative SPR values that are robust to possible bycatch scenarios."*

78. The Commission **AGREED** that although the relative spawning biomass has been retrospectively estimated to have fallen below $SB_{30\%}$ over the period 2009-2015, it was not determined to be below the fishery trigger during that time period when the mortality limits were set.

79. The Commission **NOTED** the following recommendations from the MSAB and IPHC Secretariat, and **AGREED** to hold an inter-sessional meeting soon after the AM096 to provide direction:

    - *Recommended that the primary coastwide biological sustainability objective of maintaining the female spawning biomass above a biomass limit of $SB_{20\%}$ at least 95% of the time be used to evaluate management procedures.*

- *Recommended primary coastwide fishery objectives to be used for evaluation of management procedures (Table 1), including:*

  a) maintain the female spawning biomass around a proxy target biomass of $SB_{36\%}$;
  b) limit annual changes in the TCEY; and
  c) optimize directed fishing yield.

- *Recommended that the primary biological sustainability objective of conserving spatial population structure across Biological Regions be used to evaluate management procedures.*

- *Recommended primary fishery objectives at the IPHC Regulatory Area scale for evaluation of management procedures (Table 1), including*

  a) limit annual changes in the TCEY for each IPHC Regulatory Area;
  b) optimize the TCEY among IPHC Regulatory Areas;
  c) optimize a percentage of the coastwide TCEY among IPHC Regulatory Areas;
  d) maintain the TCEY above a minimum absolute level within each IPHC Regulatory Area; and
  e) maintain a percentage of the coastwide TCEY above a minimum level within each IPHC Regulatory Area;

- *Recommended that given the results from the coastwide MSE, the following elements from the scale (coastwide) component of the management procedure meet the coastwide objectives*

  a) SPR values greater than 40%;
  b) A control rule of 30:20;
  c) A constraint on the annual change in the TCEY do one of the following: limit it to 15%, use a slow-up, fast-down approach, or fix the mortality limits for three-year periods.

- *Recommended a reference SPR fishing intensity of 43% with a 30:20 control rule and allocations to 2A and 2B, as defined in IPHC-2019-AM095-R paragraphs 69 b and c, be used as an updated interim management procedure consistent with MSE results for the development of 2020 stock assessment results pending delivery of the final MSE results at AM097.*

80. The Commission **NOTED** that various elements of the scale and distribution components of the management procedure, including those listed in IPHC-2019-MSAB014-R will be evaluated for consideration at AM097 in 2021.

81. The Commission **NOTED** that an independent peer review of the MSE will take place in April 2020 and August 2020 with a report supplied to the SRB, MSAB, and Commission.

82. The Commission **NOTED** that the SRB will review MSE results in September 2020, and these results including scale and distribution management procedures will be presented to the Commission at AM097 in 2021.

83. The Commission **NOTED** that MSE is the appropriate tool to evaluate management procedures related to discard mortality for non-directed fisheries (*bycatch*) because it can capture downstream effects, biological implications, and the management performance relative to objectives.

10.2 Reports of the 13th and 14th Sessions of the IPHC Management Strategy Advisory Board (MSAB013 and MSAB014)

84. The Commission **NOTED** the Reports of the 13th and 14th Sessions of the IPHC Management Strategy Advisory Board (MSAB013 - IPHC-2019-MSAB013-R; MSAB014 - IPHC-2019-MSAB014-R) which was presented by Mr Adam Keizer (Canada) and Dr Carey McGillard (USA).

85. The Commission **NOTED** that the MSAB014 made five (5) recommendations to the Commission as follows:

A review of the coastwide goals and objectives of the IPHC MSE process

MSAB014–Rec.01 (para. 34) *The MSAB RECOMMENDED a coastwide fishery objective, in response to a request from the Commissioners, to maintain the spawning biomass above a target reference point of RSB36%, 50% of the time over the long-term.*

Identification of goals and objectives related to distributing the TCEY

MSAB014–Rec.02 (para. 41) *The MSAB RECOMMENDED the primary objectives and associated performance metrics detailed in Appendix V to be used for the evaluation of management procedures at MSAB015.*

Performance metrics for evaluation

MSAB014–Rec.03 (para. 46) *NOTING the current progress on evaluating coastwide fishing intensity, the MSAB RECOMMENDED that:*

1) a coastwide fishing intensity SPR of 43%, with a 30:20 HCR, and with one of two constraints 1) +/-15% maximum change in total mortality, and/or 2) slow up, fast down, be used in harvest strategy development process; and

2) a range of management procedures including fishing intensity SPR of 40-46% be considered in light of implementation variability within the closed-loop simulations when investigating distribution.

Management procedures for coastwide scale

MSAB014–Rec.04 (para. 49) *The MSAB RECOMMENDED that SPR values of 0.3, 0.34, 0.38, 0.40, 0.42, 0.46, and 0.50 with a 30:20 control rule be evaluated at MSAB015 along with constraints defined by a maximum change in the TCEY of 15%, a slow-up fast-down approach, and/or setting quotas every third year.*

Management procedures for distributing the TCEY

MSAB014–Rec.05 (para. 56) *The MSAB RECOMMENDED that the management procedures listed in Table 2 in Appendix VI be evaluated at MSAB015.*

86. The Commission **NOTED** that the MSAB will use the primary objectives and associated performance metrics detailed in Appendix V of IPHC-2019-MSAB014-R for the evaluation of management procedures.

87. The Commission **NOTED** that relative harvest rates will be evaluated as a component of management procedures at MSAB015 and MSAB016.

88. The Commission **NOTED** the MSE Program of Work (2019–21) and that the MSAB and IPHC Secretariat will continue its program of work with delivery of recommended management procedures at AM097.

89. The Commission **REQUESTED** the MSAB to confirm the proposed topics of work beyond the 2021 deliverables in time for the Interim Meeting (IM096), including work to investigate and provide advice on approaches for accounting for the impacts of bycatch in one Regulatory Area on harvesting opportunities in other Regulatory Areas.

11. REGULATORY PROPOSALS FOR 2020

11.1 IPHC Secretariat regulatory proposals

11.1.1 IPHC Fishery Regulations: Fishery Limits (Sect. 4)

90. The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropA1, which aimed to improve clarity and transparency of fishery limits in the IPHC Fishery Regulations, and to provide the framework for mortality limits adopted by the Commission.

91. The Commission **ADOPTED** the distributed mortality limits for each Contracting Party, by IPHC Regulatory Area, (Table 6) and sector, as provided in Appendix IV. [**Canada**: In favour=2, Against=1][**USA**: In favour=2, Against=1]

Table 6. Adopted TCEY mortality limits for 2020

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (metric tonnes)
2A	1.65	748
2B	6.83	3,098
2C	5.85	2,654
3A	12.20	5,534
3B	3.12	1,415
4A	1.75	794
4B	1.31	594
4CDE	3.90	1,769
Total (IPHC Convention Area)	**36.60**	**16,601**

92. The Commission **NOTED** that the FCEY values resulting from the adopted TCEY mortality limits, listed in Appendix IV, are used by the Contracting Parties to determine fishery sector allocations, recognizing that each Contracting Party may implement more restrictive limits.

93. The Commission **AGREED** that the IPHC Secretariat should continue to report out on Regulatory Area mortality against the TCEY adopted for each Regulatory Area.

94. The Commission **AGREED** to continue the development of a workplan to explore methods for improvement of monitoring requirements in directed and non-directed fisheries.

95. The Commission **AGREED** to continue work on evaluating and redefining TCEY to include the U26 component of discard mortalities, including non-directed commercial fisheries, as steps towards more comprehensive and responsible management of the resource, in coordination with the IPHC Secretariat and Contracting Parties. The intent is that each Contracting Party to the Treaty would be responsible for counting its U26 mortalities against its collective TCEY.

96. The Commission **AGREED** to account for some of the impact of U26 non-directed discard mortality from US IPHC Regulatory Areas on available harvest in IPHC Regulatory Area 2B. The estimated lost yield is calculated following the method described in paper IPHC-2019-IM095-12, considering a rolling three-year average of U26 non-directed discard mortality. The accounting is calculated as one half of the estimated lost yield and is applied as an adjustment to the interim management procedure adopted at AM095 and described in paragraph 4(c). This approach will apply until 2022.

97. The Commission **ADOPTED**:

    a) a coastwide mortality limit (TCEY) of 36.6 million pounds; and

    b) a fixed TCEY for IPHC Regulatory Area 2A of 1.65 million pounds is intended to apply for a period from 2019-2022, subject to any substantive conservation concerns; and

c) a share-based allocation for IPHC Regulatory Area 2B. The share will be defined based on a weighted average that assigns 30% weight to the current interim management procedure's target TCEY distribution and 70% on 2B's recent historical average share of 20%. This formula for defining IPHC Regulatory Areas 2B's annual allocation is intended to apply for a period of 2019 to 2022. For 2020, this equates to a share of 18.2% before accounting for U26 ; and

d) an accounting for some impacts of U26 non-directed discard mortality from US IPHC Regulatory Areas on available harvest in IPHC Regulatory Area 2B. The accounting increases the 2B TCEY by 50% of the estimated yield lost due to U26 non-directed discard mortality in Alaskan waters and is intended to apply for the period 2020-2022. For 2020 this calculation equates to 0.21 million pounds and reduces all Alaskan IPHC Regulatory Area TCEYs to maintain a coastwide TCEY of 36.6 million pounds; and

e) the use of a rolling three-year average for projecting non-directed fishery discard mortality by IPHC Regulatory Area; this is also intended to apply for a period of 2020 to 2022.

11.1.2 IPHC Fishery Regulations: Commercial fishing periods (Sect. 9)

98. The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropA2, which specified fishing periods for the commercial Pacific halibut fisheries.

IPHC Regulatory Area 2A Non-Tribal Directed Commercial Fishery

99. The Commission **NOTED** that of the license holders from 2017-19 that were surveyed regarding their preference between the 2-day (34 hr) and 3-day (58 hr) options for the non-tribal directed commercial fishing period, 76% of respondents preferred the 3-day option.

Commercial fishing periods

100. The Commission **ADOPTED** fishing periods for 2020 as provided below, thereby superseding the relevant portions of Section 9 of the IPHC Pacific halibut fishery regulations and specifying that:

a) All commercial fishing for Pacific halibut in all IPHC Regulatory Areas may begin no earlier than 14 March and must cease on 15 November;

b) The IPHC Regulatory Area 2A non-tribal directed commercial fishery may take place during specific fishing periods of 3 days' duration, beginning on the fourth Monday in June, with fishing period limits (vessel quota) to be determined and communicated by the IPHC Secretariat.

11.1.3 IPHC Fishery Regulations: minor amendments

101. The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropA3, which proposed amendments to ensure clarity and consistency in the IPHC Fishery Regulations, with minor modification as identified during AM096.

11.1.4 IPHC Fishery Regulations: Vessel Clearance in IPHC Regulatory Area 4 (Sect. 16)

102. The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropA4, which proposed amendments to address the need for clearances when a National Oceanic and Atmospheric Administration (NOAA) Fisheries observer or electronic monitoring device is present.

11.1.5 IPHC Fishery Regulations: IPHC Closed Area (Sect. 11)

103. The Commission **NOTED** and **DEFERRED** regulatory proposal IPHC-2020-AM096-PropA5, which proposed amendments to consider the intent and purpose of the IPHC Closed Area, as defined in the Pacific Halibut Fishery Regulations (2019) Section 11, which currently excludes directed Pacific halibut fishing, but allows other forms of mortality such as trawling, and to propose the removal of the IPHC Closed Area from the IPHC Pacific Halibut Fishery Regulations.

104. The Commission **NOTED** that further discussion of this proposal would be deferred to the IPHC Work Meeting in September 2020.

11.2 Contracting Party regulatory proposals

11.2.1 Charter management measures in IPHC Regulatory Areas 2C and 3A

105. The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropB1, which proposed IPHC Regulation changes for charter recreational Pacific halibut fisheries in IPHC Regulatory Areas 2C and 3A, in order to achieve the charter Pacific halibut allocation under the North Pacific Fisheries Management Council's (NPFMC) Pacific halibut Catch Sharing Plan.

11.2.2 Revising definition of IPHC Regulatory Area 2A-1

106. The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2020-AM096-PropB2, which proposed an update to IPHC regulatory language regarding the usual and accustomed fishing areas of Indian tribes with treaty fishing rights to Pacific halibut, with the addition of the geographic reference for Point Chehalis (46° 53.30' N. lat.).

11.3 Other Stakeholder regulatory proposals

11.3.1 Alaska Recreational Fisheries

107. The Commission **NOTED** regulatory proposal IPHC-2020-AM096-PropC1, which proposed a series of common regulations to be applied to all recreational fisheries in Alaska, and referred the proponent to the NPFMC.

11.3.2 Alaska Recreational Fisheries

108. The Commission **NOTED** regulatory proposal IPHC-2020-AM096-PropC2, which proposed a common daily bag limit for all non-resident fishers in the recreational fisheries in Alaska, and referred the proponent to the NPFMC.

11.4 Stakeholder statements

109. The Commission **NOTED** paper IPHC-2020-AM096-INF01 Rev_1 which provided the Commission with a consolidated document containing submitted '*Statements*' from stakeholders on the range of Regulatory Proposals and other topics submitted to the Commission for its consideration at the 96th Session of the IPHC Annual Meeting (AM096).

110. The Commission **REQUESTED** that the IPHC Secretariat organise and synopsize stakeholder statements by topic, in order to insert the stakeholder written inputs into public comment at appropriate points in the agenda for the Commission's consideration.

12. CONTRACTING PARTY NATIONAL REPORTS

12.1 Canada

111. The Commission **NOTED** the Contracting Party report from Canada (IPHC Regulatory Area 2B; IPHC-2020-AM096-NR01 Rev_1).

12.2 United States of America

112. The Commission **NOTED** the Contracting Party report from the United States of America IPHC Regulatory Areas 2A/2C/3/4; IPHC-2020-AM096-NR02 Rev_1).

113. The Commission **NOTED** that the NOAA Fisheries Observer Program has increased observer fees and has received increased government funding, and **REQUESTED** that NOAA Fisheries provide a

synopsis of observer coverage rates over time and how coverage rates are expected to change in 2020 and beyond.

114. The Commission **NOTED** the update of the Alaska Seafood Cooperative's deck-sorting experiment to reduce Pacific halibut non-directed commercial discard mortality (a.k.a. bycatch) in the trawl sector.

12.3 IPHC Contracting Party Report format

115. **NOTING** that efficiencies were gained by modifying the format and content for Contracting Parties' reports to the Commission, the Commission **AGREED** that the Contracting Parties, via Commissioners, should continue to work with the IPHC Secretariat to improve the reporting format. This could include removing redundancies and coordinating presentations to highlight the most important information and enhance the reports' usefulness to the Commission in its deliberations.

13. REPORT OF THE 96TH SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC096)

116. The Commission **NOTED** the Report of the 96th Session of the IPHC Finance and Administration Committee (FAC096) (IPHC-2020-FAC096-R) which was presented by Dr David T. Wilson (IPHC Executive Director).

13.1 Financial Statement for FY2019

117. The Commission **NOTED** that in FY2019, the IPHC budgeted with the aim of drawing down on the carryover. Specifically, the IPHC adopted an expense budget that was US$1,086,618 greater than the expected income. Due to significantly lower Pacific halibut catches and associated prices, that deficit increased to US$2,042,069, resulting in a much larger draw down on the carryover.

a) FY2019 Income: US$10,984,805

b) FY2019 Expenses: US$13,026,874

c) FY2019 Fund Balance: US$1,881,113

118. The Commission **NOTED** the contributions (in USD) received from Contracting Parties as follows:

a) ***Canada Contribution*** – In FY2019, the Canadian government contributed **$848,970** to the IPHC.

b) ***U.S.A. Contribution*** – In FY2019, the U.S.A. Government appropriated **$4,395,000** to the IPHC.

119. The Commission **NOTED** that for FY2019, US$111,250 was budgeted from Canada for a contribution to the International Fisheries Commissions Pension Society (the Plan). Canada indicated that in 2013 it agreed to an annual pension liability payment schedule. Canada has indicated that as a result of additional payments in 2017, they are now $400,537 ahead of the agreed schedule. As a result, no additional funds were contributed in 2019. At this time, overall payments and contributions are being reviewed for proper application to the Plan. Further details will be forthcoming intersessionally for noting.

120. The Commission **NOTED** the Financial Statements for FY2019, as detailed in paper IPHC-2020-FAC096-04 Rev_3, and that the IPHC Secretariat would facilitate a deeper review of the corrections and write-offs as part of the FY2019 Financial Statements, and to provide a report to the Commission intersessionally.

13.2 Annual independent auditor's report (2018 & 2019)

121. The Commission **NOTED** the status of the FY2018 and FY2019 audit reports, and that the audits will be communicated to the Commission for intersessional endorsement.

13.3 FY2020 Budget – update

122. The Commission **RECALLED** the Contracting Party contributions adopted as part of the FY2020 budget (Appendix V) as follows: (Para. 114, of IPHC-2019-AM095-R):

a) **Canadian Contribution** – **US$985,432** (**US$874,182** for contributions to the General Fund, and **US$111,250** to cover pension deficit payments);

b) **U.S.A. Contribution** – **US$4,532,000** (**US$4,020,093** for contributions to the General Fund; **US$139,424** to cover pension deficit payments, and **US$371,673** to cover the headquarters building lease (US$274,665) and maintenance (US$97,008) costs).

123. The Commission **NOTED** that as of 3 February 2020 (4 months into the FY2020 fiscal year), contributions have not yet been received by the IPHC Secretariat from either Contracting Party for FY2020. This is placing a strain on cash flow at the IPHC Secretariat and may soon result in forced reductions in operations.

124. The Commission **NOTED** that the FY2020 General Fund was approved with the expectation that it would run at a loss of US$759,838 to draw down the carry-over. However, given that the previously targeted level of carry-over funds has been reached one year ahead of schedule (due to FISS fish sales ~$1,200,000 less than budgeted), the IPHC Secretariat would seek to reduce operating expenses to match income. The IPHC Secretariat intends on providing the Commission with a list of budget lines to be reduced intersessionally.

125. The Commission **NOTED** and **AGREED** that the IPHC Secretariat will seek to ensure that all FISS activities are accurately cost-recovered from the Supplemental Fund to the General Fund.

126. The Commission **NOTED** and **AGREED** that all auxillary activities requested by other parties (e.g. government agencies) should be fully cost recovered.

13.4 Budget estimates: FY2021 (for approval); FY2022 (for information)

FY2021

127. The Commission **RECALLED** that subsequent to the Commission approving an annual budget, with associated Contracting Party contributions, the Contracting Parties go through an internal process of review and appropriation. Should an appropriation be lower than the Commission approved budget, an intersessional meeting would need to be held to agree on in-year budget reductions to match the contributions received.

128. The Commission **ADOPTED** Contracting Party contributions for FY2021 as follows:

a) **Canadian Contribution** – **US$1,011,657** (**US$900,407** for contributions to the General Fund, and **US$111,250** to cover pension deficit payments, noting that the pension fund will be valued in April of 2020 and may result in a variation of the deficit payment required by Canada);

b) **U.S.A. Contribution** – **US$4,767,901** (**US$4,157,760** for contributions to the General Fund; **US$139,424** to cover pension deficit payments (noting that the pension fund will be valued in April of 2020 and may result in a variation of the deficit payment required by USA), and **US$470,717** to cover the headquarters building lease (US$370,798) and maintenance (US$99,919) costs.

129. The Commission **ADOPTED** the FY2021 budget (financial period: 1 October 2020 to 30 September 2021) (Appendix VI).

130. The Commission **NOTED** that the IPHC Headquarters Lease is currently being renewed for the period 1 Oct 2020 to 30 September 2025. The draft was received in-session and provided to the Commission for information. The new lease represents a significant increase from the previous lease (~50%) for the first year, and continues to increase incrementally for each of the 4 subsequent years. The IPHC Secretariat

will commence investigations into potential options to move the Headquarters and keep the Commission informed consistent with the provisions of the Northern Pacific Halibut Act of 1982.

FY2022

131. The Commission **RECALLED** that subsequent to the Commission approving an annual budget, with associated Contracting Party contributions, the Contracting Parties go through an internal process of review and appropriation. Should an appropriation be lower than the Commission approved budget, an intersessional meeting would need to be held to agree on in-year budget reductions to match the contributions received.

132. The Commission **NOTED** that the IPHC Secretariat's proposed budget for FY2022 is based on a 3% increase in general contributions for Canada and U.S.A. to cover expected matching increases in costs, including a 2.5% increase in salaries (based on cost of living and step increases) and a 5% increase in health care costs.

13.5 IPHC Financial Regulations (2020)

133. The Commission **AGREED** to consider the revised IPHC Financial Regulations (2020) intersessionally for final approval, with additional review and input from Commissioners.

13.6 IPHC Rules of Procedure (2020)

134. The Commission **NOTED** the revised IPHC Rules of Procedure (2020) (IPHC-2020-FAC096-09 Rev_1) which proposed amendments to the IPHC Rules of Procedure (2019), and included edits from the CB090 and FAC096.

135. The Commission **ADOPTED** the revised IPHC Rules of Procedure (2020) by consensus, and **REQUESTED** that the IPHC Secretariat finalise and publish them accordingly.

14. IPHC PERFORMANCE REVIEW

14.1 Report of the 2nd IPHC Performance Review

136. The Commission **NOTED** paper IPHC-2020-AM096-14 which provided the Commission with an opportunity to consider the Report of the 2nd Performance Review of the IPHC (PRIPHC02), and direct the IPHC Secretariat accordingly in terms of addressing recommendations from the PRIPHC02.

137. The Commission **NOTED** that the PRIPHC02 was carried out over the course of 2019 via three face-to-face meetings: one in Seattle, USA (4-6 June 2019), one in New York City, USA (25 August 2019) and one in Ottawa, Canada (7-11 October 2019). The Panel held several additional tele-conferences, both among themselves, and with stakeholders. The meeting was also supported by Independent Legal and Science Experts who each dedicated additional working days to providing technical reviews and reports on specific components of the review criteria relevant to their areas of expertise.

138. The Commission **NOTED** para. 22 of the report which stated:

> (para. 22) "*The PRIPHC02 CONGRATULATED the Commission and Secretariat for the positive strides in response to the first performance review. Through the course of the consultations, document review and interviews, the panel saw consistent and significant improvements in transparency, availability and modernisation of documentation and background information, and heard resounding praise for this increased transparency and the movement away from previously "closed-door" and perceived "secretive" processes and decision-making.*"

139. The Commission **REQUESTED** that paper IPHC-2020-AM096-14 be reviewed intersessionally by each Contracting Party, with the intention of providing edits/additions, for endorsement. The IPHC Secretariat will facilitate this request by proposing intersessional meeting dates.

15. REPORT OF THE 90TH SESSION OF THE IPHC CONFERENCE BOARD (CB090)

140. The Commission **NOTED** the Report of the 90th Session of the IPHC Conference Board (CB090) (IPHC-2020-CB090-R) which was presented by the Co-Chairpersons of the CB, Mr Jim Lane (Canada) and Ms Linda Behnken (USA). A total of 55 members from the two Contracting Parties (70 in 2019) were represented at the Session.

141. The Commission **CONSIDERED** the recommendations made by the CB090 (IPHC-2020-CB090-R) and provided comment or endorsement as specified below.

142. The Commission **NOTED** the CB proposed 2020 fishing period (season) dates for the commercial fishery:

a) Opening: 14 March 2020
b) Closing: 15 November 2020
c) Non-treaty directed commercial fishery 3-day fishing period as stated in IPHC-2020-AM096-PropA2

143. The Commission **NOTED** the indication from the CB that it will be forming an ad-hoc stakeholder working group to review options for shifting to a year round fishery. The work group will work with the IPHC Secretariat and Contracting Party staff to determine feasibility for an extended or year round Pacific halibut fishery.

144. The Commission **NOTED** the CB proposed TCEY catch limits for the 2020 fishing period as provided in Table 7.

Table 7. Conference Board (CB) recommended TCEY mortality limits for 2020, with each Contracting Party not agreeing to the other's recommended limits.

IPHC Regulatory Area	Canada Mortality limit (TCEY) (Mlbs)	USA Mortality limit (TCEY) (Mlbs)
2A	1.65	1.65
2B	6.84	6.72
2C		5.82
3A		12.11
3B		3.12
4A		1.94
4B		1.37
4CDE		4.17
Total (IPHC Convention Area)	**35.20**	**36.90**

16. REPORT OF THE 25TH SESSION OF THE IPHC PROCESSOR ADVISORY BOARD (PAB025)

145. The Commission **NOTED** the Report of the 25th Session of the IPHC Processor Advisory Board (PAB025) (IPHC-2020-PAB025-R) which was presented by the Chairperson of the PAB, Ms Jessie Kiplinger (USA). A total of 15 voting members (18 in 2019) attended the Session (5 from Canada and 10 from the U.S.A.).

146. The Commission **CONSIDERED** the recommendations made by the PAB025 from its 2020 report (IPHC-2020-PAB025-R) and provided comment or endorsement as specified below.

147. The Commission **NOTED** the PAB proposed 2020 fishing period (season) dates for the commercial fishery:

a) Opening: 21 March 2020 at noon local time

b) Closing: 31 October at noon local time

148. The Commission **NOTED** the PAB proposed TCEY catch limits for the 2020 fishing period as provided in Table 8.

Table 8. Processor Advisory Board (PAB) proposed TCEY mortality limits for 2020 and an SPR of 41.5% [in favour=08 (Canada: 1; USA: 7); against=07 (Canada: 4; USA: 3); abstain=0].

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)
2A	1.65
2B	6.72
2C	5.82
3A	12.11
3B	3.12
4A	1.94
4B	1.37
4CDE	4.17
Total (IPHC Convention Area)	**36.90**

17. OTHER BUSINESS

17.1 IPHC meetings calendar (2020-22)

149. The Commission **NOTED** paper IPHC-2020-AM096-15 which provided an opportunity to consider the draft IPHC meetings calendar (2020-22).

150. The Commission **NOTED** the offer by the USA to host the 98th Session of the IPHC Annual Meeting (AM098) in 2022 in Seattle/Bellevue area, U.S.A. from 24 to 28 January 2022.

151. The Commission **ADOPTED** the proposed dates and places for the meetings of the Commission and its subsidiary bodies, as provided in Appendix VII.

17.2 Media release

152. The Commission **AGREED** to the contents of an initial media release on 7 February 2020 announcing the 2020 mortality limits and fishing periods, and that a subsequent, more detailed media release will be published within 14 days of the close of the Session.

17.3 Election of a Chairperson and Vice-Chairperson

153. The Commission **NOTED** that the term of the current Chairperson, Mr Chris Oliver (USA), is due to expire at the closing of the current Session, and as per Rule 9 of the IPHC Rules of Procedure (2019) the Commission is required to elect a new Chairperson for the next year.

154. **NOTING** Rule 9 of the IPHC Rules of Procedure (2019), the Commission **CALLED** for nominations for the newly vacated position of Chairperson of the IPHC for the next year. Mr Paul Ryall (Canada) was nominated, seconded, and **ELECTED** as Chairperson of the IPHC for the next year.

155. The Commission **NOTED** that the term of the current Vice-Chairperson, Mr Paul Ryall (Canada), is due to expire at the closing of the current Session, and as per Rule 9 of the IPHC Rules of Procedure (2019) the Commission is required to elect a new Vice-Chairperson for the next year.

156. **NOTING** Rule 9 of the Rules of Procedure (2019), the Commission **CALLED** for nominations for the newly vacated position of Vice-Chairperson of the IPHC for the next year. Mr Chris Oliver (U.S.A.) was nominated, seconded, and **ELECTED** as Vice-Chairperson of the IPHC for the next year.

17.4 Size limits

157. The Commission **NOTED** the stakeholder questions regarding the current minimum size limit applied to the directed commercial Pacific halibut fishery. In light of the newly available sex-ratio information from the directed commercial fishery, the Commission identified the need for a better understanding of the effects of the minimum size limit on available fishery yield and potential changes from previous analyses. Further, investigation of the use of a maximum size limit has also been a topic on ongoing discussion.

158. The Commission **REQUESTED** that the IPHC Secretariat prepare an updated discussion of the costs and benefits of removing or adjusting the current minimum size limit and/or adding a maximum size limit. This analysis would be presented during the 2020 Work Meeting and IM096.

18. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 96TH SESSION OF THE IPHC ANNUAL MEETING (AM096)

159. The Commission **REQUESTED** that the IPHC Secretariat finalise and publish the IPHC *Pacific Halibut Fishery Regulations (2020)* no later than 28 February 2020, **NOTING** that only minor editorial and formatting changes are permitted beyond the decisions made by the Commission at the AM096.

160. The Report of the 96th Session of the IPHC Annual Meeting (IPHC-2020-AM096-R) was **ADOPTED** on 07 February 2020, including the consolidated set of recommendations and requests arising from AM096, provided at Appendix VIII.

APPENDIX I
LIST OF PARTICIPANTS FOR THE 96TH SESSION OF THE IPHC ANNUAL MEETING (AM096)

Commission Officers

Vice-Chairperson	Chairperson
Mr Paul **Ryall** (Canada)	Mr Chris **Oliver** (United States of America)

Commissioners

Canada	United States of America
Mr Paul **Ryall**	Mr Chris **Oliver**
Mr Neil **Davis**	Mr Robert **Alverson**
Mr Peter **DeGreef**	Mr Richard **Yamada**

Advisors/experts

Ms Maureen **Finn –** Policy Advisor	Dr. Jim **Balsiger** – Policy Advisor
Ms Ann-Marie **Huang –** Scientific Advisor	Ms. Kathryn **Blair** – Technical Advisor
Mr Adam **Keizer –** Policy Advisor	Ms. Caitlin **Imaki** – Technical Advisor
	Mr. Kurt **Iverson** – Technical Advisor
	Mr. John **Lepore** – Legal Advisor
	Mr. Frank **Lockhart** – Technical / Policy Advisor
	Ms. Staci **MacCorkle** – Financial Advisor
	Dr. Carey **McGilliard** – Scientific Advisor
	Mr. Glenn **Merrill** – Technical /Policy Advisor
	Ms. Alicia **Miller** – Technical Advisor
	Dr. Alesia **Read** – Staff Advisor
	Mr. Demian **Schane** – Legal Advisor
	Ms. Maggie **Smith** – Legal Advisor

Observers

Participant	Organisation	Email
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APPENDIX II
AGENDA FOR THE 96TH SESSION OF THE IPHC ANNUAL MEETING (AM096)

1. OPENING OF THE SESSION

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

3. UPDATE ON ACTIONS ARISING FROM THE 95th SESSION OF THE IPHC ANNUAL MEETING (AM095) AND THE 95th SESSION OF THE IPHC INTERIM MEETING (IM095)

4. REPORT OF THE IPHC SECRETARIAT (2019)

5. FISHERY STATISTICS (2019)

6. STOCK STATUS OF PACIFIC HALIBUT (2019) & HARVEST DECISION TABLE (2020)

- 6.1 IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2019
- 6.2 Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data
- 6.3 Stock Assessment: Independent peer review of the Pacific halibut stock assessment
- 6.4 Stock Assessment: Data overview and stock assessment (2019), and harvest decision table (2020)
- 6.5 Pacific halibut mortality projections using the IPHC mortality projection tool

7. IPHC 5-YEAR RESEARCH PROGRAM

- 7.1 IPHC 5-year Biological & Ecosystem Science Research Plan: update

8. REPORT OF THE 20TH SESSION OF THE IPHC RESEARCH ADVISORY BOARD (RAB020)

9. REPORTS OF THE 14th AND 15TH SESSIONS OF THE IPHC SCIENTIFIC REVIEW BOARD (SRB014; SRB015)

10. MANAGEMENT STRATEGY EVALUATION

- 10.1 IPHC Management Strategy Evaluation: update
- 10.2 Reports of the 13th and 14th Sessions of the IPHC Management Strategy Advisory Board (MSAB013; MSAB014)

11. REGULATORY PROPOSALS FOR 2020

- 11.1 IPHC Secretariat regulatory proposals
- 11.2 Contracting Party regulatory proposals
- 11.3 Other Stakeholder regulatory proposals
- 11.4 Stakeholder statements

12. CONTRACTING PARTY: NATIONAL REPORTS

- 12.1 Canada
- 12.2 United States of America

13. REPORT OF THE 96th SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC096)

14. IPHC PERFORMANCE REVIEW

14.1 Report of the 2nd IPHC Performance Review (PRIPHC02)

15. REPORT OF THE 90th SESSION OF THE IPHC CONFERENCE BOARD (CB090)

16. REPORT OF THE 25th SESSION OF THE IPHC PROCESSOR ADVISORY BOARD (PAB025)

17. OTHER BUSINESS

17.1 IPHC meetings calendar (2020-22)

17.2 Media release

17.3 Election of Chairperson and Vice-Chairperson

18. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 96th SESSION OF THE IPHC ANNUAL MEETING (AM096)

APPENDIX III
LIST OF DOCUMENTS FOR THE 96TH SESSION OF THE IPHC ANNUAL MEETING (AM096)

Meeting documents	Title	Availability
IPHC-2020-AM096-01	Agenda & Schedule for the 96th Session of the IPHC Annual Meeting (AM096)	✓ 25 Oct 2019 ✓ 4 Dec 2019 ✓ 31 Jan 2020
IPHC-2020-AM096-02	List of Documents for the 96th Session of the IPHC Annual Meeting (AM096)	✓ 25 Oct 2019 ✓ 6 Dec 2019 ✓ 10 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-03	Update on actions arising from the 95th Session of the IPHC Annual Meeting (AM095) and the 95th Session of the IPHC Interim Meeting (IM095) (IPHC Secretariat)	✓ 4 Dec 2019
IPHC-2020-AM096-04	Report of the IPHC Secretariat (2019) (IPHC Secretariat)	✓ 6 Dec 2019
IPHC-2020-AM096-05 Rev_2	Fishery statistics (2019) (L. Erikson & H. Tran)	✓ 24 Dec 2019 ✓ 9 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-06	IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2019 (L. Erikson & R. Webster)	✓ 24 Dec 2019
IPHC-2020-AM096-07	Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data (R. Webster)	✓ 20 Dec 2019
IPHC-2020-AM096-08	Stock Assessment: Independent peer review of the Pacific halibut stock assessment (D. Wilson)	✓ 4 Dec 2019
IPHC-2020-AM096-09 Rev_2	Stock Assessment: Summary of the data, stock assessment, and harvest decision table for Pacific halibut (*Hippoglossus stenolepis*) at the end of 2019 (I. Stewart, A. Hicks, R. Webster & D. Wilson)	✓ 19 Dec 2019 ✓ 9 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-10	Options for the treatment of U26 discard mortality from non-directed fisheries (bycatch) within a total mortality limit (I. Stewart)	✓ 16 Dec 2019
IPHC-2020-AM096-11	IPHC 5-year Biological and Ecosystem Science Research Plan: update (J. Planas)	✓ 16 Dec 2019
IPHC-2020-AM096-12	IPHC Management Strategy Evaluation (MSE): update (A. Hicks, P. Carpi, S. Berukoff, & I. Stewart)	✓ 13 Dec 2019

IPHC-2020-AM096-13 Rev_1	Regulatory Proposal (2020) implementation notes (IPHC Secretariat)	✓ 03 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-14	2nd IPHC Performance Review (PRIPHC02): Update (D. Wilson)	✓ 6 Dec 2019
IPHC-2020-AM096-15	IPHC 3-year meetings calendar (2020-22) (IPHC Secretariat)	✓ 10 Dec 2019
Contracting Party: National reports		
IPHC-2020-AM096-NR01 Rev_1	Canada	✓ 03 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-NR02 Rev_1	United States of America	✓ 04 Jan 2020 ✓ 10 Jan 2020
Regulatory proposals for 2020		
IPHC Secretariat regulatory proposals for 2020		
IPHC-2020-AM096-PropA1	Fishery Limits (Sect. 4) (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-PropA2	Commercial Fishing Periods (Sect. 9) (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-PropA3	IPHC Pacific Halibut Fishery Regulations: minor amendments (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-PropA4	Vessel clearance in IPHC Regulatory Area 4 (Sect. 16) (IPHC Secretariat)	✓ 03 Jan 2020
IPHC-2020-AM096-PropA5	IPHC Closed Area (Sect. 11) (IPHC Secretariat)	✓ 30 Dec 2019
Contracting Party regulatory proposals for 2020		
IPHC-2020-AM096-PropB1 Rev_1	Charter management measures in IPHC Regulatory Areas 2C and 3A (USA - NOAA Fisheries)	✓ 03 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-PropB2	Revising definition of IPHC Regulatory Area 2A-1 (USA - NOAA Fisheries)	✓ 31 Dec 2019
Other Stakeholder regulatory proposals for 2020		
IPHC-2020-AM096-PropC1	Alaska recreational fisheries (J. Kearns)	✓ 19 Dec 2019
IPHC-2020-AM096-PropC2	Alaska recreational fisheries (L. Jarrett)	✓ 19 Dec 2019
Information papers		
IPHC-2020-AM096-INF01 Rev_3	Stakeholder statements on regulatory proposals for 2020 (IPHC Secretariat)	✓ 03 Jan 2020 ✓ 24 Jan 2020 ✓ 31 Jan 2020 ✓ 02 Feb 2020
IPHC-2020-AM096-INF02	Review of the use of pot gear in the Gulf of Alaska 2017-19 (IPHC Secretariat)	✓ 30 Dec 2019

IPHC-2020-AM096-INF03	Draft announcement for the IPHC MSE peer review – External expert/consultant (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-INF04	Terms of reference for a Life-History Modeler (IPHC Secretariat)	✓ 16 Dec 2019
IPHC-2020-AM096-INF05	IPHC science posters for AM096 (IPHC Secretariat)	✓ 31 Jan 2020
IPHC-2020-AM096-INF06	Analysis of the effects of historical discard mortality in non-directed fisheries ('bycatch') (I. Stewart, A. Hicks, P. Carpi)	✓ 16 Dec 2019
Report of the 2nd IPHC Performance Review		
IPHC-2019-PRIPHC02-R	Report of the 2nd Performance Review of the International Pacific Halibut Commission (PRIPHC02)	✓ 15 Oct 2019
Reports from IPHC subsidiary bodies (2019/20)		
IPHC-2019-RAB020-R	Report of the 20th Session of the IPHC Research Advisory Board (RAB020)	✓ 6 March 2019
IPHC-2019-SRB014-R	Report of the 14th Session of the IPHC Scientific Review Board (SRB014)	✓ 28 June 2019
IPHC-2019-SRB015-R	Report of the 15th Session of the IPHC Scientific Review Board (SRB015)	✓ 27 Sept 2019
IPHC-2019-MSAB013-R	Report of the 13th Session of the IPHC Management Strategy Advisory Board (MSAB013)	✓ 10 May 2019
IPHC-2019-MSAB014-R	Report of the 14th Session of the IPHC Management Strategy Advisory Board (MSAB014)	✓ 25 Oct 2019
IPHC-2019-IM095-R	Report of the 95th Session of the IPHC Interim Meeting (IM095)	✓ 26 Nov 2019
IPHC-2020-FAC096-R	Report of the 96th Session of the IPHC Finance and Administration Committee (FAC096)	✓ 4 Feb 2020
IPHC-2020-CB090-R	Report of the 90th Session of the IPHC Conference Board (CB090)	✓ 6 Feb 2020
IPHC-2020-PAB025-R	Report of the 25th Session of the IPHC Processor Advisory Board (PAB025)	✓ 6 Feb 2020

APPENDIX IV
MORTALITY TABLE PROJECTED FOR THE 2020 MORTALITY LIMITS BY IPHC REGULATORY AREA

(All values reported in millions of net pounds)

Sector	IPHC Regulatory Area								
	2A	**2B**	**2C**	**3A**	**3B**	**4A**	**4B**	**4CDE**	**Total**
Commercial discard mortality	0.03	0.13	NA	NA	0.16	0.09	0.04	0.08	0.52
O26 Non-directed discard mortality	0.12	0.24	0.07	1.29	0.53	0.22	0.16	2.06	4.69
Recreational	NA	0.05	1.15	1.66	0.00	0.01	0.00	0.00	2.88
Subsistence	NA	0.41	0.37	0.19	0.02	0.01	0.00	0.04	1.03
Total Non-FCEY	0.15	0.82	1.59	3.14	0.71	0.34	0.20	2.17	9.12
Commercial discard mortality	NA	NA	0.07	0.29	NA	NA	NA	NA	0.36
Recreational	0.61	0.88	0.78	1.71	NA	NA	NA	NA	3.98
Subsistence	0.03	NA	NA	NA	NA	NA	NA	NA	0.03
Commercial Landings	0.87	5.12	3.41	7.05	2.41	1.41	1.10	1.73	23.11
Total FCEY	**1.50**	**6.00**	**4.26**	**9.06**	**2.41**	**1.41**	**1.10**	**1.73**	**27.48**
TCEY	**1.65**	**6.83**	**5.85**	**12.20**	**3.12**	**1.75**	**1.31**	**3.90**	**36.60**
U26 Non-directed discard mortality	0.00	0.02	0.00	0.29	0.12	0.14	0.01	1.02	1.60
Total Mortality	**1.65**	**6.85**	**5.85**	**12.49**	**3.24**	**1.89**	**1.32**	**4.92**	**38.19**

APPENDIX V
FY2020 ADOPTED BUDGET

(1 Oct. 2019 to 30 Sept. 2020)

General Fund

Income			*Expenses*	
Contributions			**Core IPHC Activities**	
United States of America	$4,532,000	[1,2]	Administration	$2,288,847
Canada	$985,432	[1]	Scientific	$3,652,199
			Catch Sampling	$638,132
Other Income			**Research Activities**	
Grants & Contracts	$449,562		Field Research	$0
Interest Income	$5,000		Other Research	$550,000
Misc. Income	$0			
			FISS Program Cost Recovery	($397,346)
General Fund Total	$5,971,994		*General Fund Total*	$6,731,832
General Fund - Gain/Loss	***($759,838)***		***Year-end Carryover***	***$434,954***

Supplemental Fund

Income		*Expenses*	
Fish Sales Income		**FISS Expenses**	
FISS Program	$4,904,582	FISS Program	$4,539,501
Other Research	$46,400	FISS Program Cost Recovery	$397,346
Other Income			
Interest	$1,125		
Rollover from Reserve Account	$10,000		
Supplemental Fund Total	$4,962,106	*Supplemental Fund Total*	$4,936,847
Supplemental Fund - Gain/Loss	***$25,260***	***Year-end Carryover***	***$558,949***

Combined General/Supplemental Funds

Combined Gain/Loss	***($734,578)***	***Year-end Combined Balance***	***$993,903***

Notes: [1] - Includes Pension Funding Payment. In 2013 Canada agreed to an annual pension liability payment schedule. Canada have indicated that as a result of additional payments in 2017, they are now $400,537 ahead of the agreed schedule. As a result no additional funds are expected to be contributed in 2020.

[2] - Includes Headquarters Lease and Building Maintenance Payments.

APPENDIX VI
FY2021 PROPOSED BUDGET

(1 Oct. 2020 to 30 Sept. 2021)

General Fund

Income			*Expenses*	
Contributions			**Core IPHC Activities**	
United States of America	$4,767,960	[1,2]	Administration	$2,402,610
Canada	$1,011,657	[1]	Scientific	$3,427,938
			Catch Sampling	$646,945
Other Income			**Research Activities**	
Grants & Contracts	$478,599		Field Research	$0
Interest Income	$5,000		Other Research	$425,000
Misc. Income	$0			
			FISS Program Cost Recovery	($639,277)
General Fund Total	$6,263,216		*General Fund Total*	$6,263,216
General Fund - Gain/Loss	***($0)***		***Year-end Carryover***	***$434,954***

Supplemental Fund

Income		*Expenses*	
Fish Sales Income		**FISS Expenses**	
FISS Program	$5,010,798	FISS Program	$4,608,624
Other Research	$46,400	FISS Program Cost Recovery	$639,277
Other Income			
Interest	$1,125		
Rollover from Reserve Account	$25,000		
Supplemental Fund Total	$5,083,323	*Supplemental Fund Total*	$5,247,901
Supplemental Fund - Gain/Loss	***$164,579***	***Year-end Carryover***	***$451,858***

Combined General/Supplemental Funds

Combined Gain/Loss	***($164,579)***	***Year-end Combined Balance***	***$886,812***

Notes: [1] - Includes Pension Funding Payment.
[2] - Includes Headquarters Lease and Building Maintenance Payments.

APPENDIX VII
IPHC MEETINGS CALENDAR (2020-22)

	2020			2021			2022		
Meeting	**No.**	**Dates**	**Location**	**No.**	**Dates**	**Location**	**No.**	**Dates**	**Location**
Annual Meeting (AM)	**96th**	**3-7 Feb**	**Anchorage, USA**	**97th**	**25-29 Jan**	**Victoria, Canada**	**98th**	**24-28 Jan**	**TBD, USA**
Finance and Administration Committee (FAC)	96th	3 Feb	Anchorage, USA	97th	25 Jan	Victoria, Canada	98th	24 Jan	TBD, USA
Conference Board (CB)	90th	4-5 Feb	Anchorage, USA	91st	26-27 Jan	Victoria, Canada	92nd	25-26 Jan	TBD, USA
Processor Advisory Board (PAB)	25th	4-5 Feb	Anchorage, USA	26th	26-27 Jan	Victoria, Canada	27th	25-26 Jan	TBD, USA
Research Advisory Board (RAB)	21st	26 Feb	Seattle, USA	22nd	10 Feb	Seattle, USA	23rd	9 Feb	Seattle, USA
Management Strategy Advisory Board (MSAB)	15th	11-14 May	Courtenay, Canada	-	-	-	-	-	-
	16th	19-22 Oct	Seattle, USA	-	-	-	-	-	-
Scientific Review Board (SRB)	16th	23-25 June	Seattle, USA	18th	22-24 June	Seattle, USA	20th	21-23 June	Seattle, USA
	17th	22-24 Sept	Seattle, USA	19th	21-23 Sept	Seattle, USA	21st	20-22 Sept	Seattle, USA
Work Meeting (WM)	--	16-17 Sept (tentative)	Bellingham, USA	--	15-16 Sept	Bellingham, USA	--	14-15 Sept	Bellingham, USA
Interim Meeting (IM)	**96th**	**18-19 Nov**	**Seattle, USA**	**97th**	**30 Nov-1 Dec**	**Seattle, USA**	**98th**	**29-30 Nov**	**Seattle, USA**

APPENDIX VIII
CONSOLIDATED SET OF RECOMMENDATIONS AND REQUESTS OF THE 96TH SESSION OF THE IPHC ANNUAL MEETING (AM096) (03-07 FEBRUARY 2020)

RECOMMENDATIONS

Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data

AM096–Rec.01 (para. 31) The Commission **RECOMMENDED** that for the 2020 FISS season, the IPHC Secretariat shall employ the proposed subarea design for Regulatory Areas 2A, 4A, 4B, 4CDE, and an enhanced randomised subsampling FISS design in Regulatory Areas 2B, 2C, 3A, and 3B to meet the primary design objective, while also considering secondary and tertiary objectives (Table 2). The IPHC Secretariat shall determine the number of skates at each FISS station with the secondary objective in mind (Table 2). A demonstration of this design is provided at Fig. 2.

AM096–Rec.02 (para. 32) The Commission **RECOMMENDED** the following specific additions to the new 2020 FISS design, on the basis of the tertiary objective specified in Table 2 on a cost recovery basis. Any other tertiary sampling objective shall be at the discretion of the IPHC Secretariat unless specifically directed by the Commission:

a) Regulatory Area 2A: Washington Department of Fish and Wildlife - rockfish sampling;

b) Regulatory Area 2B: DFO-Canada - rockfish sampling.

REQUESTS

Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data

AM096–Req.01 (para. 33) The Commission **REQUESTED** the 2020 consultation process in preparation for the 2021 FISS and beyond be enhanced to include input from the IPHC subsidiary bodies, particularly the Research Advisory Board and the Scientific Review Board, as well as from stakeholders who have performed survey work for the IPHC, with a view to finalizing the FISS sampling design for the coming year as early as possible in the annual planning cycle.

Stock Assessment: Data overview and stock assessment (2019), and harvest decision table (2020)

AM096–Req.02 (para. 52) The Commission **REQUESTED** that the IPHC MSE process continue to evaluate status quo management related to discard mortality for non-directed fisheries (bycatch) under the current program of work for delivery of full MSE results at AM097 in 2021, noting that this source of mortality is currently modelled as a fixed component of the total (with variability).

Reports of the 13th and 14th Sessions of the IPHC Management Strategy Advisory Board (MSAB013 and MSAB014)

AM096–Req.03 (para. 89) The Commission **REQUESTED** the MSAB to confirm the proposed topics of work beyond the 2021 deliverables in time for the Interim Meeting (IM096), including work to investigate and provide advice on approaches for accounting for the impacts of bycatch in one Regulatory Area on harvesting opportunities in other Regulatory Areas.

Stakeholder statements

AM096–Req.04 (para. 110) The Commission **REQUESTED** that the IPHC Secretariat organise and synopsize stakeholder statements by topic, in order to insert the stakeholder written inputs into public comment at appropriate points in the agenda for the Commission's consideration.

Contracting Party National Reports - United States of America

AM096–Req.05 (para. 113) The Commission **NOTED** that the NOAA Fisheries Observer Program has increased observer fees and has received increased government funding, and **REQUESTED** that NOAA Fisheries provide a synopsis of observer coverage rates over time and how coverage rates are expected to change in 2020 and beyond.

IPHC Rules of Procedure (2020)

AM096–Req.06 (para. 135) The Commission **ADOPTED** the revised IPHC Rules of Procedure (2020) by consensus, and **REQUESTED** that the IPHC Secretariat finalise and publish them accordingly.

Report of the 2nd IPHC Performance Review

AM096–Req.07 (para. 139) The Commission **REQUESTED** that paper IPHC-2020-AM096-14 be reviewed intersessionally by each Contracting Party, with the intention of providing edits/additions, for endorsement. The IPHC Secretariat will facilitate this request by proposing intersessional meeting dates.

Size limits

AM096–Req.08 (para. 158) The Commission **REQUESTED** that the IPHC Secretariat prepare an updated discussion of the costs and benefits of removing or adjusting the current minimum size limit and/or adding a maximum size limit. This analysis would be presented during the 2020 Work Meeting and IM096.

Review of the draft and adoption of the report of the 96th Session of the IPHC Annual Meeting (AM096)

AM096–Req.09 (para. 159) The Commission **REQUESTED** that the IPHC Secretariat finalise and publish the IPHC *Pacific Halibut Fishery Regulations (2020)* no later than 28 February 2020, **NOTING** that only minor editorial and formatting changes are permitted beyond the decisions made by the Commission at the AM096.

DRAFT: AGENDA & SCHEDULE FOR THE 96th SESSION OF THE IPHC ANNUAL MEETING (AM096)

Date: 03-07 February 2020
Location: Anchorage, AK, USA
Venue: Hotel Captain Cook
Time: 3 Feb: 12:30-17:30;
4-7 Feb: 09:00-17:00 daily
Chairperson: Mr. Chris Oliver (USA)
Vice-Chairperson: Mr Paul Ryall (Canada)

Notes:

- ***Document deadline**: 04 January 2020 (30 days prior to the opening of the Session)*
- *All sessions are open to observers and the general public, unless the Commission specifically decides otherwise.*
- *All open sessions will be webcast. Webcast sessions will also take audience comments and questions as directed by the Chairperson of the Commission.*

AGENDA FOR THE 96th SESSION OF THE IPHC ANNUAL MEETING (AM096)

1. OPENING OF THE SESSION

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

3. UPDATE ON ACTIONS ARISING FROM THE 95th SESSION OF THE IPHC ANNUAL MEETING (AM095) AND THE 95th SESSION OF THE IPHC INTERIM MEETING (IM095)

4. REPORT OF THE IPHC SECRETARIAT (2019)

5. FISHERY STATISTICS (2019)

6. STOCK STATUS OF PACIFIC HALIBUT (2019) & HARVEST DECISION TABLE (2020)

- 6.1 IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2019
- 6.2 Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data
- 6.3 Stock Assessment: Independent peer review of the Pacific halibut stock assessment
- 6.4 Stock Assessment: Data overview and stock assessment (2019), and harvest decision table (2020)
- 6.5 Pacific halibut mortality projections using the IPHC mortality projection tool

7. IPHC 5-YEAR RESEARCH PROGRAM

- 7.1 IPHC 5-year Biological & Ecosystem Science Research Plan: update

8. REPORT OF THE 20TH SESSION OF THE IPHC RESEARCH ADVISORY BOARD (RAB020)

9. REPORTS OF THE 14th AND 15TH SESSIONS OF THE IPHC SCIENTIFIC REVIEW BOARD (SRB014; SRB015)

10. MANAGEMENT STRATEGY EVALUATION
- 10.1 IPHC Management Strategy Evaluation: update
- 10.2 Reports of the 13th and 14th Sessions of the IPHC Management Strategy Advisory Board (MSAB013; MSAB014)

11. REGULATORY PROPOSALS FOR 2020
- 11.1 IPHC Secretariat regulatory proposals
- 11.2 Contracting Party regulatory proposals
- 11.3 Other Stakeholder regulatory proposals
- 11.4 Stakeholder statements

12. CONTRACTING PARTY: NATIONAL REPORTS
- 12.1 Canada
- 12.2 United States of America

13. REPORT OF THE 96th SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC096)

14. IPHC PERFORMANCE REVIEW
- 14.1 Report of the 2nd IPHC Performance Review (PRIPHC02)

15. REPORT OF THE 90th SESSION OF THE IPHC CONFERENCE BOARD (CB090)

16. REPORT OF THE 25th SESSION OF THE IPHC PROCESSOR ADVISORY BOARD (PAB025)

17. OTHER BUSINESS
- 17.1 IPHC meetings calendar (2020-22)
- 17.2 Media release
- 17.3 Election of Chairperson and Vice-Chairperson

18. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 96th SESSION OF THE IPHC ANNUAL MEETING (AM096)

SCHEDULE FOR THE 96th SESSION OF THE IPHC ANNUAL MEETING (AM096)

Monday, 03 February 2020		
Time	**Agenda item**	**Lead (support)**
96th Session of the IPHC Annual Meeting (AM096): *Room – Fore / Mid Deck*		
Time	**Agenda item**	**Lead (support)**
12:30-12:40	1. Opening of the Session	Chairperson
12:40-12:50	2. Adoption of the agenda and arrangements for the Session ➢ ***IPHC-2020-AM096-01**: Agenda & Schedule for the 96th Session of the IPHC Annual Meeting (AM096)* ➢ ***IPHC-2020-AM096-02**: List of Documents for the 96th Session of the IPHC Annual Meeting (AM096)*	Chairperson & D. Wilson
12:50-13:10	3. Update on actions arising from the 95th Session of the IPHC Annual Meeting (AM095) and the 95th Session of the IPHC Interim Meeting (IM095) ➢ ***IPHC-2020-AM096-03**: Update on actions arising from the 95th Session of the IPHC Annual Meeting (AM095), and the 95th Session of the IPHC Interim Meeting (IM095)* ➢ ***IPHC-2019-IM095-R**: Report of the 95th Session of the IPHC Interim Meeting (IM095)*	D. Wilson
13:10-13:30	4. Report of the IPHC Secretariat (2019) ➢ ***IPHC-2020-AM096-04**: Report of the IPHC Secretariat (2019)*	D. Wilson
13:30-13:50	5. Fishery statistics (2019) ➢ ***IPHC-2020-AM096-05 Rev_2**: Fishery statistics (2019)*	L. Erikson
13:50-14:00	6. Stock status of Pacific halibut (2019) and harvest decision table (2020) 6.1 IPHC Fishery Independent Setline Survey (FISS) design and implementation in 2019 ➢ ***IPHC-2020-AM096-06:** IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2019*	L. Erikson

14:00-14:20	6.2 Space-time modelling of survey data ➢ ***IPHC-2020-AM096-07:*** Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data	R. Webster
14:20-15:30	6.3 Independent peer review of the IPHC stock assessment ➢ ***IPHC-2020-AM096-08:*** *Stock Assessment: Independent peer review of the Pacific halibut stock assessment* 6.4 Data overview and stock assessment (2019), and harvest decision table (2020) ➢ ***IPHC-2020-AM096-09 Rev_2:*** *Stock Assessment: Summary of the data, stock assessment, and harvest decision table for Pacific halibut (Hippoglossus stenolepis) at the end of 2019* ➢ ***IPHC-2020-AM096-10***: Options for the treatment of U26 discard mortality from non-directed fisheries (bycatch) within a total mortality limit	D. Wilson I. Stewart
15:30-15:45	Break	
15:45-16:00	6.5 Pacific halibut mortality projections using the IPHC mortality projection tool	I. Stewart
16:00-17:00	7. IPHC 5-year research program 7.1 IPHC 5-year Biological & Ecosystem Science Research Plan: update ➢ ***IPHC-2020-AM096-11:*** *IPHC 5-year Biological and Ecosystem Science Research Plan: update*	J. Planas
17:00-17:30	*Public comment and questions (Agenda items 6-7)*	Chairperson
Tuesday, 04 February 2020		
Time	**Agenda item**	**Lead (support)**
96th Session of the IPHC Annual Meeting (AM096) cont.: *Room – Fore / Mid Deck*		
09:00-09:15	8. Report of the 20th Session of the IPHC Research Advisory Board (RAB020) ➢ ***IPHC-2019-RAB020-R:*** *Report of the 20th Session of the IPHC Research Advisory Board (RAB020)*	D. Wilson
09:15-09:30	9. Reports of the 14th and 15th Sessions of the IPHC Scientific Review Board (SRB014; SRB015) ➢ ***IPHC-2019-SRB014-R****: Report of the 14th Session of the IPHC Scientific Review Board (SRB014)*	S.Cox

	➢ ***IPHC-2019-SRB015-R:*** *Report of the 15th Session of the IPHC Scientific Review Board (SRB015)*	
09:30-10:30	10. Management strategy evaluation 10.1 IPHC Management Strategy Evaluation update ➢ ***IPHC-2020-AM096-12:*** *IPHC Management Strategy Evaluation (MSE): update* 10.2 Reports of the 13th and 14th Sessions of the IPHC Management Strategy Advisory Board (MSAB013; MSAB014) ➢ ***IPHC-2019-MSAB013-R:*** *Report of the 13th Session of the IPHC Management Strategy Advisory Board (MSAB013)* ➢ ***IPHC-2019-MSAB014-R:*** *Report of the 14th Session of the IPHC Management Strategy Advisory Board (MSAB014)*	A. Hicks MSAB Co-Chairpersons
10:30-10:45	Break	
10:45-11:15	*Public comment and questions (Agenda Items 8-10)*	Chairperson
11:15-12:30	11. Regulatory proposals for 2020 11.1 IPHC Secretariat regulatory proposals for 2020 ➢ ***IPHC-2020-AM096-PropA1:*** *Fishery Limits (Sect. 4)* ➢ ***IPHC-2020-AM096-PropA2:*** *Fishing Periods (Sect. 9)* ➢ ***IPHC-2020-AM096-PropA3:*** *IPHC Fishery Regulations: minor amendments* ➢ ***IPHC-2020-AM096-PropA4:*** *Vessel clearance in IPHC Regulatory Area 4 (Sect. 16)* ➢ ***IPHC-2020-AM096-PropA5:*** *IPHC Closed Area (Sect. 11)* 11.2 Contracting Party regulatory proposals for 2020 ➢ ***IPHC-2020-AM096-PropB1 Rev_1:*** *Charter management measures in IPHC Regulatory Areas 2C and 3A (USA - NOAA Fisheries)* ➢ ***IPHC-2020-AM096-PropB2:*** *Revising definition of IPHC Regulatory Area 2A-1 (USA - NOAA Fisheries)* 11.3 Other Stakeholder regulatory proposals for 2020 ➢ ***IPHC-2020-AM096-PropC1:*** *Alaska recreational fisheries (J. Kearns)* ➢ ***IPHC-2020-AM096-PropC2:*** *Alaska recreational fisheries (L. Jarrett)* 11.4 Stakeholder statements ➢ ***IPHC-2020-AM096-INF01 Rev_2:*** *Stakeholder statements on regulatory proposals for 2020* ➢ ***IPHC-2020-AM096-13 Rev_1:*** *Regulatory Proposals (2020) implementation notes*	S. Keith Contracting Party agencies Stakeholders Stakeholders S. Keith
12:30-13:30	Lunch	

96th Session of the IPHC Annual Meeting (AM096) cont.: *Room – Aft Deck*		
13:30-14:30	12. Contracting Party: National Reports 12.1 Canada ➢ ***IPHC-2020-AM096-NR01 Rev_1:*** *Canada*	Various agencies
14:30-15:30	12.2 United States of America ➢ ***IPHC-2020-AM096-NR02 Rev_1:*** *USA*	Various agencies
15:30-15:45	Break	
15:45-16:30	*Public comment and questions (Agenda Item 12)*	Chairperson
16:30-17:00	*Discussion of National Report process and documentation (Agenda Item 12)*	Chairperson
Wednesday, 05 February 2020		
Time	**Agenda item**	**Lead (support)**
96th Session of the IPHC Annual Meeting (AM096) cont.: *Room – Aft Deck*		
09:00-09:45	13. Report of the 96th Session of the IPHC Finance and Administration Committee (FAC096) ➢ ***IPHC-2020-FAC096-R:*** *Report of the 96th Session of the IPHC Finance and Administration Committee (FAC096)*	D. Wilson (K. Jernigan)
09:45-10:30	14. 2nd IPHC Performance Review (PRIPHC02) 14.1 Report of the 2nd IPHC Performance Review (PRIPHC02) ➢ ***IPHC-2020-AM096-14:*** *2nd IPHC Performance Review* ➢ ***IPHC-2019-PRIPHC02-R:*** *Report of the 2nd IPHC Performance Review of the International Pacific Halibut Commission*	D. Wilson
10:30-10:45	Break	
10:45-11:15	*Public comment and questions (Agenda Items 13 and 14)*	Chairperson
11:15-12:30	Revisit Regulatory proposals for 2020: for discussion (Agenda item 11)	S. Keith
12:30-13:30	Lunch	

13:30-17:00	No AM096 Session: Commissioner opportunity to caucus and/or view CB/PAB proceedings	
Thursday, 06 February 2020		
96th Session of the IPHC Annual Meeting (AM096) cont.: *Room – Fore / Mid Deck*		
09:00-10:30	Revisit Regulatory proposals for 2020: for discussion (Agenda item 11)	S. Keith
10:30-10:45	Break	
10:45-12:30	Revisit Regulatory proposals for 2020: for discussion (Agenda item 11)	S. Keith
12:30-13:30	Lunch	
13:30-14:15	15. Report of the 90th Session of the IPHC Conference Board (CB090) ➢ ***IPHC-2020-CB090-R**: Report of the 90th Session of the IPHC Conference Board (CB090)*	CB Chairperson
14:15-15:30	16. Report of the 25th Session of the IPHC Processor Advisory Board (PAB025) ➢ ***IPHC-2020-PAB025-R**: Report of the 25th Session of the IPHC Processor Advisory Board (PAB025)*	PAB Chairperson
15:30-15:45	Break	
15:45-17:00	Revisit Regulatory proposals for 2020: for decision (Agenda item 11)	S. Keith
Friday, 07 February 2020		
96th Session of the IPHC Annual Meeting (AM096) cont.: *Room – Fore / Mid Deck*		
09:00-10:00	Revisit Regulatory proposals for 2020: for decision (Agenda item 11)	S. Keith
10:00-10:30	Mortality limits for 2020: For decision/announcement (Agenda Item 11)	Chairperson
10:30-10:45	Break	
10:45-11:30	Revisit final mortality projections based on adopted mortality limits for 2020	Chairperson & D. Wilson
11:30-12:30	17. Other business 17.1 IPHC meetings calendar (2020-22) ➢ ***IPHC-2020-AM096-15:** IPHC 3-year meetings calendar (2020-22)*	S. Keith

	17.2 Media release 17.3 Election of a Chairperson and Vice-Chairperson	S. Keith Chairperson (D. Wilson)
12:30-13:30	Lunch	
13:30-17:00	18. Review of the draft and adoption of the Report of the 96th Session of the IPHC Annual Meeting (AM096)	Chairperson & D. Wilson

DRAFT: LIST OF DOCUMENTS FOR THE 96th SESSION OF THE IPHC ANNUAL MEETING (AM096)

Meeting documents	Title	Availability
IPHC-2020-AM096-01	Agenda & Schedule for the 96th Session of the IPHC Annual Meeting (AM096)	✓ 25 Oct 2019 ✓ 4 Dec 2019 ✓ 31 Jan 2020
IPHC-2020-AM096-02	List of Documents for the 96th Session of the IPHC Annual Meeting (AM096)	✓ 25 Oct 2019 ✓ 6 Dec 2019 ✓ 10 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-03	Update on actions arising from the 95th Session of the IPHC Annual Meeting (AM095) and the 95th Session of the IPHC Interim Meeting (IM095) (IPHC Secretariat)	✓ 4 Dec 2019
IPHC-2020-AM096-04	Report of the IPHC Secretariat (2019) (IPHC Secretariat)	✓ 6 Dec 2019
IPHC-2020-AM096-05 Rev_2	Fishery statistics (2019) (L. Erikson & H. Tran)	✓ 24 Dec 2019 ✓ 9 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-06	IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2019 (L. Erikson & R. Webster)	✓ 24 Dec 2019
IPHC-2020-AM096-07	Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data (R. Webster)	✓ 20 Dec 2019
IPHC-2020-AM096-08	Stock Assessment: Independent peer review of the Pacific halibut stock assessment (D. Wilson)	✓ 4 Dec 2019
IPHC-2020-AM096-09 Rev_2	Stock Assessment: Summary of the data, stock assessment, and harvest decision table for Pacific halibut (*Hippoglossus stenolepis*) at the end of 2019 (I. Stewart, A. Hicks, R. Webster & D. Wilson)	✓ 19 Dec 2019 ✓ 9 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-10	Options for the treatment of U26 discard mortality from non-directed fisheries (bycatch) within a total mortality limit (I. Stewart)	✓ 16 Dec 2019
IPHC-2020-AM096-11	IPHC 5-year Biological and Ecosystem Science Research Plan: update (J. Planas)	✓ 16 Dec 2019

IPHC-2020-AM096-12	IPHC Management Strategy Evaluation (MSE): update (A. Hicks, P. Carpi, S. Berukoff, & I. Stewart)	✓ 13 Dec 2019
IPHC-2020-AM096-13 Rev_1	Regulatory Proposal (2020) implementation notes (IPHC Secretariat)	✓ 03 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-14	2nd IPHC Performance Review (PRIPHC02): Update (D. Wilson)	✓ 6 Dec 2019
IPHC-2020-AM096-15	IPHC 3-year meetings calendar (2020-22) (IPHC Secretariat)	✓ 10 Dec 2019
Contracting Party: National reports		
IPHC-2020-AM096-NR01 Rev_1	Canada	✓ 03 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-NR02 Rev_1	United States of America	✓ 04 Jan 2020 ✓ 10 Jan 2020
Regulatory proposals for 2020		
IPHC Secretariat regulatory proposals for 2020		
IPHC-2020-AM096-PropA1	Fishery Limits (Sect. 4) (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-PropA2	Commercial Fishing Periods (Sect. 9) (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-PropA3	IPHC Pacific Halibut Fishery Regulations: minor amendments (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-PropA4	Vessel clearance in IPHC Regulatory Area 4 (Sect. 16) (IPHC Secretariat)	✓ 03 Jan 2020
IPHC-2020-AM096-PropA5	IPHC Closed Area (Sect. 11) (IPHC Secretariat)	✓ 30 Dec 2019
Contracting Party regulatory proposals for 2020		
IPHC-2020-AM096-PropB1 Rev_1	Charter management measures in IPHC Regulatory Areas 2C and 3A (USA - NOAA Fisheries)	✓ 03 Jan 2020 ✓ 31 Jan 2020
IPHC-2020-AM096-PropB2	Revising definition of IPHC Regulatory Area 2A-1 (USA - NOAA Fisheries)	✓ 31 Dec 2019
Other Stakeholder regulatory proposals for 2020		
IPHC-2020-AM096-PropC1	Alaska recreational fisheries (J. Kearns)	✓ 19 Dec 2019
IPHC-2020-AM096-PropC2	Alaska recreational fisheries (L. Jarrett)	✓ 19 Dec 2019
Information papers		
IPHC-2020-AM096-INF01 Rev_2	Stakeholder statements on regulatory proposals for 2020 (IPHC Secretariat)	✓ 03 Jan 2020 ✓ 24 Jan 2020 ✓ 31 Jan 2020

IPHC-2020-AM096-INF02	Review of the use of pot gear in the Gulf of Alaska 2017-19 (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-INF03	Draft announcement for the IPHC MSE peer review – External expert/consultant (IPHC Secretariat)	✓ 30 Dec 2019
IPHC-2020-AM096-INF04	Terms of reference for a Life-History Modeler (IPHC Secretariat)	✓ 16 Dec 2019
IPHC-2020-AM096-INF05	IPHC science posters for AM096 (IPHC Secretariat)	✓ 31 Jan 2020
IPHC-2020-AM096-INF06	Analysis of the effects of historical discard mortality in non-directed fisheries ('bycatch') (I. Stewart, A. Hicks, P. Carpi)	✓ 16 Dec 2019
Report of the 2nd IPHC Performance Review		
IPHC-2019-PRIPHC02-R	Report of the 2nd Performance Review of the International Pacific Halibut Commission (PRIPHC02)	✓ 15 Oct 2019
Reports from IPHC subsidiary bodies (2019/20)		
IPHC-2019-RAB020-R	Report of the 20th Session of the IPHC Research Advisory Board (RAB020)	✓ 6 March 2019
IPHC-2019-SRB014-R	Report of the 14th Session of the IPHC Scientific Review Board (SRB014)	✓ 28 June 2019
IPHC-2019-SRB015-R	Report of the 15th Session of the IPHC Scientific Review Board (SRB015)	✓ 27 Sept 2019
IPHC-2019-MSAB013-R	Report of the 13th Session of the IPHC Management Strategy Advisory Board (MSAB013)	✓ 10 May 2019
IPHC-2019-MSAB014-R	Report of the 14th Session of the IPHC Management Strategy Advisory Board (MSAB014)	✓ 25 Oct 2019
IPHC-2019-IM095-R	Report of the 95th Session of the IPHC Interim Meeting (IM095)	✓ 26 Nov 2019
IPHC-2020-FAC096-R	Report of the 96th Session of the IPHC Finance and Administration Committee (FAC096)	Expected: 3 Feb 2020
IPHC-2020-CB090-R	Report of the 90th Session of the IPHC Conference Board (CB090)	Expected: 6 Feb 2020
IPHC-2020-PAB025-R	Report of the 25th Session of the IPHC Processor Advisory Board (PAB025)	Expected: 6 Feb 2020

Update on actions arising from the 95th Session of the IPHC Annual Meeting (AM095) and Interim Meeting (IM095)

PREPARED BY: IPHC SECRETARIAT (D. WILSON; 4 DECEMBER 2019)

PURPOSE

To provide the Commission with an opportunity to consider the progress made during the inter-sessional period in relation to the direct requests for action by the Commission during the 95th Session of the IPHC Annual Meeting (AM095, January 2019), and the 95th Session of the IPHC Interim Meeting (IM095, November 2019).

BACKGROUND

At the 95th Session of the IPHC Annual Meeting (AM095), Contracting Parties agreed on a series of actions to be taken by Commissioners, subsidiary bodies, and the IPHC Secretariat on a range of issues as detailed in Appendix A.

DISCUSSION

Noting that best practice governance requires the prompt delivery of core tasks assigned to the IPHC Secretariat by the Commission, at each subsequent session of the Commission and its subsidiary bodies, attempts will be made to ensure that any recommendations for action are carefully constructed so that each contains the following elements:

1) a specific action to be undertaken (deliverable);
2) clear responsibility for the action to be undertaken (i.e. a specific Contracting Party, the IPHC Secretariat staff, a subsidiary body of the Commission, or the Commission itself);
3) a desired time frame for delivery of the action (i.e. by the next session of a subsidiary body, or other date).

This involves numbering and tracking all action items (see Appendix A) from the Commission, as well as including clear progress updates and document reference numbers.

RECOMMENDATION/S

That the Commission:

1) **NOTE** paper IPHC-2019-AM096-03, which provided the Commission with an opportunity to consider the progress made during the inter-sessional period, in relation to the direct requests for action by the Commission during its 95th Annual Meeting (AM095, January 2019), and the 95th Session of the IPHC Interim Meeting (IM095, November 2019).

APPENDICES

Appendix A: Update on actions arising from the 95th Annual Meeting (AM095: January 2019) and the 95th Session of the IPHC Interim Meeting (IM095: November 2019)

APPENDIX A

Update on actions arising from the 95th Session of the IPHC Annual Meeting (AM095: January 2019) and 95th Session of the IPHC Interim Meeting (IM095)

95th Session of the IPHC Annual Meeting (AM095)		
Action No.	**Description**	**Update**
	RECOMMENDATIONS	
AM095–Rec.01 (para. 59c)	***IPHC Management Strategy Evaluation*** The Commission **RECOMMENDED** the MSAB develop the following additional objective, as well as prioritize this objective in the evaluation of management procedures, for the Commission's consideration. i. A conservation objective that meets a spawning biomass target.	**Lead**: Allan Hicks **Status/Plan**: Completed. The MSAB discussed this objective at MSAB013 and MSAB014 and the objective recommended at MSAB014 was presented at IM095 and will be presented at AM096. See paper **IPHC-2020-AM096-12**
AM095–Rec.02 (para. 62)	***Report of the 12th Session of the IPHC Management Strategy Advisory Board (MSAB012)*** The Commission **RECOMMENDED** that the MSAB and IPHC Secretariat continue its program of work on the Management Procedure for the Scale portion of the harvest strategy, **NOTING** that Scale and Distribution components will be evaluated and presented no later than at AM097 in 2021, for potential adoption and subsequent implementation as a harvest strategy. The management procedure that best meets the primary objectives for coastwide scale is: a) A target SPR of 40% with a fishery trigger of 30% and a fishery limit of 20% in the control rule; b) An annual constraint of 15% from the previous year's mortality limit.	**Lead**: Allan Hicks **Status/Plan**: In progress. Additional results from simulations for coastwide fishing intensity (Scale) were presented and discussed at MSAB013, with similar outcomes as presented at AM095. Work is now focused on defining objectives related to distribution, identifying management procedures for scale and distribution components, and developing a simulation framework that allows for the evaluation of management procedures with both scale and distribution components. See paper **IPHC-2020-AM096-12**
AM095–Rec.03 (para. 65)	***Fishery Limits (Sect. 4)*** The Commission **RECOMMENDED** that Contracting Parties undertake a detailed review of the amendments to the IPHC Fishery Regulations contained in IPHC-2019-AM095-PropA1, and to provide initial feedback at the 95th Session of the IPHC Interim Meeting (IM095) on whether agreement could be reached to adopt the amendments at the subsequent 96th Session of the IPHC Annual Meeting (AM096) in January 2020.	**Lead**: Steve Keith **Status/Plan**: Completed. Draft reviewed at IM095. To be considered for adoption at AM096. See paper **IPHC-2020-AM096-PropA1**

95th Session of the IPHC Annual Meeting (AM095)		
Action No.	**Description**	**Update**
AM095–Rec.04 (para. 66)	The Commission **RECOMMENDED** evaluating and redefining TCEY to include the U26 component of discard mortalities, including bycatch, as steps towards more comprehensive and responsible management of the resource, in coordination with the IPHC Secretariat and Contracting Parties. The intent is that each Contracting Party to the Treaty would be responsible for counting its U26 mortalities against its collective TCEY. This change would be intended to take effect for TCEYs established at the 2020 Annual Meeting.	**Lead**: Ian Stewart **Status/Plan**: Completed. Discussion paper comparing several alternatives for the treatment of U26 within a total mortality limit was considered at the 95th Interim Meeting (IM095 - **IPHC-2019-IM095-10**). At IM095 (para 43) *The Commission **NOTED** that the options provided were sufficient for consideration at AM096, and made no specific requests for further action by the Secretariat at IM095.* See paper **IPHC-2020-AM096-10**
AM095–Rec.05 (para. 67)	The Commission **RECOMMENDED** that the IPHC Secretariat expand upon the analysis completed in IPHC-2019-AM095-INF08 "*Treatment and effects of Pacific halibut discard mortality (bycatch) in non-directed fisheries projected for 2019*", to be reviewed by the SRB at its next meeting. The objective of this work is to estimate lost yield from bycatch of Pacific halibut in non-directed fisheries for the years of 1991-2018.	**Lead**: Ian Stewart **Status/Plan**: Completed. Discussion paper describing methods and results reviewed at SRB015 (**IPHC-2019-SRB015-12**), and IM095 (**IPHC-2019-IM095-11**). See paper **IPHC-2020-AM096-INF06**
AM095–Rec.06 (para. 71)	The Commission **RECOMMENDED** that the IPHC Secretariat continue to report out annually on Regulatory Area mortality against the TCEY adopted for each Regulatory Area.	**Lead**: Lara Erikson **Status/Plan**: Completed. Incorporated into regular reporting on the fishery provided to the Commission and stakeholders via the Landing Report which is updated bi-monthly: https://www.iphc.int/data/landings-2019
AM095–Rec.07 (para. 72)	The Commission **RECOMMENDED** that the IPHC Secretariat develop options for accounting for Pacific halibut mortalities associated with the FISS and their other research projects in the definition of the coastwide TCEY.	**Lead**: Ian Stewart & L. Erikson **Status/Plan**: Completed. Discussion paper comparing several accounting alternatives prepared for IM095 (**IPHC-2019-IM095-INF03**). IM095 (para 54) *The Commission **REQUESTED** that 'Option 1: The status quo (no change to current accounting' as detailed in paper IPHC-2019-IM095-INF03, should be the accounting practice for FISS landings.*

95th Session of the IPHC Annual Meeting (AM095)		
Action No.	**Description**	**Update**
AM095–Rec.08 (para. 78)	***IPHC Regulatory Area 2A Non-Tribal Directed Commercial Fishery*** **NOTING** the indication made to the PFMC in a letter dated 25 January 2019, that the IPHC Secretariat would welcome the opportunity to further address the safety concerns in the fishery, and to examine other potential management options for the fishery such as an IFQ or limited entry, as well as its management responsibilities, the Commission **RECOMMENDED** that this workshop take place, given the desire for the IPHC to move full management of the fishery from the IPHC (an international fisheries management body) to the relevant domestic agencies.	**Lead**: Steve Keith **Status/Plan**: In progress. Coordinating with relevant Contracting Party domestic agencies regarding shifting management of all Pacific halibut fisheries in IPHC Regulatory Area 2A from the IPHC to the relevant domestic agencies. IM095 (para. 89) *The Commission **WELCOMED** the PFMC's commitment to transition management of Pacific halibut fisheries in IPHC Regulatory Area 2A from the IPHC to domestic agencies and REQUESTED that the IPHC Secretariat continue to support this process in the short-term, with the aim of transitioning management of the fishery to the domestic agencies at the earliest opportunity.*
AM095–Rec.09 (para. 82)	***IPHC Fishery Regulations: minor amendments*** The Commission **RECOMMENDED** that Contracting Parties undertake a detailed review of the amendments to the IPHC Fishery Regulations contained in IPHC-2019-AM095-PropA3 Rev_1, and to provide initial feedback at the 95th Session of the IPHC Interim Meeting (IM095) on whether agreement could be reached to adopt the amendments at the subsequent 96th Session of the IPHC Annual Meeting (AM096) in January 2020.	**Lead**: Steve Keith **Status/Plan**: Completed. Draft reviewed at IM095. To be considered for adoption at AM096. See paper **IPHC-2020-AM096-PropA3**
AM095–Rec.10 (para. 129)	***Peer review process for IPHC science products*** The Commission **RECOMMENDED** that the IPHC Secretariat develop terms of reference for a consultant to undertake a peer review of the IPHC Pacific halibut stock assessment, for implementation in early 2019. The terms of reference and budget shall be endorsed by the Commission inter-sessionally.	**Lead**: David Wilson & Ian Stewart **Status/Plan**: Completed. TORs drafted, sent and reviewed by SRB, sent to Commissioners for formal decision via Circular 2019-007. Approved by consensus. Contract awarded, peer review undertaken by Dr Kevin Stokes. Final report/review circulated to Commission on 2 Aug 2019 via IPHC Circular 2019-015, considered at IM095. See paper **IPHC-2020-AM096-08**

95th Session of the IPHC Annual Meeting (AM095)		
Action No.	**Description**	**Update**
AM095–Rec.11 (para. 130)	The Commission **RECOMMENDED** that the IPHC Secretariat finalise terms of reference for an expert/consultant to undertake a peer review of the IPHC Pacific halibut MSE, for implementation in early November 2019 and July 2020. The terms of reference and budget shall be endorsed by the Commission inter-sessionally.	**Lead**: David Wilson & Allan Hicks **Status/Plan**: In progress. TORs in development. Plan is for the review to occur in 2020, not 2019. See paper **IPHC-2020-AM096-INF03**
	REQUESTS	
AM095–Req.01 (para. 06)	***Report of the IPHC Secretariat (2018)*** The Commission **NOTED** the new functionality added to the IPHC website in 2018, and **REQUESTED** that these initiatives continue to be enhanced, with the overall aim of further improving the transparency of the IPHC's operations and data collected (http://iphc.int/): a) Fishery-Independent Setline Survey (FISS) data interactive b) Regulations portal, including the online regulatory proposal submission form c) Landings Report d) Mortality projection tool	**Lead**: All Branch Managers **Status/Plan**: Completed. Work for 2019 has now concluded. See IPHC website for improvements made to each section.
AM095–Req.02 (para. 12)	***Fishery statistics (2018)*** **NOTING** the uncertainty associated with various estimates of removals, as listed below, the Commission **REQUESTED** each Contracting Party address these uncertainties in a report to the Commission at its next Session. The intention is to provide greater detail on how each removal category is quantified, and verified: ***Canada*** a) self-reporting of lodges for recreational estimates in Canada; b) subsistence estimates in Canada; ***United States of America*** c) self-reporting of lodges for recreational estimates in the U.S.A. (Alaska); d) recreational discard mortality estimates for U.S.A. (IPHC Regulatory Area 2A); e) subsistence estimates in the U.S.A.; f) estimates for the Pacific halibut commercial fishery discard mortality in U.S.A. (Alaska) due to the estimates calculated by the IPHC Secretariat differing from those provided by NMFS, due primarily to the way coverage is measured (by fish weight caught, versus fishing trip);	**Lead**: Lara Erikson **Status/Plan**: In progress. See papers: Canada: **IPHC-2020-AM096-NR01** USA: **IPHC-2020-AM096-NR02**

95th Session of the IPHC Annual Meeting (AM095)		
Action No.	**Description**	**Update**
	g) the estimates for Pacific halibut bycatch mortality in other fisheries in the U.S.A., for the same reasons identified in the previous point.	
AM095–Req.03 (para. 23)	***Space-time modelling of survey data (WPUE; FISS expansion results, etc.)*** **NOTING** that more FISS stations in the disputed area between Regulatory Areas 2B and 2C appear to be assigned to Regulatory Area 2C, and that the IPHC Secretariat indicated that this assignment is based on a 'compromise' boundary line previously developed, the Commission **REQUESTED** that this separation line be clarified and clearly marked on any future IPHC map to avoid confusion. The IPHC Secretariat shall develop such maps and distribute to the Commission in the coming weeks.	**Lead**: Ray Webster **Status/Plan**: Completed. Following discussions with Commissioners, all FISS stations within the overlap of Canadian and USA maritime claims are included in both Regulatory Areas 2B and 2C's WPUE and NPUE indices. Use of a "compromise" boundary line has been discontinued.
AM095–Req.04 (para. 91)	***Contracting Party (by Agency) reports - Regulatory Area 2A (U.S.A.: West coast)*** **NOTING** a lack of clarity regarding the accounting for Pacific halibut caught recreationally in British Columbia waters (Canada) and landed in Washington ports (U.S.A.), the Commission **REQUESTED** continued liaison between the Washington Department of Fish and Wildlife and Fisheries and Oceans Canada on the subject.	**Lead**: Steve Keith **Status/Plan**: In progress. See papers: Canada: **IPHC-2020-AM096-NR01** USA: **IPHC-2020-AM096-NR02**
AM095–Req.05 (para. 117)	***Budget estimates for FY2020 (for approval), and tentatively for FY2021*** The Commission **REQUESTED** that the IPHC Secretariat continue to develop a proposal for a potential Life History Modeller to join the IPHC Secretariat and for this to be provided to the Commission for consideration inter-sessionally.	**Lead**: Josep Planas **Status/Plan**: In progress. The position description was provided to the Commissioners inter-sessionally via IPHC Circular 2019-022 and will be discussed informally prior to the AM096 in February 2020 where the Commission may choose to appropriate funds for the position. See paper **IPHC-2020-AM096-INF04**
AM095–Req.06 (para. 120)	***IPHC Financial Regulations (2019)*** The Commission **ADOPTED** the revised IPHC Financial Regulations (2019) by consensus, and **REQUESTED** that the IPHC Secretariat finalise and publish them accordingly.	**Lead**: David Wilson **Status/Plan**: Completed. **IPHC Financial Regulations 2019** were published to the IPHC website on 4 February 2019.
AM095–Req.07 (para. 124)	***IPHC Rules of Procedure (2019)*** The Commission **ADOPTED** the revised IPHC Rules of Procedure (2019) by consensus, and **REQUESTED** that the IPHC Secretariat finalise and publish them accordingly.	**Lead**: David Wilson **Status/Plan**: Completed, **IPHC Rules of Procedure 2019** were published to the IPHC website on 4 February 2019.

95th Session of the IPHC Annual Meeting (AM095)		
Action No.	**Description**	**Update**
AM095–Req.08 (para. 150)	***Review of the draft and adoption of the report of the 95th Session of the IPHC Annual Meeting (AM095)*** The Commission **REQUESTED** that the IPHC Secretariat finalise and publish the IPHC *Pacific Halibut Fishery Regulations (2019)* no later than 28 February 2019, **NOTING** that only minor editorial and formatting changes are permitted beyond the decisions made by the Commission at the AM095.	**Lead**: Steve Keith **Status/Plan**: Completed, **IPHC Pacific Halibut Fishery Regulations 2019** were published to the IPHC website on 19 February 2019.

95th Session of the IPHC Interim Meeting (IM095)		
Action No.	**Description**	**Update**
	RECOMMENDATIONS	
IM095-Rec.01 (para. 78)	***Management Strategy Evaluation*** The Commission **RECOMMENDED** that the MSAB use the primary objectives and associated performance metrics detailed in Appendix V of IPHC-2019-MSAB014-R for the evaluation of management procedures.	**Lead**: Allan Hicks **Status/Plan**: In progress. To be considered at MSAB meetings in 2020. See paper **IPHC-2020-AM096-12**
	REQUESTS	
IM095-Req.01 (para. 23)	***Space-time modelling of survey data (WPUE; FISS expansion results, etc.)*** The Commission **REQUESTED** that information on FISS cost and revenue projections for design options for 2021 and 2022 be presented at AM096 for further consideration.	**Lead**: David Wilson & Ray Webster **Status/Plan**: Completed. See paper **IPHC-2020-AM096-INF07**
IM095-Req.02 (para. 37)	***Data overview and preliminary stock assessment (2019), and draft harvest decision table (2019)*** **NOTING** that the Interim Management Procedure uses the previous year's estimated discard mortality in non-directed fisheries as the basis for mortality projections, and that the actual estimates the following year can differ from those predictions due to changes in both the Pacific halibut stock and in the non-directed fisheries, and noting that the Commission is seeking to generate a bycatch estimate that is as accurate as possible, the Commission **REQUESTED** an additional projection be prepared for comparison at AM096 based on an average of the most recent 3-years of discard mortality in non-directed fisheries.	**Lead**: Ian Stewart **Status/Plan**: Completed. See paper **IPHC-2020-AM096-09**

95th Session of the IPHC Interim Meeting (IM095)		
Action No.	**Description**	**Update**
IM095-Req.03 (para. 49)	***Alternative projections for 2019 (last year) adjusted for the effects of U26 Pacific halibut discard mortality in non-directed fisheries ('bycatch')*** The Commission **REQUESTED** that the method described in paper IPHC-2019-IM095-12, in addition to the adjustments to the Interim Management procedure adopted at AM095, be applied as a basis for the mortality projection tool for use in the decision-making processes at AM096.	**Lead**: Ian Stewart **Status/Plan**: Completed. See paper **IPHC-2020-AM096-10**
IM095-Req.04 (para. 50)	The Commission **REQUESTED** that the IPHC Secretariat prepare the following alternatives for presentation at AM096: a) changing the relative harvest rate for IPHC Regulatory Area 4CDE to a value of 1.0 (from 0.75) after the adjustments to the Interim Management Procedure; and b) comparing the adjusted management procedure (as presented, and including the U26 non-directed fishery discard mortality mitigation) further modified to add the TCEY pounds additional to the historical Interim Management Procedure calculation for IPHC Regulatory Areas 2A and 2B to the total TCEY.	**Lead**: Ian Stewart **Status/Plan**: Completed. See paper **IPHC-2020-AM096-09**
IM095-Req.05 (para. 53)	***Options for FISS mortality accounting in projections*** The Commission **REQUESTED** that the IPHC Secretariat develop the time-series table of FISS mortality by IPHC Regulatory Area for comparison of Total and Distribution mortality as sampling designs vary in the future under a rationalised approach, and provide the table as a web-based resource to be updated each for the Annual Meeting.	**Lead**: Ian Stewart & Lara Erikson **Status/Plan**: See **Website**
IM095-Req.06 (para. 54)	The Commission **REQUESTED** that '*Option 1: The status quo (no change to current accounting*' as detailed in paper IPHC-2019-IM095-INF03, should be the accounting practice for FISS landings. Predicted commercial landings in the IPHC's current mortality projection tool include FISS mortality. This leaves the accounting for the mortality associated with the FISS to the managers implementing the applicable quota programs and CSPs. FISS landings have been relatively small in recent years, and have represented an average of only 3% of the total fish ticket landings (FISS and commercial combined). It does not appear that in recent year's managers have opted to set aside quota to offset FISS mortality, and the IPHC has not provided explicit projections of FISS landings. However, the magnitude of the actual mortality accruing to the TCEY compared to the adopted TCEY in recent years does not appear to be related to years of higher or lower FISS activity. This may suggest that the current approach is not causing actual mortality (FISS and commercial combined) to exceed the adopted mortality limits, although in concept if all other sources were fully harvested this would be the case. The status quo approach does not require use of uncertain	**Lead**: Ian Stewart **Status/Plan**: Completed. See paper **IPHC-2020-AM096-09**

95th Session of the IPHC Interim Meeting (IM095)		
Action No.	**Description**	**Update**
	projections of FISS landings, but as this paper outlines, does not provide for transparent accounting.	
IM095-Req.07 (para. 81)	***Management Strategy Evaluation*** The Commission **NOTED** the MSE Program of Work (2019–21) and **REQUESTED** that the MSAB and IPHC Secretariat continue its program of work with delivery of recommended management procedures at AM097.	**Lead**: Allan Hicks **Status/Plan**: In progress. See paper **IPHC-2020-AM096-12**
IM095-Req.08 (para. 89)	***Pacific Fishery Management Council (PFMC)*** The Commission **WELCOMED** the PFMC's commitment to transition management of Pacific halibut fisheries in IPHC Regulatory Area 2A from the IPHC to domestic agencies and **REQUESTED** that the IPHC Secretariat continue to support this process in the short-term, with the aim of transitioning management of the fishery to the domestic agencies at the earliest opportunity.	**Lead**: Steve Keith **Status/Plan**: In progress. See papers **IPHC-2020-AM096-04** and USA: **IPHC-2020-AM096-NR02**
IM095-Req.09 (para. 104)	***Report of the 2nd IPHC Performance Review (PRIPHC02)*** **NOTING** the 26 recommendations arising from the PRIPHC02, the Commission **REQUESTED** that the IPHC Secretariat prepare a table for consideration at AM096 which would include each recommendation, and proposed/draft 1) responsibilities, 2) timeline, 3) priorities; and 4) any initial comments of relevance. The intention will be for the Commission to review the table at AM096, modify and adopt a plan for implementation moving forward.	**Lead**: David Wilson **Status/Plan**: Completed. See paper **IPHC-2020-AM096-14**

Report of the IPHC Secretariat (2019)

PREPARED BY: IPHC SECRETARIAT (D. WILSON, S. KEITH; 6 DECEMBER 2019)

Contents

1. PURPOSE

To provide the Commission with an update on the activities of the IPHC Secretariat in 2019, not already contained within other papers before the Commission.

2. STAFFING IMPROVEMENTS DURING 2019

2.1. REGULAR FULL-TIME POSITIONS

FT Arrivals	Type	Hire Date	Status	Position Title
Ms Katja Hyvarinen	Regular full-time	2 Dec 2019	Active	Administrative Specialist
Ms Kayla Ualesi	Regular full-time	2 Dec 2019	Active	Setline Survey Coordinator
Ms Monica Mocaer	Regular full-time	18 Nov 2019	Active	Setline Survey Specialist
Ms Kamala Carroll	Regular full-time	8 Aug 2019	Active	Fisheries Data Coordinator
Ms Kimberly Sawyer	Regular full-time	22 Jul 2019	Active	Fisheries Data Specialist
FT Change				
Nil	Nil	Nil	Nil	Nil
FT Departure				
Mr E. Soderlund	Regular full-time	17 Mar 2003	Departed 24 Oct 2019	Setline Survey Specialist
Ms A. Tesfatsion	Regular full-time	2 Aug 1999	Departed 7 Jul 2019	Fisheries Data Specialist
Ms T. Geernaert	Regular full-time	5 May 1986	Departed 14 Jun 2019	Setline Survey Advisor
Ms T. Briggie	Regular full-time	28 Nov 2011	Departed 13 Dec 2019	Administrative Specialist

2.2. TEMPORARY FULL-TIME POSITIONS

Temporary full-time positons				
Temp/contract	**Type**	**Hire Date**	**Status**	**Position Title**
Dr Barbara Hutniczak	Temporary full-time	1 Nov 2019	2-yr contract ending 31 October 2021	Fisheries Economist
Mr Andy Jasonowicz	Temporary full-time	26 Aug 2019	1-yr contract ending in Aug 2020	Research Biologist (Genetics)
Dr Piera Carpi	Temporary full-time	1 Apr 2019	2-yr contract ending in March 2021	MSE Researcher

Mr Colin Jones	Temporary full-time	14 Jan 2019	2-yr contract ending in January 2021	Setline Survey Specialist (Gear and Bait)
Ms Abby Carrigan	Temporary full-time 6-mo contract ending in Jan 2020	15 Jul 2019	Departed 14 Dec 2019	Data Entry Specialist

3. IPHC INTERNSHIP PROGRAM: 2019

The IPHC funds one full-time intern each summer. In 2019, Ms Kennedy Bolstad from the University of Victoria, BC, Canada joined the IPHC. Kennedy worked on two projects during her tenure:

1) Genotyping efforts to assist in determining the sex ratio in the commercial fishery: DNA purification from fin clips; and
2) Reproductive assessment project: Identification and characterisation of reproductive markers in female Pacific halibut.

4. IPHC MERIT SCHOLARSHIP FOR 2019

The IPHC funds several Merit Scholarships to support university, technical college, and other post-secondary education for students from Canada and the USA who are connected to the Pacific halibut fishery. Generally, a single new scholarship valued at US$4000 per year is awarded every two years. The scholarships are renewable annually for the normal four-year period of undergraduate education, subject to maintenance of satisfactory academic performance. A Scholarship Committee of industry and Commission representatives reviews applications and determines recipients based on academic qualifications, career goals, and relationship to the Pacific halibut industry.

No scholarships were awarded in 2019, as the next announcement will occur in early 2020.

The list of current recipients and their expected years of receipt are provided below. Note that in 2016 the IPHC Merit Scholarship shifted from an award of US$,2000 per year for four years, with a new recipient selected each year, to an award of US$4,000 per year for four years, with a new recipient selected every other year.

Name	2016	2017	2018	2019	2020	2021	2022
Ysabel Echeverio (Stevensville, MT, USA)	$4000	$4000	$4000	$4000	-	-	-
Kaia Dahl (Petersburg, AK, USA)	-	-	$4000	$4000	$4000	$4000	-
TBD	-	-	-	-	$4000	$4000	$4000

5. MEETINGS OF THE COMMISSION AND SUBSIDIARY BODIES DURING 2019

Meeting	No.	Date	Location
Finance and Administration Committee (FAC)	95th	28 Jan	Victoria, Canada
Annual Meeting (AM)	**95th**	**28 Jan-1 Feb**	**Victoria, Canada**
Conference Board (CB)	89th	29-30 Jan	Victoria, Canada

Processor Advisory Board (PAB)	24th	29-30 Jan	Victoria, Canada
Research Advisory Board (RAB)	20th	27 Feb	Seattle, USA
Management Strategy Advisory Board (MSAB)	13th	6-9 May	Sitka, USA
	14th	21-24 Oct	Seattle, USA
Scientific Review Board (SRB)	14th	26-28 June	Seattle, USA
	15th	24-26 Sept	Seattle, USA
Work Meeting (WM)	--	18-19 Sept	Bellingham, USA
Interim Meeting (IM)	**95th**	**25-26 Nov**	**Seattle, USA**

6. IPHC FISHERY REGULATIONS (2019)

6.1. FISHERY REGULATIONS ADOPTED IN 2019

In 2019, the Commission adopted **three (3)** fishery regulations in accordance with Article III of the Convention, as follows:

*1) **IPHC Pacific halibut fishery regulations, Section 4. Fishery Limits***

IPHC-2019-AM095-R, para. 70: The Commission **ADOPTED** the mortality limits for each Contracting Party, by IPHC Regulatory Area, (Table 5) and sector, as provided in Appendix IV.

Table 5. Adopted TCEY mortality limits for 2019

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (metric tonnes)
2A	1.65	748.42
2B	6.83	3,098.04
2C	6.34	2,875.78
3A	13.50	6,123.50
3B	2.90	1,315.42
4A	1.94	879.97
4B	1.45	657.71
4CDE	4.00	1,814.37
Total (IPHC Convention Area)	**38.61**	**17,513.20**

Appendix IV (of IPHC-2019-AM095-R)
Mortality table projected for the 2019 mortality limits by IPHC Regulatory Area
(All values reported in millions of net pounds)

Sector	IPHC Regulatory Area								
	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
Commercial discard mortality	0.02	0.13	NA	NA	0.19	0.09	0.02	0.04	0.50
O26 Bycatch	0.13	0.27	0.03	1.28	0.36	0.18	0.22	1.87	4.33
Non-CSP Recreational (+ discards)	NA	0.08	1.38	1.74	0.00	0.01	0.00	0.00	3.21
Subsistence	NA	0.41	0.44	0.22	0.01	0.01	0.00	0.06	1.14
Total Non-FCEY	0.15	0.88	1.85	3.24	0.57	0.29	0.24	1.96	9.18
Commercial discard mortality	NA	NA	0.06	0.31	NA	NA	NA	NA	0.37
CSP Recreational (+ discards)	0.60	0.84	0.82	1.89	NA	NA	NA	NA	4.16

Subsistence	0.03	NA	NA	NA	NA	NA	NA	NA	0.03
Commercial Landings	0.86	5.10	3.61	8.06	2.33	1.65	1.21	2.04	24.88
Total FCEY	1.50	5.95	4.49	10.26	2.33	1.65	1.21	2.04	29.43
TCEY	1.65	6.83	6.34	13.50	2.90	1.94	1.45	4.00	38.61
U26 Bycatch	0.00	0.02	0.00	0.37	0.11	0.10	0.01	1.12	1.73
Total Mortality	**1.65**	**6.85**	**6.34**	**13.87**	**3.01**	**2.04**	**1.46**	**5.12**	**40.34**

2) ***IPHC Pacific halibut fishery regulations, Section 9. Commercial fishing periods***

IPHC-2019-AM095-R, para. 80: The Commission **ADOPTED** fishing periods for 2019 as provided below, thereby superseding Section 9 of the IPHC Pacific halibut fishery regulations: (para. 80)

a) All commercial fishing for Pacific halibut in all IPHC Regulatory Areas may begin no earlier than 15 March and must cease on 14 November.

b) IPHC Regulatory Area 2A (Non-Treaty Directed Commercial): Retain the 10-hour derby fishery for 2019, 26 June, 10 July, 24 July, 7 August, 21 August, 4 September, 18 September, with additional openings and fishing period limits (vessel quota) to be determined and communicated by the IPHC Secretariat.

3) ***Charter management measures in IPHC Regulatory Areas 2C and 3A***

IPHC-2019-AM095-R, para. 83: The Commission **NOTED** and **ADOPTED** regulatory proposal IPHC-2019-AM095-PropB1, which proposed IPHC Regulation changes for charter Pacific halibut fisheries in IPHC Regulatory Areas 2C and 3A, in order to achieve the charter Pacific halibut allocation under the North Pacific Fisheries Management Council's (NPFMC) Pacific halibut Catch Sharing Plan. (para. 83)

6.2. DEFERRED REGULATORY PROPOSALS

At the 95th Session of the IPHC Annual Meeting (AM095), the Commission deferred action on a number of IPHC Secretariat and stakeholder regulatory proposals and tasked the IPHC Secretariat as follows:

Fishery Limits (Sect. 4)

Para. 63. The Commission **NOTED** regulatory proposal IPHC-2019-AM095-PropA1, which aimed to improve clarity and transparency of fishery limits in the IPHC Fishery Regulations, and to provide the framework for mortality limits adopted by the Commission.

Para 64. The Commission **DEFERRED** modifications to the fishery regulations at this time, due to administrative concerns raised by NOAA-Fisheries, and indication that they would be unable to make modifications to the IPHC's Fishery Regulations outside of absolutely essential edits.

IPHC Fishery Regulations: minor amendments

Para. 81. The Commission **NOTED** and **DEFERRED** regulatory proposal IPHC-2019-AM095-PropA3 Rev_1, which proposed amendments to ensure clarity and consistency in the IPHC Fishery Regulations.

IPHC Regulatory Area 2A Quota Proposal

Para. 87. The Commission **NOTED** and **DEFERRED** action on regulatory proposal IPHC-2019-AM095-PropC2, which proposed an individual quota system for IPHC Regulatory Area 2A (reference paragraphs 75-79).

Progress: Updated versions of IPHC-2019-AM095-PropA1 and IPHC-2019-AM095-PropA3 were published 7 October 2019 in order complete review before IM095. No further action on IPHC-2019-AM95-PropC2 is contemplated, given the ongoing discussion regarding management of the Pacific halibut fisheries in IPHC Regulatory Area 2A (see paragraph 6.3.2b below).

7. INTERACTIONS WITH CONTRACTING PARTIES

7.1. *CONTRACTING PARTY REPORTS*

At AM095, the Commission agreed to pursue a modified format for annual Contracting Party reports to the IPHC:

IPHC-2019-AM095-R, para. 100: The Commission **NOTED** paper IPHC-2019-AM095-INF02 which provided a revised draft template for use by Contracting Parties (and/or domestic agencies) in their annual reports to the Commission.

IPHC-2019-AM095-R, para. 101: **NOTING** that efficiencies are likely to be gained by modifying the format and content for Contracting Parties reports to the Commission, the Commission **AGREED** that the Contracting Parties, via Commissioners, would work with the IPHC Secretariat intersessionally to improve the process, including the possibility for reports from Contracting Party agencies to be aggregated and presented as a consolidated Contracting Party report to the Commission. The IPHC Secretariat will share this work with the governments of both Contracting Parties to facilitate this effort throughout 2019.

The IPHC Secretariat is discussing the new reporting format at the staff level with Contracting Party agencies and has provided them the new template for reports. The Commission may wish to provide further input to the Contracting Parties regarding aggregation of reports.

7.2. *CANADA*

7.2.1. *Fisheries and Oceans Canada (DFO)*

a) **Areas of conservation concern**

The IPHC Secretariat followed up with Fisheries and Oceans Canada on incursions into Marine Protected Areas (MPAs) by the 2018 IPHC fishery-independent setline survey (FISS). In response, the IPHC Secretariat improved its

FISS protocols, operations monitoring, and training. The two vessels involved also received letters of warning from Fisheries and Oceans Canada.

7.2.2. *Halibut Advisory Board (HAB)*

a) The Executive Director participates as a HAB member, with other Secretariat staff in support. This relationship is expected to continue into the future given the HAB's contributions to the Canadian decision-making process.

b) IPHC Secretariat attended HAB meetings on 25 September and 12 November 2019 via webinar, and will attend the 10 December 2019 meeting in person (Vancouver, Canada).

7.3. *UNITED STATES OF AMERICA*

7.3.1. *NORTH Pacific Fishery Management Council (NPFMC)*

a) **Abundance-Based Management of Pacific halibut bycatch (ABM)**

The NPFMC's Abundance-Based Management Working Group (ABMWG) continued its work, with participation of the IPHC Secretariat. The Commission has supported the development of ABM due to its potential effect on the directed Pacific halibut fisheries.

At its February 2019 meeting, the NPFMC received a report from the ABM Stakeholder Committee and revised alternatives for the forthcoming halibut ABM PSC limit analysis. The Council then agreed to a revised set of alternatives for analysis: Council Motion D3.

At the April 2019 NPFMC meeting, the Scientific and Statistical Committee (SSC) reviewed the operating model and additional analytical considerations to be employed in the initial ABM review analysis.

The Commission provided comments to the NPFMC on the analysis to date in its letter of 30 September 2019, and encouraged the NPFMC to address the Commission's concerns prior to making any final decisions on this issue.

At its October 2019 meeting, the NPFMC reviewed the current analysis and the preliminary draft environmental impact statement (EIS). The NPFMC requested particular revisions to the operating model and the preliminary draft EIS, as suggested by its SSC, and requested that the preliminary draft EIS should come back to the NPFMC for another initial review before publishing, likely in June 2020.

The Commission may wish to provide further input to the NPFMC regarding the process during 2020.

7.3.2. *PACIFIC Fishery Management Council (PFMC)*

a) **IPHC Regulatory Area 2A Catch Sharing Plans and in-season management**

The IPHC Secretariat collaborated with NOAA Fisheries and State agencies to conduct in-season management of the various fisheries identified in the IPHC Regulatory Area 2A Catch Sharing Plan. Date and possession restrictions were adjusted in season among the various fisheries to meet identified fishery needs

while attaining and remaining within the applicable catch limits. Estimates of removals for 2019 will be presented during the IPHC Annual Meeting Agenda Item 5 on fishery statistics.

b) **IPHC Regulatory Area 2A non-tribal directed commercial fishery**

In 2017, the IPHC Secretariat initiated discussion with the PFMC, as well as with NOAA Fisheries and the relevant State agencies, regarding the management of the non-tribal directed commercial Pacific halibut fishery in IPHC Regulatory Area 2A, with the goal of moving away from its current derby-style management. The IPHC Secretariat noted concerns over safety and discards, as well as limitations on fishers' and processors' flexibility.

Discussion continued during 2018, focused on the IPHC's proposal to change the length of the fishing period for this fishery, presented in IPHC-2019-AM095-PropA2. At AM095, the Commission continued the 10-hour fishing period for 2019, but indicated its desire to move away from the current derby format:

> IPHC-2019-AM095-R, para. 75: *The Commission **AGREED** that for IPHC Regulatory Area 2A, fishing periods for the non-tribal directed commercial fishery should be longer than the current 10-hour derby fishing periods, primarily for safety reasons.*
>
> IPHC-2019-AM095-R, para. 79: ***NOTING** the concerns expressed by Canada about the safety issues related to the current management of this derby fishery, the Commission **EXPRESSED** its hope that there will be a proposal for an alternative management approach that addresses safety concerns by the time the Commission reconvenes at next year's annual meeting. If no resolution is in hand by then, the IPHC expects to re-examine what steps it can take to address the issue, including moving to longer fishing periods.*

During 2019, in response to letters exchanged between the Commission and the PFMC, and the Commission's desires expressed at AM095, the discussion broadened to include shifting responsibility for management of Pacific halibut fisheries in IPHC Regulatory Area 2A from the IPHC to domestic agencies, as is the case in all other IPHC Regulatory Areas.

> IPHC-2019-AM095-R, para. 77: *The Commission **NOTED** the suggestion from the PFMC and the NOAA Fisheries West Coast Region office for a workshop to consider future changes to the IPHC Regulatory Area 2A Pacific halibut fishery management structure in a more holistic way, to include all management partners and to take place as early as spring 2019.*
>
> IPHC-2019-AM095-R, para. 78: ***NOTING** the indication made to the PFMC in a letter dated 25 January 2019, that the IPHC Secretariat would welcome the opportunity to further address the safety concerns in the fishery, and to examine other potential management options for the fishery such as an IFQ or limited entry, as well as its management responsibilities, the Commission **RECOMMENDED** that this workshop take place, given the desire for the IPHC to move full management of the fishery from the IPHC (an*

international fisheries management body) to the relevant domestic agencies.

At its June 2019 meeting, the PFMC affirmed its commitment to pursue domestic management of the Pacific halibut fisheries in IPHC Regulatory Area 2A. The workshop described in the paragraphs above has been postponed, as the current focus is to transfer management of the fishery before the 2021 fishing period. The PFMC may then later investigate other potential management options for the fishery. Further discussion of the way ahead is expected at the PFMC's November 2019 meeting.

The PFMC noted its commitment to the transition of management in its letter to the IPHC of 6 September 2019. The Commission responded in its letter to the PFMC of October 2019, offering to support the transition process and expressing its desire to complete the transition as expeditiously as possible.

8. IPHC COMMUNICATIONS AND OUTREACH

8.1. *IPHC Website*

The IPHC Secretariat continues to develop different ways to publish data and statistics for our stakeholders, focusing particularly on the addition of timely and useful visual displays such as our interactive maps and our online fishery-independent setline survey (FISS) data query. New developments to be presented at the IM095, including commercial fishery data pages and catch tables.

8.2. *Annual Report*

The 2018 Annual Report is available for download from the IPHC website at the following link: https://www.iphc.int/library/documents/annual-reports/iphc-2019-ar2018-iphc-annual-report-2018. We are now using an accelerated production timeline for the IPHC Annual Report, thereby ensuring users of the report receive the summary information as close to the relevant year as possible. Continued feedback on the content, format and presentation of the Annual Report is welcome.

The 2019 Annual Report is on track for publication at the end of February 2020.

8.3. *IPHC Circulars and Media Releases*

IPHC Circulars, introduced in late 2016, continue to serve as the formal inter-sessional communication mechanism for the Commission. Circulars are used to announce meetings of the Commission and its subsidiary bodies, as well as inter-sessional decisions made by the Commission.

IPHC Media Releases, are now the primary informal communication with all stakeholders. In some cases these will duplicate the formal communications provided in IPHC Circulars. IPHC Media Releases replace IPHC News Releases and other informal communication formats used previously.

Effective 1 August 2019, the IPHC Secretariat moved to fully electronic information distribution, after a two (2) year transition period. IPHC Circulars, Media releases, and similar information are posted on the IPHC website and distributed via email links only.

Stakeholders are encouraged to request that their email addresses be added to IPHC distribution lists at the following link: https://www.iphc.int/form/media-and-news.

8.4. *IPHC External engagement*

There is a considerable amount of effort put into public outreach, attending conferences and meetings that enhance knowledge, contributing expertise to the broader scientific community through participation on boards and committees, and seeking further education and training.

8.4.1. *Committees and external organisation appointments*

North America:

1) *Technical Subcommittee (TSC) of the Canada-United States Groundfish Committee* - Dr. Josep Planas & Ms. Lara Erikson

Canada:

1) *Halibut Advisory Board* (Canada) - Dr. David Wilson
2) *Canadian Science Advisory Secretariat Regional Peer Review Meeting for the Widow Rockfish Stock Assessment, 18-19 June 2019, Nanaimo, BC* - Dr. Allan Hicks

United States of America:

1) *Bering Sea/Aleutian Islands Plan Team* - Dr. Allan Hicks
2) *Bering Sea Fishery Ecosystem Plan Team* - Dr. Ian Stewart
3) *North Pacific Fishery Management Council (NPFMC) Abundance-based Management Working Group* – Dr. Allan Hicks
4) *NPFMC Scientific and Statistical Committee* - Dr. Ian Stewart
5) *NPFMC Trawl Electronic Monitoring Committee* – Ms. Huyen Tran
6) *North Pacific Research Board Science Panel* - Dr. Josep Planas
7) *Observer Science Committee (NOAA-Alaska)* – Dr. Ray Webster
8) *Interagency electronic reporting system for commercial fishery landings in Alaska (eLandings) Steering Committee* – Ms. Lara Erikson and Ms. Huyen Tran
9) *Interagency electronic reporting system for commercial fishery landings in Alaska (eLandings) IT Steering Committee* – Mr. Afshin Taheri
10) *Western Groundfish Conference Committee* – Mr. Edward Henry, Mr. Claude Dykstra

8.4.2. *Conferences and symposia (chronological order)*

1) Science Talk '19, 4-5 April 2019, Portland, OR, USA – Ed Henry
2) 2019 Bevan Symposium, 16-18 April, Seattle, WA, USA – Ms. Lauri Sadorus
3) 2019 Wakefield Symposium, 7-10 May, Anchorage, AK, USA – Dr. Josep Planas
4) AFSC workshop on Integrating ecosystem and socioeconomic information into the groundfish/crab stock assessments Ecosystem and Socioeconomic Profiles, 29-31 May, Seattle, WA – Dr. Ian Stewart
5) 54th European Marine Biology Symposium, 25-29 August, Dublin, Ireland – Dr. Tim Loher
6) 149th AFS Annual Meeting 29 Sept- 3 Oct, Reno, NV, U.S.A – Mr. Edward Henry
7) **2019 PICES Annual Meeting and Pacific halibut Workshop**, 18-24 October, Victoria, B.C., Canada - Dr. David Wilson, Dr. Ian Stewart, Dr. Allan Hicks, Dr. Josep

Planas, Dr. Tim Loher, Ms. Lauri Sadorus, Ms. Joan Forsberg, Ms. Anna Simeon, Mr. Andy Jasonowicz, Ms. Dana Rudy, Mr. Claude Dykstra

8) CAPAM Next Generation Stock Assessment Models, 4-8 November 2019, Wellington, NZ – Dr. Allan Hicks, Dr. Piera Carpi

8.4.3. *Outreach*

1) **Booth at the Pacific Northwest Sportsman's Show, 5-10 February, Portland, OR, USA** – Stephen Keith, Edward Henry, Lauri Sadorus, Ian Stewart, Caroline Robinson, Lara Erikson, Collin Winkowski
2) **Booth at ComFish Alaska, 29-30 March, Kodiak, AK** – Dr. Ian Stewart, Ms. Lara Erikson
3) **Booth at the Pacific Marine Expo, 21-23 November, Seattle, WA, USA** – Edward Henry, Tom Kong, Abby Carrigan, Kimberly Sawyer, Colin Jones, Stephen Keith, Kamala Carroll, Collin Winkowski, Anna Simeon, Claude Dykstra, Josep Planas, Caroline Robinson
4) **Booths (x2) at the Fisherman's Fall Festival, 21 September, Seattle, WA, USA** – David Wilson, Caroline Robinson, Piera Carpi, Jay Walker, Tamara Briggie, Dana Rudy, Huyen Tran, Edward Henry, Kimberly Sawyer, Abby Carrigan, Chris Johnson, Kamala Carroll, Josep Planas, Lara Erikson, Collin Winkowski, Keith Jernigan, Lauri Sadorus

8.4.4. *Academic affiliations*

Affiliate Faculty:

1) Dr. Allan Hicks - University of Washington School of Aquatic and Fishery Sciences, Seattle, WA, USA
2) Dr. Ian Stewart - University of Washington School of Aquatic and Fishery Sciences, Seattle, WA, USA
3) Dr. Josep Planas - Alaska Pacific University, Anchorage, AK, USA

Graduate student committee member:

1) Dr. Allan Hicks - University of Massachusetts School for Marine Science & Technology, Dartmouth, MA, USA
2) Dr. Allan Hicks - University of Washington School of Aquatic & Fishery Sciences, Seattle, WA, USA
3) Dr. Ian Stewart - Alaska Pacific University, Anchorage, AK, USA
4) Dr. Ian Stewart - University of Washington School of Aquatic & Fishery Sciences, Seattle, WA, USA
5) Dr. Josep Planas - Alaska Pacific University, Anchorage, AK, USA
6) Dr. Tim Loher - University of Alaska Fairbanks, Juneau, AK, USA

9. IPHC PUBLICATIONS IN 2019

9.1. *Published peer-reviewed journal papers*

Kuriyama PT, Branch TA, **Hicks AC**, Harms JH & Hamel OS (2019) Investigating three sources of bias in hook-and-line surveys: survey design, gear saturation, and multispecies interactions. Can. J. Fish. Aquat. Sci. 76: 192–207 (2019)

Monnahan, CC, Branch, TA, Thorson, JT, **Stewart, IJ**, and Szuwalski, C. (2019). Overcoming long Bayesian run times in integrated fisheries stock assessments. ICES J. Mar. Sci. 76(6): 1477-1488.

Nielsen JK, Mueter FJ, Adkinson MD, **Loher T**, McDermott SF & Seitz AC (2019) Effect of study area bathymetric heterogeneity on parameterization and performance of a depth-based geolocation model for demersal fish. Ecological Modelling 402:1-34.

Rose CS, Nielsen JK, Gauvin J, **Loher T**, Sethi S, Seitz AC, Courtney MB & Drobny P (2019) Pacific halibut (*Hippoglossus stenolepis*) survivals after release from trawl catches through expedited sorting: deploying advanced tags in quantity (160) reveals patterns in survival outcomes. Can. J. Fish. Aquat. Sci. 76(12): 2215-2224.

9.2. *In press peer-reviewed journal papers*

van Helmond ATM, Mortensen LO, Plet-Hansen KS, Ulrich C, Needle CL, Oesterwind D, Kindt-Larsen L, Catchpole T, Mangi S, Zimmermann C, Olesen HK, Bailey N, Bergsson H, Dalskov J, Elson J, Hosken M, Peterson L, McElderry H, Ruiz J, Pierre JP, **Dykstra C**, Poos JJ. (in press). Electronic monitoring in fisheries: Lessons from global experiences and future opportunities. Fish & Fisheries 2019; 00:1–28. https ://doi.org/10.1111/faf.12425.

9.3. *Submitted peer-review journal papers – In revision*

Punt, AE, Tuck G, Day J, Canales M, Cope JM, de Moor C, De Oliveira JAA, Dickey-Collas M, Elvarsson B, Haltuch MA, Hamel OS, **Hicks AC**, Legault CM, Lynch PD, Wilberg MJ (In review). When are model-based stock assessments rejected for use in management and what happens then? Fisheries Research.

Webster, R. A., Soderlund, E., Dykstra, C. L. and Stewart, I. J. (*in review*) Monitoring change in a dynamic environment: spatio-temporal modelling of calibrated data from different types of fisheries surveys of Pacific halibut. Can. J. Fish. Aquat. Sci.

9.4. *In preparation peer-reviewed journal articles x 9 (for 2020)*

Forrest RE, **Stewart IJ**, Monnahan CC, Bannar-Martin KH, Lacko LC (In preparation). Evidence for rapid avoidance of rockfish habitat under reduced quota and comprehensive at-sea monitoring in the British Columbia Pacific Halibut fishery.

Hicks A, Carpi P, Stewart IJ (In preparation). An analysis of dynamic reference points for Pacific halibut given changes in productivity.

Sadorus LL, Goldstein E, **Webster RA**, Stockhausen WT, **Planas JV**, Duffy-Anderson J (In preparation). Multiple life-stage connectivity of Pacific halibut (*Hippoglossus stenolepis*) across the Bering Sea and Gulf of Alaska.

Planas JV, Simeon A, Jasonowicz A, Rudy D, Timmins-Schiffman E, Nunn BL, Kroska A, Wolf N, Hurst TP (In preparation). Physiological signatures of temperature-induced growth manipulations in white skeletal muscle of juvenile Pacific halibut (*Hippoglossus stenolepis*).

Simeon A, Stewart IJ, Loher T, Erikson L, McCarty O, **Dykstra C**, Drinan DP, Hauser L, **Planas JV** (In preparation). Sex marking at sea by the directed Pacific halibut fleet.

Carpi P, Dykstra C, Forsberg J, Hicks A, Jasonowicz A, Johnston C, Loher T, Planas JV, Rudy D, Sadorus L, Simeon A, Stewart IJ, Tobin R, Webster R, Wilson D (In preparation). Ontogenetic and spawning migration of Pacific halibut: a review.

Fish T, Winkouski C, **Simeon A**, Wolf N, Harris B, **Planas JV** (In preparation). Histological characterization of oocyte developmental stages in Pacific halibut (*Hippoglossus stenolepis*).

Rudy D, Forsberg J, Johnston C, Tobin R, Stewart IJ, Planas JV, Loher T (In preparation). Can we reconstruct the growth history of the Pacific halibut (*Hippoglossus stenolepis*) population by otolith increment analysis?

Loher T, Dykstra C, Stewart IJ, Hicks A, Wolf N, Harris B, **Planas JV** (In preparation). Survival estimates of discarded Pacific halibut from the directed fishery as assessed by accelerometer satellite tags.

10. RECOMMENDATION

That the Commission:

1) **NOTE** paper IPHC-2020-AM096-04 which provides the Commission with a draft update on activities of the IPHC Secretariat in 2019 not detailed in other papers before the Commission.

APPENDICES

Nil.

Fishery statistics (2019)

PREPARED BY: IPHC SECRETARIAT (L. ERIKSON & H. TRAN; 24 DECEMBER 2019, 9 & 31 JANUARY 2020)

PURPOSE

To provide an overview of the key fishery statistics from fisheries catching Pacific halibut during 2019, including the status of landings compared to fishery limits implemented by the Contracting Parties of the Commission.

BACKGROUND

The International Pacific Halibut Commission (IPHC) estimates all Pacific halibut (*Hippoglossus stenolepis*) removals taken in the IPHC Convention Area and uses this information in its yearly stock assessment (see IPHC-2020-AM096-09) and other analyses. The data are compiled by the IPHC Secretariat and include data from Federal and State agencies of each Contracting Party. All 2019 data are in net weight (head-off, dressed, ice and slime deducted) and are considered preliminary at this time.

This paper includes Pacific halibut removals for:

- Directed commercial fisheries, including landings and discard mortality
- Recreational fisheries, including landings and discard mortality
- Subsistence fisheries
- Non-directed commercial discard mortality (previously bycatch, e.g. trawl, pot, longline)
- IPHC Fishery-Independent Setline Survey (FISS) and other research

Figure 1 shows the distribution of Pacific halibut removals (mortality) by these fishery sources in 2019. Table 1 and Table 2 provide estimates of total removals by Contracting Party and IPHC Regulatory Area (Figure 2).

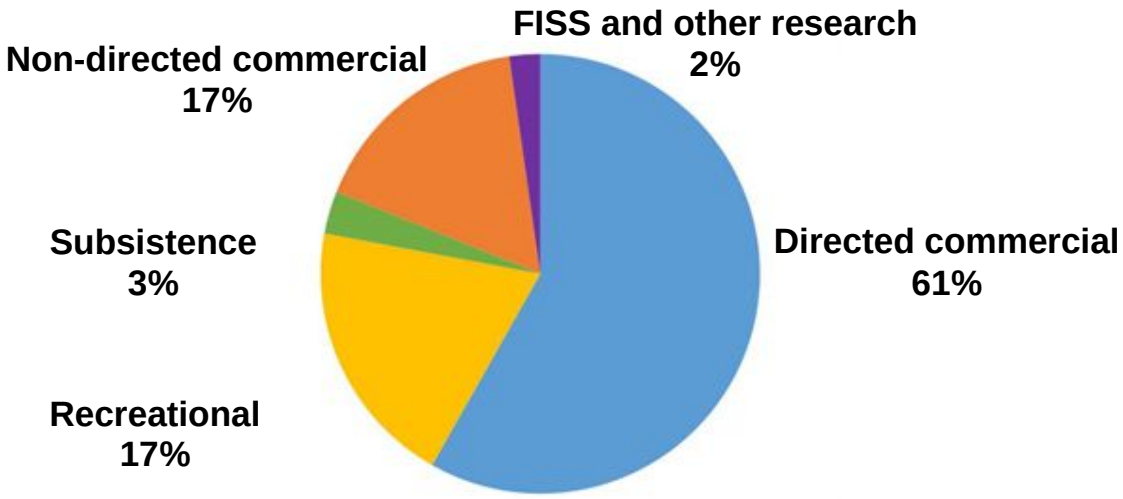

Figure 1. Distribution of Pacific halibut mortality by source in 2019.

Table 1. 2019 Mortality limits (TCEYs) and estimates (TCEYs and U26) by Contracting Party.

Contracting Party	Mortality limits (net weight)		Mortality (net weight)		Percent
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	%
Canada	**3,098**	**6,830,000**	**3,087**	**6,804,806**	**100**
United States of America	**14,415**	**31,780,000**	**14,267**	**31,453,705**	**99**
IPHC Regulatory Area 2A	748	1,650,000	692	1,526,495	93
IPHC Regulatory Area 2C	2,876	6,340,000	2,771	6,109,138	96
IPHC Regulatory Area 3A	6,123	13,500,000	6,254	13,787,578	102
IPHC Regulatory Area 3B	1,315	2,900,000	1,324	2,917,958	101
IPHC Regulatory Area 4A	880	1,940,000	790	1,741,619	90
IPHC Regulatory Area 4B	658	1,450,000	541	1,193,777	82
IPHC Regulatory Area 4CDE and Closed Area	1,814	4,000,000	1,895	4,177,140	104
Subtotal (TCEY)	**17,513**	**38,610,000**	**17,354**	**38,258,511**	**99**
Non-directed commercial discard mortality (U26)	none	none	730	1,610,000	n/a
Total	**none**	**none**	**18,084**	**39,868,511**	**n/a**

Table 2. 2019 mortality projections and estimates (net weight) of Pacific halibut by IPHC Regulatory Area (as of 31 January 2020).

IPHC Regulatory Area	Mortality projection (net weight)		Mortality (net weight)		Percent
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	%
Canada – Area 2B (British Columbia)	3,107.11	6,850,000	3,097.49	6,828,806	100
Directed commercial fishery landings	2,313.32	5,100,000	2,304.77	5,081,145	100
Directed commercial discard mortality	58.97	130,000	63.50	140,000	108
Recreational fishery	381.02	840,000	371.53	819,085	98
Recreational discard mortality[1]	36.29	80,000	19.34	42,634	53
Recreational fishery (XRQ)	n/a	n/a	8.16	17,999	n/a
Subsistence[1]	183.70	405,000	183.70	405,000	99
Non-directed commercial discard mortality (O26)[1]	122.47	270,000	97.52	215,000	80
IPHC fishery-independent setline survey and research	n/a	n/a	38.08	83,943	n/a
Non-directed commercial discard mortality (U26)	9.07	20,000	10.89	24,000	120
USA – 2A (California, Oregon, and Washington)	748.43	1,650,000	693.31	1,528,495	93
Non-treaty directed commercial	115.41	254,426	114.65	252,761	99
Non-treaty incidental to salmon troll fishery	20.37	44,899	19.69	43,417	97
Non-treaty incidental to sablefish fishery	31.75	70,000	36.00	79,360	113
Treaty Indian directed commercial	225.44	497,000	224.33	494,568	100
Directed commercial discard mortality	9.07	20,000	13.15	29,000	145
Recreational – Washington	125.69	277,100	122.48	270,024	97
Recreational – Oregon	131.35	289,575	72.71	160,306	55
Recreational – California	17.69	39,000	8.15	17,968	46
Recreational discard mortality	n/a	n/a	2.59	5,706	n/a
Treaty Indian ceremonial and subsistence	12.70	28,000	14.61	32,200	115
Non-directed commercial discard mortality (O26)[1]	58.97	130,000	56.25	124,000	95
IPHC fishery-independent setline survey and research	n/a	n/a	7.79	17,185	n/a
Non-directed commercial discard mortality (U26)	0.00	0	0.91	2,000	n/a

continued….

Table 2 continued. 2019 estimates of total removals (net weight), including fishery limits and mortality of Pacific halibut by IPHC Regulatory Area (as of 31 January 2020).

IPHC Regulatory Area	Fishery projection (net weight)		Mortality (net weight)		Percent
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	%
USA – Area 2C (southeastern Alaska)	2,875.78	6,340,000	2,771.51	6,110,138	96
Directed commercial fishery landings	1,637.47	3,610,000	1,537.05	3,388,622	94
Directed commercial discard mortality	27.22	60,000	36.29	80,000	133
Metlakatla (Annette Island Reserve)	n/a	n/a	12.64	27,863	n/a
Guided recreational fishery	371.95	820,000	287.58	634,000	77
Guided recreational discard mortality[2]	n/a	n/a	14.97	33,000	n/a
Guided recreational fishery (GAF)[1]	n/a	n/a	34.04	75,039	n/a
Unguided recreational fishery[1]	625.96	1,380,000	515.28	1,136,000	82
Unguided recreational discard mortality[2]	n/a	n/a	6.80	15,000	n/a
Subsistence[1]	199.58	440,000	166.11	366,214	83
Non-directed commercial discard mortality (O26)[1]	13.61	30,000	41.28	91,000	303
IPHC fishery-independent setline survey and research	n/a	n/a	119.02	262,400	n/a
Non-directed commercial discard mortality (U26)	0.00	0	0.45	1,000	n/a
USA – Area 3A (central Gulf of Alaska)	6,291.33	13,870,000	6,377.77	14,060,578	101
Directed commercial fishery landings	3,655.95	8,060,000	3,582.34	7,897,699	98
Directed commercial discard mortality	140.61	310,000	160.12	353,000	114
Guided recreational fishery	857.29	1,890,000	907.18	2,000,000	106
Guided recreational discard mortality[2]	n/a	n/a	8.62	19,000	n/a
Guided recreational fishery (GAF)	n/a	n/a	4.83	10,652	n/a
Unguided recreational fishery[1]	789.25	1,740,000	742.08	1,636,000	94
Unguided recreational discard mortality[2]	n/a	n/a	12.70	28,000	n/a
Subsistence[1]	99.79	220,000	85.14	187,698	85
Non-directed commercial discard mortality (O26)[1]	580.60	1,280,000	622.78	1,373,000	107
IPHC fishery-independent setline survey and research	n/a	n/a	128.15	282,529	n/a
Non-directed commercial discard mortality (U26)	167.83	370,000	123.83	273,000	74
USA – Area 3B (western Gulf of Alaska)	1,365.31	3,010,000	1,352.59	2,981,958	99
Directed commercial fishery landings	1,056.87	2,330,000	995.44	2,194,580	94
Directed commercial discard mortality[1]	86.18	190,000	73.94	163,000	86
Recreational fishery[1]	4.54	10,000	1.81	4,000	40
Recreational discard mortality	0.00	0	0.00	0	n/a
Subsistence[1]	4.54	10,000	7.55	16,644	166
Non-directed commercial discard mortality (O26)[1]	163.29	360,000	188.69	416,000	116
IPHC fishery-independent setline survey and research	n/a	n/a	56.12	123,734	n/a
Non-directed commercial discard mortality (U26)	49.90	110,000	29.03	64,000	58
USA – Area 4A (eastern Aleutians)	925.33	2,040,000	856.21	1,887,619	93
Directed commercial fishery landings	748.43	1,650,000	622.48	1,372,332	83
Directed commercial discard mortality[1]	40.82	90,000	47.17	104,000	116
Recreational fishery[1]	4.54	10,000	6.35	14,000	140
Recreational discard mortality	0.00	0	0.00	0	0
Subsistence[1]	4.54	10,000	6.00	13,237	132
Non-directed commercial discard mortality (O26)[1]	81.65	180,000	90.72	200,000	111
IPHC fishery-independent setline survey and research	n/a	n/a	17.26	38,050	146
Non-directed commercial discard mortality (U26)	45.36	100,000	66.22	146,000	n/a

continued …

Table 2 continued. 2019 estimates of total removals (net weight), including fishery limits and mortality of Pacific halibut by IPHC Regulatory Area (as of 31 January 2020).

IPHC Regulatory Area	Fishery projection (net weight)		Mortality (net weight)		Percent
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	%
USA – Area 4B (central/western Aleutians)	662.24	1,460,000	544.21	1,199,777	82
Directed commercial fishery landings	548.85	1,210,000	443.50	977,742	81
Directed commercial discard mortality[1]	9.07	20,000	17.24	38,000	190
Recreational fishery[1]	0.00	0	0.00	0	0
Recreational discard mortality	0.00	0	0.00	0	0
Subsistence[1]	0.00	0	0.76	1,684	n/a
Non-directed commercial discard mortality (O26)[1]	99.79	220,000	67.13	148,000	67
IPHC fishery-independent setline survey and research	n/a	n/a	12.86	28,351	n/a
Non-directed commercial discard mortality (U26)	4.54	10,000	2.72	6,000	n/a
USA – Area 4CDE and Closed (Bering Sea)	2,322.39	5,120,000	2,390.85	5,271,140	103
Directed commercial fishery landings	925.33	2,040,000	744.72	1,641,820	80
Directed commercial discard mortality[1]	18.14	40,000	34.02	75,000	188
Recreational fishery[1]	0.00	0	0.00	0	0
Recreational discard mortality	0.00	0	0.00	0	0
Subsistence[1]	27.22	60,000	17.04	37,564	63
Non-directed commercial discard mortality (O26)[1]	848.22	1,870,000	1,090.44	2,404,000	129
IPHC fishery-independent setline survey and research	n/a	n/a	8.51	18,756	n/a
Non-directed commercial discard mortality (U26)	508.02	1,120,000	496.23	1,094,000	98
Totals	18,297.91	40,340,000	18,084.05	39,868,511	99
Directed commercial fishery landings	11,669.26	25,726,325	11,083.03	24,433,909	95
Recreational fishery	3,345.55	7,375,675	3,147.21	6,938,413	94
Subsistence[1]	534.33	1,178,000	480.92	1,060,241	90
Non-directed commercial discard mortality (O26)[1]	1,964.05	4,330,000	2,254.81	4,971,000	115
IPHC fishery-independent setline survey and research	n/a	n/a	387.80	854,948	n/a
Non-directed commercial discard mortality (U26)	784.71	1,730,000	730.28	1,610,000	93

[1] 'Fishery projection' is value from 2018 estimates which were used in setting the TCEY for each IPHC Regulatory Area.
[2] Limit included in limit listed above.
n/a = not available and XRQ = Experimental Quota and GAF = Guided Angler Fish (XRQ and GAF leased from commercial quota).

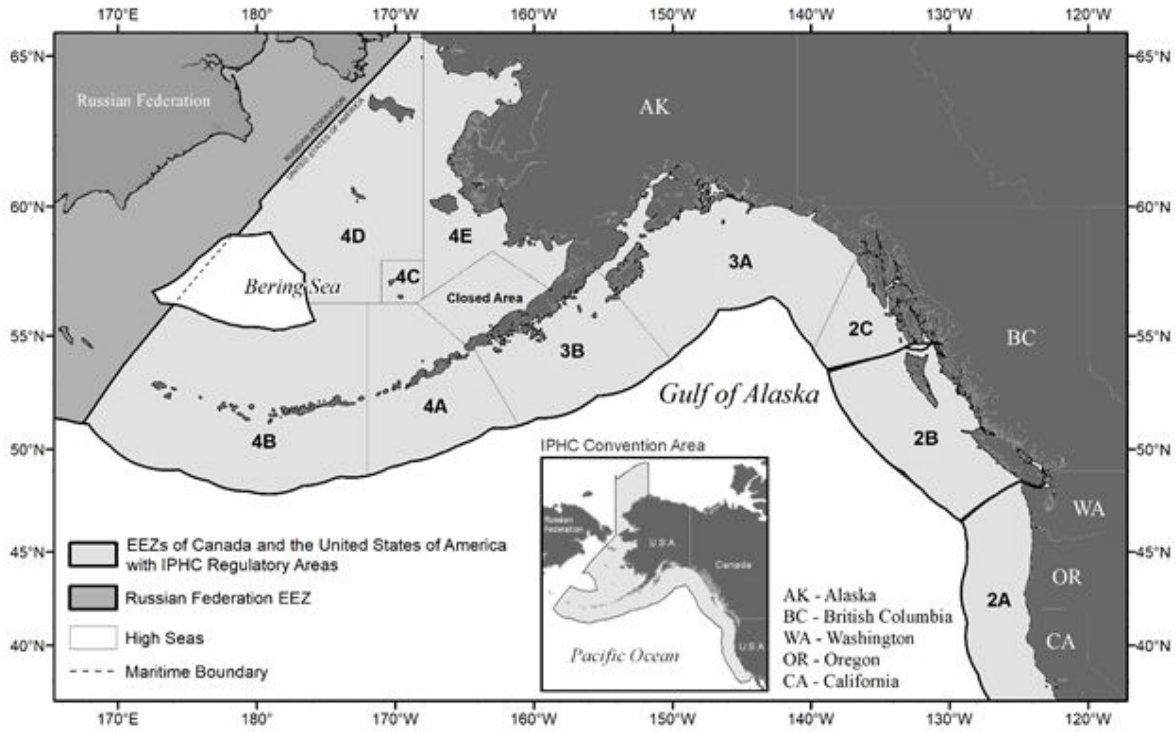

Figure 2. Map of the IPHC Convention Area (insert) and IPHC Regulatory Areas.

DEFINITIONS

Directed commercial fisheries: include commercial landings and discard mortality. Directed commercial discard mortality continues to include estimates of sub-legal Pacific halibut (under 32 inches (81.3 cm), also called U32), fish that die on lost or abandoned fishing gear, and fish discarded for regulatory compliance reasons.

Recreational fisheries: include recreational landings (including landings from commercial leasing) and discard mortality.

Subsistence fisheries (formerly called personal use/subsistence): are non-commercial, customary, and traditional use of Pacific halibut for direct personal, family, or community consumption or sharing as food, or customary trade. Subsistence fisheries include:

i) ceremonial and subsistence (C&S) removals in the IPHC Regulatory Area 2A treaty Indian fishery,
ii) the sanctioned First Nations Food, Social, and Ceremonial (FSC) fishery conducted in British Columbia,
iii) federal subsistence fishery in Alaska, USA that uses Alaska Subsistence Halibut Registration Certificate (SHARC), and
iv) U32 Pacific halibut retained in IPHC Regulatory Areas 4D and 4E by the CDQ fishery for personal use.

Non-directed commercial discard mortality: incidentally caught Pacific halibut by fisheries targeting other species and that cannot legally be retained, e.g. by the trawl fleet. Refers only to those Pacific halibut that subsequently die due to capture.

IPHC FISS and Research: includes Pacific halibut landings and removals as a result of the IPHC fishery-independent setline survey and other research.

DIRECTED COMMERCIAL FISHERIES

The IPHC's directed commercial fisheries span from northern California through to northern and western Alaska in USA and Canada waters of the northeastern Pacific Ocean. The IPHC sets annual limits for the catch of Pacific halibut in each IPHC Regulatory Area. Participants in these commercial fisheries use longline and pot gear to catch Pacific halibut for sale. The directed commercial Pacific halibut fisheries in IPHC Regulatory Area 2A consisted of the non-treaty Indian directed commercial fishery with fishing period limits, the incidental Pacific halibut catch during the salmon troll and limited-entry sablefish fisheries, and the treaty Indian fisheries. Farther north, the directed commercial fisheries consisted of the Individual Vessel Quota (IVQ) fishery in IPHC Regulatory Area 2B, the Individual Fishing Quota (IFQ) system in Alaska, USA, the Community Development Quota (CDQ) fisheries in IPHC Regulatory Areas 4B and 4CDE, and the Metlakatla fishery in IPHC Regulatory Area 2C. All 2019 landing and discard mortality data presented in this document are preliminary.

Commercial Fishing Periods

The Canadian IVQ fishery in IPHC Regulatory Area 2B and the USA IFQ and CDQ fisheries in IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E commenced at 12 noon local time on 15 March and closed at 12 noon local time on 14 November 2019 (Table 3). The IPHC Regulatory Area 2A directed commercial fisheries, including the treaty Indian commercial fisheries, occurred during the same calendar period (15 March to 14 November 2019). For IPHC Regulatory Area 2A, eight potential 10-hour fishing periods for the non-treaty directed commercial fishery were adopted: 26 June, 27 June, 10 July, 24 July, 7 August, 21 August, 4 September, and 18 September 2019. All fishing periods began at 0800 and ended at 1800 local time, were further restricted by fishing period limits, and closed for the remainder of the year after the third opening on 24 July (no opening was observed on 27 June) when the IPHC Regulatory Area 2A directed commercial fishery allocation was estimated to have been reached.

Table 3. Fishing periods for commercial Pacific halibut fisheries by IPHC Regulatory Area, 2010-19.

IPHC Regulatory Area	Year									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Canada: 2B	6 Mar–15 Nov (255)	12 Mar–18 Nov (252)	17 Mar–7 Nov (236)	23 Mar–7 Nov (230)	8 Mar–7 Nov (244)	14 Mar–7 Nov (238)	19 Mar–7 Nov (233)	11 Mar–7 Nov (241)	24 Mar–7 Nov (228)	15 Mar-14 Nov (244)
USA: 2A Treaty Indian	6 Mar–20 Mar (14) 6 Mar-8 Apr	20-22 Mar (2) 1-2 May (19 h) 12-19 Mar 24-28 Mar (13)	24-26 Mar (2) 1 May (13 hrs) 17-19 Mar (55 hrs)	23-25 Mar (48 hrs) 2-4 Apr, 15-16 Apr, 8 May, 6 Jun, 13 Jul 20 Jul 3 Aug	11-13 Mar (48 hrs) 20-21Mar, 8May 8 May	16-18 Mar (48 hrs) 1-2 Apr	19-21 Mar,20-21 Mar, 21-23 Mar 1-2 Apr 1-2,11-12 May, 18 May-15 Aug, 25 Jul-2 Aug, 12 Sep-7 Nov	20 Mar, 15-16 Apr 1-2 May 19-20 May, 22-23 May 18-19 Jun 21-22 Jul	24 Mar – 28 Apr (36 hrs) 24 Mar – 28 Apr (37 hrs) 4 May – 23 May (30 hrs)	15 Mar-15 May (55 hrs) (Unrestricted) 15 Mar-15 May (84 hrs) and 20 May-15 Jun (72 hrs) (Restricted) 11 Jun-24 Jul(~327 lbs per tribe)
USA: 2A Commercial Directed	30 Jun (10 hrs)	29 Jun (10 hrs) 13 Jul (10 hrs)	27 Jun (10 hrs) 11 Jul (10 hrs)	26 Jun (10 hrs) 10 Jul (10 hrs)	25 Jun (10 hrs) 9 Jul (10 hrs)	24 Jun (10 hrs) 8 Jul (10 hrs)	22 Jun (10 hrs) 6 Jul (10 hrs) 20 Jul (10 hrs)	28 Jun (10 hrs) 12 Jul (10 hrs) 26 Jul (10 hrs)	27 Jun (10 hrs) 11 Jul (10 hrs) 25 Jul (10 hrs)	26 June (10 hrs) 10 July (10 hrs) 24 July (10 hrs)
USA: 2A Commercial Incidental	Salmon 1 May– 16 Jun (45) Sablefish No fishery	Salmon 1 May–28May (28) 29 Jul-31 Oct (94) Sablefish No fishery	Salmon 1 May – 3 Jul (64) Sablefish 1 May– 31 Oct (184)	Salmon 1 May–10 Aug (101) Sablefish 1 May– 31 Oct (184)	Salmon 1 Apr–11 Sep (163) Sablefish 1 Apr– 31 Oct (213)	Salmon 1 Apr–21 Aug (142) Sablefish 1 Apr– 31 Aug (152)	Salmon 1 Apr – 31 Oct (213) Sablefish 1 Apr – 31 Oct (213)	Salmon 1 Apr–3 Aug (124) Sablefish 1 Apr– 31 Oct (213)	Salmon 24 Mar - 8 Aug (137) Sablefish 24 Mar – 7 Nov (228)	Salmon 20 Apr - 30 Sept (WA, CA - 163) 20 Apr - 31 Oct (OR - 194) Sablefish 1 April- 31 Oct (213)
USA: Alaska (2C, 3A, 3B, 4A, 4B, 4CDE)	6 Mar–15 Nov (255)	12 Mar–18 Nov (252)	17 Mar–7 Nov (236)	23 Mar–7 Nov (230)	8 Mar–7 Nov (244)	14 Mar–7 Nov (238)	19 Mar–7 Nov (233)	11 Mar–7 Nov (241)	24 Mar–7 Nov (228)	15 Mar-14 Nov (244)

Directed Commercial Landings

Directed commercial landings and fishery limits by IPHC Regulatory Area for the 2019 fishing season are shown in Table 2. Directed commercial fishery limit, as referred to here, is the IPHC directed commercial fishery limit set by the Contracting Parties following the Annual Meeting. The fishery limits with adjustments from the underage and overage programs from the previous year's quota share programs, and in IPHC Regulatory Area 2B it also includes relinquishment of quota and quota leasing programs among sectors and the Use of Fish allocation, are not presented.

The 2019 directed commercial fishery landings were spread over nine months of the year (Table 4). On a month-to-month comparison, July took the lead as the busiest month for total poundage (18%) landed from IPHC Regulatory Area 2B. On a month-to-month comparison, May was the busiest months for total poundage (17%) from Alaska, USA.

Table 4. 2019 Directed commercial landings (tonnes, net weight, preliminary) of Pacific halibut for Alaska, USA and British Columbia, Canada by IPHC Regulatory Area and month.

IPHC Regulatory Area	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total
2B[1]	284	309	263	257	390	285	207	208	100	2,305
2C[2]	189	312	332	143	102	171	139	118	31	1,537
3A[2]	232	616	694	475	268	468	397	324	109	3,582
3B[2]	30	125	101	169	92	150	159	117	52	995
4A[2]	-	38[3]	56	68	76	114	174	76	20	622
4B[2]	-	61[3]	108	53	79	67	37	39[4]	-	444
4CDE[2]	-	-	15[3]	112	159	279	103	64	14	745
Alaska Total	451	1,152	1,306	1,020	776	1,249	1,009	738	226	7,926
Grand Total	735	1,460	1,568	1,277	1,166	1,533	1,216	946	327	10,230

[1] Based on landings from DFO Fishery Operations System (FOS).
[2] Based on landings from NOAA Fisheries Restricted Access Management (RAM) Division.
[3] Weight combined with the previous months for confidentiality purposes.
[4] Weight combined with the following month for confidentiality purposes.
n/a = not available

Canada – IPHC Regulatory Area 2B (British Columbia)

Under the IVQ fishery in British Columbia, Canada, the number of active Pacific halibut licences (L licences), and First Nations communal commercial licences (FL licences) was 153 in 2019. In addition, Pacific halibut can be landed as incidental catch in other licensed groundfish fisheries. Therefore, Pacific halibut was landed from a total of 231 active licences in 2019, with 78 of these licences from other fisheries. The 2019 directed commercial landings of 2,305 tonnes (5,081,000 pounds) were less than 1% under the fishery limit (2,313 tonnes (5,100,000 pounds)) (Table 2).

Directed commercial trips from IPHC Regulatory Area 2B were delivered into 16 different ports in 2019. The ports of Port Hardy (including Coal Harbour and Port McNeill) and Prince Rupert/Port Edward were the major landing locations, receiving 90% of the commercial landings.

Port Hardy received 40% while Prince Rupert received 50% (913 and 1,158 tonnes (2,013,000 and 2,554,000 pounds), respectively) of the directed commercial landings. All of the IVQ landings were landed in IPHC Regulatory Area 2B. Only Canadian vessels landed frozen, head-off Pacific halibut in 2019, and only in Canadian ports: 47 landings (36.75 tonnes; 81,010 net lb) reported frozen-at-sea head-off product from 21 vessels.

USA – IPHC Regulatory Area 2A (Washington, Oregon, California)

The 2019 IPHC Regulatory Area 2A fisheries and respective fishery limits are listed in Table 2. The total IPHC Regulatory Area 2A directed commercial landings (not including IPHC FISS and other research) of 395 tonnes (870,000 pounds) were less than 1% over the fishery limit. The total directed commercial non-treaty Indian landings of 115 tonnes (253,000 pounds) were 1% under the fishery limit of 115 tonnes (254,426 pounds) after three 10-hour openers. The fishing period limits by vessel size class for each opening in 2019 are listed in Table 5.

At the start of the salmon troll fishery season on 20 April, the allowable incidental landing ratio was one Pacific halibut per three Chinook (*Oncorhynchus tshawytscha*), plus an “extra” Pacific halibut per landing, and a vessel trip limit of 10 fish. The allowable incidental landing ratio was changed to one Pacific halibut per two Chinook, plus an “extra” Pacific halibut per landing, and a vessel trip limit of 15 fish on 1 May. The allowable incidental landing ratio was changed to one Pacific halibut per two Chinook, plus an “extra” Pacific halibut per landing, and a vessel trip limit of 15 fish on 1 July. The allowable incidental landing ratio was changed to one Pacific halibut per two Chinook, plus an “extra” Pacific halibut per landing, and a vessel trip limit of 4 fish on 19 July. The allowable incidental landing ratio was changed to one Pacific halibut per two Chinook, plus an “extra” Pacific halibut per landing, and a vessel trip limit of 2 fish on 29 July. The incidental Pacific halibut retention in Washington and California was open through 30 September with Oregon remaining open through the month of October. Total landings of 20 tonnes (43,417 pounds) was 3% under the fishery limit (20 tonnes (44,899 pounds)).

Incidental Pacific halibut retention during the limited-entry sablefish fishery remained open from 1 April to noon on 31 October. Beginning 1 April, the allowable landing ratio was 0.09 tonnes (200 pounds) (net weight) of Pacific halibut to 0.45 tonnes (1,000 pounds) (net weight) of sablefish, and up to two additional Pacific halibut in excess of the ratio limit. Effective 2 August, the landing ratio was modified to 0.11 tonnes (250 pounds) (net weight) of Pacific halibut to 0.45 tonnes (1,000 pounds) (net weight) of sablefish, and up to two additional Pacific halibut in excess of the ratio limit. The total landings of 36 tonnes (79,360 pounds) were 13% over the fishery limit (32 tonnes (70,000 pounds)).

In IPHC Regulatory Area 2A, north of Point Chehalis, the treaty Indian tribes manage the commercial landings for three fisheries under a Memorandum of Understanding among the 13 tribes. These consist of an unrestricted fishery, a restricted fishery with trip limits, and a late season fishery. These fisheries are subject to in-season management. There were one unrestricted, open access fishery 15 March to 15 May, and two restricted fisheries, including a vessel per day limit of 0.23 tonnes (500 pounds) for 15 March to 15 May and 20 May to 5 June openings. The 2019 treaty Indian directed commercial season closed to all parties following a late fishery 11 June to 24 July with each tribe fishing a share of approximately 0.15 tonnes (327 pounds). Estimated total landings, of 224 tonnes (494,568 pounds), were less than 1% under the fishery limit (225 tonnes (497,000 pounds)).

Table 5. The fishing periods and limits (tonnes, dressed, head-on with ice/slime) by vessel class used in the 2019 directed commercial fishery in IPHC Regulatory Area 2A.

Vessel Class		Fishing Period (dates) & Limits (t)	
Letter	**Feet**	**26 June and 10 July**	**24 July**
A	≤25	2.05	1.04
B	26-30	2.05	1.04
C	31-35	2.05	1.04
D	36-40	3.09	1.04
E	41-45	3.09	1.04
F	46-50	4.12	1.04
G	51-55	4.12	1.04
H	56+	4.64	1.04

USA – IPHC Regulatory Areas 2C, 3, and 4 (Alaska)

In Alaska, USA, the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) Restricted Access Management (RAM) allocated Pacific halibut quota share (QS) to recipients by IPHC Regulatory Area. Quota share transfers were permitted with restrictions on the amount of QS a person could hold and the amount that could be fished per vessel. In 2018, RAM reported that 2,257 persons held QS.

The total 2019 landings from the IFQ/CDQ Pacific halibut fishery for the waters off Alaska, USA were 7,926 tonnes (17,473,000 pounds), less than 8% under the fishery limit. By IPHC Regulatory Area, the landings were under the fishery limit by 4% for Areas 2C, 2% for Area 3A, 6% for Area 3B, 17% for Area 4A, and 19% for Area 4B (Table 2). The total combined IPHC Regulatory Area 4CDE commercial landings of 745 tonnes (1,642,000 pounds) were 20% under the combined Area 4CDE fishery limit (925 tonnes (2,040,000 pounds)). The North Pacific Fishery Management Council's Catch Sharing Plan allowed IPHC Regulatory Area 4D CDQ to be harvested in IPHC Regulatory Areas 4D or 4E and Area 4C IFQ and CDQ to be fished in Areas 4C or 4D.

Homer received approximately 14% (1,142 tonnes (2,517,000 pounds)) of the directed commercial landings of Alaskan catch making it the port that received the greatest number of pounds in 2019. Kodiak received the second and Seward the third largest landing volume at 12% (927 tonnes, (2,043,000 pounds)) and 11% (895 tonnes (1,974,000 pounds)) of the Alaskan commercial landings, respectively. In Southeast Alaska, the two largest landing volumes were received in Sitka (551 tonnes (1,214,000 pounds)), and Juneau (548 tonnes (1,209,000 pounds)), and their combined landings represented 14% of the commercial Alaskan landings. The Alaskan QS catch that was landed outside of Alaska, USA was 2%.

The Metlakatla Indian Community (within IPHC Regulatory Area 2C) was authorized by the United States government to conduct a commercial Pacific halibut fishery within the Annette Islands Reserve. There were 14 two-day openings between 29 March and 29 September for total landings of 13 tonnes (27,863 pounds) (Table 6).

Table 6. Metlakatla community fishing periods, number of vessels, and preliminary Pacific halibut landings (net weight) in IPHC Regulatory Area 2C, 2019.

Fishing Period Dates	Landings		Number of Vessels
	(Tonnes)	(Pounds)	
29 – 31 March	0.74	1,627	7
12 – 14 April	0.79	1,731	8
26 – 28 April	0.89	1,952	6
10 – 12 May	1.14	2,516	9
24 – 26 May	0.73	1,616	8
07 – 09 June	0.89	1,952	5
21 – 23 June	0.67	1,483	7
05 – 07 July	1.64	3,610	7
19 – 21 July	1.20	2,640	6
02 – 04 August	0.71	1,567	5
16 – 18 August	1.21	2,662	7
30 August – 01 September	0.85	1,865	5
13 – 15 September	0.86	1,863	8
27 – 29 September	0.35	779	3
Total	12.64	27,863	14 Openings

Directed Commercial Discard Mortality

Incidental mortality of Pacific halibut in the directed commercial Pacific halibut fishery is the mortality of all Pacific halibut that do not become part of the landed catch. The three main sources of discard mortality estimate include: 1) fish that are captured and discarded because they are below the legal size limit of 81.3 cm (32 inches), 2) fish that are estimated to die on lost or abandoned fishing gear, and 3) fish that are discarded for regulatory reasons (e.g. the vessels trip limit has been exceeded). The methods that are applied to produce each of these estimates differ due to the amount and quality of information available. Information on lost gear and regulatory discards is collected through logbook interviews and fishing logs received by mail. The ratio of U32 to O32 Pacific halibut (>81.3 cm or 32 inches in length) is determined from the IPHC fisheries-independent setline survey in most areas and by direct observation in the IPHC Regulatory Area 2B fishery. Different mortality rates are applied to each category: released Pacific halibut have a 16% mortality rate and Pacific halibut mortality from lost gear is 100%.

Pacific halibut discard mortality estimates from the directed commercial Pacific halibut fishery are summarized by IPHC Regulatory Area in Table 2.

RECREATIONAL FISHERIES

The 2019 recreational removals of Pacific halibut, including discard mortality, was estimated at 3,147 tonnes (6,938,000 pounds). Recreational fishery limits and landings are detailed by IPHC Regulatory Area in Table 2.

Recreational Landings

Canada – IPHC Regulatory Area 2B (British Columbia)

IPHC Regulatory Area 2B operated under a 115 cm (45.3 inch) maximum size limit and one Pacific halibut had to be less than 83 cm (32.7 inch) when attaining the two fish possession limit with an annual limit of six per licence holder from 1 March to 1 April. 1 April the maximum size limit was increased to 126 cm (49.6 inch) and one fish had to be less than 90 cm (35.4 inch) when attaining the two fish possession limit. The IPHC Regulatory Area 2B fishery remains open.

British Columbia, Canada and Alaska, USA both have programs that allow recreational harvesters to land fish that is leased from directed commercial fishery quota share holders for the current season. In Canada, an estimated 8 tonnes (18,000 pounds) were leased from the commercial quota fishery and landed as recreational harvest.

USA – IPHC Regulatory Area 2A (Washington, Oregon, California)

The 2019 IPHC Regulatory Area 2A recreational allocation was 275 tonnes (605,674 pounds) net weight and based on the Pacific Fishery Management Council's Catch Sharing Plan formula, which divides the overall fishery limit among all sectors. The recreational allocation was further subdivided to seven subareas, after 32 tonnes (70,000 pounds) were allocated to the incidental Pacific halibut catch in the commercial sablefish fishery in Washington. This subdivision resulted in 126 tonnes (277,100 pounds) being allocated to Washington subareas, 131 tonnes (289,575 pounds) to Oregon subareas. In addition, California received an allocation of 18 tonnes (39,000 pounds). The IPHC Regulatory Area 2A recreational harvest totaled 203 tonnes (448,298 pounds), 26% under the recreational allocation (Table 2).

Recreational fishery harvest seasons by subareas varied and were managed inseason with fisheries opening on 1 May.

USA – IPHC Regulatory Areas 2C, 3, and 4 (Alaska)

A reverse slot limit allowing for the retention of Pacific halibut, if ≤ 97 cm (38 inches) or ≥ 203 cm (80 inches) in total length, was continued by the IPHC for the charter fishery in IPHC Regulatory Area 2C. In IPHC Regulatory Area 3A, charter anglers were allowed to retain two fish, but only one could exceed 71 cm (28 inches) in length, a four fish annual limit with a recording requirement, one trip per calendar day per charter permit, with no charter retention of Pacific halibut on Wednesdays throughout the season and 9 July, 16 July, 23 July, 30 July, 6 August and 13 August.

Similar to British Columbia (Canada), Alaska (USA) has programs that allow recreational harvesters to land fish that is leased from commercial fishery quota share holders for the current season. In IPHC Regulatory Areas 2C and 3A, 34 tonnes (75,039 pounds) and 5 tonnes (10,652 pounds), respectively, were leased from the directed commercial quota fisheries in those areas and landed as recreational harvest.

Recreational Discard Mortality

Pacific halibut discarded for any reason suffer some degree of discard mortality, and impacts more of the stock with the increasing use of size restrictions, such as reverse slot limits. Current year estimates from Contracting Parties' agencies of recreational discard mortality have been received from Alaska, Washington, Oregon and California in the USA, and British Columbia, Canada and are provided in Table 2.

SUBSISTENCE FISHERIES

Pacific halibut is taken throughout its range as subsistence harvest by several fisheries. Subsistence fisheries are non-commercial, customary, and traditional use of Pacific halibut for direct personal, family, or community consumption or sharing as food, or customary trade. The primary subsistence fisheries are the treaty Indian Ceremonial and Subsistence fishery in IPHC Regulatory Area 2A off northwest Washington State (USA), the First Nations Food, Social, and Ceremonial (FSC) fishery in British Columbia (Canada), and the subsistence fishery by rural residents and federally-recognized native tribes in Alaska (USA) documented via Subsistence Halibut Registration Certificates (SHARC).

The coastwide subsistence estimate for 2019 is 481 tonnes (1,060,241 pounds) (Table 2).

Estimated subsistence harvests by area

In the commercial Pacific halibut fisheries coastwide, the state and federal regulations require that take-home Pacific halibut caught during commercial fishing be recorded as part of the commercial fishery on the landing records (i.e. State fish tickets or Canadian validation records). This is consistent across areas, including the quota share fisheries in Canada and USA, and as part of fishing period limits and Pacific halibut ratios in the incidental fisheries in IPHC Regulatory Area 2A. Therefore, personal use fish or take-home fish within the commercial fisheries are accounted for as commercial landings and are not included here.

Canada – IPHC Regulatory Area 2B (British Columbia)

The source of Pacific halibut subsistence harvest in British Columbia is the First Nations FSC fishery. The IPHC receives some logbook and landing data for this harvest from the DFO but those data have not been adequate for the IPHC to make an independent estimate of the FSC fishery harvest. DFO estimated the First Nations FSC harvest to be 136 tonnes (300,000 pounds) annually until 2006, and since 2007, the yearly estimate has been provided as 184 tonnes (405,000 pounds).

USA – IPHC Regulatory Area 2A (Washington, Oregon, California)

The Pacific Fishery Management Council's Catch Sharing Plan allocates the Pacific halibut fishery limit to commercial, recreational, and treaty Indian users in IPHC Regulatory Area 2A. The treaty tribal fishery limit is further sub-divided into commercial and ceremonial and subsistence (C&S) fisheries. The 2018 final estimate of C&S was 13 tonnes (28,000 pounds) and this catch estimate became the 2019 C&S allocation. The estimate of the 2019 removals is 15 tonnes (32,200 pounds).

USA – IPHC Regulatory Areas 2C, 3, and 4 (Alaska)

In 2003, the subsistence Pacific halibut fishery off Alaska was formally recognized by the North Pacific Fishery Management Council, and implemented by IPHC and NOAA Fisheries regulations. The fishery allows the customary and traditional use of Pacific halibut by rural residents and members of federally-recognized Alaska, USA native tribes who can retain Pacific halibut for non-commercial use, food, or customary trade. The NOAA Fisheries regulations define legal gear, number of hooks, and daily bag limits, and IPHC regulations set the fishing season. Prior to subsistence fishing, eligible persons registered with NOAA Fisheries Restricted Access Management to obtain a SHARC. The Division of Subsistence at ADF&G was contracted

by NOAA Fisheries to estimate the subsistence harvest in Alaska, USA through a data collection program. Yearly reports are available at http://www.fakr.noaa.gov/ram/subsistence/halibut.htm . Each year, the data collection program included an annual voluntary survey conducted by mail or phone, with some onsite visits. The 2012 estimate has been carried forward for the 2013 estimate and the 2014 estimate has been used for 2014 through 2015; a 2016 estimate was used for 2016 through 2017 and a new 2018 estimate is used for 2018 through 2019. The 2014 estimates are about 10% higher than in 2012, and are noticeably higher in IPHC Regulatory Area 4E. To collect the 2014 harvest estimates, the ADF&G staff conducted face to face interviews in two of the major subsistence harvesting communities within IPHC Regulatory Area 4E rather than relying on mailed returns. Face to face interviews likely resulted in more realistic harvest estimates than the mail survey alone, so it is likely that the IPHC Regulatory Area 4E harvest estimates between 2009 through 2013 were low.

In addition to the SHARC harvest, IPHC regulations allow Pacific halibut less than 81.3 cm or 32 inches in fork length (also called U32) to be retained in the IPHC Regulatory Area 4D and 4E commercial Pacific halibut CDQ fishery, under an exemption requested by the North Pacific Fishery Management Council, as long as the fish are not sold or bartered. The exemption originally applied only to CDQ fisheries in IPHC Regulatory Area 4E in 1998 but was expanded in 2002 to also include IPHC Regulatory Area 4D. The CDQ organizations are required to report to the IPHC the amounts retained during their commercial fishing operations. This harvest is not included in the SHARC program estimate and is reported separately.

Reports for 2019 were received from three organizations: Bristol Bay Economic Development Corporation (BBEDC), Coastal Villages Regional Fund (CVRF), and Norton Sound Economic Development Corporation (NSEDC). The reports are summarized below, and the reported amounts of retained U32 Pacific halibut totaled 3 tonnes (7,252 pounds). Generally, annual changes are a reflection of the amount of effort by the local small boat fleets and the availability of fish in their nearshore fisheries.

CDQ - Bristol Bay Economic Development Corporation (BBEDC)

BBEDC requires their fishers to record the lengths of retained U32 Pacific halibut in a separate log, which are tabulated by BBEDC at the conclusion of the season. The lengths were converted to weights using the IPHC length/weight relationship and summed to estimate the total retained U32 weight. Pacific halibut were landed by BBEDC vessels equally at Togiak and Dillingham, with a small amount landed in Naknek and a minor amount landed in Egegik. BBEDC reported 25 harvesters landed 317 U32 Pacific halibut (1.5 tonnes; 3,349 pounds).

CDQ - Coastal Villages Regional Fund (CVRF)

CVRF reported that no Pacific halibut were landed by their fishers or received by their facilities.

CDQ - Norton Sound Economic Development Corporation (NSEDC)

NSEDC required their fishers to offload the U32 Pacific halibut for weighing. Ice was removed but the fish were not washed nor the heads removed. The U32 Pacific halibut were then returned to the harvester. NSEDC reported 390 U32 Pacific halibut weighing 1.8 tonnes (3,903 pounds) were caught in the local CDQ fishery and landed at the Nome plant.

NON-DIRECTED COMMERCIAL DISCARD MORTALITY

Estimates of Pacific halibut discard mortality in non-directed fisheries in 2019 have been projected to total 2,985 tonnes (6,581,000 pounds) net weight (Table 2).

Estimating Non-Directed Commercial Discard Mortality

Non-directed commercial discard mortality of Pacific halibut is estimated because not all fisheries have 100% monitoring and not all Pacific halibut that are discarded are assumed to die. Contracting Party agencies estimate the amount of non-directed commercial discard that will not survive, called non-directed commercial discard mortality.

The IPHC relies upon information supplied by observer programs run by Contracting Party agencies for non-directed commercial discard mortality estimates in most fisheries. Non-IPHC research survey information is used to generate estimates of non-directed commercial discard mortality in the few cases where fishery observations are unavailable. Trawl fisheries off Canada British Columbia are comprehensively monitored and non-directed commercial discard mortality information is provided to IPHC by DFO. NOAA Fisheries operates observer programs off the USA West Coast and Alaska, which monitor the major groundfish fisheries. Data collected by those programs are used to estimate non-directed commercial discard mortality.

Non-directed Commercial Discard Mortality by Area

Canada – IPHC Regulatory Area 2B (British Columbia)

For 2019, non-directed commercial discard mortality in the bottom trawl fishery in Canada (British Columbia) was projected to be 108 tonnes (239,000 pounds) (Table 2). The reported non-directed commercial discard mortality data were complete through October. Projections for the full calendar year 2019 were made by extrapolating to the full 12 months.

USA – IPHC Regulatory Area 2A (Washington, Oregon, California)

Groundfish fisheries off Washington, Oregon, and California are managed by NOAA Fisheries, following advice and recommendations developed by the Pacific Fishery Management Council. The current estimate of non-directed commercial discard mortality in IPHC Regulatory Area 2A is 57 tonnes (126,000 pounds) (Table 2).

USA – IPHC Regulatory Areas 2C, 3, and 4 (Alaska)

Groundfish fisheries in Alaska are managed by NOAA Fisheries, following advice and recommendations developed by the North Pacific Fishery Management Council. Non-directed commercial discard mortality projected estimates for Alaskan areas were provided by NOAA Fisheries (Table 2).

USA – IPHC Regulatory Area 2C (Southeast Alaska)

For the federal waters of IPHC Regulatory Area 2C, only non-directed commercial discard mortality by hook-and-line vessels fishing in the outside waters were reported by NOAA Fisheries. These vessels are primarily targeting Pacific cod and rockfish (*Sebastes* spp.) in open access fisheries, and sablefish in the IFQ fishery.

Fisheries occurring within state waters and resulting in Pacific halibut non-directed commercial discard mortality include pot fisheries for red and golden king crab, and tanner crab. Information is provided periodically by ADF&G, and the estimate was again rolled forward.

In aggregate, these fisheries are projected to result in 42 tonnes (92,000 pounds) of non-directed commercial discard mortality in 2019.

USA – IPHC Regulatory Area 3 (Eastern, Central and Western Gulf of Alaska)

IPHC Regulatory Area 3 is comprised of Areas 3A and 3B. IPHC tracks non-directed commercial discard mortality for each IPHC Regulatory Area due to assessment and stock management needs, while groundfish fisheries operate throughout both areas. Trawl fisheries are responsible for the majority of the non-directed commercial discard mortality in these IPHC Regulatory Areas, with hook-and-line fisheries a distant second for a projected total of 964 tonnes (2,126,000 pounds). State-managed crab and scallop fisheries are also known to take Pacific halibut as non-directed commercial discard mortality, but at low levels.

IPHC Regulatory Area 3 remains the area where non-directed commercial discard mortality mortality is estimated most poorly. Observer coverage for most fisheries is relatively low. Tendering, loopholes in trip cancelling, and safety considerations likely result in observed trips not being representative of all trips (observed and unobserved) in many regards (e.g. duration, species composition, etc.. This, plus low coverage, lead to increased uncertainty in these non-directed commercial discard mortality estimates and to potential for bias.

USA – IPHC Regulatory Area 4 (Bering Sea and Aleutian Islands)

Non-directed commercial discard mortality for all IPHC Regulatory Areas within Area 4 was projected at 1,813 tonnes (3,998,000 pounds).

Pacific cod is the major fishery in this IPHC Regulatory Area with Pacific halibut non-directed commercial discard mortality, which is conducted in the late winter/early spring and late summer. Almost all of the vessels are required to have 100% observer coverage because of the vessel's size and requirements of their fishery cooperative; very few small vessels fish Pacific cod in this IPHC Regulatory Area. Because of this high level of observer coverage, non-directed commercial discard mortality estimates for this and other IPHC Regulatory Area 4 fisheries are considered reliable.

Pots are used to fish for Pacific cod and sablefish and fish very selectively. Non-directed commercial discard mortality rates are quite low and survival is relatively high. Annual non-directed commercial discard mortality estimates are typically low, usually less than 7 tonnes.

IPHC FISHERY-INDEPENDENT SETLINE SURVEY AND OTHER RESEARCH

The IPHC's FISS provides catch information and biological data on Pacific halibut (*Hippoglossus stenolepis)* that are independently collected from the commercial fishery. Approximately 388 tonnes (855,000 pounds) of Pacific halibut were landed from the FISS in 2019 with the amount landed from each IPHC Regulatory Area documented in Table 2. For additional information on the FISS see IPHC-2020-AM096-06.

RECOMMENDATION/S

That the Commission:

1) **NOTE** paper IPHC-2020-AM096-05 Rev_2 which provides fishery statistics from fisheries catching Pacific halibut during 2019, including the status of removals compared to fishery limits implemented by the Contracting Parties of the Commission.

REFERENCES

Nil

APPENDICES

Nil

Fishery-independent setline survey (FISS) design and implementation in 2019

PREPARED BY: IPHC SECRETARIAT (L.ERIKSON; 24 DECEMBER 2019)

PURPOSE

To provide an overview of the International Pacific Halibut Commission's (IPHC) fishery-independent setline survey (FISS) design and implementation in 2019, including results of the expansions in IPHC Regulatory Areas 3A and 3B in 2019, and a discussion of the Pacific halibut weight sampling undertaken on the FISS in 2019.

BACKGROUND

The annual IPHC Fishery-Independent Setline Survey (FISS) of the Pacific halibut stock has been augmented each year since 2014 with expansion stations that fill in gaps in coverage in the annual FISS. Typically, expansions have taken place in one or two IPHC Regulatory Areas each year, with IPHC Regulatory Areas 2A and 4A undertaken in 2014, the eastern Bering Sea flats in 2015, the IPHC Regulatory Area 4CDE shelf edge in 2016, IPHC Regulatory Areas 2A and 4B in 2017, IPHC Regulatory Areas in 2B and 2C in 2018 and IPHC Regulatory Areas 3A and 3B in 2019.

Prior to 2019, only fixed gear was used to fish FISS sets. With increasing use of snap gear in the commercial fishery, this restriction has limited the number of vessels available for the FISS. Further, any differences between snap and fixed gears (including catch rate differences and differences in fishing locations) may affect our understanding of trends in commercial fishery indices. This has motivated the need for a study comparing the two gear types.

Data from IPHC collections from commercial landings and other sources have provided evidence that the current standard length-net weight curve used for estimating Pacific halibut weights on the FISS may be over-estimating weights on average in most IPHC Regulatory Areas, and that the relationship between weight and length may vary spatially. Prior to 2019, the FISS depended on the standard curve for estimation of all Pacific halibut weights, and therefore questions have arisen regarding the accuracy of estimates that depend on these weights, including weight per unit effort (WPUE) indices of density.

Interactive views of some of the FISS results were provided via the IPHC website and can be found here:

https://www.iphc.int/data/setline-survey-catch-per-unit-effort

INTRODUCTION

In most IPHC Regulatory Areas, the standard, annual FISS grid is fished in waters within the 37-503 m (20-275 fm) depth range. Information from commercial fishery data and other fishery-independent sources showed the presence of Pacific halibut down to depths of 732 m (400 fm) and in waters shallower than 37 m. Further, most IPHC Regulatory Areas had significant gaps in coverage within the standard 37-503 m depth range. The incomplete coverage of Pacific halibut habitat by the FISS had the potential to create bias in estimates of the weight per unit effort and numbers per unit effort (NPUE) density indices used in the stock assessment modelling and for stock distribution estimation. For this reason, the IPHC has

been undertaking a sequence of FISS expansions since 2014 (following a 2011 pilot), with stations added to the standard grid to cover habitat not previously sampled on the FISS. The expansions involve adding stations to one or two IPHC Regulatory Areas each year, and reverting to the standard annual grid for those areas in subsequent years. In 2019, FISS expansions took place in IPHC Regulatory Areas 3A and 3B.

In addition, a comparison of the use of snap gear to the use of fixed gear on the FISS was conducted in IPHC Regulatory Area 2C. The design featured each station being fished twice, once with fixed gear and once with snap gear, with randomisation of the order of the two gear types for each station. The comparison will provide data on any differences between catch (e.g. Pacific halibut catch rates, age and size distribution, bycatch species) on the two gears.

In 2019, weighing of Pacific halibut at sea throughout the FISS was introduced in order to improve the quality of estimates based on Pacific halibut weight. The use of direct weight measurements will lead to more accurate estimates of WPUE and other quantities based on weights, allow estimation of length-weight curves based on all sizes available to longline gear (whereas collections from commercial landings only measure fish greater than or equal to 81.3 cm in length) and provide additional information on biases in the standard curve and spatial differences in the length-weight relationship.

MATERIALS AND METHODS

The IPHC's FISS design encompasses nearshore and offshore waters of the IPHC Convention Area (Figure 1). The current FISS station layout has been in place since 1998 (with some additions in 2006 (Bering Sea), and in 2011 (IPHC Regulatory Area 2A).

The IPHC Regulatory Areas are divided into 31 regions, each requiring between 10 and 46 charter days to survey. FISS stations were located at the intersections of a 10 nmi by 10 nmi square grid within the depth range occupied by Pacific halibut during summer months (20-275 fm [37-503 m] in most areas). Figure 2 depicts the 2019 FISS station positions (including expansion stations), charter region divisions, and IPHC Regulatory Areas surveyed.

Thirteen extra stations in southeast Alaska and eight rockfish (*Sebastes spp*.) index stations in the Washington charter region are fished on a different layout than the FISS and are included in the IPHC stock assessment dataset.

Fishing vessels are chosen through a competitive bid process each year where up to 3 regions per vessel are awarded and typically 10-15 vessels are chosen.

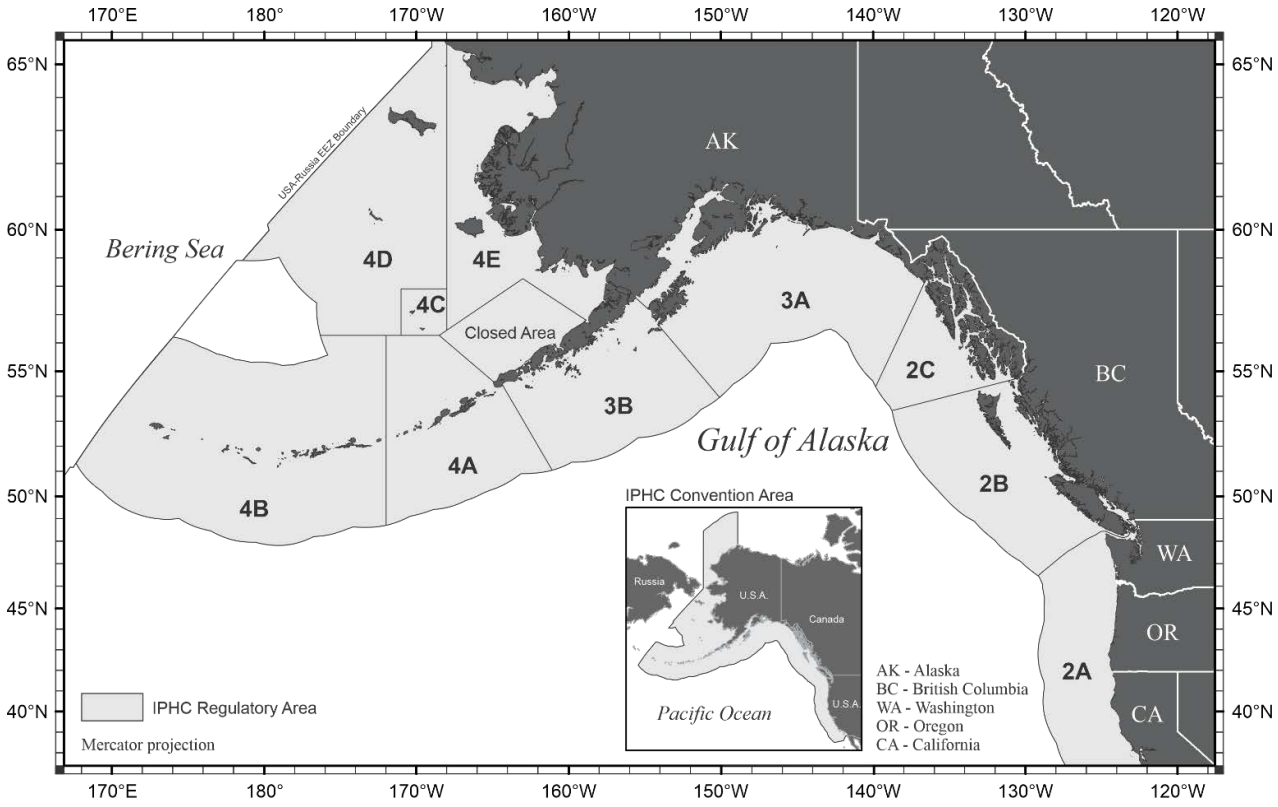

Figure 1. Map of the IPHC Convention Area (insert) and IPHC Regulatory Areas.

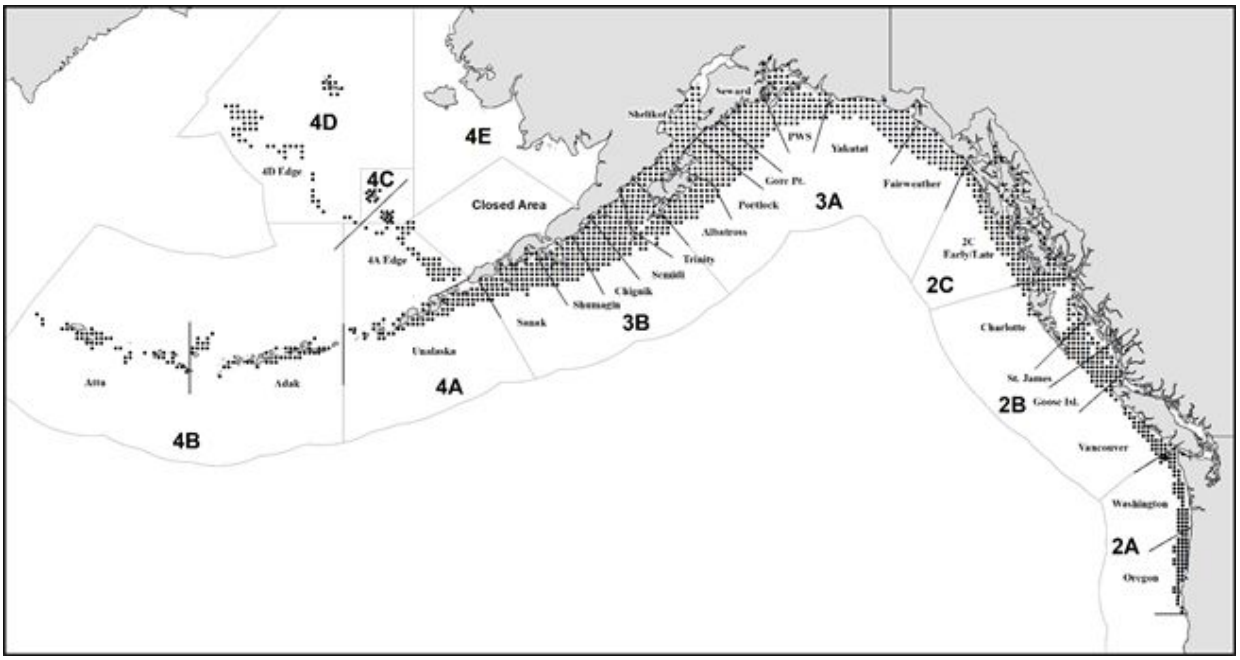

Figure 2. 2019 FISS station positions, charter region divisions, and IPHC Regulatory Areas.

Expansion stations

Since 2014, the IPHC has been sampling expansion FISS stations in one or two IPHC Regulatory Areas each year (Figure 3). Commercial fishery data and other sources have shown the presence of Pacific halibut down to depths of 732 m (400 fm) and in waters shallower than 37 m (20 fm). The IPHC has been undertaking a sequence of expansions since 2014 (following a 2011 pilot), with FISS stations added to the standard grid to cover habitat not previously sampled.

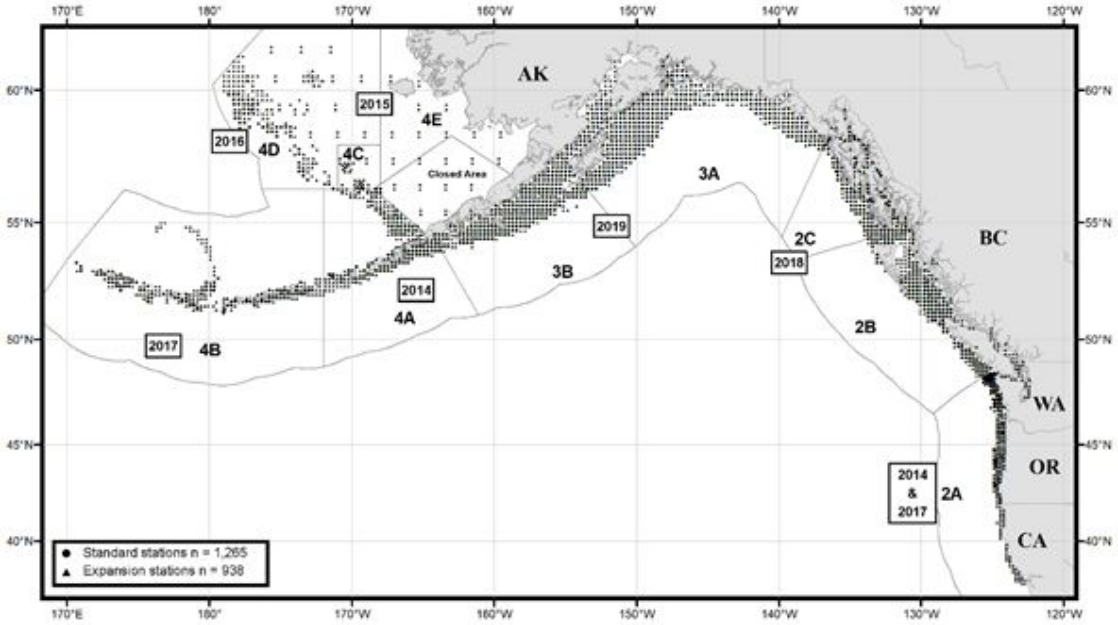

Figure 3. FISS expansion stations planned for 2014-19.

2019 Expansion in IPHC Regulatory Area 3A

The FISS expansion in IPHC Regulatory Area 3A included an additional 89 stations that were added to the existing 374 FISS stations (standard) in IPHC Regulatory Area 3A. These included stations as shallow as 9 fathoms (17 m) and as deep as 399 fathoms (732 m) (Figure 4).

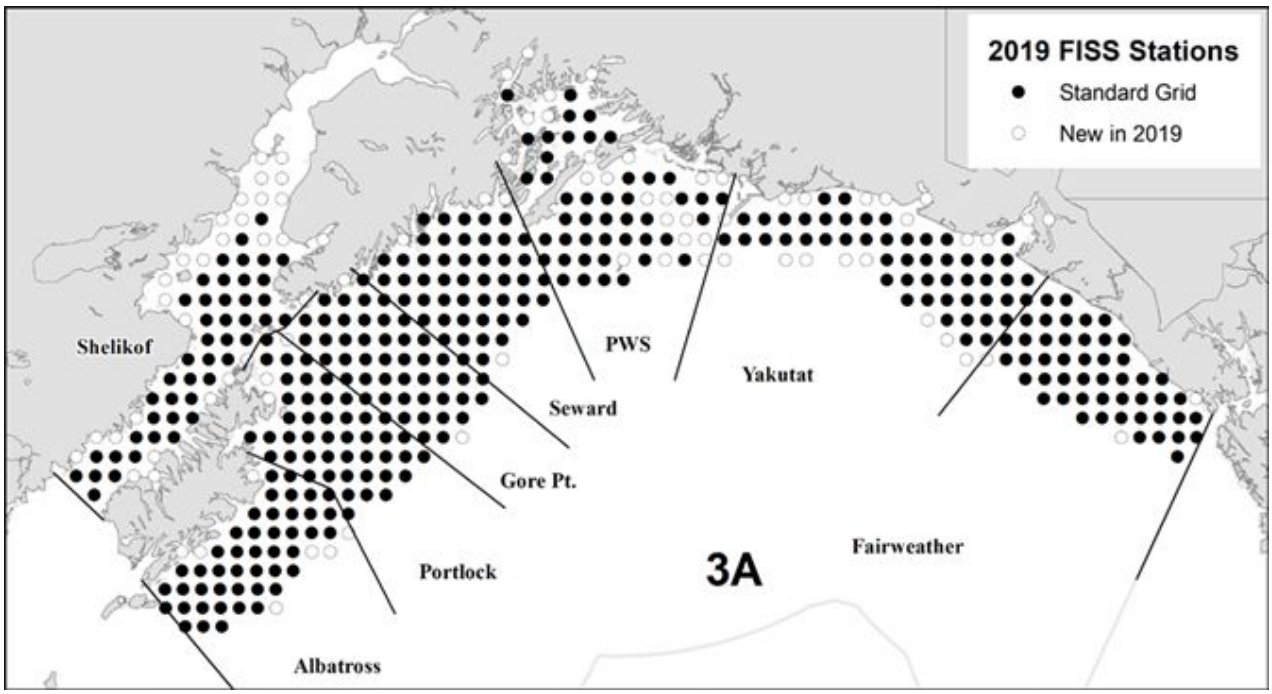

Figure 4. 2019 IPHC FISS stations in IPHC Regulatory Area 3A by charter region.

2019 Expansion in IPHC Regulatory Area 3B (USA)

The FISS expansion in IPHC Regulatory Area 3B included 231 of the existing FISS stations (standard) with an additional 66 stations, including stations as shallow as 9 fathoms (17 m) and as deep as 399 fathoms (732 m) (Figure 5).

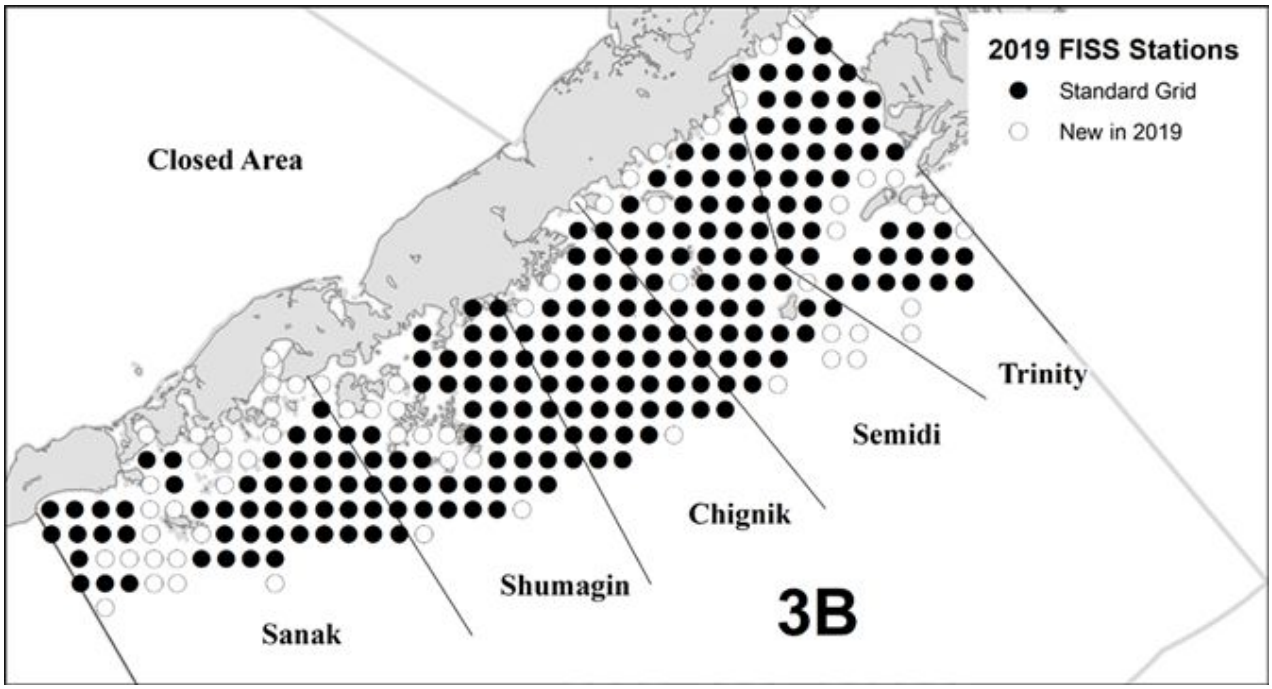

Figure 5. 2019 FISS stations in IPHC Regulatory Area 3B by charter region.

Gear comparison

All stations in IPHC Regulatory Area 2C were fished twice, once by the FISS standard of fixed-hook gear and once by snap gear. To accomplish this work, IPHC Regulatory Area 2C was divided into early and late charter regions instead of by the traditional three charter regions of Ketchikan, Sitka and Ommaney. The stations for each charter region for both gear types are shown in Figure 6 with the fixed-gear timing.

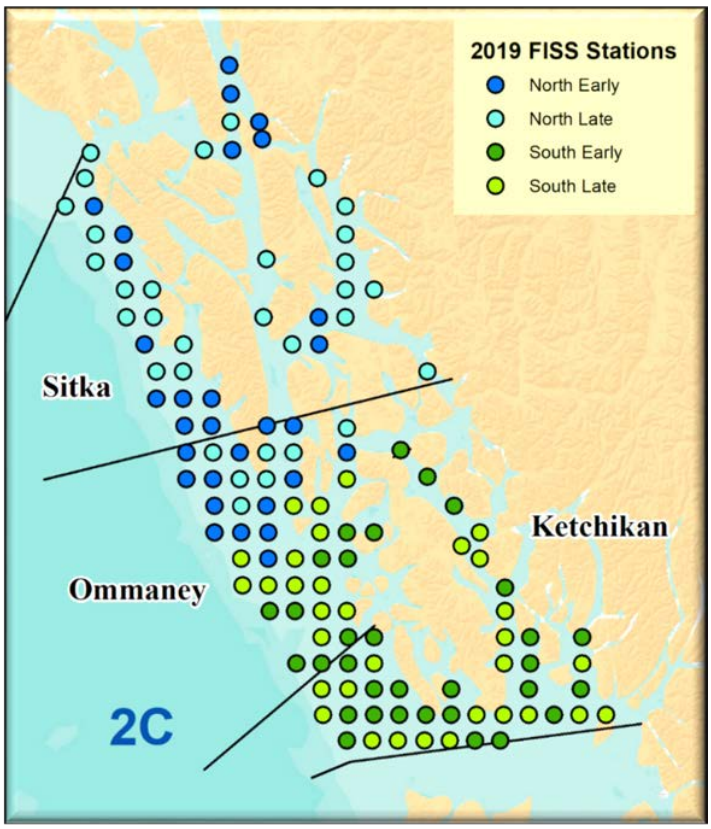

Figure 6. IPHC Regulatory Area 2C fixed-hook gear timing (early was 26 May to 15 July and late was 16 July to 31 August).

Sampling protocols

Setline Survey Specialists collected data according to protocols established in the 2019 FISS Manual.

Bait purchase

The minimum quality requirement for FISS bait is No. 2 semi-bright (Alaska Seafood Marketing Institute grades A through E), headed and gutted, and individually quick-frozen chum salmon. The IPHC secures most of the bait needed to supply FISS operations at the end of the previous salmon season. In August 2018, staff began arranging bait purchases for the 2019 FISS. Approximately 185 tonnes of chum salmon were utilized from three suppliers in the United States of America. Bait usage is based on 0.17 kilograms per hook resulting in approximately 117 kilograms per 7 skate station. Bait quality was monitored and documented throughout the season and found to meet the standard as described above.

RESULTS AND REVENUE

Beginning in 2017, interactive views of some of the FISS results were provided via the IPHC website and can be found here: https://www.iphc.int/data/setline-survey-catch-per-unit-effort.

As in previous years, legal-sized Pacific halibut that were caught on FISS stations and sacrificed in order to obtain biological data were retained and sold. This helps to offset costs of the FISS program. FISS vessels also retained for sale incidentally captured rockfish (*Sebastes spp*.) and Pacific cod (*Gadus macrocephalus*). These species were retained because they rarely survive the barotrauma resulting from capture. Most vessel contracts provided the vessel a lump sum payment, along with a 10% share of the Pacific halibut proceeds and a 50% share of the incidental catch proceeds. The *R/V Pacific Surveyor* received no share of Pacific halibut or bycatch proceeds. The IPHC does not retain proceeds from the sale of incidentally captured rockfish and Pacific cod. Instead, for retained bycatch captured in USA waters, proceeds are divided equally between the vessel (for handling expenses) and the state management agency. In Canada, Fisheries and Oceans Canada (DFO) receives all proceeds from sales of retained bycatch captured in Canadian waters, subsequent to abovementioned deduction of the predetermined vessel bycatch processing fees.

Vessel Operations

The 2019 FISS chartered eighteen (18) commercial longline vessels (eight Canadian and ten USA) during a combined 97 trips and 939 charter days (Table 1). Of the 1,439 FISS stations planned for the 2019 FISS season, 1,369 (95%) were effectively completed. Twenty-three expansion stations were not fished because they were either too deep or too shallow once prospected. The remaining 54 stations were rated ineffective because of whale depredation (n=41), sand flea damage (n=7), gear soak time exceeded 24 hours (n=2), shark depredation (n=1), and setting and gear issues (n=4). Otoliths were removed from 18,210 fish coastwide. Approximately 390 tonnes (860,000 pounds) of Pacific halibut, 70 tonnes (130,000 pounds) of Pacific cod, and 34 tonnes (75,000 pounds) of rockfish were landed from the FISS stations.

Table 1. Effort and catch summary by FISS charter region and vessel for all 2019 stations[7].

IPHC Regulatory Area	Charter Region	Vessel	Vessel Number[1]	Charter Days[2]	Planned Stations[3]	Effective Stations[4]	Pacific halibut Sold (t) [5]	Pacific halibut Sold (lb) [5]	Average Price USD/kg [6]	Average Price USD/lb [6]
2A	Oregon	*Pacific Surveyor*	-	24	47	47	4	7,920	$17.09	$7.75
2A	Washington	*Pacific Surveyor*	-	23	57	57	4	9,265	$12.66	$5.74
2B	Charlotte	*Pender Isle*	27282	24	43	42	10	21,996	$14.87	$6.75
2B	Goose Is.	*Pender Isle*	27282	17	43	42	9	18,904	$14.64	$6.64
2B	St. James	*Pender Isle*	27282	1	2	2	1	1,814	$14.96	$6.78
2B	St. James	*Vanisle*	21912	21	39	38	14	30,096	$12.24	$5.55
2B	Vancouver	*Pender Isle*	27282	22	41	41	5	11,133	$15.42	$6.99
2C	Ketchikan	*Borealis I (Snap)*	311359	11	20	20	9	19,554	$14.30	$6.49
2C	Ketchikan	*Free To Wander (Snap)*	29155	16	22	22	13	29,050	$15.35	$6.96
2C	Ketchikan	*Predator*	33133	12	22	22	7	15,338	$12.40	$5.62
2C	Ketchikan	*Vanisle*	21912	4	20	20	7	16,434	$13.20	$5.99
2C	Ommaney	*Borealis I (Snap)*	311359	7	13	13	7	15,588	$12.18	$5.52
2C	Ommaney	*Free To Wander (Snap)*	29155	7	10	10	0	0	-	-
2C	Ommaney	*Hanna Lio (Snap)*	23162	12	13	12	7	15,064	$12.05	$5.47
2C	Ommaney	*Heather Rae (Snap)*	23322	5	7	7	3	6,060	$13.53	$6.14
2C	Ommaney	*Pender Isle*	27282	*10*	*14*	13	*8*	18,029	$12.41	*$5.63*
2C	Ommaney	*Predator*	33133	7	10	10	5	10,896	$12.49	$5.67
2C	Ommaney	*VanIsle*	21912	9	20	20	14	30,501	$12.80	$5.81
2C	Sitka	*Hanna Lio (Snap)*	23162	11	16	16	13	28,530	$10.86	$4.93
2C	Sitka	*Heather Rae (Snap)*	23322	19	25	25	9	19,079	$13.29	$6.03
2C	Sitka	*Pender Isle*	27282	9	16	15	7	15,360	$12.40	$5.63
2C	Sitka	*VanIsle*	21912	14	25	24	10	22,917	$12.44	$5.64
3A	Albatross	*Saint Nicholas*	45399	38	49	49	15	34,139	$12.08	$5.48
3A	Fairweather	*Bold Pursuit*	20875	24	50	40	13	28,901	$13.16	$5.97
3A	Gore Pt.	*Bold Pursuit*	20875	21	48	40	16	35,318	$13.58	$6.16
3A	Portlock	*Kema Sue*	41033	24	50	49	14	30,918	$13.45	$6.10
3A	PWS	*Free To Wander*	29155	39	68	66	19	42,092	$12.29	$5.57
3A	Seward	*Bold Pursuit*	20875	25	52	48	17	36,599	$13.32	$6.04
3A	Shelikof	*Southern Seas*	61864	36	71	68	16	35,258	$13.04	$5.92
3A	Yakutat	*Cindria Gene*	58183	17	34	34	8	16,820	$12.35	$5.60
3A	Yakutat	*Star Wars II*	20492	29	34	32	10	22,484	$11.86	$5.38
3B	Chignik	*Polaris*	19266	27	48	43	11	25,335	$10.45	$4.74
3B	Sanak	*All Star*	55922	44	71	70	11	25,055	$9.57	$4.34
3B	Semidi	*Polaris*	19266	31	56	55	14	30,036	$11.60	$5.26
3B	Shumagin	*VanIsle*	21912	26	53	53	7	15,312	$9.87	$4.48
3B	Trinity	*Cindria Gene*	58183	9	20	20	3	6,389	$11.37	$5.16
3B	Trinity	*Saint Nicholas*	45399	21	37	37	10	21,608	$11.03	$5.01
4A, 4C, Closed	4A Edge	*Kema Sue*	41033	23	57	56	3	7,281	$9.40	$4.26
4A	Unalaska	*Kema Sue*	41033	32	66	61	14	30,769	$9.52	$4.32
4D, 4C	4D Edge	*Sunward*	14305	57	68	66	9	18,756	$8.92	$4.05
4B	Adak	*Norcoaster*	38173	33	45	45	8	17,718	$9.81	$4.45
4B	Attu	*Norcoaster*	38173	29	44	44	5	10,633	$9.30	$4.22
Total		**18 Vessels**		**870**	**1546**	**1494**	**388**	**854,948**	**$12.33**	**$5.59**

[1] Canada: Vessel Registration Number and USA: ADF&G vessel number.
[2] Days are estimated - some vessels fished two charter regions in one day.
[3] Does not include 23 stations which were not attempted, all were expansions or optional stations.
[4] Stations that did not meet setting parameters or deemed ineffective are excluded.
[5] Net weight (head-off, dressed, washed). May not sum to correct total because of rounding errors.
[6] Based on Gross Price.
[7] Includes eight Rockfish Index stations.

Vessels chartered by the IPHC delivered fish to 23 different ports (Table 2). Fish sales were awarded based on the objectives of obtaining a fair market price and distributing sales among buyers and ports. When awarding sales, the Commission considered the price offered, the number of years that a buyer had been buying and marketing Pacific halibut, how fish were graded at the dock (including the determination of No. 2 and chalky Pacific halibut), and the promptness of settlements following deliveries. Obtaining fair market value was the main consideration in awarding fish sales. However, sales were sometimes awarded to buyers not offering the highest prices, thereby meeting the goal of distributing sales among qualified buyers. Individual sales were evaluated after each event to ensure that the buyer was meeting IPHC standards. Average prices decreased from $12.65/kg in 2018 to $12.31/kg in 2019 (Table 3).

Table 2. Effort and catch summary by FISS charter region and vessel for all 2019 stations[7].

Offload Port	Trips	Tonnes	Pounds	Total USD	Average Price (USD/kg)	Average Price (USD/lb)
Adak	5	13	28,351	$ 123,673	$9.62	$4.36
Astoria	1	1	1,801	$ 13,984	$17.12	$7.77
Charleston	1	1	2,362	$ 18,318	$17.10	$7.76
Cordova	1	6	12,170	$ 73,618	$13.34	$6.05
Dutch / Unalaska	7	17	38,235	$ 164,652	$9.49	$4.31
Homer	5	22	48,004	$ 299,517	$13.76	$6.24
Juneau/Auke Bay	2	9	19,092	$ 115,496	$13.34	$6.05
Ketchikan	3	15	33,466	$ 185,351	$12.21	$5.54
Kodiak	13	51	113,271	$ 605,029	$11.78	$5.34
Neah Bay	1	2	4,619	$ 23,976	$11.44	$5.19
Newport	3	3	5,639	$ 43,701	$17.08	$7.75
Petersburg	1	8	18,468	$ 104,657	$12.49	$5.67
PHardy/Beaver C/Coal	3	13	29,390	$ 183,319	$13.75	$6.24
Prince Rupert	12	65	143,747	$ 912,535	$14.00	$6.35
Sand Point	8	26	56,386	$ 243,258	$9.51	$4.31
Seward	8	44	97,646	$ 587,082	$13.25	$6.01
Sitka	8	47	103,498	$ 557,735	$11.88	$5.39
St Paul	4	8	18,571	$ 75,105	$8.92	$4.04
Steveston	1	3	5,584	$ 40,000	$15.79	$7.16
Ucluelet/Barkley Sd	1	4	9,011	$ 61,606	$15.07	$6.84
Valdez	1	8	17,201	$ 84,191	$10.79	$4.89
Westport/Grayland	1	1	2,764	$ 14,607	$11.65	$5.28
Yakutat	7	21	45,673	$ 250,504	$12.09	$5.48
Grand Total	**97**	**388**	**854,949**	**$ 4,781,917**	**$12.33**	**$5.59**

[1] Net weight (head-off, dressed, washed).
[2] Prices based on net weight.

Table 3. FISS landings (total pounds and price) of Pacific halibut by IPHC Regulatory Area in 2019[1].

IPHC Regulatory Area	2A	2B	2C	3A	3B	4A	4B	4CDE	Combined
Tonnes	8	38	119	128	56	17	13	9	388
Pounds	17,185	83,943	262,400	282,529	123,734	38,050	28,351	18,756	854,948
Price USD/kg	$14.70	$13.95	$12.86	$12.84	$10.63	$9.49	$9.62	$8.92	$12.33
Price USD/lb	$6.67	$6.33	$5.83	$5.82	$4.82	$4.31	$4.36	$4.05	$5.59

[1] Net weight (head-off, dressed, washed

FISS timing

Each year, the months of June, July, and August are targeted for FISS fishing. On a coastwide basis, FISS vessel activity was highest in intensity at the beginning of the FISS season and declined early in August as boats finished their charter regions (Figure 7). All FISS activity was completed by late-September.

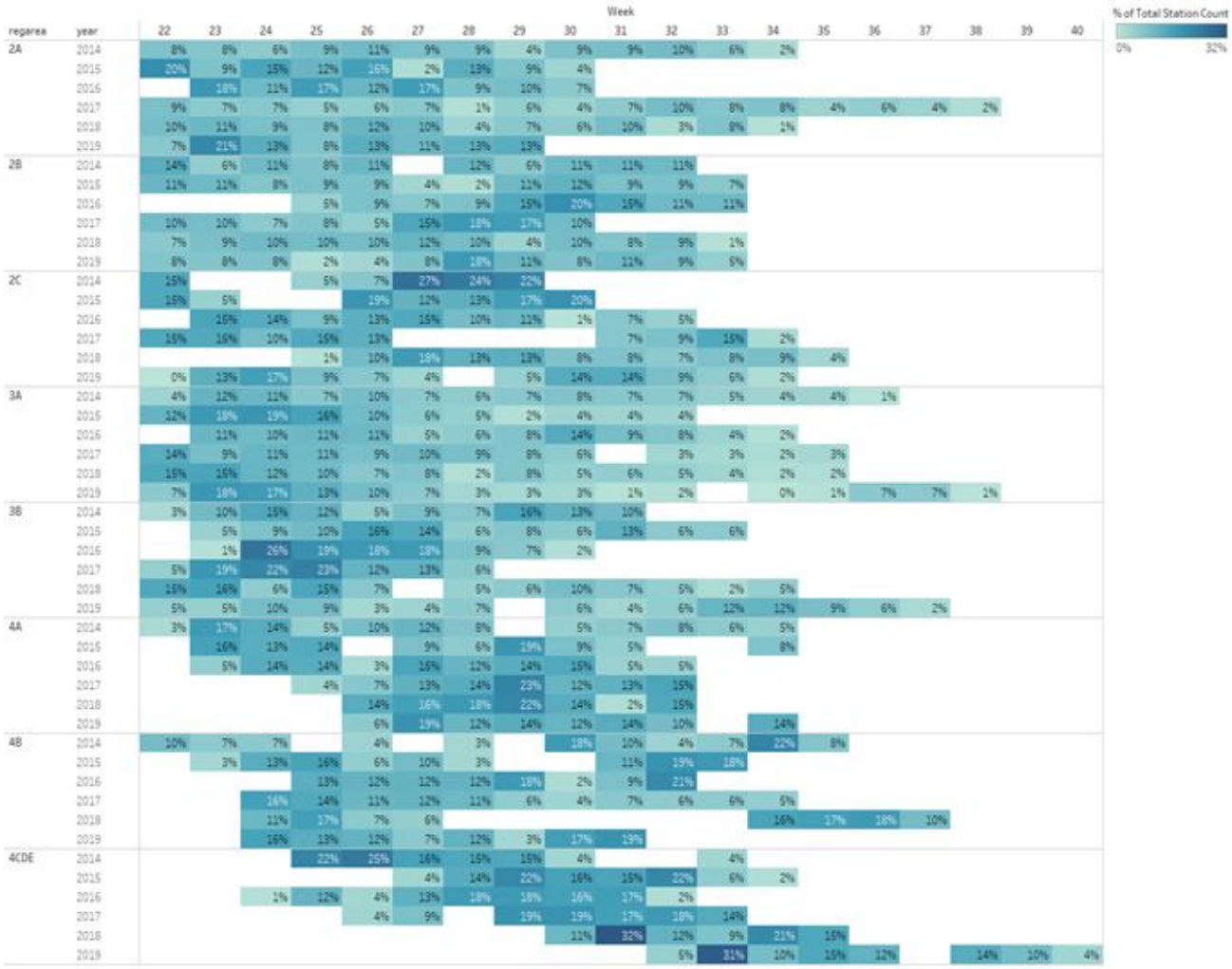

Figure 7. Percent of the total FISS stations completed by IPHC Regulatory Area during each week of the year. Week 22 begins in late May or early June depending on the year.

RECOMMENDATION/S

That the Commission **NOTE** paper IPHC-2020-AM096-06 which provided an overview of the International Pacific Halibut Commission's (IPHC) fishery-independent setline survey (FISS) design and implementation in 2019.

REFERENCES

Nil

APPENDICES

Nil

Space-time modelling of IPHC Fishery-Independent Setline Survey (FISS) data

PREPARED BY: IPHC SECRETARIAT (R. WEBSTER; 20 DECEMBER 2019)

PURPOSE

To provide the Commission with a summary of the results of the 2019 space-time modelling of Pacific halibut survey data (which includes data from other fishery-independent surveys), as well as results of the IPHC fishery-independent setline survey (FISS) expansions in IPHC Regulatory Areas 3A and 3B, and modelling results from fixed and snap gear comparison in Regulatory 2C. Also presented are methods for rationalising the FISS following completion of the final set of expansions in 2019.

BACKGROUND/INTRODUCTION

The IPHC has completed a series of FISS expansions, beginning with a 2011 pilot in IPHC Regulatory Area 2A, and continuing from 2014-19 as follows:

- 2014: IPHC Regulatory Areas 2A and 4A
- 2015: IPHC Regulatory Area 4CDE eastern Bering Sea flats
- 2016: IPHC Regulatory Area 4CDE shelf edge
- 2017: IPHC Regulatory Areas 2A and 4B
- 2018: IPHC Regulatory Areas 2B and 2C
- 2019: IPHC Regulatory Areas 3A and 3B

The purpose of the expansion program has been to fill in the often large gaps in the annually-fished FISS to build a complete picture of Pacific halibut density throughout its range, and thereby reduce bias and improve precision in density indices and other quantities computed from the FISS data.

With the expansions completed in 2019, the intention is to use our improved understanding of the Pacific halibut distribution to re-design the annual FISS. As a result, it is likely that stations that were previously fished annually may require less frequent fishing, and it may be efficient to annually fish some expansion stations that have been surveyed just once to date. This report proposes criteria and methods for evaluating such a FISS rationalisation, and uses Regulatory Area 4B as an example to demonstrate the application of our proposed approach. We envision the rationalisation as an ongoing process: as new data become available each year and relative costs change with time, future designs choices will be re-evaluated and modified to adapt to changing data needs.

Snap gear is increasingly used in the commercial fishery, and allowing vessels using snap gear to participate in the FISS (previously fixed-gear only) increases the number of available vessels. Using a study design that fished each FISS station in Regulatory 2C twice, once with each gear type, provided data for comparing snap and fixed gears, including examining the effect of gear type on weight and numbers per unit effort indices through space-time modelling.

Space-time modelling results for 2019

Revisions to the data inputs for space-time modelling of survey data include: the addition of expansion stations in Regulatory Areas 3A and 3B; the use of direct individual weight measurements of FISS Pacific halibut in computing 2019 station-level WPUE; the application of revised effectiveness criteria for whale depredation for FISS sets; the inclusion of snap-gear data in Regulatory Area 2C modelling; and the inclusion of FISS stations within the area of overlap of US and Canadian maritime claims in Dixon entrance in the estimation of WPUE and NPUE indices in both Regulatory Areas.

Figures 1-2 show time series estimates of O32 WPUE (most comparable to fishery catch-rates) and all sizes NPUE over the 1993-2019 period included in the 2019 space-time modelling. Declines of 4-5% were estimated in all three indices from 2018-19, largely driven by 8-10% declines in Biological Region 3. Equivalent figures for Regulatory Areas are in Appendix A.

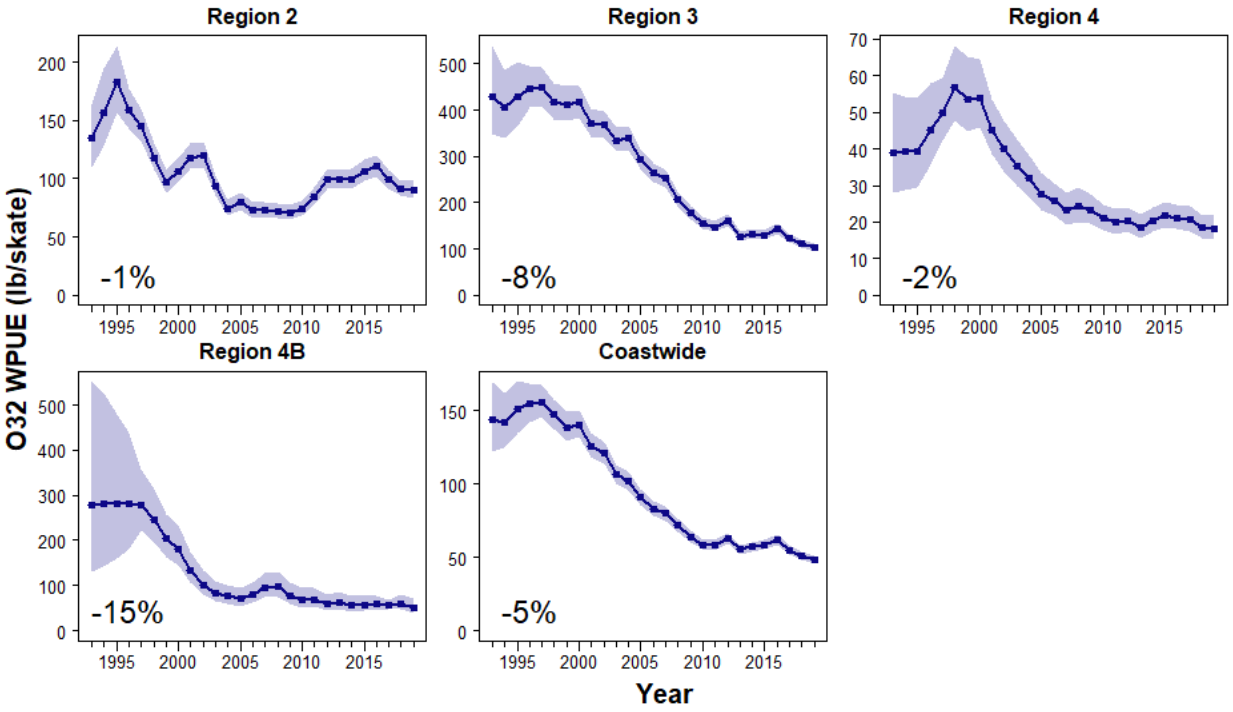

Figure 1. Space-time model output for O32 WPUE for 1993-2019 for Biological Regions. Filled circles denote the posterior means of O32 WPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean O32 WPUE from 2018 to 2019.

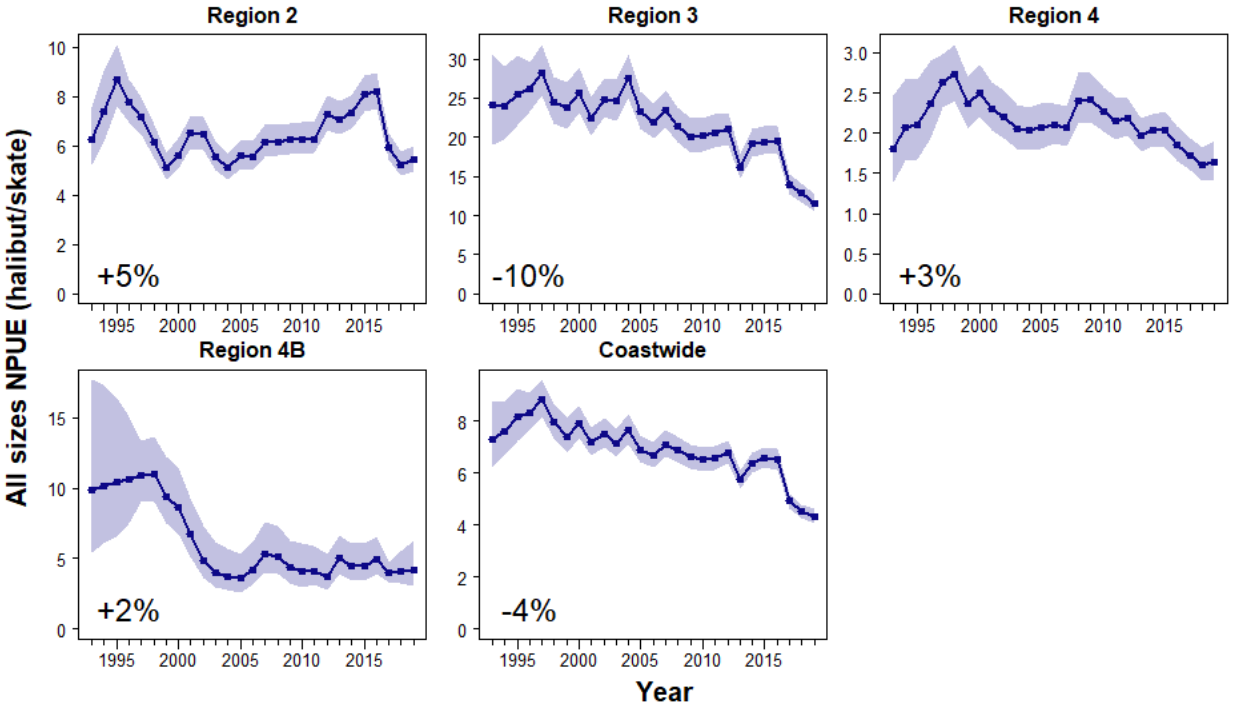

Figure 2. Space-time model output for all sizes NPUE for 1993-2019 for Biological Regions. Filled circles denote the posterior means of all sizes NPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean all sizes NPUE from 2018 to 2019.

In Regulatory Area 2C, data from both fixed and snap gears were used in the modelling. Parameters allowing for different catch rates of the two gears were included in the models, and estimates of WPUE and NPUE series were based on model predictions assuming fixed gear to ensure consistency with other Regulatory Areas. Comparisons of estimates based on data with and without the snap gear data show no meaningful effect of including the snap gear data on either means or uncertainty (Appendix B). Note that these figures do not imply there were no gear differences in catch rates, since we have standardized for gear type by predicting at fixed gear only. Indeed, parameter estimates of gear type differences showed some evidence that snap gear catch rates were lower on average (Table 1), with estimated catch rate ratios of 0.86 for all three indices modelled in 2019 (i.e., we estimate snap gear had 86% of the catch of fixed gear on average). Posterior 95% credible intervals all had an upper limit of 1.00, i.e., no difference in catch rate, so evidence for a difference in gear types was not strong. Although there is no impediment to using these data in generating estimates of indices, with the calibration estimated within the space-time model, the results imply the need to collect additional data comparing fixed and snap gears in order to better understand the relative efficiency of the gears and potential variability over time and space.

Table 1. Posterior estimates of the ratio of snap to fixed gear catch rates for O32 and all sizes WPUE, and all sizes NPUE, from space-time modelling of data from Regulatory Area 2C in 2019.

Variable	Ratio of snap to fixed catch rate	
	Posterior mean	95% credible interval
O32 WPUE	0.86	0.74 – 1.00
All sizes WPUE	0.86	0.75 – 1.00
All sizes NPUE	0.86	0.75 – 1.00

The 2019 FISS expansions in Regulatory Areas 3A and 3B led to improvements in precision and reductions in bias (Appendix C). This was particularly true for Regulatory Area 3A, where the addition of expansion stations to previously very poorly-predicted locations in places like Cook Inlet and Prince William Sound greatly reduced uncertainty (Figures C.1 and C.2).

Methods for FISS rationalisation

The primary purpose of the annual FISS is to sample Pacific halibut to provide data for the stock assessment and estimates of stock distribution. The priority of a rationalised FISS is therefore to maintain or enhance data quality (precision and bias) by establishing minimum sampling requirements in terms of station count, station distribution and skates per station. Potential considerations that could add to or modify the design are logistics and cost (secondary design layer), and FISS removals (impact on the stock), data collection assistance for other agencies, and IPHC policies (tertiary design layer). These priorities are outlined in Table 2.

Table 2. Prioritization of FISS objectives and corresponding design layers.

Priority	Objective	Design Layer
Primary	Sample Pacific halibut for stock assessment and stock distribution estimation	Minimum sampling requirements in terms of: • Station distribution • Station count • Skates per station
Secondary	Long term revenue neutrality	Logistics and cost: operational feasibility and cost/revenue neutrality
Tertiary	Minimize removals, and assist others where feasible on a cost-recovery basis.	Removals: minimize impact on the stock while meeting primary priority Assist: assist others to collect data on a cost-recovery basis IPHC policies: ad-hoc decisions of the Commission regarding the FISS design

The historical sampling, combined with FISS expansions from 2014-2019, established a full sampling frame of 1890 stations from California to the Bering Sea shelf edge on a 10 nmi grid from depths of 10 – 400 ftm (Figure 3). Future annual FISS designs will comprise a selection of stations from this frame. Examples of such designs include completely randomized sampling within each Regulatory Area (Figure 4), and randomized cluster sampling (Figure 5). In the latter case, clusters of stations are selected that comprise (where possible) 3-4 stations to make an operationally efficient fishing day, and thus this design is an example of one that includes a consideration of logistics and cost.

We propose precision targets that the designs should meet in order to maintain data quality for the stock assessment and stock distribution estimation. For designs such as those in Figures 4 and 5, the randomization ensures that resulting estimates (eg, WPUE, NPUE indices) are unbiased. Other designs under consideration require an evaluation of the potential for bias, as discussed below.

From a scientific perspective, more information is always better; however, sampling the full grid (Figure 4) is unnecessary as the precision target for the index can be maintained with substantial subsampling. While a fully randomized subsampling design (or a randomized cluster subsampling design) with sufficient sample size will still meet scientific needs, in several Regulatory Areas where Pacific halibut are concentrated in a subset of the available habitat, such a design can be inefficient. We therefore evaluate another type of design in which effort is focused in most years on habitat with highest density (which generally contributes most to the overall variance), while sampling other habitat with sufficient frequency to maintain low bias.

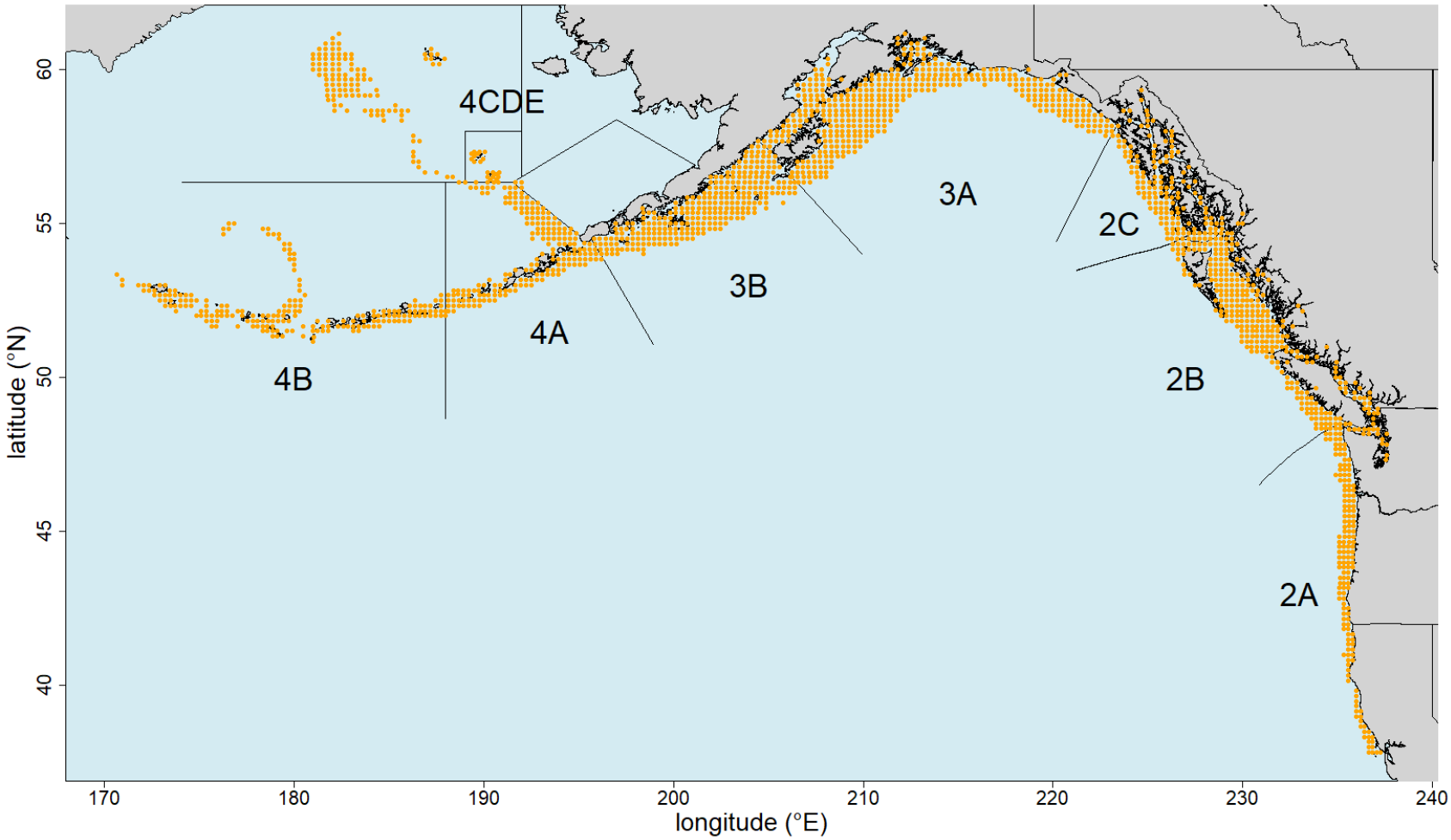

Figure 3. Map of the full FISS sampling frame to be used from 2020 onwards. Each orange circle represents a FISS station.

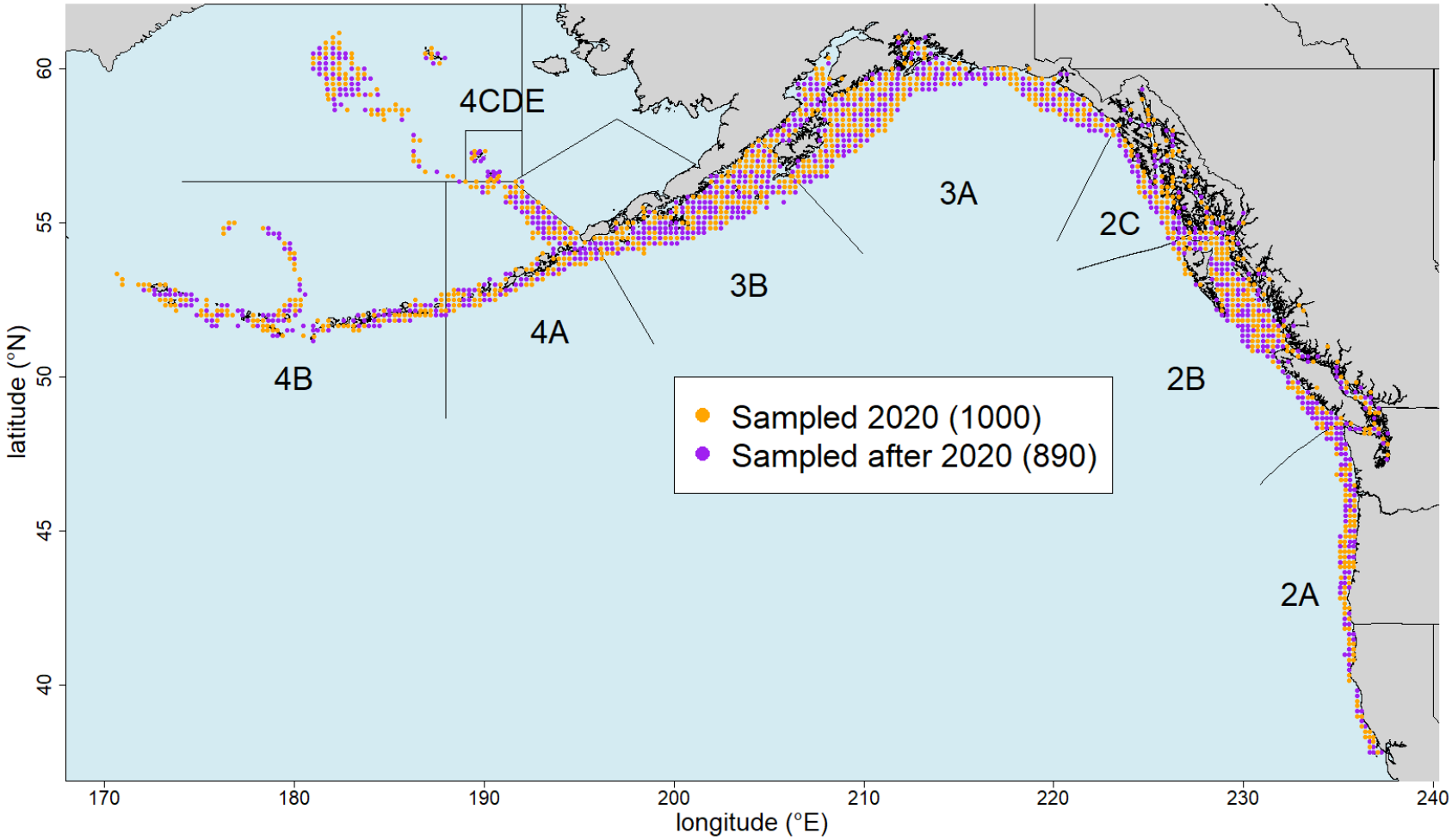

Figure 4. Map of a hypothetical randomized sampling design for 2020 with a target coastwide sample size of 1000 stations.

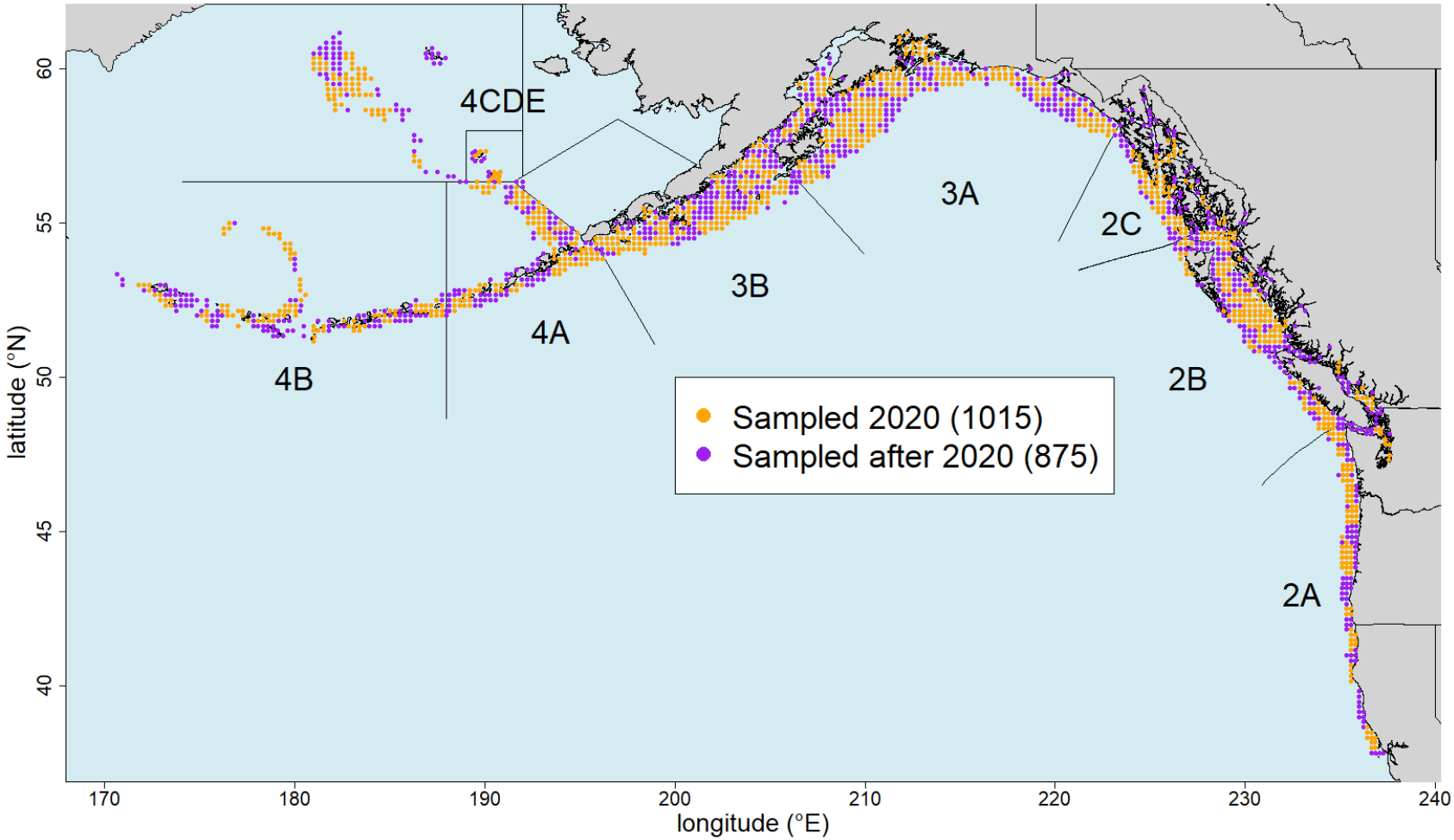

Figure 5. Map of a hypothetical randomized cluster sampling design for 2020 with a target coastwide sample size of approximately 1000 stations.

Precision targets

Previously, the IPHC Secretariat had an informal goal of maintaining a coefficient of variation (CV) of no more than 15% for mean WPUE for each IPHC Regulatory Area. Including all expansion data to date, this goal has been achieved in all areas from 2011, the year of the first pilot expansion (Table 2), except Regulatory Area 4B in 2011-14 and 2019 for O32 WPUE and 2011-12 and 2019 for all sizes WPUE, and Regulatory Area 4A in 2016-19 (O32 and all sizes WPUE).

Table 2. Range of coefficients of variation for O32 and all sizes WPUE from 2011-18 by Regulatory Area.

Reg Area	O32 WPUE (2011-19)				All sizes WPUE (2011-18)			
	Lowest CV (%)	Year	Highest CV (%)	Year	Lowest CV (%)	Year	Highest CV (%)	Year
2A	10	2014*	13	2019	10	2014*	13	2019
2B	5	2018*	7	2019	5	2018*	7	2012
2C	5	2018*	6	2012	5	2018*	6	2011
3A	4	2017	5	2011	5	2019	5	2011
3B	7	2019*	8	2015	9	2018	10	2015
4A	12	2014*	18	2019	10	2014*	19	2019
4B	10	2017*	16	2012	10	2017*	16	2012
4CDE	10	2017#	11	2013	5	2015*	6	2019

* Year of FISS expansion in Reg. Area. # Year of NMFS trawl expansion in Reg. Area 4CDE.

Considering Biological Regions, CVs for WPUE in Region 2 and Region 3 were at or below 5% in all years from 2011 (Table 3). Region 4 CVs for WPUE were below 10%, while the smallest region, Region 4B, has some years with CVs above 15% as noted previously. For all sizes NPUE (Table 4), CVs were above 10% in all Regions except Region 4B. Based on this information, constraining the FISS design to produce CVs of 10% or less for Regions 2-4 and 15% for Region 4B should allow for some reduced FISS effort in the former regions, while maintaining low uncertainty in Region 4B.

Table 3. Range of coefficients of variation for O32 and all sizes WPUE from 2011-19 by Biological Region.

Region	WPUE (2011-19)				All sizes WPUE (2011-19)			
	Lowest CV (%)	Year	Highest CV (%)	Year	Lowest CV (%)	Year	Highest CV (%)	Year
2	4	2018*	4	2012	4	2018*	4	2012
3	4	2019*	4	2011	4	2018	5	2011
4	8	2014*	9	2019	5	2014*	9	2019
4B	10	2017*	16	2012	10	2017*	16	2012

* Year of FISS expansion in at least part of the Region.

Table 4. Range of coefficients of variation for all sizes NPUE from 2011-19 by Biological Region.

Region	All sizes NPUE (2011-19)			
	Lowest CV (%)	Year	Highest CV (%)	Year
2	4	2018*	5	2011
3	4	2018*	5	2011
4	5	2014*	8	2019
4B	9	2017*	20	2019

* Year of FISS expansion in at least part of the Region.

Finally, the CV of coastwide, all sizes NPUE (used in the stock assessment) is estimated to be from 3-9% for all years of estimation from 1993 to 2019 (3-4% for 2011-19). This suggests a target of 10% for the CV of this index will ensure that uncertainty is maintained at a low level for this key stock assessment input.

In summary, in order to maintain the quality of the estimates used for the assessment, and for estimating stock distribution, we propose that a rationalised FISS should be designed to meet the following precision targets:

- CVs below 15% for O32 and all sizes WPUE for all Regulatory Areas
- CVs below 10% for O32 WPUE, all sizes WPUE, and all sizes NPUE for Regions 2, 3 and 4
- CVs below 15% for O32 WPUE, all sizes WPUE, and all sizes NPUE for Region 4B
- CVs below 10% for the coastwide, all sizes NPUE index

Reducing the potential for bias

With these targets set, we can proceed to using the space-time modelling to evaluate different FISS designs by IPHC Regulatory Area and Biological Region. However, when stations are not selected randomly, sampling a subset of the full data frame in any area or region brings with it the potential for bias, when trends in the unsurveyed portion of a management unit (Regulatory Area or Region) differ from the surveyed portion. To reduce the potential for bias, we also looked at how frequently part of an area or region (called a “subarea” here) should be surveyed in order to reduce the likelihood of appreciable bias. For this, we propose a threshold of a 10% absolute change in biomass percentage: how quickly can a subarea’s percent of the biomass of a Regulatory Area or Region’s change by at least 10%? By sampling each subarea frequently enough to keep down the chance of its percentage changing by more than 10% between successive surveys of the subarea, we reduce the potential for appreciable bias in the Regulatory Area or Region’s indices as a whole.

Analytical methods

We examined the effect of subsampling a management unit on precision as follows:

- Where a randomized design is not used, identify subareas within each management unit and select priorities for future sampling
- Generate simulated data for all FISS stations based on the output from the most recent space-time modelling
- Fit space-time models to the observed data series augmented with 1 to 3 additional years of simulated data, where the design over those three years reflects the sampling priorities identified above

Extending the modelling beyond three years is not considered worthwhile, as we expect further evaluation undertaken following collection of data during the one to three-year time period to influence design choice to subsequent years.

Ideally, a full simulation study with many replicate data sets would be used, but this is impractical for the computationally time-consuming spatio-temporal modelling. Instead, "simulated" sample data sets for the future years will be taken from the 2000 posterior samples from the most recent year's modelling. Each year's simulated data will have to be added and modelled sequentially, as subsequent data can improve the precision of prior years' estimates, meaning the terminal year is often the least precise (given a consistent design). If time allows, the process can be repeated with several simulated data sets to ensure consistency in results, although with large enough sample sizes (number of stations) in each year, we would expect even a single fit to be informative.

In considering potential FISS designs, we distinguish between the core area of the stock, where densities are relatively high (Regulatory Areas 2B, 2C, 3A and 3B) from the margins of the stock (Regulatory Areas 2A, 4A, 4B and 4CDE), which contains subareas of higher density, along with large regions of lower density. A fully randomized design for the latter can be an inefficient way of conducting the sampling, and we propose an alternative that may make more effective use of resources to achieve the scientific goals of the FISS.

IPHC Regulatory Area 4B

Regulatory Area 4B is a relatively small area, can be divided into fairly distinct subareas based on the 2017 FISS expansion results (Figure 2):

1. West of Kiska Is. At present, a relatively low density subarea, but one that previously had much higher densities of Pacific halibut. (57 stations)
2. East of Kiska Is, and west of Amchitka Pass, including Bowers Ridge. Also at present a low density subarea, but one largely unsurveyed before 2017. (73 stations)
3. East of Amchitka Pass. Currently, a subarea of relatively high density and stability, although with higher density in the past. (73 stations)

In recent years, the bulk of the 4B stock (70-80%, Figure 3) is estimated to have been in Subarea 3. With standard deviations typically increasing with the mean for this type of data, focusing FISS effort on this subarea in future surveys should succeed in maintaining target CVs, while reducing net cost. However, additional analysis of the historical WPUE time series shows Subarea 1's percentage of the biomass can also change by relatively large amounts over short time frames, with absolute changes of over 10% over as little as 3-4 years This also should be accounted for in a three-year design plan.

We augmented the 1993-2018 data with simulated data sets for 2019-22. For 2019, the planned FISS design was used, while the following designs were considered for subsequent years:

- 2020: Only Subarea 3 fished (73 stations)
- 2021: Only Subarea 3 fished (73 stations)
- 2022a: Only Subarea 3 fished (73 stations)
- 2022b: Only Subarea 1 fished (57 stations)
- 2022c: Subareas 1 and 2 fished (130 stations)

The three options for 2022 allow either a continuation of Subarea 3 only (2022a), Subarea 1 only to reduce the chance of bias due to changes in density in Subarea 1 over the three years since 2019 (2022b), and a third option (2022c) in case 2022b leads to CVs above the 15% target. The third option is also precautionary in that while there is apparent stability in Subarea 2's biomass percentage (Figure 3 and Table 5), most of Subarea 2 has been surveyed just once, in the 2017 expansion.

Fitting space-time models to the augmented data sets shows that fishing only Subarea 3 from 2020-22 is expected to be sufficient to reduce and then maintain CVs to below 15%. Fishing Subarea 1 and 2 in 2022 should also meet the precision target, and would be the preferred minimum design in that year in order to ensure that bias remained low.

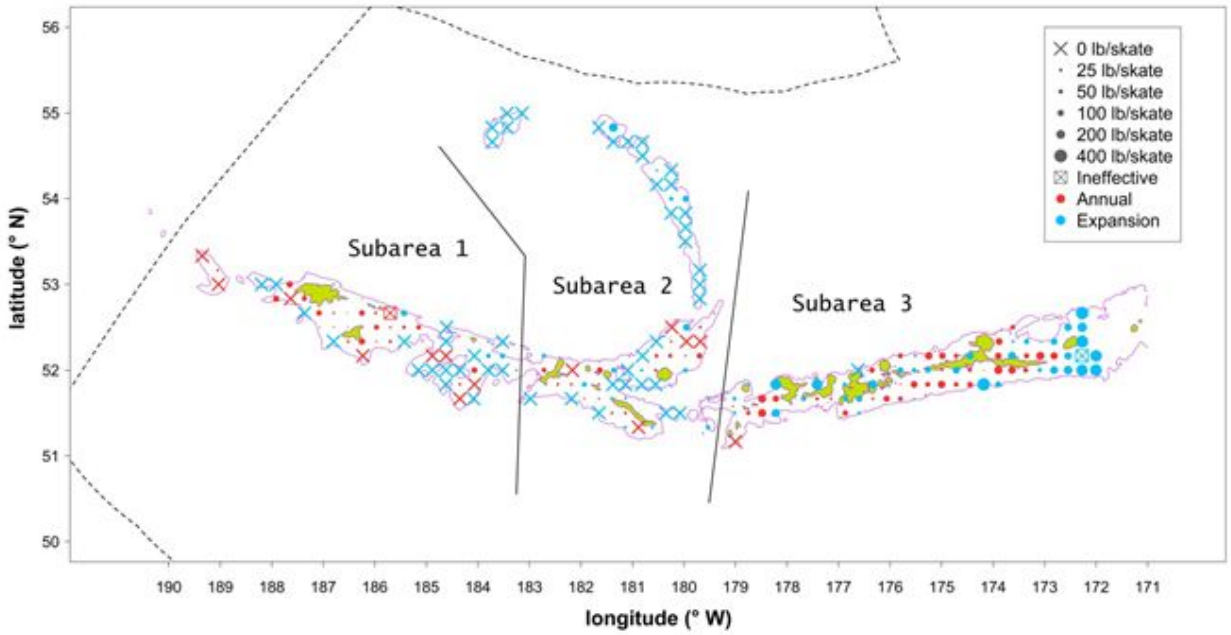

Figure 2. Map of the 2017 FISS expansion design in IPHC Regulatory Area 4B showing the subareas used in the analysis.

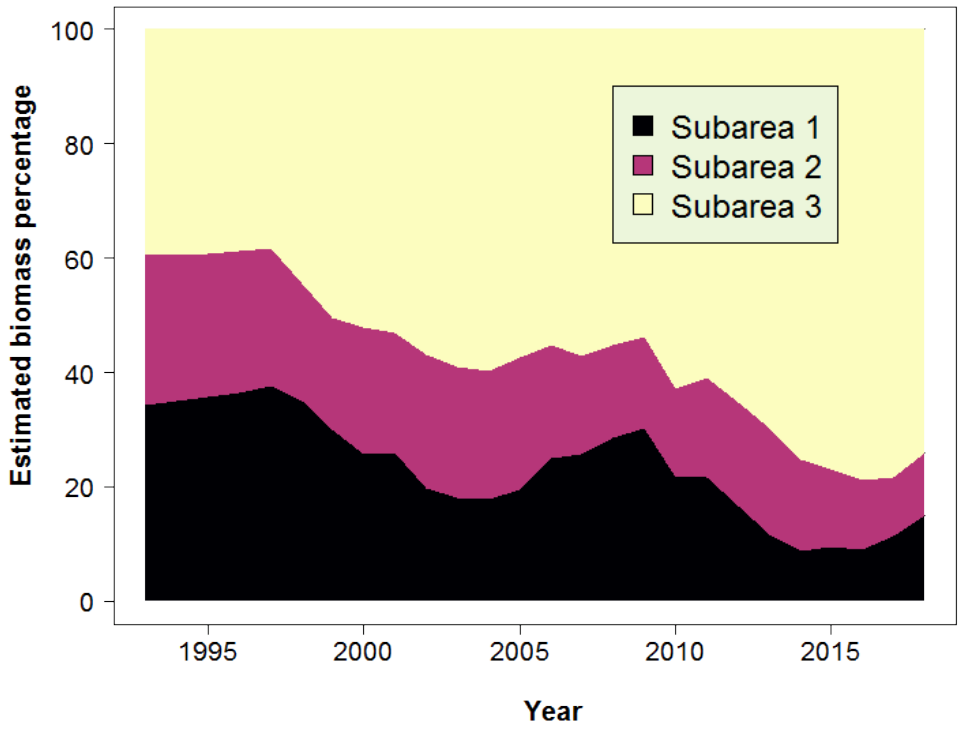

Figure 3. Estimated Regulatory Area 4B biomass % by subarea and year.

IPHC Regulatory Area 4A

Like Regulatory Area 4B, we have divided Regulatory Area 4A into geographic subareas (Figure 4) for use in devising an efficient FISS design. Subarea 1 is a high density subarea, which in recent years has had 65-85% of the biomass, and has been historically variable in terms of its proportion of the biomass (Figure 5). Subarea 2 is a low-density area with a very stable proportion of the Regulatory Area 4A biomass, while Subarea 3 has had more variable biomass. (The smallest subarea, Subarea 4, is covered by the annual NMFS trawl survey, and we are not proposing to sample it as part of the annual survey.)

Based on this information, the following designs were evaluated for 2020-22:

- 2020: Only Subarea 1 fished (59 stations)
- 2021: Only Subarea 1 fished (59 stations)
- 2022a: Only Subarea 3 fished (63 stations)
- 2022b: Subareas 2 and 3 fished (114 stations)
- 2022c: Subareas 1 and 3 fished (122 stations)

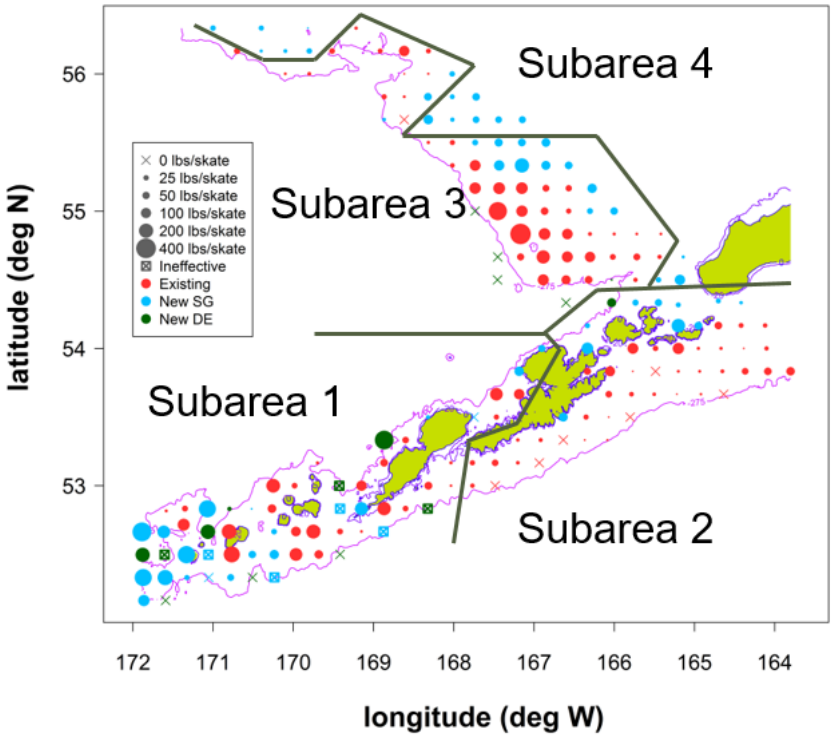

Figure 4. Map of the 2014 FISS expansion design in IPHC Regulatory Area 4A showing the subareas used in the analysis.

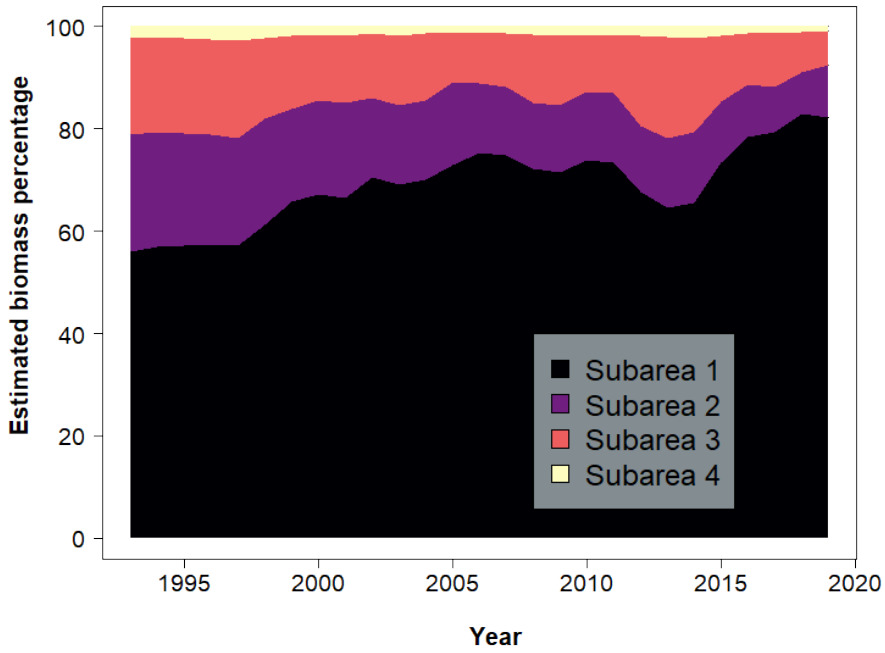

Figure 5. Estimated Regulatory Area 4A biomass % by subarea and year.

Sampling only Subarea 1 in Regulatory Area 4A was sufficient to meet precision targets in 2020-21. For 2022, designs that omitted Subarea 1 were not expected to meet precision targets, and the minimum proposed design for 2022 is to fish Subareas 1 and 3.

IPHC Regulatory Area 2A

In Regulatory Area 2A, we again proposed subareas based on density and geography, but there were not contiguous due to the existence of two distinct higher density regions, one off the north Washington coast, and the other of the central Oregon coast (Figure 6). Thus, we created Subarea 1 to include both of these higher density regions, while Subarea 2 includes the moderate density zone between them, as well as the northern part of California. Subarea 3 includes the remaining low density regions in the Salish Sea, California, and the stations in deep and shallow waters throughout the Regulatory Area. The proportion of biomass in each subarea does not change greatly over periods less than five years (Figure 7), and this relative stability should allow us to reduce sampling frequency in lower density subareas while maintaining precision targets.

For the 2020-22 period, we evaluated a sampling design in which only Subarea 1 was sampled. This 72-station design was sufficient to maintain CVs for mean WPUE below the 15% target in all years, while having low bias due to the stability of the biomass distribution among subareas.

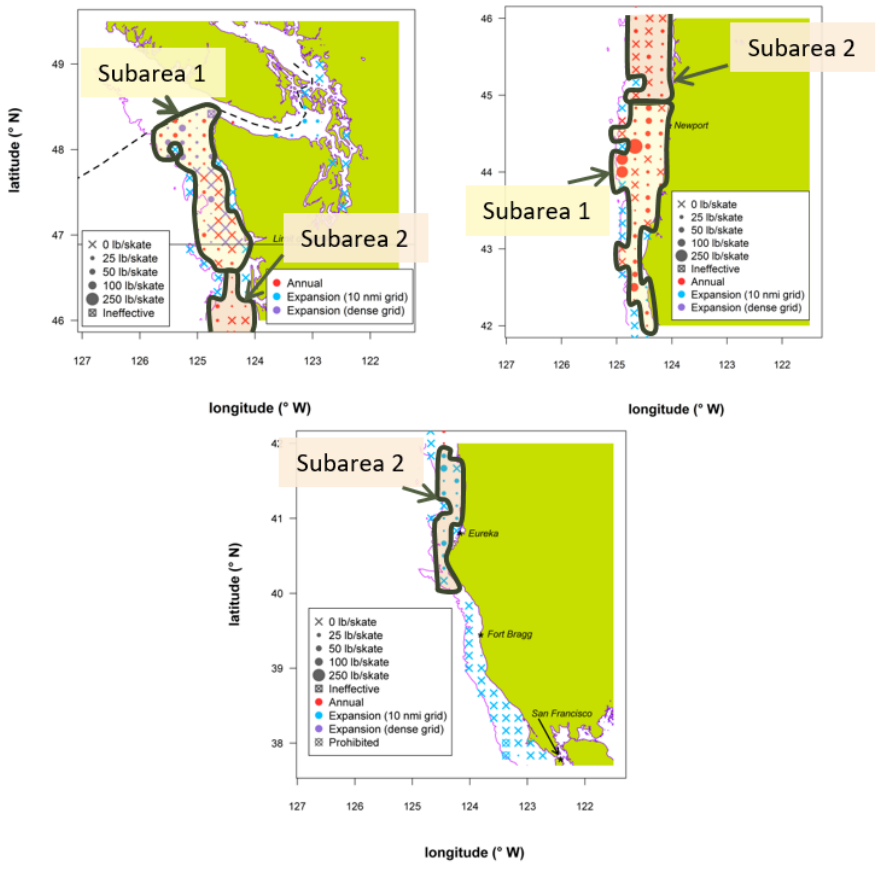

Figure 6. Map of the 2017 FISS expansion design in IPHC Regulatory Area 2A showing the subareas used in the analysis. Subarea 3 is unlabeled but is comprised of the stations outside of Subareas 1 and 2.

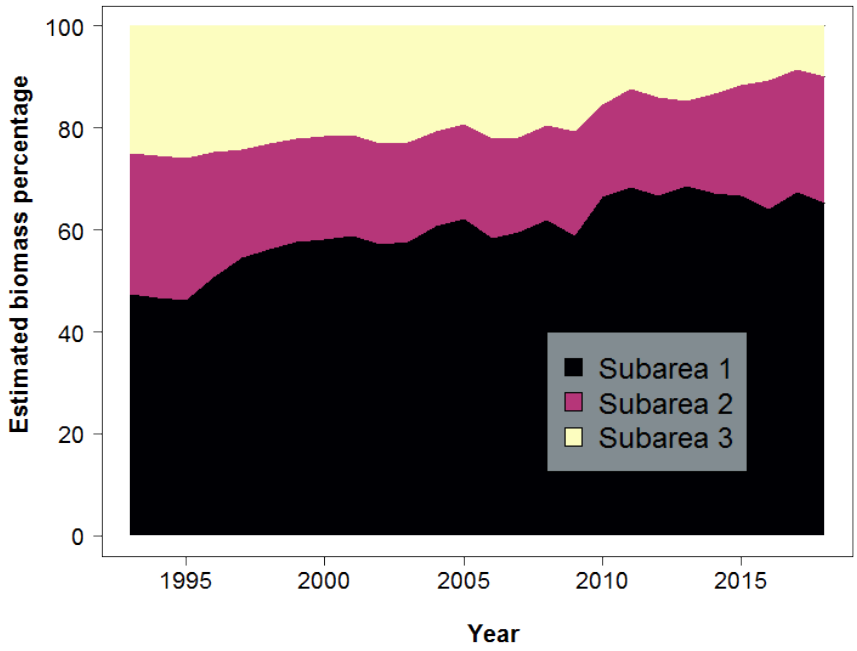

Figure 7. Estimated Regulatory Area 2A biomass % by subarea and year.

Other Regulatory Areas

Regulatory Areas 2B, 2C, 3A and 3B represent the core of the Pacific halibut stock, with generally high relative density throughout. It was therefore more difficult to identify subareas based on density, geographic regions, or biological differences. Instead, IPHC FISS regions were considered as subareas, and sampling priorities were based on the density and temporal variability of these. Specifically, we considered designs in which two FISS region per year were omitted from the six regions in Regulatory 2B, the eight regions in Regulatory 3A and the five regions in Regulatory 3B, and where two of the three FISS regions in Regulatory 2C were fished. Those regions with either the highest densities in recent years, or (in the case of Regulatory Area 3B), with densities that varied greatly over short time periods, were prioritized for annual sampling, while other FISS regions can be sampled on a rotating basis. As described above, the proposed designs for each Regulatory Area in 2020 were evaluated to ensure that precision and bias criteria were met.

Proposals for 2020-2022

The full proposal for 2020-22 based on a subarea design is shown in Figures 8-10. This represents a design that will meet the data quality criteria for analytical purposes, and comprises approximately 1150 stations, fewer than in recent years.

An alternative design is presented in Figures 11-13. This design uses efficient subarea sampling in Regulatory Areas 2A, 4A and 4B, but incorporates a randomized design in Regulatory Areas 2B, 2C, 3A and 3B (except for the near-zero catch rate inside waters around Vancouver Island), with a sampling rate chosen to keep the sample size close to 1000 stations in an average year. Advantages of this design over the full subarea proposal in Figures 8-10 include maintaining spatially comprehensive biological and environmental sampling in the core Regulatory Areas, unbiased estimation of WPUE and NPUE indices in those areas, and expected greater precision with fewer stations. The disadvantages are possible increased cost and more challenging logistics in fishing the sparser design.

Each proposal includes fishing the full 10 nmi grid along the Regulatory Area 4CDE edge in 2020-22 (last fished in 2016). While it may be possible to reduce FISS sampling and still meet precision/bias targets, we note that ecosystem conditions have been anomalous in the Bering Sea for several years, making the Pacific halibut distribution more difficult to predict in unsurveyed habitat. Indeed, recent NMFS trawl surveys in the northern Bering Sea have shown a generally increasing trend in that region, but over the last three years, deeper waters in the north covered by the FISS grid have been unsampled. The IPHC is interested in better understanding density trends and possible links with Pacific halibut in Russian waters in the Bering Sea, and the data obtained from sampling the full FISS grid would help greatly in achieving these goals. The need to sample these stations in 2021-22 will be re-evaluated following the results of the 2020 FISS.

For proposals that do not sample all stations in the design, additional stations can be included if there are specific needs beyond precision and bias criteria, such as for sampling efficiency, cost recovery, biological sampling, environmental monitoring, and IPHC policy decisions.

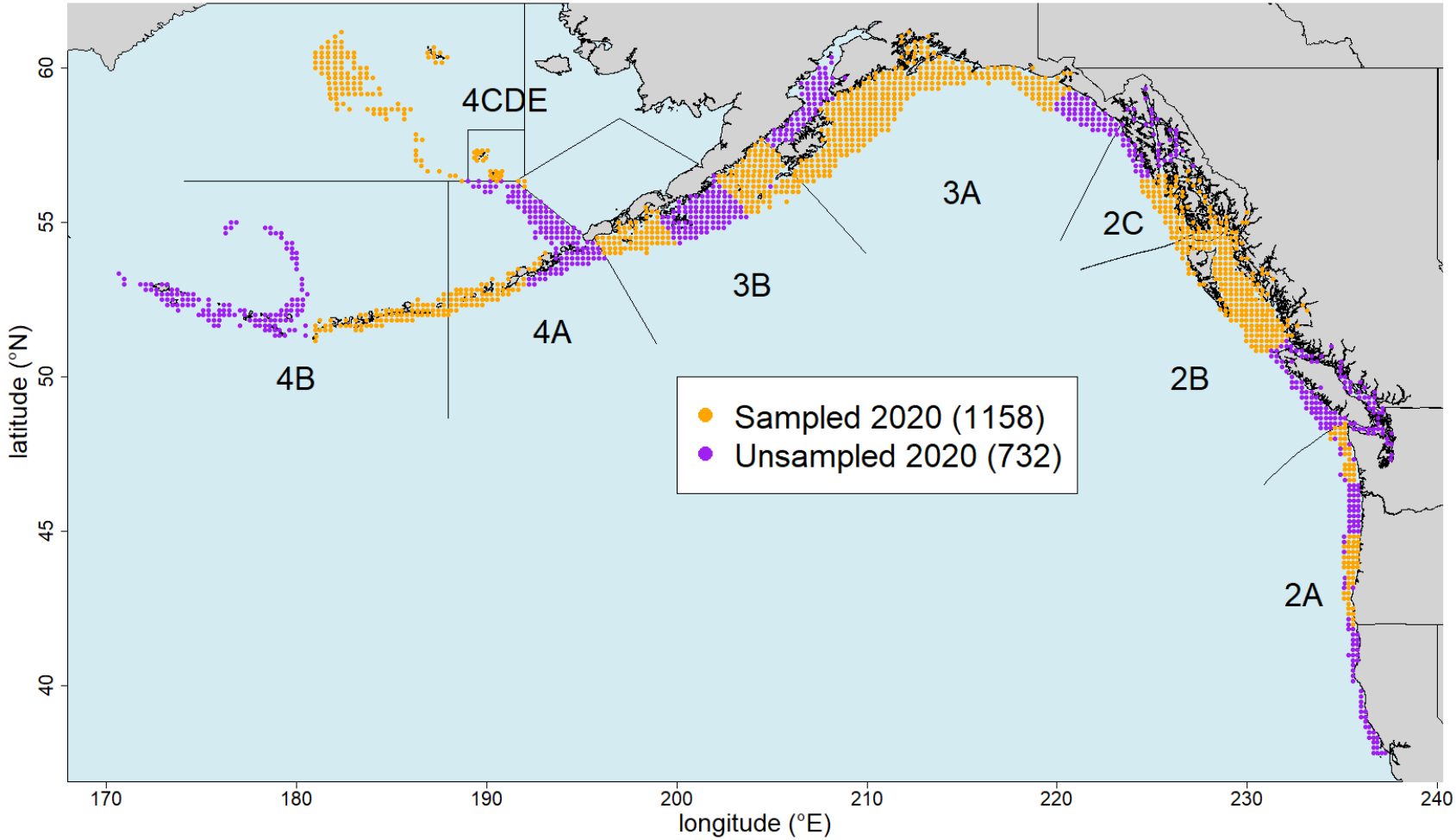

Figure 8. Proposed minimum FISS design in 2020 (orange circles) based on subareas. Purple circles are optional for meeting data quality criteria.

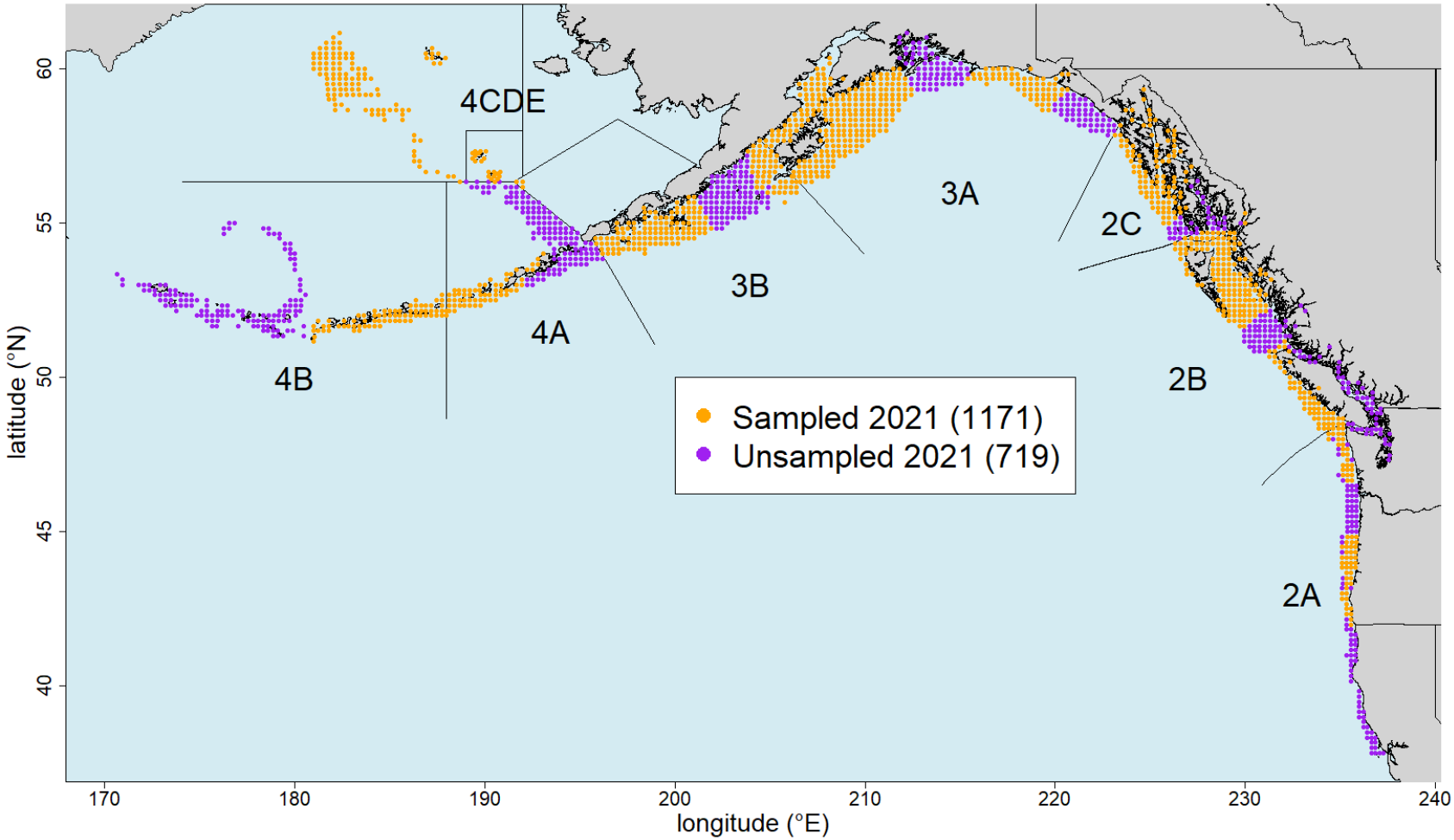

Figure 9. Proposed minimum FISS design in 2020 (orange circles) based on subareas. Purple circles are optional for meeting data quality criteria.

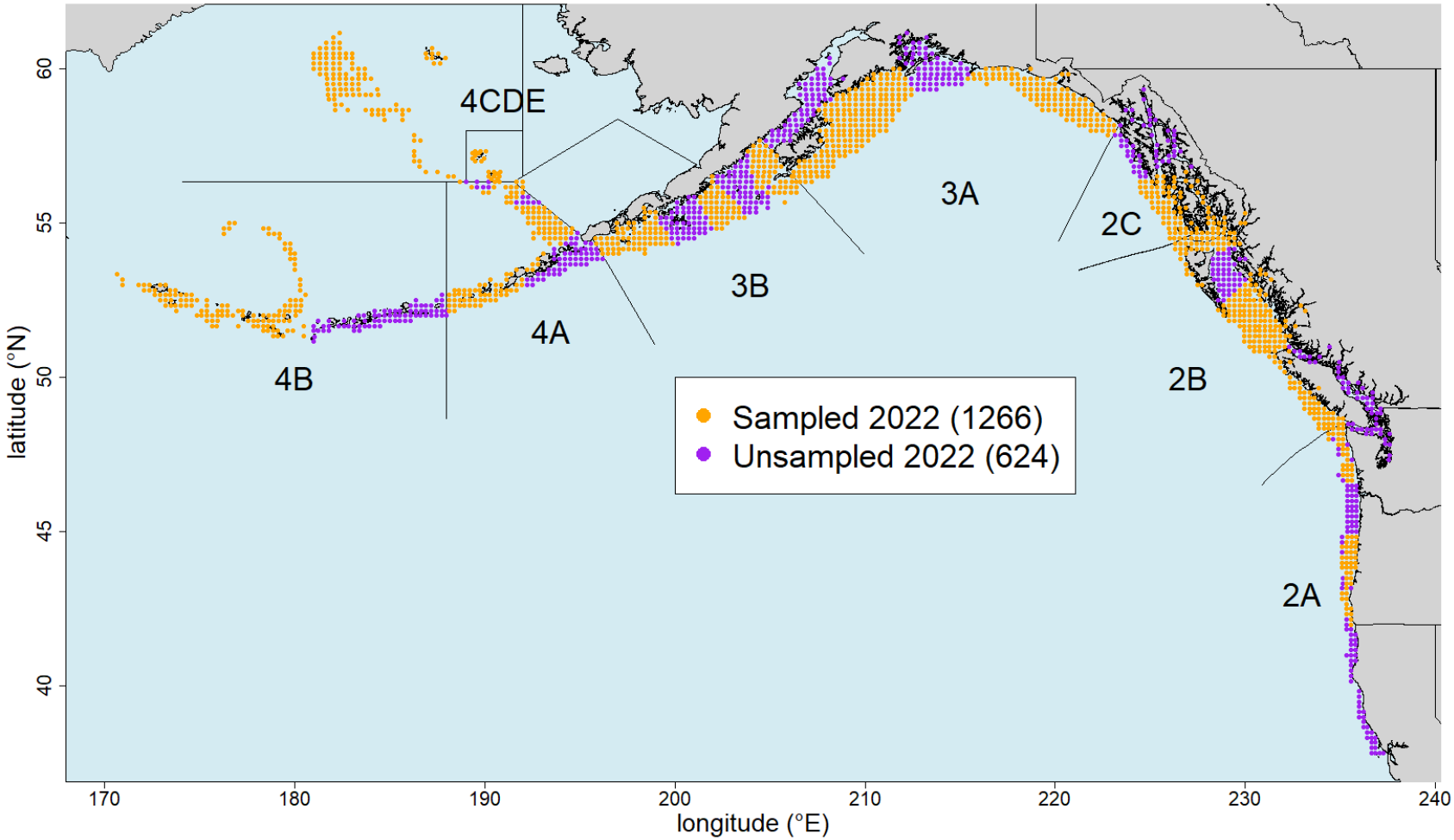

Figure 10. Proposed minimum FISS design in 2022 (orange circles) based on subareas. Purple circles are optional for meeting data quality criteria.

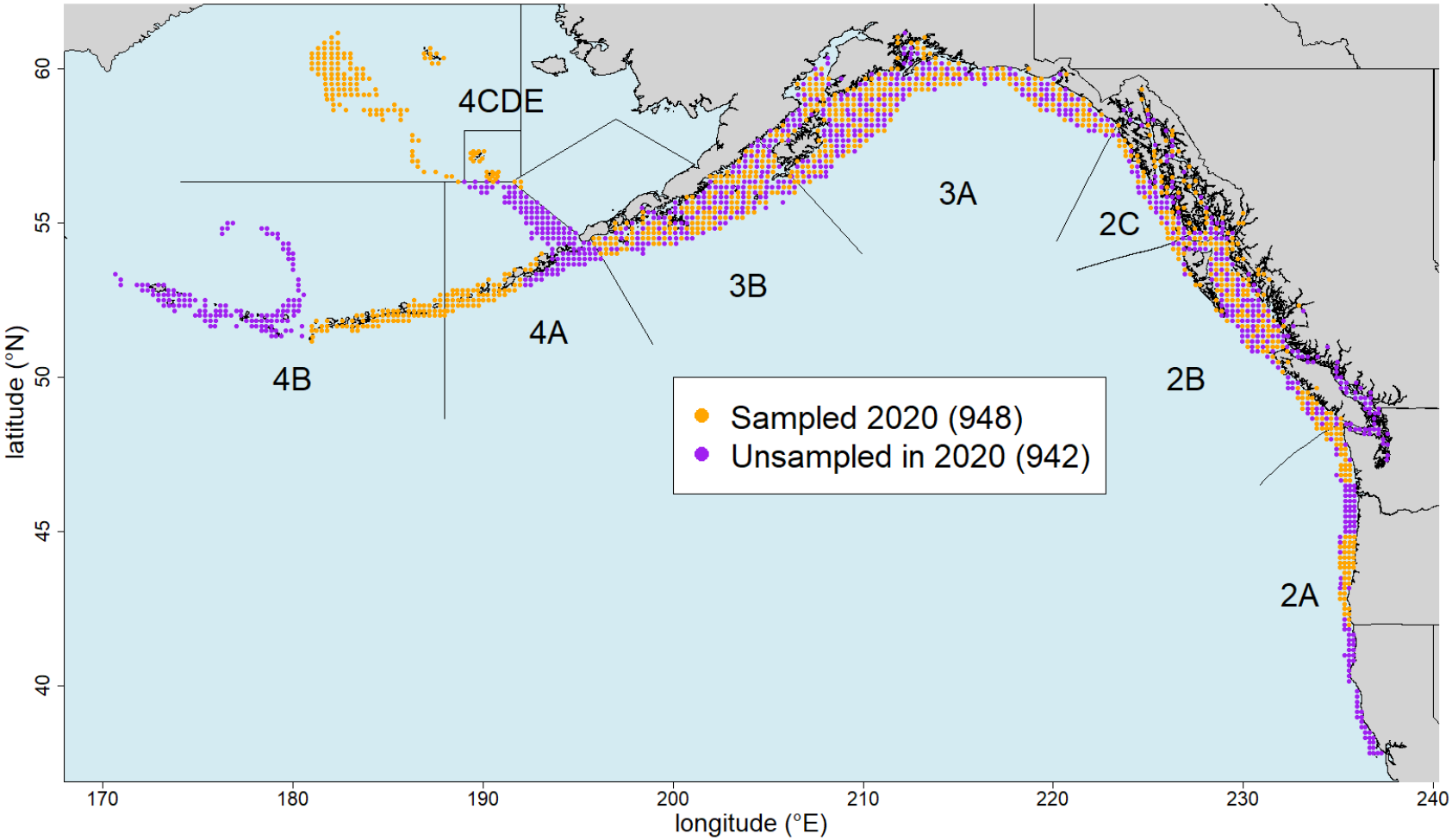

Figure 11. Proposed minimum FISS design in 2020 (orange circles) based on randomized sampling in 2B-3B, and a subarea design elsewhere. Purple circles are optional for meeting data quality criteria.

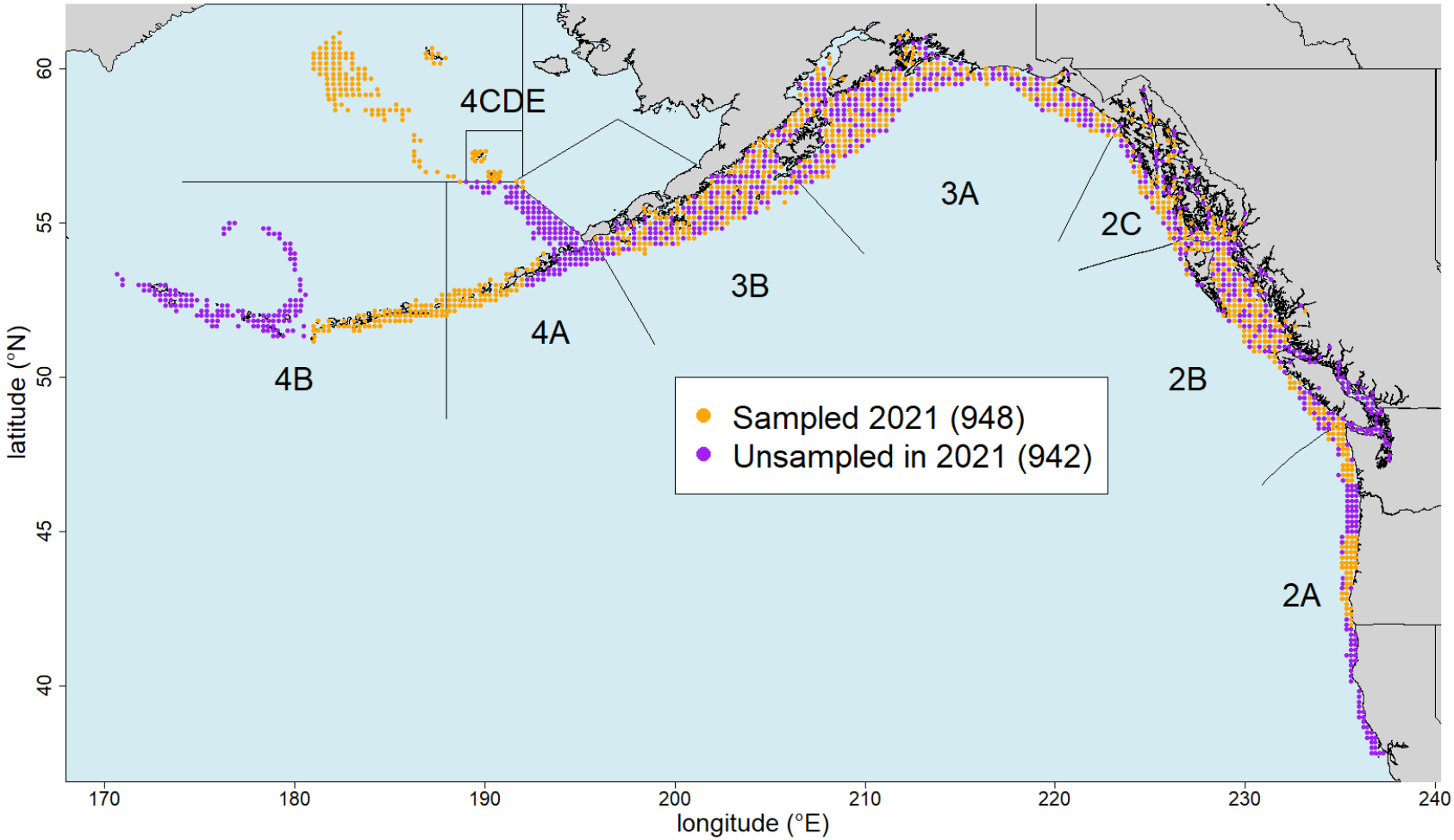

Figure 12. Proposed minimum FISS design in 2021 (orange circles) based on randomized sampling in 2B-3B, and a subarea design elsewhere. Purple circles are optional for meeting data quality criteria.

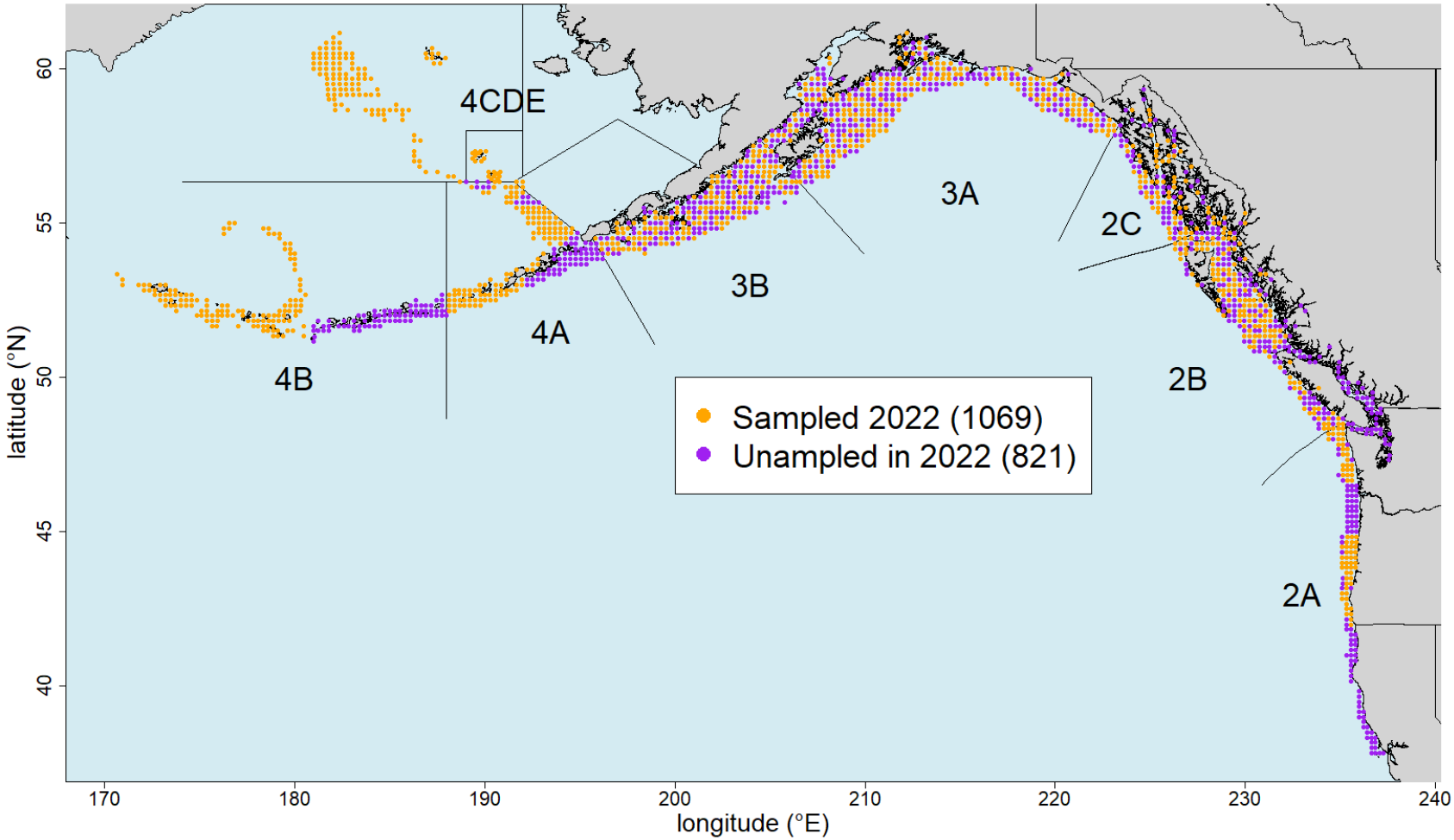

Figure 13. Proposed minimum FISS design in 2022 (orange circles) based on randomized sampling in 2B-3B, and a subarea design elsewhere. Purple circles are optional for meeting data quality criteria.

RECOMMENDATION/S

That the Commission:

a) **NOTE** paper IPHC-2020-AM096-07 which provides alternatives for FISS sampling in 2020 ranging from the full grid to randomized and subarea options.
b) **REQUEST** the type of design that the IPHC Secretariat should employ, commencing in 2020.
c) **REQUEST** any specific additions or modifications to that design that the IPHC Secretariat should consider in evaluating the three design criteria: Scientific, logistical/cost, and resource extraction/policy.

APPENDIX A

Space-time modelling results by IPHC Regulatory Area

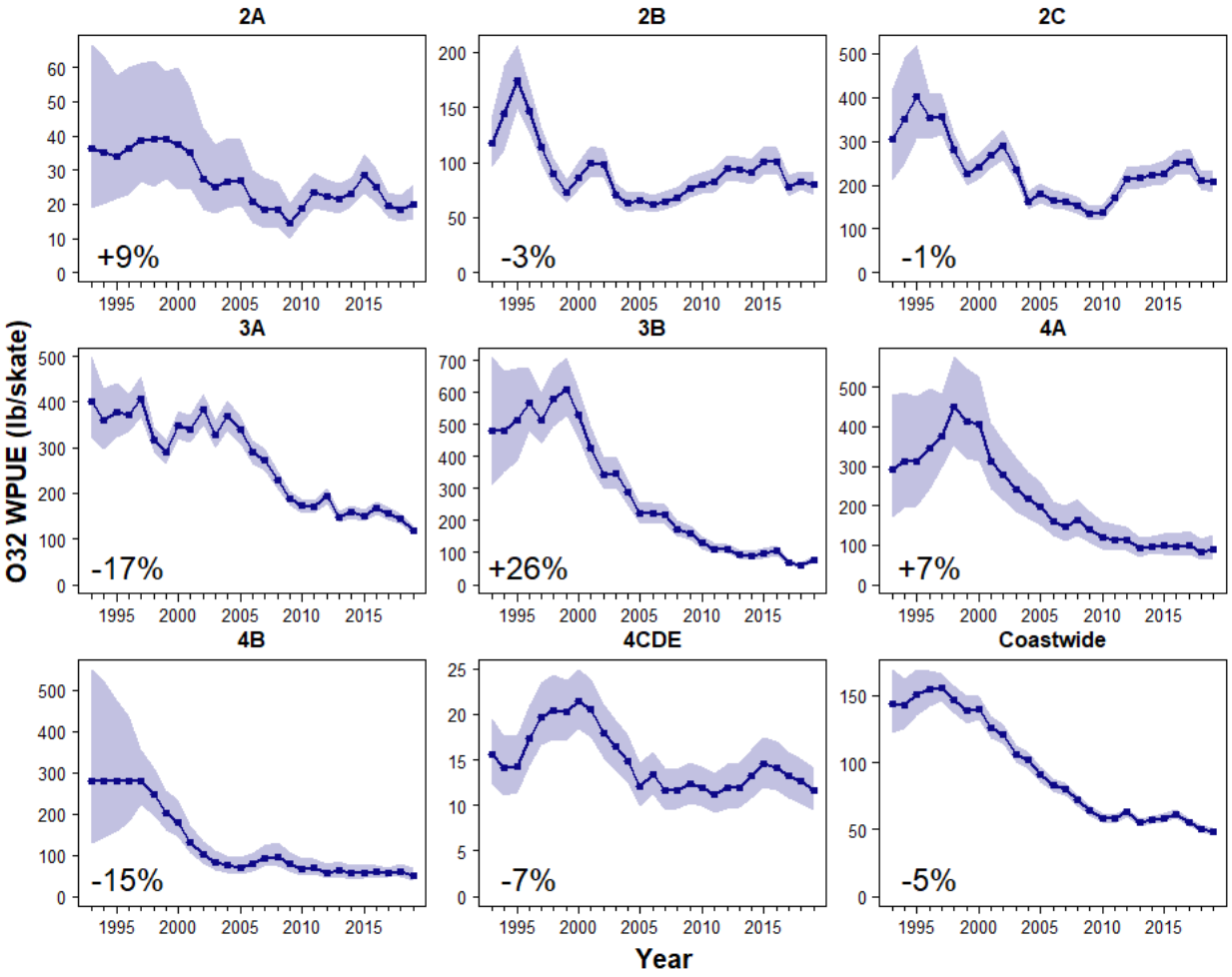

Figure A.1. Space-time model output for O32 WPUE for 1993-2019. Filled circles denote the posterior means of O32 WPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean O32 WPUE from 2018 to 2019.

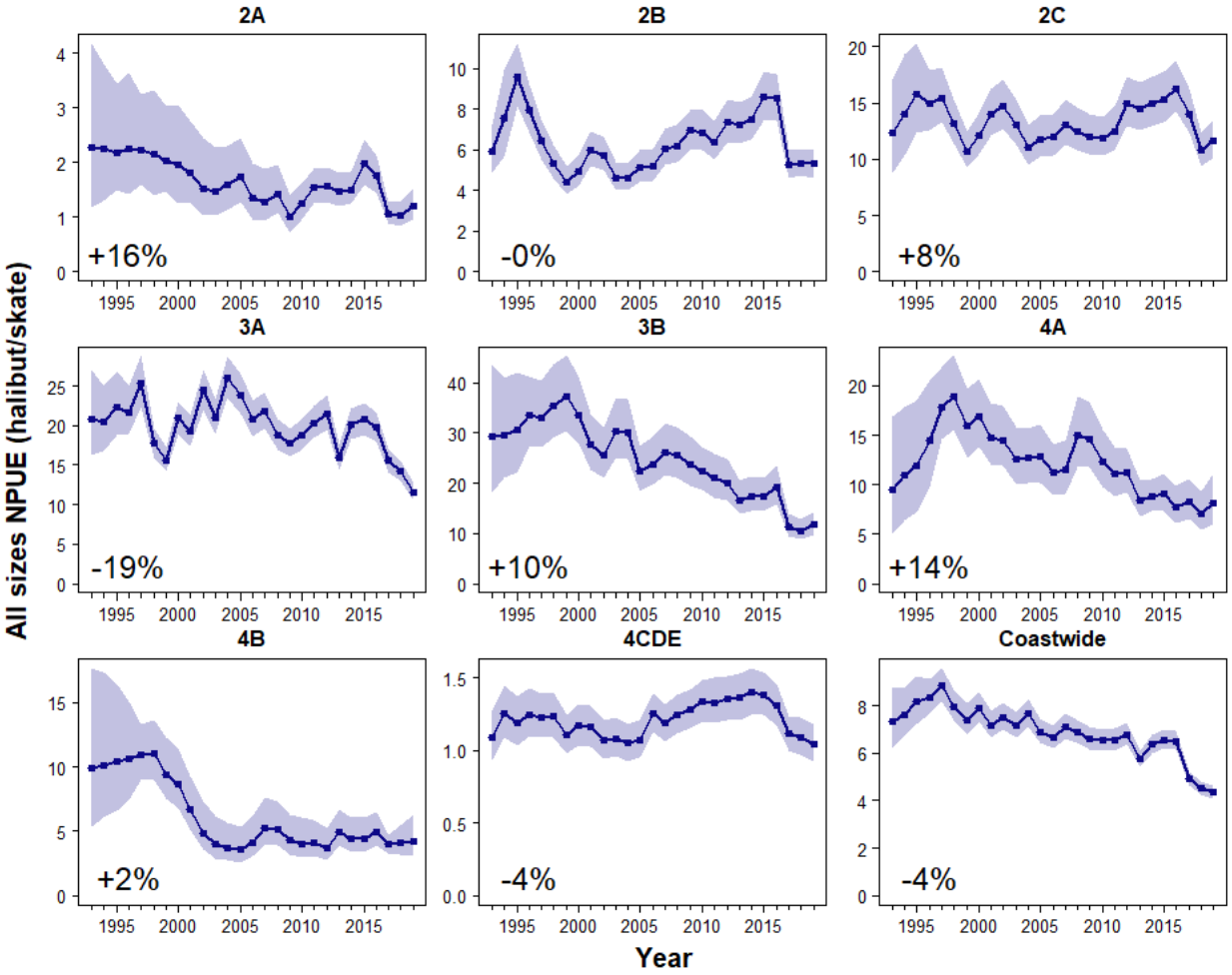

Figure A.2. Space-time model output for total NPUE for 1993-2019. Filled circles denote the posterior means of total NPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean total NPUE from 2018 to 2019.

APPENDIX B

Space-time modelling results for Regulatory Area 2C with and without snap gear data.

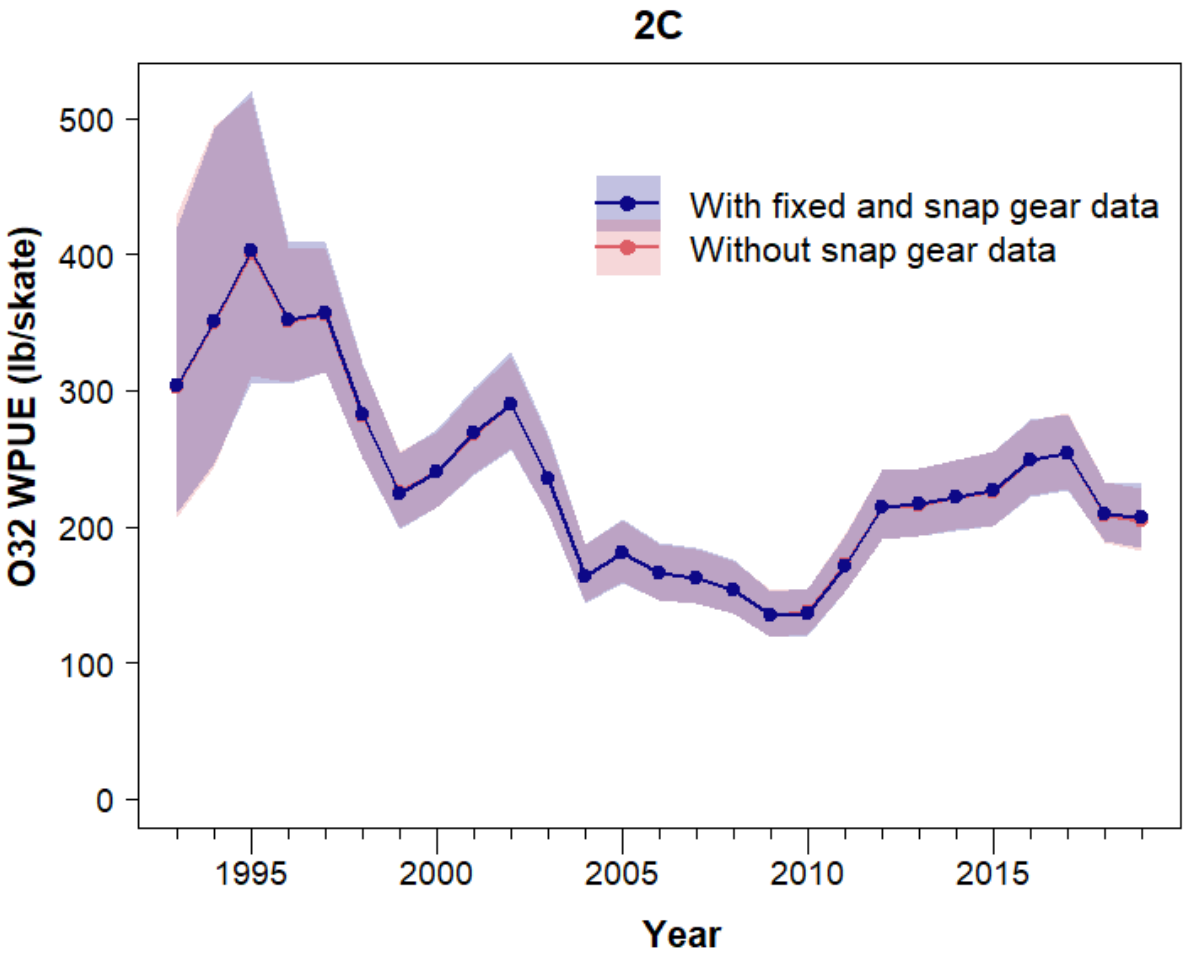

Figure B.1. Space-time model output for O32 WPUE for 1993-2019 for Regulatory Area 2C, comparing output from models with and without snap gear data. Filled circles denote the posterior means of O32 WPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate.

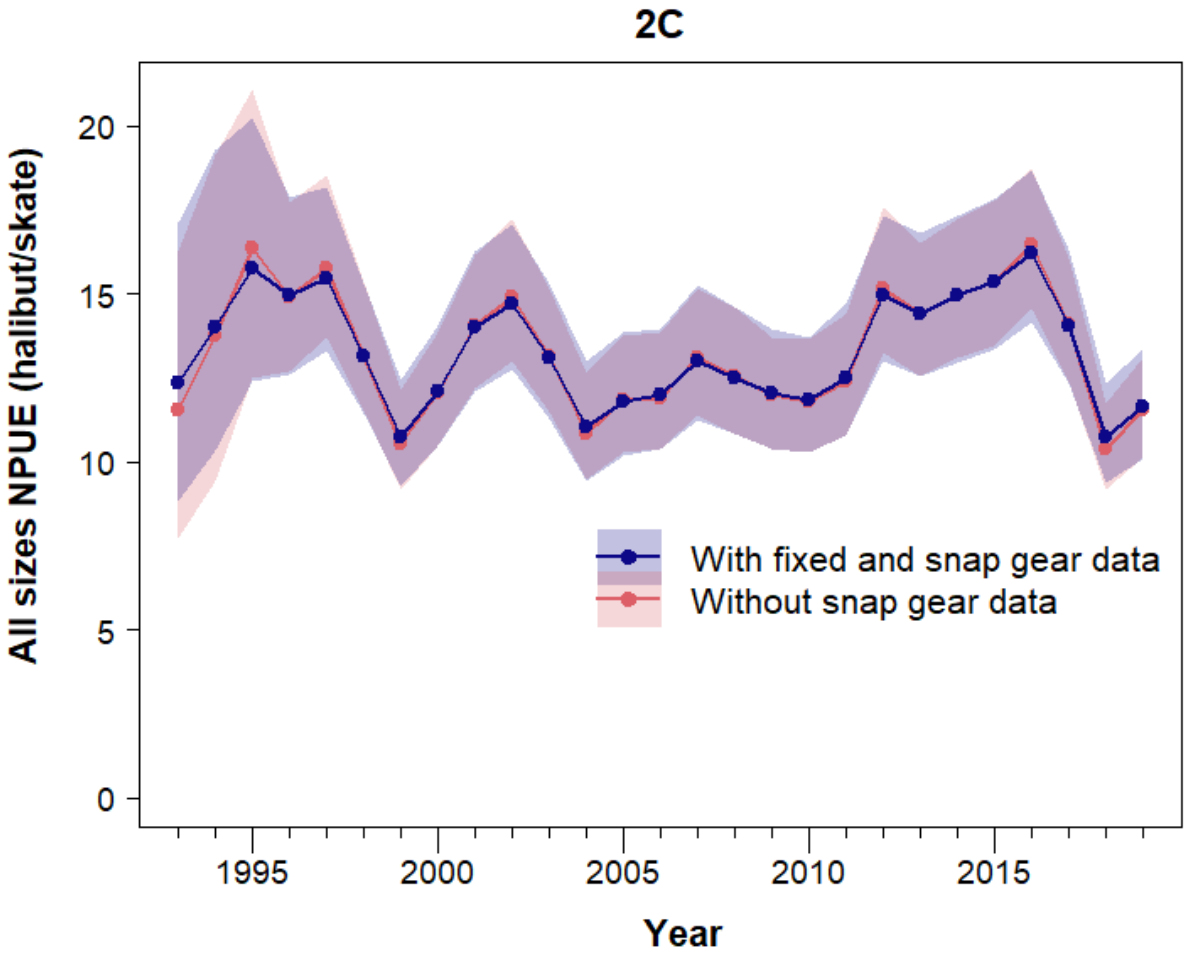

Figure B.2. Space-time model output for all sizes NPUE for 1993-2019 for Regulatory Area 2C, comparing output from models with and without snap gear data. Filled circles denote the posterior means of all sizes NPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate.

APPENDIX C

The effect of 2019 FISS expansions on space-time modelling results by IPHC Regulatory Area

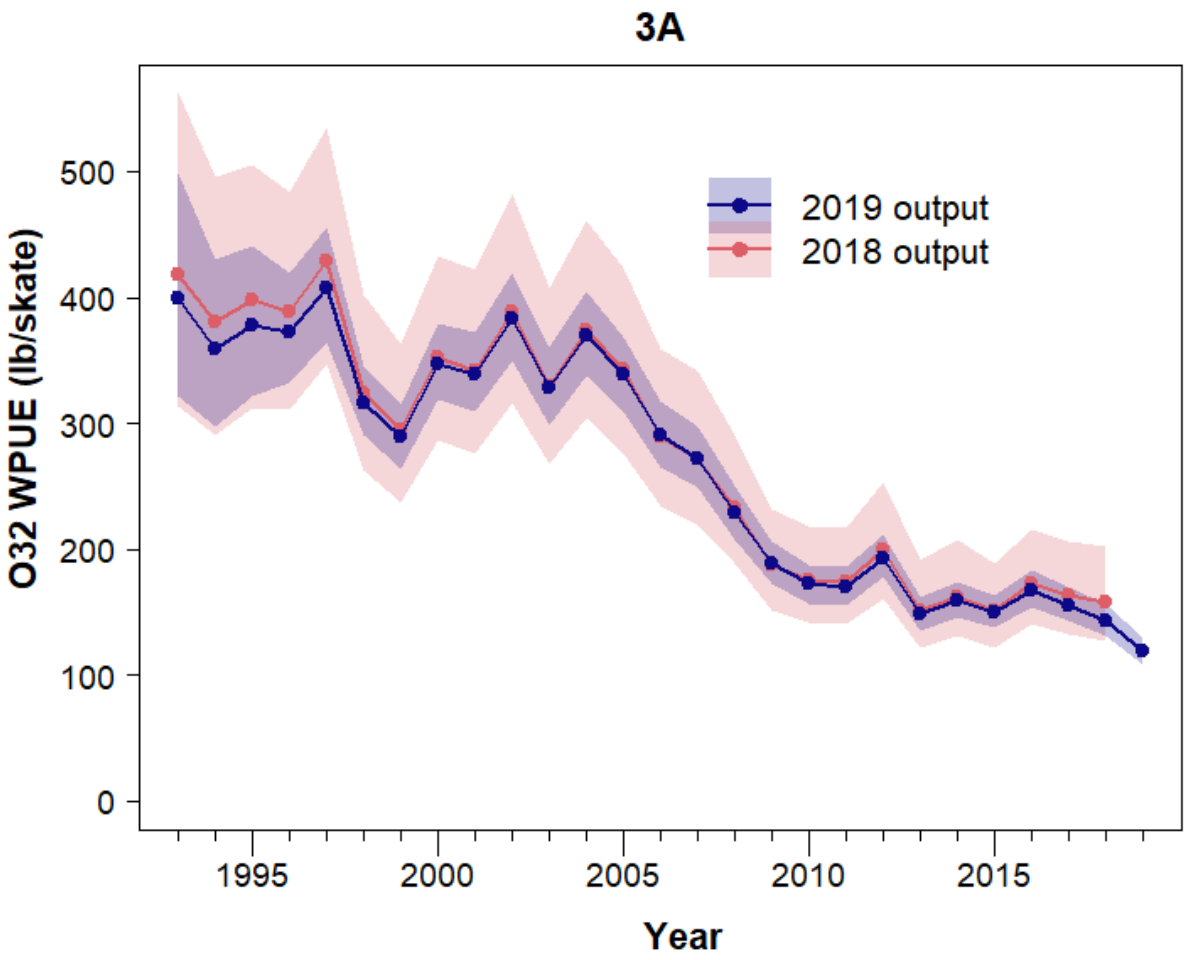

Figure C.1. Time series of posterior means of average O32 WPUE in Regulatory Area 3A from space-time modelling undertaken in 2019, compared with model output from 2018 modelling. The shaded regions show 95% posterior credible intervals.

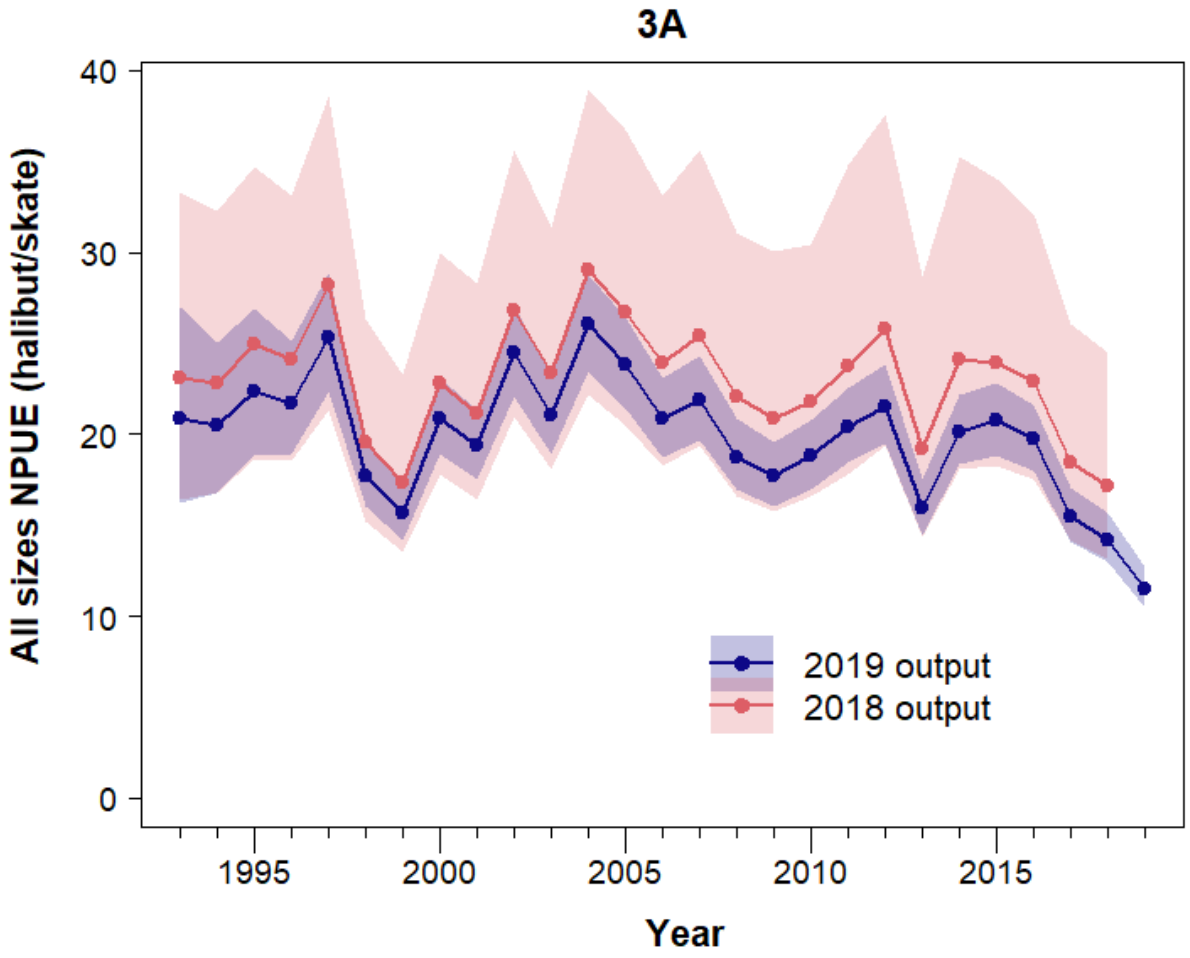

Figure C.2. Time series of posterior means of average all sizes NPUE in Regulatory Area 3A from space-time modelling undertaken in 2019, compared with model output from 2018 modelling. The shaded regions show 95% posterior credible intervals.

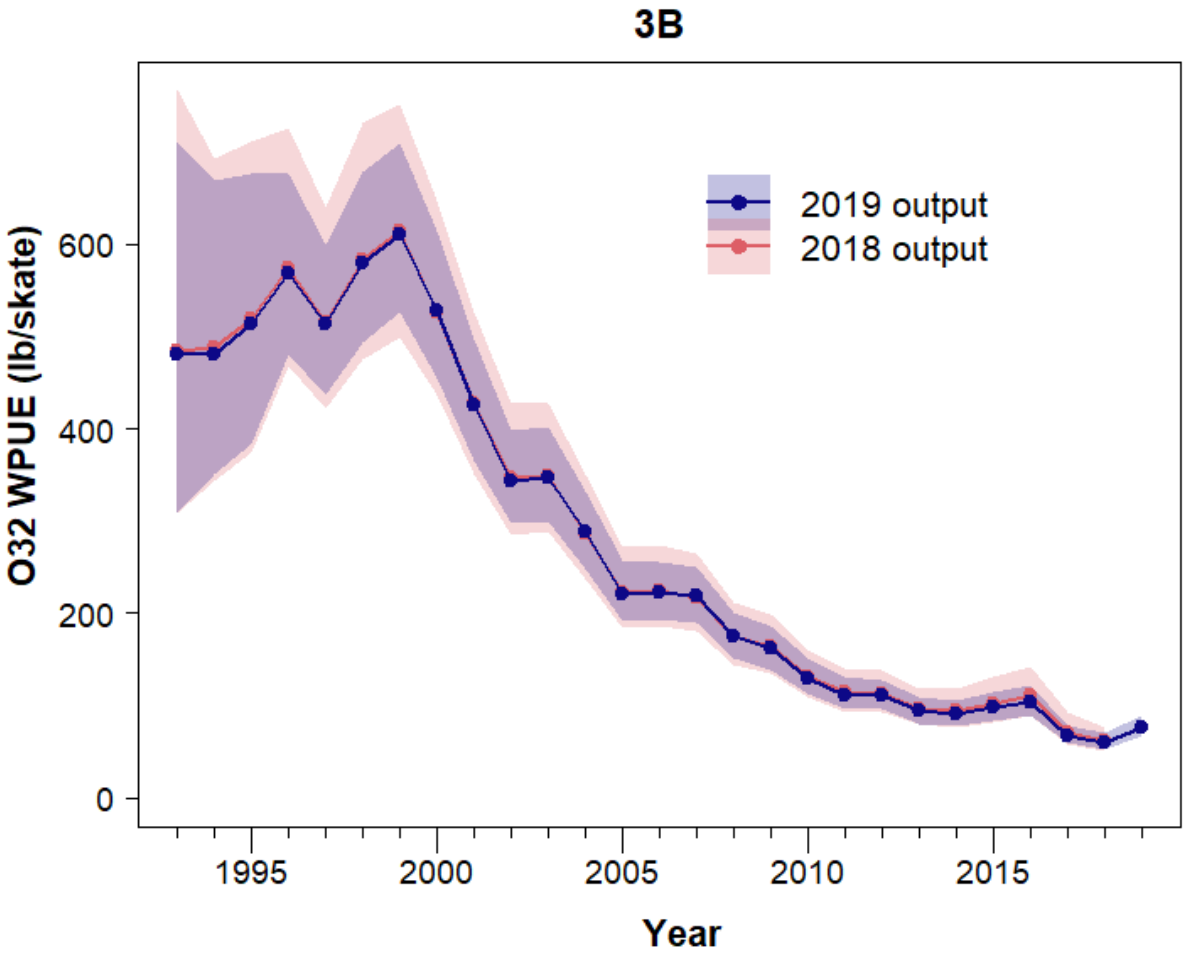

Figure C.3. Time series of posterior means of average O32 WPUE in Regulatory Area 3B from space-time modelling undertaken in 2019, compared with model output from 2018 modelling. The shaded regions show 95% posterior credible intervals.

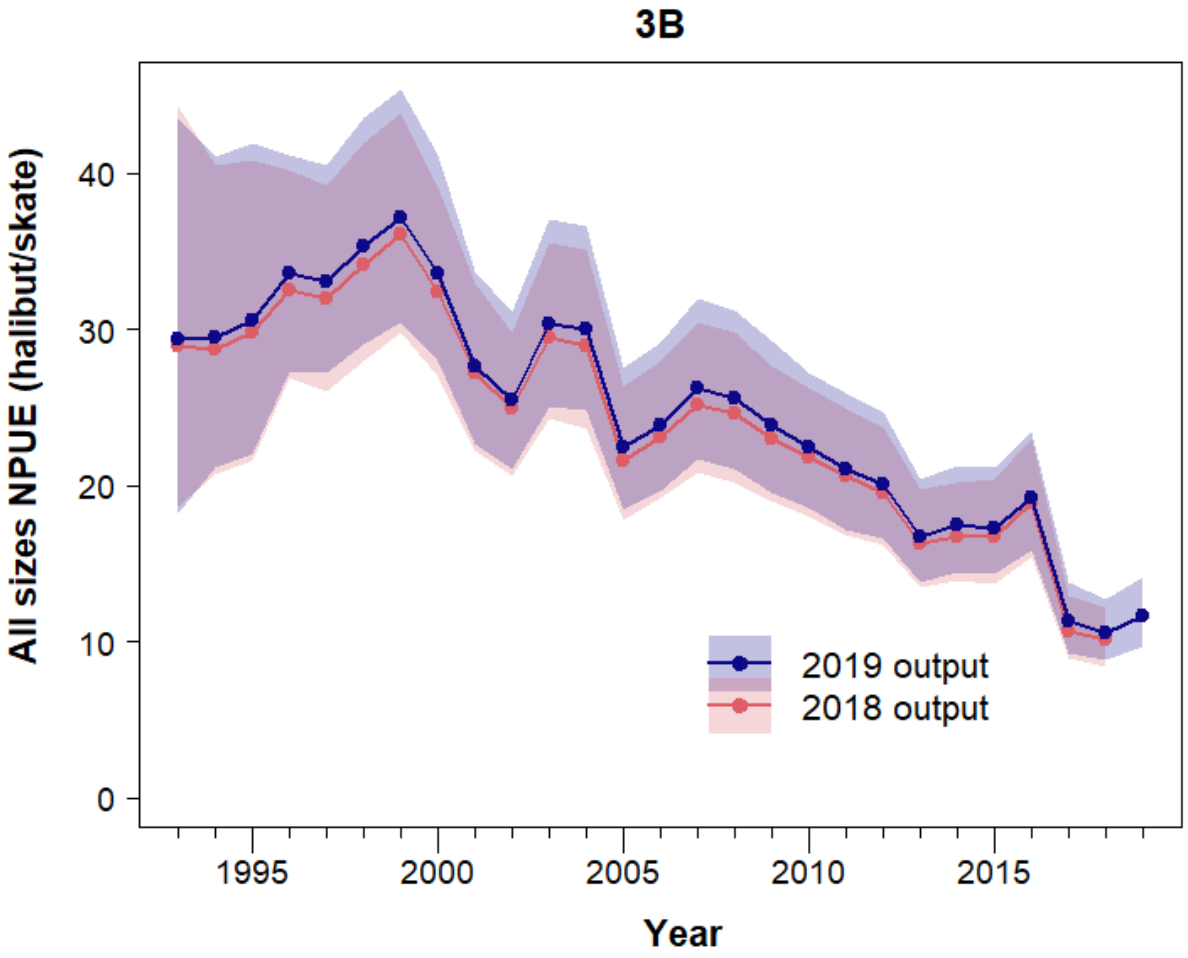

Figure C.4. Time series of posterior means of average all sizes NPUE in Regulatory Area 3B from space-time modelling undertaken in 2019, compared with model output from 2018 modelling. The shaded regions show 95% posterior credible intervals.

Stock Assessment: Independent peer review of the Pacific halibut stock assessment

PREPARED BY: IPHC SECRETARIAT (D. WILSON, 4 DECEMBER 2019)

PURPOSE

To provide the Commission with an opportunity to further consider the independent peer review report of the IPHC Stock Assessment for Pacific halibut.

BACKGROUND

The Commission directed the IPHC Secretariat via Commission decisions **AM095-Rec.10** and **IPHC-2019-ID001** (shown below) to:

> **95th Session of the IPHC Annual Meeting (AM095) – 1 February 2019**
> **AM095–Rec.10 (para. 129)** "*The Commission **RECOMMENDED** that the IPHC Secretariat develop terms of reference for a consultant to undertake a peer review of the IPHC Pacific halibut stock assessment, for implementation in early 2019. The terms of reference and budget shall be endorsed by the Commission inter-sessionally.*"
>
> **2019 Inter-sessional decision – 17 April 2019**
> **IPHC-2019-ID001**: The Commission **ENDORSED** the "*Open call for expressions of interest: Independent peer reviewer for the IPHC stock assessment*"

The report by the independent consultant was provided to the Commission on 2 August 2019, via IPHC Circular 2019-16, and again at the 95th Session of the IPHC Interim Meeting (IM095).

DISCUSSION

The report by the independent peer reviewer, Dr Kevin Stokes, is provided at **Appendix I**, and is also available on the Stock Assessment page of the IPHC website under the 'Peer Review' tab for transparency and accountability purposes: https://www.iphc.int/management/science-and-research/stock-assessment. A direct link to the pdf is also provided below:

https://www.iphc.int/uploads/pdf/sa/2019/stokes_2019-independent_peer_review_for_the_2019_iphc_stock_assessment.pdf

The review will be considered at the Commission's upcoming Work Meeting (18-19 September 2019), and also by the IPHC's Scientific Review Board at its 15th Session from the 24-26 September 2019.

RECOMMENDATION/S

That the Commission **NOTE** paper IPHC-2020-AM096-08 which provided the Commission with an opportunity to further consider the independent peer review of the IPHC Stock Assessment for Pacific halibut.

APPENDICES

Appendix A: Independent peer review of the Pacific halibut stock assessment (K. Stokes)

Independent Peer Review for the 2019 IPHC Stock Assessment

Prepared by Kevin Stokes
August 2019

Summary

This report reviews the in-development 2019 full stock assessment of Pacific Halibut being conducted by the Secretariat of the International Pacific Halibut Commission (IPHC). The stock assessment is updated annually and undergoes full assessment every 5 years. The last full assessment was in 2014. The basis for the full stock assessment should be completed by September 2019 for final review by the IPHC Scientific Review Board (SPB) before its application to all updated data in December 2019 and provision of science-based risk assessments to the IPHC for decision-making in early 2020.

This review covers the full spectrum of stock assessment related matters and is guided by the terms of reference set out by the IPHC. The potential scope is large and the review attempts to focus on key matters, based on the terms of reference and discussion with the IPHC Secretariat. The review included a site visit to the IPHC in Seattle which overlapped with an SRB meeting. The SRB has separately provided feedback to the Secretariat on the in-development stock assessment.

Pacific halibut has been exploited for over a century along the North American west coast by IPHC members (USA and Canada). Commercial fisheries started in the 19th century along the west coast but even before 1920 had expanded to the Gulf of Alaska. The majority of the stock is distributed in Alaskan waters and over time the commercial fisheries in Alaska have come to dominate mortalities. Since the 1960s, bycatch in commercial Alaskan trawl fisheries has grown. Pafiic halibut provides important subsistence catches and has also been increasingly taken by guided and non-guided recreational fisheries since the late 1970s. Despite the wide array of fishery sectors, data on mortalities and catch rates are generally of a high quality to inform stock assessment. Some minor areas of concern are noted in this review, including the section on research priorities.

Biological data from commercial fisheries are generally sound though as fish are landed dressed, sampling at ports is critical. A key issue is determination of commercial catch sex ratios. Work by the IPHC to determine sex ratios using port sampling and genetic analyses is in hand and new data have already been considered in the in-development stock assessment. This work is important and may need to continue beyond the initial 2 year program.

The IPHC operates a dedicated and extensive annual setline survey which provides the stock assessment with critical information on Pacific halibut abundance and distribution as well as with biological data. Exploratory work to improve the survey has been in progress since 2014 and should come to fruition in late 2019/early 2020 to inform the 2020 design. The survey, which uses a large number of member country commercial vessels annually, is outstanding by any measure and provides not just critical inputs to the stock assessment but also an important platform for ongoing and agile research to understand Pacific halibut biology and ecology. State of the art approaches are used to analyse survey data and provide high quality indices and

other data to the stock assessment. The survey is critical in that provides information on fish that will enter the fishery three or four years later.

The stock assessment is conducted using the Stock Synthesis framework and is carried out by world class analysts, supported within the IPHC by statistics and biology teams and by the independent SRB, and embedded in the fertile Seattle stock assessment and methods community. The quality of analysis if excellent and aimed purposefully at providing science-based risk assessment to support IPHC decision-making.

Individual stock assessment models have been developed iteratively over many years but have settled since the last full assessment to include four structurally different models that are fitted in a two-way cross to Long (i.e., full history) or Short (i.e., since 1992) data series and to Coastwide (i.e., as a single area) or AAF (i.e., Areas-as-Fleets). The models use different approaches to fixing or estimating natural mortality, selectivity, and environmental factors. The rationales provided for the model development are credible and robust based on historical analyses, data availability, and utility. All models are individually fit using state of the art manual, iterative tuning techniques which are well explained. As an in-development assessment, final tuning will be required once the assessment approach is agreed and final 2019 data become available. The in-development assessment considers addition or replacement of models for the final assessment. This review finds the four models a good basis for providing a consistent, robust and credible risk assessment to the IPHC in early 2020. Especially given the progress being made on Management Strategy Evaluation by the IPHC Secretariat, for possible implementation of agreed mortality-setting rules by 2021, major changes to the existing set of stock assessment models is not encouraged.

The provision of risk assessment advice to the IPHC uses all four, structurally different models, in a way which is slightly unconventional. Most stock assessment-based advice is based on a single assessment and associated sensitivity runs to portray uncertainty. While that approach may provide risk assessments that include uncertainty associated with data and model fitting to data, it does not address uncertainty due to the structural differences between models - all of which are valid. Selecting a single model as a basis for risk assessment puts a key part of the risk decision in to the science process rather than the IPHC Annual Meeting process. In order to separate risk decisions in science and policy to the greatest extent possible, the IPHC approach is to assess risks associated with any decisions on future mortalities using an ensemble of all four models. Selection of the four models is rational and science-based and use of all four removes the necessity to focus on any one model.

Of course, different models could be selected and risk assessments could be affected. The rationales for model development are, however, science based and credible. In order to provide a consistent basis for advice this review concludes that continued use of the four individual models is appropriate. This leaves open the issue of whether the four models might be weighted equally, as in recent years, or differentially. There is no right way to weight the models and even equal weighting is arbitrary. Equal weighting also makes models with lower biomass scales

influential in assessing risks. The issue of weighting is considered in the review and at this stage it is advised to maintain equal weighting.

The IPHC is conducting Management Strategy Evaluation which is likely to result in adoption of rules for setting mortalities in 20121. Once implemented, it is possible the need for annual stock assessment updates will be removed. This would provide time to analysts to explore more fully a range of important issues such as automated tuning of individual models, alternative individual models to account for structural uncertainty, weighting of models within the ensemble, use of Bayesian approaches (also impacting on ensemble weighting options). All of these are considered in the review as well as all other research priorities outlined in IPHC stock assessment and data update papers.

Background: ToR, Process, and relationship to IPHC Performance Review

Terms of Reference (ToR) for this stock assessment (SA) review are intentionally wide, providing scope for discussion and focus as deemed appropriate on the *stock assessment process, methods and reporting*. Nevertheless, *specific topics that should be addressed* fall in the following categories:

1) Aspects of data collection and analysis.
2) Aspects of individual model development. [Aspects of developing individual models to consider for including in the ensemble.]
3) The collection of models contributing to the ensemble, and the methods for combining/weighting the results.
4) Comments on research priorities or avenues for data, model or management advice development as appropriate.
5) Comments on the document and background material provided for the review.

The review is also required to *clearly delineate between tactical changes to be considered for the current (2019) stock assessment and research avenues for future work.*

The review was carried out remotely but benefited from an informal site visit from 17-20 June 2019 to meet IPHC staff, discuss a range of SA issues, identify key SA documents, and understand the IPHC website structure and content. The site visit also provided an opportunity to discuss science processes, to be reported on separately as input to the 2nd Performance Review (PR) of the IPHC (PRIPHC02). The site visit was not initially planned and I am grateful to the IPHC staff who made time and contributed to it.

The IPHC SA is undertaken within the Secretariat by dedicated science staff. The primary focus of this review is the SA *per se*, conducted by the *Quantitative Sciences Branch*. Inputs to the SA and aspects of research planning and prioritisation, however, also require consideration of work carried out by the *Biological & Ecosystem Sciences Branch* and the *Fisheries Statistics &*

Services Branch. During the site visit, four presentations were provided by the three IPHC Branches as background and to aid discussion. The presentations used were the same as given to the 1st session of PRIPHC02; they are available online at: https://www.iphc.int/venues/details/2nd-performance-review-of-the-iphc-priphc02-1st-session.

The last full SA of Pacific halibut was in 2015 with updates in 2016, 2017 and 2018. The in-development SA now being reviewed (the 2019 assessment) is the first weigh point in the first full assessment since 2015. Expectations about the SA are provided in the report of the 13th Session of the Scientific Review Board (SRB; IPHC, 2018): *A full assessment analysis and review is planned for 2019, which will allow more in-depth investigation and model-based evaluation of the new and/or revised data. Progress continues on the reevaluation of whale depredation accounting in the Fishery Independent Setline Survey time-series, as well as the sex-ratio of the commercial catch in 2017; both products are anticipated in February 2019. That analysis will also allow for an in-depth exploration of data weighting, parameterization of time-varying processes and other modelling approaches implemented in the four Pacific halibut models comprising the stock assessment ensemble.*

The key SA document for the review is Stewart and Hicks (2019). As a first weigh point in the 2019 process, the paper describes and reports on preliminary analyses conducted during the development of the 2019 SA. It includes consideration of new data; bridging from the previous assessment, including consideration of issues noted by the SRB; initial individual model weighting; and initial ensemble modelling. While it superficially provides indications for status in 2019, these should be treated cautiously given the imminent addition of full 2019 survey, fishery and other data, and potentially any changes in models used.

The IPHC SA process includes two SRB meetings annually; the preliminary SA report is presented and considered in June each year and feedback from the SRB is used in development of the final SA that is presented to the SRB in mid-late September. Completed current year data are then used in final model runs and development of decision tables to be used by the Commission. This review is timed to allow any findings to be considered alongside comments made by the SRB in the report of its 14th session. Stewart and Hicks (2019) has in fact already been considered by the 14th Session of the SRB which met from 24-26 June 2019 (IPHC, 2019a). The SRB made just three requests of the SA team: one regarding the IPHC setline survey and two regarding the SA modelling. These are commented on below.

ToR bullet 5 (*Comments on the document and background material provided for the review*) can be dealt with quickly and simply at the outset. The SA paper by Stewart and Hicks (2019) is notable for its careful and logical elaboration of the in-development SA. It is unusually and exceptionally clear with a focus on explaining why as well as how models have been developed - from an historical perspective, given data, and in the IPHC decision-making context. While many SA documents focus on model fitting, Stewart and Hicks (2019) is about modelling but with full consideration of model fitting nested appropriately, comprehensively and clearly. It is an excellent document but for review needs to be read in conjunction with Stewart and Webster

(2019) which elaborates on data available for the SA. It also needs to be considered in the context of its purpose which is to provide a scientifically rigorous, but value-free, risk assessment to aid the Commission in its annual deliberations.

In addition to the in-development SA document, a wide range of papers and materials were made available for the review in electronic form, either in advance, during the informal site visit, or through the IPHC website. In advance, these included detailed input and output files for the individual models (see ToR bullet 2) used in the ensemble (see ToR bullet 3); the excellent, annually updated, overview of data sources up to November 2018 (Stewart and Webster, 2019; ToR bullet 1); previous model documentation; and relevant papers/manuscripts on the assessment, most notably as relevant to ToR bullets 2 and 3. The overall quality of documentation from all IPHC sources is of the highest quality with exceptional care taken in preparation.

Data Collection and Analysis

ToR bullet 1: Aspects of data collection and analysis.

Stewart and Webster (2019) provides an annual update of data as of November 2018. The paper is clear and comprehensive in scope as of November 2018, identifying data changes and additions but not repeating methods as outlined in previous documents. Data as relevant to the SA development, including bridging and weighting, have also been summarised in Stewart and Hicks (2019). During the site visit for the SA review, a number of relevant presentations were made (as also made to the PRIPHC02, see above).

Full review of all data sources is beyond the scope of this review. Review, for example, of fisheries statistics collection or the Fisheries Independent Setline Survey (FISS) could be standalone. Only key aspects of data collection and analysis are commented upon here. Stewart and Webster (2019) note a number of data sources for potential future analyses and relevant research projects. All of these are also included in a wider list of research priorities outlined by Stewart and Hicks (2019). These are all commented on in the section below on *Research priorities, Biological understanding* or *Research priorities, Data related research*.

The data available for Pacific halibut SA are unusual in that they span a long period of time and comprise both high quality fishery dependent and independent sources which are well documented and understood. The fishery dependent and independent sources are remarkably coherent. For example, the comparison between the FISS over-32” WPUE and commercial WPUE from 1995 onwards can be seen clearly in slides 10 and 11 of IPHC (2019b) and between FISS indices and commercial WPUE reported in Stewart and Webster (2019). While the sex ratios of the FISS and commercial catch are different, the trends and scales are neverthless suggestive of a high degree of consistency between the indices, reflected also in the good fits to all indices in the individual models reported in Stewart and Hicks (2019). Comparisons of compositional data from different sources also appear consistent. Of course,

the SA needs to balance compositional and other data with indices and to fit complex selectivities, estimate mortality, etc, but the coherence overall gives reassurance that the final SA should be able to provide i) a robust view of the Pacific halibut stock status, and ii) a sound basis for risk assessment related to future mortalities. It is usual in SA to need to make hard decisions about data weighting in individual models which go beyond rigorous statistical considerations. With such coherent data there is a reasonable *a priori* expectation that weighting choices might be less important than is often the case. Also, with such coherent data it is reasonable *a priori* to expect between-models correlation of trends and estimates of variance on status metrics and forecasts (see below on ensemble modelling).

Pacific halibut is caught by an array of sectors across a wide geographic range and in two national jurisdictions. Even with the majority of the catches being taken in directed setline fisheries, fisheries data collection and preparation is therefore complex.The IPHC has its own observers but relies necessarily on its member states' national data collection programs for fisheries-dependent data that feed into the SA. In discussion with IPHC staff, this seemed to be regarded as a weakness, but it is normal for cross-boundary stocks managed by RFMOs and the overall quality of mortality data does seem to be good. The IPHC clearly works directly with fisheries and has good relationships that enhance data collection and understanding of issues. IPHC staff visit ports and vessels and the annual use of multiple commercial fishers for the FISS is a means not just to collect high quality data but also to develop relationships that underpin confidence in wider data collection. Ongoing access at ports, e.g for fin clipping to determine sex ratios in commercial catches, is a good example. Confidence in following regulations and reporting is also created in, e.g., USA complete lack of head-off landings in 2017 and 2018 following regulatory change in early 2017 (IPHC, 2017 para 48).

IPHC (2019b) and Stewart and Webster (2019) provide a summary of the multiple fishery components by sector and area. My overall impression is that while the data collection systems could always be better specifically for halibut, they of course are designed for multiple species with a wide range of constraints. Given those constraints, there seems in the main documentation to be general satisfaction that the nature and extent of mortality is reasonably captured. The lack of sensitivity testing in historic and current SA suggests it is not regarded as a major uncertainty. However, some concerns are implied at *Research priorities, Data related research* items 10 and 11 which propose (10) reanalysis of historical bycatch mortalities and age frequencies, and (11) investigation of variances and errors in the scale of mortality estimates; these concerns are commented on below. IPHC (2019c) notes a number of concerns related to recreational, subsistence and bycatch fisheries. Considering concerns expressed by both IPHC (2019c) and Stewart and Webster (2019), only one common issue seems to emerge - the low level of observer coverage in directed fisheries in Alaska, with none for vessels less than 40', leading to inaccurate fish weights and age-distributions for discarded fish. The Alaska commercial fishery mortality is a large percentage of the total (circa 50%) and of the Alaska fishery the discard percentage is of the order of 5%. While 5% of 50% may seem small, information on fish below the MLS is important in determining selectivities and providing information on recruitment to the SA. It is beyond the scope of this review to recommend

improving observer coverage by a member state but this is clearly one aspect of mortality estimation where improved information would be useful and could improve credibility of the SA.

One potential unaccounted mortality component is whale depradation in the commercial fisheries, as has been observed, quantified and explored for the FISS (see below). This is not mentioned in Stewart and Hicks (2019), even under *Research priorities*, or other documents but was raised in discussion during the site visit. The possible scale and nature is unclear, as is whether it might (or not) be important in the risk assessments provided for decision-making. While discarding could create an unaccounted mortality of smaller fish that might impact estimated future risks, depradation by whales of the same scale as discarding might be important to estimated status and/or future risks depending on its nature (i.e., size of fish taken or trends). Generally, for all stock assessments, consistent biases in unaccounted mortalities should "come out in the wash" if fishing practices remain consistent. Where unaccounted mortalities trend, however, and if they are of sufficient scale, problems can occur. If depradation is greater in specific areas and mortalities are allocated by area, as is the case for Pacific halibut, then the unaccounted mortality could become very important. Given experience from the FISS, working with commercial fishers in areas susceptible to whale depradation to quantify possible losses would appear to be feasible. Some simple 'what if' model runs with assumed trends in the scale and nature of depradation could be made quite quickly as part of the 2019 SA or, more pertinently, Management Strategy Evaluation (MSE) processes to gauge what level of depradation might be important (see *Research priorities, Data related* research item 9).

Pacific halibut are landed gutted and the sex ratio of the commercial catch has therefore not been monitored historically. As the fishery is highly size selective and males and females have different growth schedules, the commercial sex ratio is not expected to be 50:50 and could vary spatially and/or temporally. As reported in Stewart and Hicks (2019), this has been a cause for concern in the SA for some years. The current IPHC 5-year Biological and Ecosystem Science Research Plan for 2017-2021 recognises the need for accurate sex identification of commercial landings both for SA and MSE work (see: https://www.iphc.int/uploads/pdf/besrp/2019/iphc-2019-besrp-5yp.pdf). In line with the plan, port-based fin clip processing was carried out during 2017 and 2018 with genotyping of samples to determine sex also conducted. The work has yet to be published but is outlined briefly in https://www.iphc.int/uploads/pdf/priphc/priphc02/ppt/iphc-2019-priphc02-05c-p.pdf. To date, the 2017 samples have been genotyped and results made available for the 2019 SA development work. The results are briefly outlined in Stewart and Hicks (2019) and are used in the 2019 individual model bridging exercise (see below). The 2017 data became available in February 2019 and it is unclear if the 2018 sex ratio results will be available for the final 2019 SA or only in 2020 for the 2021 update.

Including coastwide and regional sex ratio information in the SA is clearly important given the nature of the fishery and potential implications for model fitting (see below) and management. The willingness of IPHC to pursue important data collection and use new data in analyses is commendable. The research plan currently only includes fin clip collection in 2017 and 2018. It

may be necessary to update the plan to monitor in future years as well in case of temporal or spatial changes in sex ratios, with potentially serious implications for SA modelling. If the 2018 results are similar to the 2017 ones then the final 2019 SA may remain appropriate and credible but if the 2018 results become available in early 2020 and show different patterns, it could undermine confidence in the2019 SA and any decisions made by the Commission in January 2020. Ideally, the 2018 results would be available for the final 2019 SA.

Fishery independent information is available through the IPHC FISS and the NMFS trawl survey in Alaska. It is unusual for SA purposes to have access to even one high quality fishery-independent index and the IPHC is fortunate to have two, with the dedicated IPHC FISS being exceptional by any standard. Its duration, scope and fine-scale provide a fishery independent index (coastwide or by region or area), composition data, and biological information, including annual estimates of stock distribution by area. The FISS provides the primary index for the SA. As an IPHC-run annual survey it also provides a platform for other research (see, e.g.: https://www.iphc.int/uploads/pdf/priphc/priphc02/ppt/iphc-2019-priphc02-05b-p.pdf). The use of multiple commercial vessels further provides an opportunity for industry and Secretariat interaction and for building credibility in any outputs from the survey as used in SA. Expansion work in the FISS from 2014 through 2019 demonstrates both a flexibility seldom seen in more general surveys and a desire to improve information and credible science support for decision-making. Critically, the FISS provides information to the SA on fish below the commercial MLS of 32". Together with the NMFS survey which samples still smaller/younger fish, the FISS is a key component of the SA and provides the ability to provide probabilistic forecasts of the impacts of future catches on stock status.

The FISS is simply but well described in Webster (2019). Since 1998, it has been *undertaken annually using a 10 nmi fixed grid design, within depths of 37-503 m (20-275 ftm). This design ensures that, on average, all habitat types within the area covered by the setline survey are sampled in proportion to their occurrence, while fishing the same fixed stations each year reduces uncertainty in any estimates of trends in density indices derived from the setline survey data.* As reported in Webster (2019), the FISS has been analysed using a space-time modelling approach since 2016 but, as commented on by the SRB (IPHC, 2018): *NOTING that this is the sixth review of the spacetime modelling approach, the SRB reiterated its ENDORSEMENT of the approach as cutting-edge and could be widely used. Thus there is a pressing need to publish the space-time modelling approach used for the fishery-independent setline survey data in a peer-reviewed scientific journal.* I have been unable to find even a source grey paper on the IPHC space-time modelling, only on results and discussions such as Webster (2019), but agree with the SRB as to the general utility of the approach which is now becoming commonplace as a replacement for design-based modelling and is well understood (see, e.g.: http://www.capamresearch.org/Spatio-Temporal-Modelling-Mini-Workshop/presentations). The approach allows not just surface fitting for integration of indices but a deeper exploration of covariates and time-dependencies than more traditional approaches, as well, potentially, of

estimating biological data such as age compositions. This is commented on under *Research priorities, Data relates issues* item 12.

The SRB (IPHC, 2019a) has requested: *analysis of past prediction patterns (a type of cross-validation analysis) to help assess the proposed methods' ability to meet precision targets while maintaining low bias. This should include an examination of spatio-temporal residual patterns for the appropriateness of estimated autocorrelation*. SRB reports are summary documents and do not provide documentation of discussions leading to request (though full audio recording is available). I am therefore unclear as to the reason for the SRB request. As I understand it, it is not requesting cross-validation *per se* but the requested work is regarded as conceptually related to cross-validation. Clearly, it relates to estimates from the space-time modelling and their use in the SA. I have what might be a related comment motivated by use of the space-time modelling to understand fundamentally how the distribution of fish is more or less stable through time and how complex, and the factors that influence variation. Fixed station design will generally reduce variance but at the possible expense of bias, especially if the complex distribution of fish changes through time. The space-time modelling approach used for FISS analysis can account for variations in distribution but bias will still depend on survey coverage compared to stock distribution. The expansion work since 2014 (one area *per* year) is clearly aimed at re-design to reduce bias in estimates by area and also further reducing the variance of estimates. Any re-design of the FISS following completion of the expansion series should be beneficial.

Consideration of covariates (e.g., Dissolved oxygen) in the space-time analyses appears to be ongoing and discussion between the Secretariat science staff and the SRB is guiding inclusion or otherwise. I see no need to add further comment other than the process is working, discussions taking place, and results being produced as required for the SA.

Primary and even grey literature on the FISS and application of space-time models is scarce; it would be good to see a publication not just on methods applied to the FISS and utility in SA, but also on fundamental understanding of halibut.

One issue of note regarding FISS indices is as outlined by the SRB (IPHC, 2018) - the need for re-evaluation of whale depredation accounting in the FISS time-series. This is effectively handled in the bridging exercise (see below) using revised FISS indices estimated using data revised due to redefined and reviewed criteria for determining when a FISS station has experienced whale depradation and should therefore be deemed ineffective. The details of the revised FISS indices are not given in Webster (2019) or Stewart and Webster (2019) as the work was only completed in February 2019. Presumably they will be included in the update paper dated 2020. The issue is briefly described in Stewart and Hicks (2019). This is mentioned here primarily to emphasise that the IPHC is responsive to concerns and through iteration with the SRB is careful to address issues - in this case, requiring a revision of data usage in analyses of the FISS, re-running of the FISS and consideration within the SA development phase.

While the commercial fishery samples fish from 32” upwards, mostly age 8 upwards, the FISS samples fish from 4-5 years old and the NMFS trawl survey samples fish from 2 years old. Sampling from all sources is clearly variable but IPHC samplers are involved in both surveys as well as at ports. Age composition data are available from all sources and information on cohort structures appears coherent between sources and informative in the SA. Work on age-determination has been ongoing and current ageing appears to be robust.

The overwhelming issue that stands out from biological sampling in the FISS, NMFS Alaska survey, and commercial landings is the strong trends in weight-at-age. While not discussed in Stewart and Hicks (2019) or Stewart and Webster (2019) the issue is included under *Research priorities, Biological understanding* item 4 and PHC-besrp, 2019 already (Appendices II and III) includes a number of growth-related studies due to feed in to the SA and MSE. It is unclear at this proposed item what additional work, if any, is envisaged. As a general comment, distinguishing between the range of factors listed (*competition, density dependence, environmental effects, size-selective fishing and other factors*) is likely to be extremely difficult in practice, even with the extensive and high quality data available on Pacific halibut, other stocks, and the environment from the USA and Canada NW and USA Alaska regions. Also, while understanding historic variations in growth in relation to a number of factors might be possible, prediction is only possible if the processes are understood. As reference points are defined as spawning biomass relative to dynamic, unfished spawning biomass, changes in weight-at-age are masked in advice on Stock Status but do, of course, flow through to Decision Tables as absolute values of Total Mortality used, as well as to Trend assessments. In the case of advice on Stock and Fishery Trends apparent risks are potentially confounded and probabilities poorly determined in weight-at-age trends are not appropriately predicted. For the 3 year forecasts used this may not be problematic but is something that might be considered in the MSE.

Individual Model Development

ToR bullet 2: Aspects of individual model development. [Aspects of developing individual models to consider for including in the ensemble.]

Stewart and Hicks (2019) describes clearly the historical development of individual models given the history of fisheries, data, survey developments, problems with previous models, etc. The rationales for model development and current selection within the ensemble are well-made and I see little need to revise these core models which have been used to provide advice for a number of years. The issue of whether they might be considered separately in providing multi-model advice or using an ensemble is a separate issue considered below. Each individual model is structurally distinct and is fitted to different data, allowing an exploration of model uncertainty.The models use either the long or short time-series and for each use more (AAF) or less (CW) disaggregated abundance and composition data. Models also differ in assumptions about selectivity, natural mortality, and other factors, with time-varying selectivity in the AAF models a major feature. The Long models also incorporate a simple environmental regime

factor, coded as a binary PDO productivity regime parameter in the stock-recruit relationship and consistent with Pacific halibut SA practice over more than a decade. Further comment on the PDO is made at *Research priorities, Technical development* item 9. As noted above, the information between data sets is reasonably coherent - abundance indices are apparently correlated, despite even sex ratio differences between surveys and commercial fisheries, and, as modeled, composition data provide reasonable information on selectivity and natural mortality sufficient to allow coherent interpretations within models. I note the use of direct weight-at-age data coupled with time-varying selectivity in the AAF models; while highly parameterised it is not statistically over-parameterised. The rationale provided that the approach deals effectively with historic retrospective patterns is reasonably convincing, though there do appear to be recalcitrant retrospective patterns still associated with male selectivity estimation.

While the abundance indices provide a robust definition of scale, the greatest uncertainty is of course due to process misspecification of natural mortality, selectivity, and recruitment but the 4 models capture a wide range of that misspecification. Despite the rigorous approach to tuning, Stewart and Hicks also downweight composition data relative to abundance data which provide information on scale critical to the risk assessment.

For the current tuning approach, clearly described in Stewart and Hicks (2019; pp. 27-29) it would be useful diagnostically, even with a simple 2x2 ensemble, to track the weights applied to each of the data sources for individual models, from assessment to assessment. It is noticeable, for example, in Stewart and Hicks (2019, Fig 13) that the AAF Long tuned model estimates of trend are markedly different to the 2018 corresponding model (at least pre-1995), perhaps implying different weighting, though other individual models within the ensemble are all similar. With no simple comparison of outputs through time (e.g., such as a 2018 equivalent of Stewart and Hicks, 2019, Fig. 62) or of final tunings (Table 11), it is hard to determine the degree to which tuning per se might be an issue. This links below to *Research priorities, Technical development* item 2. Of course, as decision-making is determined by post-1995 estimates and as trigger reference points are approached increasingly by ensemble lower/mid tail estimation, the AAF Long model may not in any case be as important as either coastwide model which have lower spawning biomass scales. With the full 2019 data yet to be used in the assessment and final tuning still to be carried out, this will all change and it is not necessary to dig too deeply at this stage.

While not made explicit in Stewart and Hicks (2019), for each model, the bridging analyses presented suggest a consistent weighting and tuning of data with past corresponding model implementations, except perhaps in the case of the AAF Long model. From the report, it is unclear to what extent individual model relative weights and tuned effective weights may have changed between years. In discussion, however, it has been clarified that within-model data weighting has been kept constant year-to-year to reduce/avoid changes to model structure during annual updates. The explanation for the clear difference in estimated trends for the 2019 AAF Long model is thus that the re-tuned weighting "*was 'catching up' with all the new information added since 2015*". This is sensible practice, consistent with the approach of annual

updates. Annual updating of data includes not just newly acquired data but also re-worked data and it could be argued that even annual updates should involve complete re-weighting and re-tuning; however, re-weighting would hide effective changes in model structure. Nevertheless, for the final SA, it might be useful to see how relative weights within individual model fits might have changed through time.

There are still axes of uncertainty such as steepness which is fixed in all individual models though has already been explored to a degree. The SRB (2019a) has requested a coarse profile of steepness. Comment is made on this in the section below on the ensemble as well as in *Research priorities, Technical development* item 2. Overall, given the historical rationale and data availability, the 4 models as structured, provide a sound basis for the risk assessment provided as advice to the Commission. None of the models is regarded as right or good enough to provide advice in isolation but the set appears to capture wide structural uncertainty and the models jointly have utility. Stewart and Hicks (2019) reports on attempts to estimate steepness. There appears to be little information to allow estimation of steepness which is, of course, confounded with natural mortality and influenced in fitting by other parameter choices. Likelihood profiling on steepness will be interesting but models that can trade steepness for other parameters generally will have little impact on probabilistic advice. However, the CW Long model is the lowest scaled of the 4 models and the one for which steepness estimation to date does have an apparent impact. Any profiling will need careful tuning but should it lead to use of a steepness axis for any or all of the 4 models in the ensemble, perhaps nested weighting could be applied such that while the four structurally different models are each weighted equally, weighting within models across the additional axes (steepness) might rely on standard approaches such as AICc (Suguira, 1978).

There is one area of potential concern. The issue of stock structure and migrations is clearly recognised by the IPHC science teams, both within the existing stock boundaries of the SA but also, potentially, as pertains to connection to the western Pacific. I note in Stewart and Hicks (2019) there is just one passing reference, in *Other Uncertainty Considerations,* to the possibility of linkage to Russian waters. It receives no mention in Stewart and Webster (2019), nor in either the presentations given to the 1st session of PRIPHC02 or the current 5-year research plan. In discussion, however, the issue was raised by IPHC staff. In contrast, migration and distribution within existing stock boundaries is well-covered in the current 5-year research plan, with dedicated projects and collaborations that explore larval and early juvenile dispersal modelling, late juvenile migration using wire tags, and tail pattern recognition to follow fish through time. Stock structure and migration issues are always important and work to understand the issues is warranted. However, the existing ensemble of models includes AAF models which allow annually varying selectivity estimation. Arguably, while modelling different processes, these models should capture some of the uncertainty that might be due to migration or stock structure. The final research priority in Stewart and Hicks' list (*Research priorities, Technical development* item 9) also touches on this general issue and comment is made below. In summary here, while the issues of stock structure and migration are recognised as important to

understand, they are not regarded as critical with respect to current individual and SA modelling and the provision of robust risk assessment and advice to the Commission.

While the SA might remain focused on the 4 individual models during the full assessment and perhaps some exploration of alternatives or nesting of axes of uncertainty within models (see section on the ensemble below), the ongoing MSE work provides an opportunity for wider investigation of structural uncertainty and could be used to guide research and SA efforts in the context of what matters to decision-making.

While supporting the continued use of the 4 individual models for the 2019 full assessment, I note that Stewart and Hicks (2019) is a weigh point and that fitting to data in November 2019 could reveal issues that warrant further investigation. The initial bridging work has utilised the most recent data to address issues raised by the SRB (IPHC, 2018) regarding whale depradation in the fishery independent setline survey (FISS) and sex ratio of the commercial catch (using fin clip sampling). It is important to note that the final 2019 SA will use data up to late 2019, including from the 2019 FISS (possibly including Region 3 expansion), mortality estimates, age compositions, weights at age, and a second year of sex ratio data. Working from the weigh point, however, and the careful bridging work carried out, it appears that issues considered have either nil effect (change in software version, and consideration of whale depradation in the survey) or result in changes as expected (use of new sex ratio data).

The explanation in Stewart and Hicks (2019) of manual, iterative tuning methods used in the SA is clear and informative; far more so than most stock assessment reports. It describes well both philosophy and, to the extent possible, practice. As described and discussed during the site visit, the Pacific halibut tuning process is rigorous. Like all manual, iterative fisheries model tuning, however, it is highly time consuming, difficult to describe in complete detail, difficult to replicate, and hard to review externally given the highly detailed process.

Stewart and Hicks note the possibility of estimating observation and process error (Thorson, 2018) rather than iterative, manual tuning. Thorson outlines how recent advances in parameter estimation involving random effects could be used to replace manual tuning in fisheries assessment models. While restricting discussion to three areas of parameter tuning that might be replaced by estimation variance parameters directly, Thorson argues that the techniques are likely extendable to the case of multiple variance parameters (as required in fisheries SA such as for Paciifc halibut). It is not clear if the Pacific halibut SA could be implemented using random effects models to estimate parameter variances (in place of manual tuning) in the 2019 SA round, but it seems unlikely given the SA is currently implemented using Stock Synthesis (“SS”; Methot *et al*, 2013)) which does not yet include the option. It is well beyond the scope of this review to suggest SS might be converted to implement random effects models but Thorson notes two modelling tools that do use random effects (STAN and TMB; references in Thorson, 2018) are already available and used for stock assessment modelling. Coding the individual Pacific halibut models using STAN or TMB is a major task and unlikely within the 2019 SA round but could be explored in 2020, perhaps for comparison with updated models using manual

tuning. This is an exciting area of development that could result in a major step forward in undertaking fisheries assessment. While estimating variance parameters will be computationally time-consuming it should be much faster and 'safer' that manual, iterative tuning. Potentially, it could also be incorporated in to grid-based operating models used in MSE/MPE.

While the approach advocated by Thorson has clear advantages, it potentially has some disadvantages. One potential disadvantage is the opportunity to press a button rather than explore. The Pacific halibut SA is an excellent example of where dedicated analysts with sufficient time to focus on a stock assessment have dug deeply into data and model variants and understand individual fits. Further, a deep understanding of information content of data allows some subjective decisions to be taken; the obvious example in this (and many) cases being the priority given to abundance indices over composition data.

Stewart and Hicks (2019) point to the potential to move to Bayesian integration of the stock assessment. Advantages of using Bayesian integration are outlined in the main document: i) better characterisation of uncertainty with ii) direct interpretation of probabilities, and iii) avoiding the potential for MLE fits to mis-estimate key quantities of interest in complex models with skewed distributions. A Bayesian analysis of the CW Short model is reported in Stewart and Hicks (2019). The time taken to run the simplest of the individual models, with slightly simplified selectivity parameterisation, is of the order of two weeks. The results from the Bayesian run as only briefly reported suggest little difference to median estimates from the standard MLE run and little skewness in the Bayesian posteriors - though a hint of right skewness in male natural mortality. It is unclear if full bayesian integration of the AAF models might lead to greater differences to MLE equivalent runs but it is clear that the computing time requirements will increase and that perhaps, further simplifications will be required. From a purely practical perspective, therefore, while moving to Bayesian analyses could be done, it does not seem to be a high priority in the context of providing robust and credible decision-support. Even with the current 2x2 ensemble, Bayesian integration would be computer intensive and time consuming and could require additional time to simplify models to run efficiently. The time taken would increase as more models were potentially added to the ensemble (*Research priorities, Technical development* item 2). As indicated in the proposal, however, using Bayesian integration could provide a more natural approach for combining models in the ensemble. The current 4 individual models are all structurally different and fit to four different, though overlapping, data sets. As such, standard model weighting (AIC and BIC variants) cannot be applied regardless of MLE or Bayesian approaches being used. Alternative approaches such as Leave-One-Out cross-validation (LOO) and the Widely Applicable Information Criterion (WAIC) (see, e.g., Vehtari et al, 2017) might be applicable but would add substantially to computing time. There is no need in the current round of SA development during 2019 to investigate further Bayesian approaches but if time permits, and perhaps when the MSE work progresses and the Commission adopts simple annual catch updating mechanisms that free up SA time, further work could (as noted by Stewart and Hicks, 2019, p91) be undertaken on individual model Bayesian integration and potentially on weighting of Bayesian models in the ensemble.

Ensemble/Weighting

ToR bullet 3: The collection of models contributing to the ensemble, and the methods for combining/weighting the results.

Consideration of the ensemble needs to include i) the general methods used, including weighting of models within the ensemble; ii) preliminary results for the 2019 SA *cf* the 2018 final results; and iii) options for development.

With regard to methods (i), the approach has been developed over the past 4-5 years and is carefully explained in Stewart and Hicks (2019). Assumptions (notably the correlation between spawning biomass and the dynamic unfished spawning biomass) have been tested for impacts on key estimates used in decision-making. Provision for flexible weighting is included in the general methods. To date, individual models have received equal weighting in the ensemble as used to generate decision tables for use by the Commission though it is clear that alternatives have been explored and considered by the Secretariat and discussed with the SRB. These are noted in the section below on possible development. The approach in use is pragmatic and reasonable; it has provided the basis for a single stream of science-based risk assessment. Importantly, by using the selected ensemble of structurally different models, and not focusing on a specific model run, the Secretariat has managed largely to separate science from policy in the support materials provided to the Commission for annual decision-making. Continued use of the 2x2 ensemble as is, with equal model weighting, would continue to provide a robust and consistent approach if used in the final 2019 SA.

Stewart and Hicks (209) provide preliminary results for 2019 and compare quantities of interest estimated using the in-development SA with those made in the final 2018 SA. Usefully, Stewart and Hicks distinguish the sources of any changes in estimates. The final 2019 SA will use fully updated fishery dependent and fishery independent data sets and all individual models will be carefully re-tuned. Preliminary results therefore need to be treated with care and only potentially as aids in thinking about model development.

The preliminary SPR estimates of interest reported in Stewart and Hicks on page 87 are given in the text only and not in preliminary decision tables or any presentation I can find. This is sensible in a development document and is noted here not as a criticism but as an indication of good process; it would be dangerous to put these figures in to any other form until the final SA is completed and final decision-support material is provided. The estimates are included at this stage to enable a deconstruction of why there are changes in the estimated status compared to the 2018 SA. Understanding this is important in providing advice in a continuous decision-making context and is critical to building credibility and trust in the advice, especially if the new estimate in the final 2019 SA remains well below the 2018 estimate and close to the trigger point for the IPHC control rule. A similar deconstruction in the final SA document is encouraged.

Individual models differ in how much flexibility they assume/allow in a variety of features and only the longer time-series models use PDO data in fitting the stock-recruitment relationship. However, while the individual models are structurally different, all are fit to the same later period fishery dependent and fishery independent data in a more or less aggregated form. It is to be expected, therefore, that they will estimate the same general late period trends and with similar uncertainty, though with different assumptions or estimates of productivity translating in to different scales of spawning biomass and recruitment and hence potential yield. This appears to be the case (e.g., Stewart and Hicks, 2019; Figs. 62-64).

The change in apparent status in the 2019 preliminary SA compared to the final 2018 SA is attributed to a change in reference points, which are estimated annually as dynamic unfished SPR, updated data and "*updating of the individual models*". Changes in dynamic reference points are natural and apparently within the range of estimation as seen through Table 14 of stewart and Hicks (2019). The majority of change is attributed jointly to new data and model updates.

The key comment at this stage is that the approach to disentangling sources of change is important and useful. However, from the preliminary analyses, it is unclear to what extent individual model effective and relative weights may have changed between years using standardised approaches requiring iterative tuning. For the current tuning approach, clearly described in Stewart and Hicks (2019; pp. 27-29) it would be useful diagnostically, even with a simple 2x2 ensemble, to track the relative weights applied to each of the data sources for individual models. It is noticeable, for example, in Stewart and Hicks (2019, Fig 13) that the AAF Long tuned model estimates of trend are markedly different to the 2018 corresponding model (at least pre-1995), perhaps implying different weighting, though other individual models within the ensemble are all similar. With no simple comparison of outputs through time (e.g., such as a 2018 equivalent of Stewart and Hicks, 2019, Fig. 62) or of final tunings (Table 11), it is hard to determine the degree to which tuning *per se* might be an issue. This links below to *Research priorities, Technical development* item 2. Of course, as decision-making is determined by post-1995 estimates and as trigger reference points are approached increasingly by ensemble lower/mid tail estimation, the AAF Long model may not in any case be as important as either coastwide model. With the full 2019 data yet to be used in the assessment and final tuning still to be carried out, this will all change and it is not necessary to dig too deeply at this stage. For the final SA, it might be useful to see how relative weights within individual model fits might have changed through time.

With regard to future development (iii), the models are currently equally weighted but there is a clear concern that this might not be the most appropriate approach. Consideration needs to be given to a) weighting of the existing 2x2 ensemble, either pragmatically or formally; and b) adoption of more and/or alternative models within the ensemble. It is important to distinguish academic issues related to model weighting from weighting as it affects the quality of risk assessment provided for decision-making; i.e., Decision Tables.

The current 4 individual models in the 2x2 ensemble are all structurally different and fit to four different, though overlapping, data sets. As such, standard model weighting such as AIC and BIC variants cannot be applied regardless of the use of MLE or Bayesian approaches in individual model fitting. If Bayesian integration is progressed then alternative approaches such as Leave-one-out cross-validation (LOO) and the widely applicable information criterion (WAIC) (see, e.g., Vehtari et al, 2017) are available but would require considerable increases in both individual model computation time and in the time required for combination of those models. They are possible means of weighting that could be explored for future use if the SA adopts a Bayesian approach.

Generally, a weighted average ensemble (as used currently in the SA) is an approach that allows multiple models to contribute to a prediction in proportion to their trust or estimated performance. In the language of machine learning and neural networks this is commonly referred to as “skill”. Stewart and Hicks (2019) reports on a number of suggested weighting approaches that have been discussed in recent years with the SRB, but not progressed for reasons that are not explicit. These are to weight models in the ensemble according to i) fit to the survey index of abundance; ii) retrospective performance (using Mohn’s rho); and iii) predictive performance (i.e., skill in predicting the terminal survey index value). Ensemble weighting based on (i) places weight on models which are already likely to be more weighted to the survey in the individual model tuning phase. Weighting using retrospective performance (ii) may favour models less influenced by the treatment of male selectivity - presumably by effectively weighting to abundance *cf* composition data. Weighting based on predictive skill for the terminal survey indice (iii) is an effective, additional weight on the survey and arguably akin to selecting, or at least prioritising,composition data over indices; in that case, a more traditional approach of using different individual models separately to reveal uncertainty might be more ‘honest’. All approaches have clear rationales but the third, notwithstanding the comment above, using “skill” arguably has the best academic foundation, borrowing in concept from machine learning and neural networks. All, however, are in fact arbitrary and as individual model tunings vary through time it is likely weighting through re-tuning of models in the ensemble may also vary, hiding relative contributions to risk-based advice. Perhaps most importantly, however, all suggestions place value on fitting specific data or achieving SA stability. It would be equally plausible to suggest, for example, that in the absence of a model with explicit stock structure and movement, the AAF models should be afforded greater weight because they provide a proxy mechanism and allow for spatial and temporal variation in distribution. While all models are caricatures and our interest in them is primarily in their predictive capabilities, given the knowledge on spatial differentiation are the CW models even admissible regardless of fit diagnostics?

The IPHC has gone to great lengths to separate science from policy advice. Arguably, rather than model weighting based on fitting criteria or *a priori* “best” model consideration, weighting might instead be focused on how robust is the advice using models combined in the ensemble. All current individual models display similar trends and variances which largely affect stock status estimates equally, but they differ in estimated scale of SB and therefore potential yield

and forecasts. In decision-making that attends to probabilities of bad things happening given absolute values of catch, it is the mid lower tails of the ensemble distributions that generally might become important. The CW models have lower SB and presumably therefore lower potential yield than AAF models (e.g., Stewart and Hicks, 2019; Table 13 and Fig. 62). Therefore, even though the 4 models are currently equally weighted, for any absolute catch assumption in the decision tables based on all 4 models the estimated probability of being below stock status trigger reference points will depend on how much the CW models (with lower SB estimates) are weighted. As decision-making is concerned with the mid lower tails, the CW models have more influence on decision outcomes than the AAF models.

One easy way to evaluate the robustness of advice to weighting would be a simple, manual leave one out approach using equal weights for each combination of three models - *a priori* it might make little difference in the stock trends part of the Decision Tables though presumably would impact more on stock status 'probabilities'. Similarly, various *ad hoc* arbitrary re-weighting of the 4 models could be considered as a sensitivity test on advice.

A consistently applied and academically defensible weighting process would be ideal but the current equal weighting approach has the merit of apparent consistency and simplicity, and therefore of credibility with users. Continuing to use the approach with equal weighting is sufficient to support consistent decision-making by the Commission but investigating the robustness of the advice to different weighting, which can be done informally, would be a good first step. In the future, if SA time is freed up following use of MSE, use of a Bayesian approach, or perhaps 'automated' tuning as suggested by Thorson (2018; see also *Research priorities, Technical developments* item 3), then more formal weighting methods might be considered, explored, and used.

The use of additional or alternative individual models in the ensemble has been mooted. The SRB (IPHC, 2019a) has requested: … *Evaluate a profile (coarse) over steepness, e.g. 0.65 and 0.85, and check the impact on recruitment estimates and RSB values…* It is not clear from the SRB summary report if this request is simply aimed at further investigation of the use of a fixed value of 0.75 for steepness, or whether it is aimed possibly at *Research priorities, Technical developmen*t, item 2 and the possibility of including additional axes of uncertainty in the ensemble. Stewart and Hicks (2019) reports on attempts to estimate steepness. There appears to be little information to allow estimation of steepness which is, of course, confounded *inter alia* with natural mortality and influenced in fitting by other parameter choices. Likelihood profiling on steepness will be interesting but models that can trade steepness for other parameters generally will have little impact on probabilistic advice. However, the CW Long model is the lowest scaled of the 4 models and the one for which steepness estimation to date does have an apparent impact. Any profiling will need careful tuning but should it lead to use of a steepness axis for any or all of the 4 models in the ensemble, perhaps nested weighting could be applied such that while the four structurally different models are each weighted equally, weighting within models across the additional axes (steepness) might rely on standard approaches such as AICc (Suguira, 1978).

The ensemble has been stable for a full SA cycle (between full assessments) and provides a consistent basis for robust decision-support. While a full assessment is an opportunity to adjust individual models and the composition and/or weighting of the ensemble, any change needs to be well justified and tested for robustness. Investigating axes of uncertainty is a key part of SA but the provision of consistent, robust and credible risk assessment as a basis for regular decision-making must be considered. With MSE work currently being carried out by the IPHC and due for presentation and possible implementation in 2021, it might be prudent to minimise or even avoid any changes to the composition of the ensemble at this time.

Research Priorities

ToR bullet 4: Comments on research priorities or avenues for data, model or management advice development as appropriate.

Stewart and Hicks (2019) provide an extensive list of '*Research priorities*', spanning improvements in basic biological understanding, investigation of existing data series and collection of new information, and technical development of models and modelling approaches. The list subsumes all potential data-related future analyses highlighted by Stewart and Webster (2019). For simplicity, the complete list from Stewart and Hicks (2019) is included here as numbered items, together with comments. The text from Stewart and Hicks is in *blue italics*. Comments are in black. Potential recommendations on prioritisation are underlined and **possible priorities are in bold case**. Note that Stewart and Hicks (2019) is a complete list and does not suggest potential costs and benefits or prioritisation, nor does it distinguish work already started from work that is proposed. In the final SA report due in September 2019, it would be helpful to separate in progress from suggested future work and for suggested work to provide priority rankings with justification, ideally linked to the text of the main report. This would assist reading but would also integrate better with development and updating of 5-year plans.

NOTE: The 5-year research plan reported in Planas (2019) seems now to be replaced by https://www.iphc.int/uploads/pdf/besrp/2019/iphc-2019-besrp-5yp.pdf. I can find no formal reference to this document and it is referred to in this report as IPHC-besrp, 2019.

Biological understanding

During the last several years, the IPHC Secretariat has developed a comprehensive five-year research program (Planas 2019). The development of the research priorities has been closely tied to the needs of the stock assessment and harvest strategy policy analyses, such that the IPHC's research projects will provide data, and hopefully knowledge, about key biological and ecosystem processes that can then be incorporated directly into analyses supporting the management of Pacific halibut. Key areas for improvement in biological understanding include:

1. *The current functional maturity schedule for Pacific halibut, including fecundity-weight relationships and the presence and/or rate of skip spawning.*This is already in progress

as reported in Planas (2019), IPHC-besrp, (2019), and Stewart and Webster (2019); no further comment.

2. *The stock structure of the Pacific halibut population. Specifically, whether any geographical components (e.g., Region 4B) are isolated to a degree that modelling approximations would be improved by treating those components separately in the demographic equations and management decision-making process.*See also item 3, below.
3. *Movement rates among Biological Regions remain uncertain and likely variable over time. Long-term research to inform these rates could lead to a spatially explicit stock assessment model for future inclusion into the ensemble.*The issue of stock structure and migrations is clearly recognised by the IPHC science teams, both within the existing stock boundaries of the SA but also, potentially, as pertains to connection to the western Pacific. I note in Stewart and Hicks (2019) there is just one passing reference, in *Other Uncertainty Considerations,* to the possibility of linkage to Russian waters. It receives no mention in Stewart and Webster (2019), nor in any of the presentations given to the 1st session of PRIPHC02 or the current 5-year research plan. In discussion, however, the issue was raised by IPHC staff, consistent with general descriptions on the IPHC website (https://iphc.int/management/science-and-research/pacific-halibut-stock-status-and-biology). In contrast, migration and distribution within existing stock boundaries is well-covered in the current 5-year research plan, with dedicated projects and collaborations that explore larval and early juvenile dispersal modelling, late juvenile migration using wire tags, and tail pattern recognition to follow fish through time. Stock structure and migration issues are always important and work to understand the issues is warranted. However, the existing ensemble of models includes AAF models which allow annually varying selectivity estimation. Arguably, while modelling different processes, these models should capture some of the uncertainty that might be due to migration or stock structure. The final research priority in Stewart and Hicks' list (*Technical development*, item 9) also touches on this general issue and comment is made there. In summary here: i) while the issues of stock structure and migration are recognised as important to understand, they are not regarded as critical with respect to current individual and SA modelling and the provision of robust risk-based advice to the Commission; ii) spatial distribution and migration are already incorporated into the 5-year work program; and iii) the issue of connection between eastern and western Pacific stocks is not currently covered in IPHC-besrp, 2019, but warrants investigation and reporting in the full SA report **(Medium priority)**
4. *The relative role of potential factors underlying changes in size-at-age is not currently understood. Delineating between competition, density dependence, environmental effects, size-selective fishing and other factors could allow improved prediction of size-at age under future conditions.*IPHC-besrp, 2019 already (Appendices II and III) includes a number of growth-related studies due to feed in to the SA and MSE. it is unclear at this proposed item what additional work, if any, is envisaged. As a general comment, distinguishing between the range of factors listed is likely to be extremely difficult in practice, even with the extensive and high quality data available on Pacific halibut, other

stocks, and the environment from the USA and Canada NW and USA Alaska regions. Also, while understanding historic variations in growth in relation to a number of factors might be possible, prediction is only possible if the processes are understood. **(Unclear priority)**

5. *Improved understanding of recruitment processes and larval dynamics could lead to covariates explaining more or the residual variability about the stock-recruit relationship than is currently accounted for via the binary indicator used for the Pacific Decadal Oscillation.*This appears to be subsumed under *Technical development*, item 8.
6. *Improved understanding of discard mortality rates and the factors contributing to them may reduce potential biases in mortality estimates used for stock assessment.*This appears to be subsumed under *Data related research*, item 11.

Data related research

This section represents a list of potential projects relating specifically to existing and new data sources that could benefit the Pacific halibut stock assessment.

1. *Continued collection of sex-ratio from the commercial landings will provide valuable information for determining relative selectivity of males and females, and therefore the scale of the estimated spawning biomass, and the level of fishing intensity as measured by SPR. Potential methods for estimating historical sex-ratios from archived scales, otoliths or other samples should be pursued if possible.* Estimates of historic and future catch sex ratios are critical to credible usage of SPR in the management context. Fin clipping of fish in the ports, together with genetic analysis, has already provided a sex ratio estimate for 2017, with a 2018 estimate imminent. This is covered in the 5-year research plan. However. The plan does not explicitly include continued fin clipping/genetic work after 2018. Nor is there any provision for estimating historic sex ratios. The potential project noted by Stewart and Hicks seems to presuppose future monitoring - this might be clarified in the 5-year research plan and the final SA report. The suggestion for methods to estimate historical sex ratios, at this stage just to explore what is possible using archived samples, is important. Consideration should be given to including at least exploration of archived samples and potential for sex ratio estimation in the 5-year plan **(Exploration - high priority)**
2. *The work of Monnahan and Stewart (2015) modelling commercial fishery catch rates has been extended to include spatial effects. This could be used to provide a standardized fishery index for the recent time-series.* The reference is not alluded to in the main text of Stewart and Hicks (2019) and is not included in the reference list. It is referenced in Stewart and Webster (2019) where it is noted that: ...*A detailed exploratory analysis of the logbook standardization data and methods was completed during 2014 (Monnahan and Stewart 2015), which suggested future analyses may be able to include all logbook records in all Regulatory Areas regardless of gear type if a model-based estimator were used. However, discussions with the IPHC's Scientific Review Board did not result in a recommendation to change the simple method employed historically*...and from which the proposal appears to carry over. Without further discussion and information it is not possible to comment or suggest priority.

3. *A revised hook spacing relationship (Monnahan and Stewart 2017) will be investigated for inclusion into IPHC database processing algorithms.* This is noted as important but, as stated, seems to be a given rather than a proposal.
4. *Reevaluation of the historical length-weight relationship to determine whether recent changes in length-at-age are also accompanied by changes in weight-at-length and how this may change estimates of removals over time is ongoing.*This is noted as important but already in progress.
5. *A historical investigation on the factors influencing observed size-at-age, and ageing of additional samples from key periods and areas to support this analysis is ongoing at the IPHC.*This is noted as important but already in progress.
6. *There is the potential that trawl surveys, particularly the Bering Sea trawl survey, could provide information on recruitment strengths for Pacific halibut several years prior to currently available sources of data. Geostatistical modelling and renewed investigation of the lack of historical correlation between trawl survey abundance and subsequent abundance of Pacific halibut in the FISS and directed fisheries may be helpful for this effort.* Early indications of recruitment are clearly key to forecasting three years ahead, as done for the decision tables provided annually. Given fishery selectivity and regulations (MLS) the FISS currently contains information 3-4 years ahead of recruitment to the fishery. The NMFS survey could in principle extend this lead in by a further 2-3 years. With annual decision-making, 3-year forecasts are likely sufficient, and if MSE leads to implementation of control rules or management procedures then FISS-derived indices are likely to dominate in informing annual mortality changes. While this proposed work would be interesting and potentially useful in developing understanding of ontogenetic or environmentally-related changes in distribution of halibut, and may be worthwhile in its own right, it is not a clear priority for SA or MSE.
7. *There is a vast quantity of archived historical data that is currently inaccessible until organized, electronically entered, and formatted into the IPHC's database with appropriate meta-data. Information on historical fishery landings, effort, and age samples would provide a much clearer (and more reproducible) perception of the historical period.* No detail on historical data (as specified in this research item) or archived materials is given in Stewart and Hicks (2019) or Stewart and Webster (2019) though Stewart and Hicks does report briefly on, e.g., re-ageing of archived otolith samples. The listed avenue of research is a general comment about inaccessible, archived data and is difficult to comment on except to provide in principle support for careful cataloguing, reanalysis and use of historical data and materials (e.g., for sex ratio estimation as at *Data related research* item 1). The re-ageing reported by Forsberg and Stewart (2015) is a good example of why such materials and data are important. It is noted that the suggestion for this item is consistent with various annual reports of assessment and research activities (e.g., IPHC, 2014).
8. *Additional efforts could be made to reconstruct estimates of subsistence harvest prior to 1991.* It is unclear from Stewart and Webster (2019), from which this item carries over, what if any sources of existing data might be used to reconstruct subsistence estimates, or if the proposal is to use e.g. structured interviewing techniques to gather information.

The scale of post-1991 subsistence estimates, however, is very small compared to other sources of mortality and it is not obvious that this work should be afforded great priority from a technical perspective.

9. *NMFS observer data from the directed Pacific halibut fleet in Alaska could be evaluated for use in updating DMRs and the age-distributions for discard mortality. This may be more feasible if observer coverage is increased and if smaller vessels (< 40 feet LOA, 12.2 m) are observed in the future. Post-stratification and investigation of observed vs. unobserved fishing behavior may be required.* Discard mortality in the directed fishery is clearly an important component to quantify and age-composition data of discards potentially provides key information on recruitment and potential yields. Increased observer coverage generally and extension to smaller vessels is clearly desirable but as commented above, while improved information would be useful and could improve credibility of the SA, it is beyond the scope of this review to recommend increasing observer coverage by a member state. This research proposal is one of a number about improving or acquiring basic data but is different in that it implies a change in monitoring. As such, with considerable cost implication, clear justification with costs and benefits to support prioritisation is required. NOTE based on the main text above: One other potential unaccounted mortality in the commercial fishery is that due to whale depradation. An exploration of potential importance in risks assessments that might be caused by trends in scale and nature of this could be undertaken quickly to determine what priority might be placed on estimating depradation in commercial fisheries. Exploration using MSE that includes how unaccounted trends impact the assessment-decision-implementation loop would be preferable. **(Medium priority)**
10. *Historical bycatch length frequencies and mortality estimates need to be reanalyzed accounting for sampling rates in target fisheries and evaluating data quality over the historical period.* It is unclear if this relates also to item 7 on inaccessible data or to accessible data sets requiring new analysis; I presume the latter. IPHC (2019c) indicates recent bycatch mortality is about 15% of total mortality but visually from Stewart and Hicks (2019; Fig. 3) historical bycatch mortality may have been as much as 25% in the 1960s and approaching 50% in the late 1970s and 1980. Older fish are well represented in the early (i.e., pre-1992) bycatch compositions. It is unclear from the main Stewart and Hicks (2019) text why this specific reanalysis is 'needed' and what priority it should receive; there is no suggestion that the data as used currently in the assessment are flawed except also by implication at *Research proposal, Technical Development* item 5. Improving these data to the greatest extent possible would be welcome and might impact on historical perspectives but it is unclear how it might flow through to impact on current advice. **(Medium priority?)**
11. *There are currently no comprehensive variance estimates for the sources of mortality used in the assessment models. In some cases, variance due to sampling and perhaps even non-sampling sources could be quantified and used as inputs to the models via scaling parameters or even alternative models in the ensemble.* (See also *Biological understanding*, item 6.) It is not uncommon to use gross sensitivity tests to account for potential misspecification of mortality components, particularly of scale, and, perhaps

more importantly, trend. This could be done as part of SA sensitivity testing and/or might be incorporated into MSE robustness testing. However, it does need to be informed by data and analysis to be credible. It is unclear from the core documents available for review what precisely is envisaged under this proposal item or if priorities would be assigned by sector. Presumably, data and information on observer coverage, etc, exist and could be used to estimate variances but issues of scale and trend may often require less formal information. Issues affecting estimates will vary by sector and information on changing practices within sectors will require careful consideration. The directed fishery is the largest proportion of mortality but likely the best sampled, though issues such as conversion factors and changing practices might be relevant. Changes through time due to regulatory change and low observer coverage might be relevant in the bycatch fishery. Over more recent times, growth in variable recreational fisheries might be of importance. It would be useful to consider this proposed item in light of perceived problems and to set priorities accordingly **(Medium priority?)**.

12. *A space-time model could be used to calculate weighted FISS age-composition data. This might alleviate some of the lack of fit to existing data sets that is occurring not because of model misspecification but because of incomplete spatial coverage in the annual FISS sampling which is accounted for in the generation of the index, but not in the standardization of the composition information.* Fitting weighted age-composition data using a space-time model would be interesting and for fisheries with less extensive sampling could be highly beneficial. However, it is not clear from Stewart and Hicks (2019) reports of individual model fits why this proposed work would be of high priority for the SA. While there is incomplete spatial coverage in the FISS age sampling, it is nevertheless extensive and fits to FISS age composition data appear generally good for all models, though I note Fig. 35 and residual patterns in the AAF Short model. The expansion work should also lead to improved age compositions. I note the comments by Thorson (http://www.capamresearch.org/sites/default/files/Thorson2.pdf; slides 46 onwards) concluding i) the feasibility of estimating age compositions using space-time models; but ii) perhaps with little benefit. However, Thorson's conclusion *re* little benefit is somewhat countered by the example used that shows stock assessment outcomes when using either design or model-based age composition data; relative spawning biomass appears little affected but in the example case the absolute spawning biomass levels are very different. Given the lack of information on scale in composition data this seems strange. Exploration of a space-time model as suggested could lead to standardised composition data as suggested and is worthy of exploration, also as an alternative/backup should future sampling or ageing be compromised. **(Not essential for the SA so Low to medium priority?)**

Technical development

There are a variety of technical explorations and improvements that could benefit the stock assessment models and ensemble framework. Although larger changes, such as the new data sets and refinements to the models presented in this document, naturally fit into the period full

assessment analyses, incremental changes may be possible during updated assessments when and if new data or methods become available. Specifically, development is intended to occur in time for initial SRB review (generally in June), with only refinements made for final review (October), such that untested approaches are not being implemented during the annual stock assessment itself. Technical research priorities include: This preamble suggests the list contains technical developments that '*could*' benefit the individual SA and ensemble but the final sentence uses the word '*priorities*'. If the intention is to prioritise then further justification is required at each item with respect to the SA and perhaps MSE but especially in the context of providing robust, consistently-based, and credible decision-support.

1. *Maintaining consistency and coordination between MSE, and stock assessment data, modelling and methodology.* Noted and supported; presumably this is ongoing and standard operating procedure. It is unclear why that this needs to be given specific mention as a "*technical exploration and improvemen*t".
2. *Continued refinement of the ensemble of models used in the stock assessment. This may include investigation of alternative approaches to modelling selectivity that would reduce relative downweighting of certain data sources (see section above), evaluation of additional axis of uncertainty (e.g., steepness, as explored above), or others.* Stewart and Hicks (2019) reports on attempts to estimate steepness. There appears to be little information to allow estimation of steepness which is, of course, confounded with natural mortality and influenced in fitting by other parameter choices. Likelihood profiling on steepness will be interesting but models that can trade steepness for other parameters generally will have little impact on probabilistic advice. However, the CW Long model is the lowest scaled of the 4 models and the one for which steepness estimation to date does have an apparent impact. Any profiling will need careful tuning but should it lead to use of a steepness axis for any or all of the 4 models in the ensemble, perhaps nested weighting could be applied such that while the four structurally different models are each weighted equally, weighting within models across the additional axes (steepness) might rely on standard approaches such as AICc (Suguira, 1978). // The ensemble has been stable for a full SA cycle (between full assessments) and provides a consistent basis for robust decision-support. While a full assessment is an opportunity to adjust individual models and the composition and/or weighting of the ensemble, any change needs to be well justified and tested for robustness. Investigating axes of uncertainty is a key part of SA but the provision of consistent, robust and credible risk assessment as a basis for regular decision-making must be considered. With MSE work currently being carried out by the IPHC and due for presentation and possible implementation in 2021, it might be prudent to minimise or even avoid any changes to the composition of the ensemble at this time.
3. *Evaluation of estimating (Thorson 2018) rather than tuning (Francis 2011; Francis 2016) the level of observation and process error in order to achieve internal consistency and better propagate uncertainty within each individual assessment model. This could include the 2d Autoregressive smoother for selectivity, the Dirichlet multinomial, and other features now implemented in stock synthesis (Methot et al. 2019).*The explanation in Stewart and Hicks (2019) of manual tuning methods/approaches used in the SA is

clear and informative; far more so than most stock assessment reports. As described and discussed during the site visit the Pacific halibut tuning process is rigorous. Like all fisheries model tuning, however, it is highly time consuming, difficult to describe in detail, difficult to replicate, and very hard to review. Stewart and Hicks note the possibility of estimating observation and process error (Thorson, 2018) rather than iterative, manual tuning. Thorson outlines how recent advances in parameter estimation involving random effects could be used to replace manual tuning in fisheries assessment models. While restricting discussion to three areas of parameter tuning that might be replaced by estimation variance parameters directly, Thorson argues that the techniques are likely extendable to the case of multiple variance parameters (as required in fisheries SA such as Paciifc halibut). It is not clear if the Pacific halibut SA could be implemented using random effects models to estimate parameter variances (in place of manual tuning) in the 2019 SA round, but it seems unlikely given the SA is currently implemented using Stock Synthesis (Methot *et al*, 2013)) which does not yet include the option. It is well beyond the scope of this review to suggest SS might be converted to implement random effects models but Thorson notes two modelling tools that do use random effects (STAN and TMB; references in Thorson, 2018) already available and used for stock assessment modelling. **Coding the individual Pacific halibut models using STAN or TMB is a major task and unlikely within the 2019 SA round but could be explored in 2020, perhaps for comparison with updated models using manual tuning.** This is an exciting area of development that could result in a major step forward in undertaking fisheries assessment. While estimating variance parameters will be computationally time-consuming it should be much faster and 'safer' that manual, iterative tuning. Potentially, it could also be incorporated into grid-based operating models used in MSE/MPE.

4. *Continued development of weighting approaches for models included in the ensemble, potentially including fit to the survey index of abundance, retrospective, and predictive performance (see section above).* As noted at item 6, below, the current 4 individual models are all structurally different and fit to four different, though overlapping, data sets. As such, standard model weighting (AIC and BIC variants) cannot be applied regardless of MLE or Bayesian approaches being used. Alternative (effectively cross-validation) approaches are available for Bayesian models (see, e.g. Vehtari et al, 2017) but would require considerable increases in both individual model computation time and in the combination of those models. They are possible means of weighting that could be explored for future use if the SA adopts a Bayesian approach. Generally, A weighted average ensemble is an approach that allows multiple models to contribute to a prediction in proportion to their trust or estimated performance. Stewart and Hicks (2019) reports on a number of suggested weighting approaches that have been discussed with the SRB but not progressed. These are to weight models in the ensemble according to i) fit to the survey index of abundance; ii) retrospective performance (using Mohn's rho); and iii) predictive performance (i.e., skill in predicting the terminal survey index value). Ensemble weighting based on (i) places weight on models which are already likely to be more weighted to the survey in the individual model tuning phase. Weighting using

retrospective performance (ii) may favour models less influenced by the treatment of male selectivity - presumably by effectively weighting to abundance *cf* composition data. Weighting based on predictive skill for the terminal survey indice (iii) is an effective, additional weight on the survey and arguably akin to selecting, or at least prioritising composition data over indices; in that case, a more traditional approach of using different individual models separately to reveal uncertainty might be more 'honest'. All approaches have clear rationales but the third, notwithstanding the comment above, using "skill" arguably has the best academic foundation, borrowing in concept from machine learning and neural networks. All, however, are in fact arbitrary and as individual model tunings vary through time it is likely weighting through re-tuning of models in the ensemble may also vary, hiding relative contributions to risk-based advice. The IPHC has gone to great lengths to separate science from policy advice; care is needed in investigating any *ad hoc* weighting to focus not on which models make a difference but on how robust is the advice using those four models. All models display similar trends and variances which affect status determination and forecasts but they differ in estimated scale of SB and therefore potential yield. In decision-making that attends to probabilities of bad things happening, it is the mid lower tails of the distributions of absolute values that generally might become important, with the CW models having lower SB and presumably therefore potential yield than AAF models (e.g., Stewart and Hicks, 2019; Table 13 and Fig. 62). One simple way to evaluating the robustness of advice to weighting would be a simple, manual leave one out approach using equal weights for each combination of three models - *a priori* it might make little difference in the status trends part and perhaps stock trends part of the Decision Tables though presumably would impact more fishery trend 'probabilities'. Similarly, an ad hoc arbitrary re-weighting of the 4 models could be considered as a sensitivity test on advice. A consistently applied and academically defensible weighting process would be ideal but the current approach has the merit of consistency and simplicity. Continuing to use the approach with equal weighting is sufficient to support decision-making by the Commission but investigating the robustness of the advice to different weighting, which can be done informally, would be a useful step in the 2019 SA **(SA 2019; Medium priority).** In time, if SA time is freed up following use of MSE, and if the SA adopts a Bayesian approach, more formal weighting methods might be used **(Post MSE)**

5. *Exploration of methods for better including uncertainty in discard mortality and bycatch estimates in the assessment (now evaluated only via alternative mortality projection tables or model sensitivity tests) in order to better include these sources uncertainty in the decision table. These could include explicit discard/retention relationships, including uncertainty in discard mortality rates, and allow for some uncertainty directly in the magnitude of mortality for these sources.* See also *Research proposals, Data related research* item 10. Work under the data related research needs to proceed first to identify uncertainties in the mortality estimates. Depending on estimates, SA and MSE focus can then be directed appropriately if warranted. The standard approach of conducting sensitivity tests on the individual models and perhaps decision tables is the obvious first approach within the SA. Including discard/retention relationships in the SA would need to

be informed by data, potentially from compliance authorities. MSE can be used to test the implications of different relationships in combination with management. If biases are consistent then the implications for decision-making are likely to be small or insignificant. If biases are variable but reasonably symmetric then the effectiveness of any control rule or management procedure will depend on its inputs (likely from the FISS) and their ability to track changes in recruited biomass. If, however, there is a discard/retention relationship related, e.g., to regulatory 'bite' (such as reducing catch limits) then unless control rules or management procedures react quickly to informative inputs, there is potential for unseen stock decline. If analyses suggest biases and especially any discard/retention relationships then the MSE rather than the SA would be an appropriate mechanism to investigate implications and to develop robust management responses as part of control rules or management procedures. **(Priority in MSE depends on analyses to identify potential issues)**

6. *Bayesian methods for fully integrating parameter uncertainty may provide improved uncertainty estimates within the models contributing to the assessment, and a more natural approach for combining the individual models in the ensemble (see section above).* Advantages of using Bayesian integration are outlined in the main document: i) better characterisation of uncertainty with ii) direct interpretation of probabilities, and iii) avoiding the potential for MLE fits to mis-estimate key quantities of interest in complex models with skewed distributions. A Bayesian analysis of the CW Short model is reported in Stewart and Hicks (2019). The time taken to run the simplest of the individual models, with slightly simplified selectivity parameterisation, is of the order of two weeks. The results from the Bayesian run as only briefly reported suggest little difference to median estimates from the standard MLE run and little skewness in the Bayesian posteriors - though a hint of right skewness in male natural mortality. It is unclear if full Bayesian integration of the AAF models might lead to greater differences to MLE equivalent runs but it is clear that the computing time requirements will increase and that, perhaps, further simplifications will be required. From a purely practical perspective, therefore, while moving to Bayesian analyses could be done, it does not seem to be a high priority in the context of providing robust and credible decision-support. Even with the current 2x2 ensemble, Bayesian integration would be computer intensive and time consuming and could require additional time to simplify models to run efficiently. The time taken would increase as more models were potentially added to the ensemble (Technical development, item 2). As indicated in the proposal, however, using Bayesian integration could provide a more natural approach for combining models in the ensemble. The current 4 individual models are all structurally different and fit to four different, though overlapping, data sets. As such, standard model weighting (AIC and BIC variants) cannot be applied regardless of MLE or Bayesian approaches being used. Alternative approaches such as Leave-one-out cross-validation (LOO) and the widely applicable information criterion (WAIC) (see, e.g., Vehtari et al, 2017) might be applicable but would add substantially to computing time. There is no need in the current round of SA development during 2019 to investigate further Bayesian approaches but if time permits, and perhaps when the MSE work progresses and the Commission adopts

simple annual catch updating mechanisms that free up SA time, further work could (as noted by Stewart and Hicks, 2019, p91) be undertaken on individual model Bayesian integration and potentially on weighting of Bayesian models in the ensemble. **(Post MSE)**

7. *Exploration of stock synthesis features previously unavailable or unevaluated including: timing of fishery and survey observations, the fishing mortality approximation used (i.e., estimated parameters, 'hybrid' or Pope's approximations).* Stewart and Hicks (2019) describe the standard population structuring adopted for all models in the SA, using mid year removals and Pope's approximation.For Pacific halibut, while exploration of alternatives may be interesting it would seem a low priority given the approximations are robust except at high fishing mortality - which is not the case. It is unclear why the proposal is made.
8. *An analysis of model sensitivity and statistical performance of treating the environmental relationship between recruitment and the PDO as annual deviates (+/-), a running mean, or annual values (actual PDO), or other methods that differ from the binary indicator variable currently employed.*The current binary indicator approach requires only a single parameter estimate (of β) in each of the Long models, and is informed primarily for the later part of the time series for which good composition data are available. It effectively assumes an unspecified linkage between general environmental state and Pacific halibut recruitment. Any alternative using e.g. a running mean or actual values in essence assumes a more direct link between PDO state and the scale of Pacific halibut recruitment resulting from the within-species contest competition implied by the Beverton-Holt S-R function. Pacific halibut recruitment, however, derives from complex and stochastic environmental processes and from complex single and multi species biological and ecological processes, also subject to stochasticity. Any direct link between PDO and recruitment will therefore have high process error, as well as observation error in the composition data informing recruitment estimation. Tuning will need to pay attention directly to recruitment but also to aliasing estimates of natural mortality in particular, but also selectivity. This would be compounded if steepness were also estimated or alternative steepness values assumed. While exploring alternative PDO linkage functions would be an interesting research area and might potentially result in apparently improved stock assessment(s) at any point in time, it is not at all clear that this would benefit risk assessments derived using stock assessments because without understanding the complex processes linking the PDO specifically to Pacific halibut recruitment, forecasting utility would not necessarily be enhanced. The MSE might again be the best place to explore how changes in environment (in a wide sense, to include not just e.g. PDO but also e.g. other species stock distribution and abundance) might affect recruitment and how alternative control rules or management procedures might be more or less robust. **(SA: Low priority; MSE: Medium priority?)**
9. *Alternative model structures, including a growth-explicit statistical catch-at-age approach and a spatially explicit approach may provide avenues for future exploration. Efforts to develop these approaches thus far have been challenging due to the technical complexity and data requirements of both. Previous reviews have indicated that such*

efforts may be more tractable in the context of operating models for the MSE, where conditioning to historical data may be much more easily achieved than fully fitting an assessment model to all data sources for use in tactical management decision making. (See also *Research priorities, Biological Understanding* items 2 and 3). The SA and MSE "philosophies" are different with more care typically taken in development of individual SA models. Conditioning, however, still requires fitting, though it is impractical to fit with the rigour used, e.g., in the individual IPHC stock assessments, especially when grid approaches with wide parameter spaces are used and specific parameter combinations may be infeasible or not well supported. Nevertheless, development of spatially explicit models for MSE purposes needs to start with careful model development and fitting as used for the tactical SA, even if final generating (operating) models are less rigorously fit. Regardless, so long as the tactical SA ensemble approach reasonably captures uncertainties through proxies for explicit spatial models (e.g. AAF with annual variation in selectivity) then specific consideration of spatially explicit models is best left to MSE where assessment and management robustness can be explored more thoroughly.

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Summary of the data, stock assessment, and harvest decision table for Pacific halibut (*Hippoglossus stenolepis*) at the end of 2019

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PURPOSE

To provide the Commission with a summary of the data, stock assessment, and harvest decision table at the end of 2019.

INTRODUCTION

In 2019 the International Pacific Halibut Commission (IPHC) undertook its annual coastwide stock assessment of Pacific halibut (*Hippoglossus stenolepis*), which included a full re-evaluation of all data sources and models contributing to the assessment. The assessment was conducted in two phases: first, a preliminary assessment underwent an external independent peer review, and a two-part review by the IPHC's Scientific Review Board (SRB; IPHC-2019-SRB014-R, IPHC-2019-SRB015-R), second the preliminary assessment was updated to include all data through 2019. This process included five steps to update from the 2018 stock assessment to the preliminary results for 2019 (Stewart and Hicks 2019) and the final estimates reported here:

1) Add the newly available sex-ratio data from the 2017 commercial fishery landings and estimate male selectivity scale parameters.
2) Extend the time series (for the two short models) from 1996 to 1992 and add a stock-recruitment function to these models.
3) Replace the modelled FISS time-series with the series corrected for whale depredation.
4) Regularize and tune each model to be reliable and internally consistent given all the changes that had been made.
5) Add the 2018 sex-ratio data, estimates of 2019 mortality and extend all data sources through 2019 for the final assessment.

Overall, the inclusion of the 2017 sex-ratio data resulted in higher spawning biomass for all models, and the updated whale depredation data made little difference to the results. Extending the time-series back to 1992 in the two short models resulted in higher estimates of recruitment for 1994 and 1995. Regularizing and tuning the series had different effects on each model. The 2019 data revised the estimates of the 2012 year-class upward slightly, but had little effect on the overall time-series, and the 2018 sex-ratio data was very similar to the 2017 information included in the preliminary analysis and therefore produced little additional change. In aggregate, the historical female spawning biomass estimated from the stock assessment ensemble was slightly larger than that estimated in previous assessments at the end of the time series, and considerably larger prior to the early 2000s, although the trend remains very similar in recent years using these updated data sources.

This document provides an overview of the final data sources available for the 2019 Pacific halibut stock assessment including the population trends and distribution among Regulatory Areas based on the modelled IPHC fishery-independent setline survey (FISS), directed commercial fishery data, and results of the stock assessment including all data available through 2019.

STOCK AND MANAGEMENT

The stock assessment reports the status of the Pacific halibut resource in the IPHC Convention Area. As in recent stock assessments, the resource is modelled as a single stock extending from northern California to the Aleutian Islands and Bering Sea, including all inside waters of the Strait of Georgia and Puget Sound, but excludes known extremities in the western Bering Sea within the Russian Exclusive Economic Zone (Figure 1).

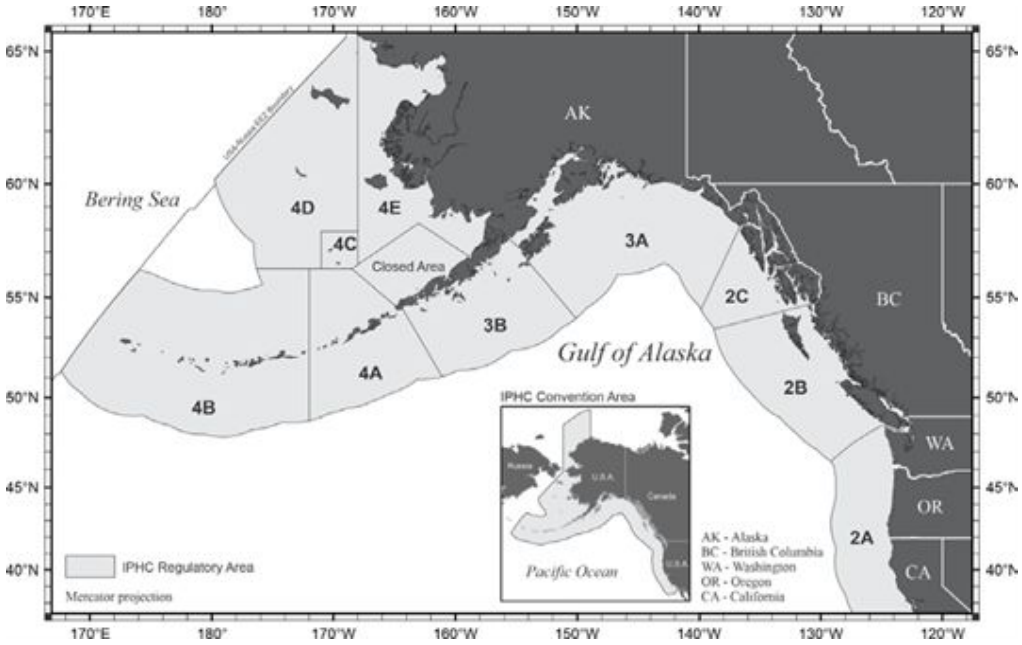

FIGURE 1. IPHC Convention Area (insert) and IPHC Regulatory Areas.

The Pacific halibut fishery has been managed by the IPHC since 1923. Mortality limits for each of eight IPHC Regulatory Areas[1] are set each year by the Commission. The stock assessment provides a summary of recently collected data, and model estimates of stock size and trend. Specific management information is summarized via a decision table reporting the estimated risks associated with alternative management actions. Mortality tables projecting detailed summaries for fisheries in each IPHC Regulatory Area (and reference levels indicated by the IPHC's interim management procedure) can be explored via the IPHC's mortality projection tool.

DATA

Historical mortality

Known Pacific halibut mortality consists of target commercial fishery landings and discard mortality (including research), recreational fisheries, subsistence, and discard mortality in fisheries targeting other species ('non-directed' fisheries where Pacific halibut retention is prohibited). Over the period 1920-2019 mortality has totaled 7.2 billion pounds (~3.3 million metric tons, t), ranging annually from 34 to 100 million pounds (16,000-45,000 t) with an annual average of 63 million pounds (~29,000 t; Figure 2). Annual mortality was above this long-term average from 1985 through 2010, and has averaged 41 million pounds (~18,500 t) from 2016-19.

[1] The IPHC recognizes sub-Areas 4C, 4D, 4E and the Closed Area for use in domestic catch agreements but manages the combined Area 4CDE.

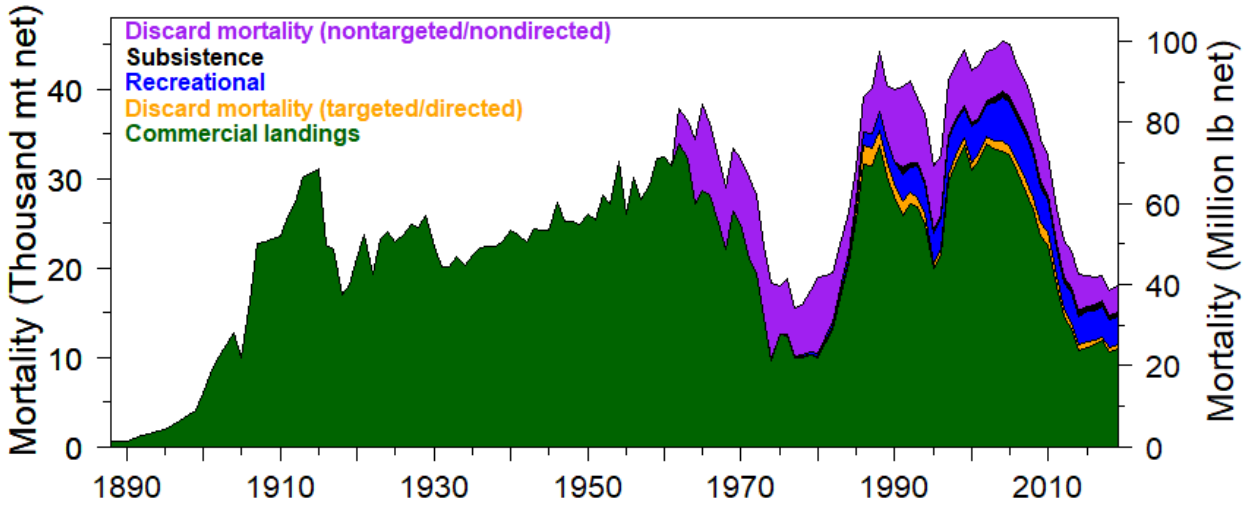

FIGURE 2. Summary of estimated historical mortality by source (colors), 1888-2019.

2019 Fishery and IPHC fishery-independent setline survey (FISS) statistics

Coastwide commercial Pacific halibut fishery landings (including research landings) in 2019 were approximately 24.3 million pounds (~11,000 t), up 3% from 2018[2]. Discard mortality in non-directed fisheries was estimated to be 6.6 million pounds in 2019 (~2,985 t)[3], up 5% from 2018. The total recreational mortality (including estimates of discard mortality) was estimated to be 6.9 million pounds (~3,100 t), very close to the final estimate for 2018. Mortality from all sources increased by 3% to an estimated 39.7 million pounds (~18,000 t) in 2019 based on preliminary information available through 31 October 2019.

Data for stock assessment use are initially compiled by IPHC Regulatory Area, and then aggregated to four Biological Regions: Region 2 (Areas 2A, 2B, and 2C), Region 3 (Areas 3A, 3B), Region 4 (4A, 4CDE) and Region 4B and then coastwide (Figure 1). In addition to the aggregate mortality (including all sizes of Pacific halibut), the assessment includes data from both fishery dependent and fishery independent sources as well as auxiliary biological information, with the most spatially complete data available since the late-1990s. Primary sources of information for this assessment include modelled indices of abundance (IPHC-2020-AM096-07; based on the IPHC's annual fishery-independent setline survey (FISS; in numbers and weight) and other surveys), commercial Catch-Per-Unit-Effort (weight), and biological summaries from both sources (length-, weight-, and age-composition data).

All data sources are reprocessed each year to include new information from the terminal year, as well as any additional information for or changes made to the entire time-series. For 2019, there were two important improvements to the existing data sources: 1) sex-ratios at age based on genetic assays of port sampled Pacific halibut were available for commercial fishery landings made in 2017 and 2018, and 2) a revised modelled index of abundance reflecting the 2019 FISS

[2] The mortality estimates reported in this document are those available at the end of October 2019, and used in the assessment analysis.

[3] The IPHC receives preliminary estimates of the current year's non-directed commercial discard mortality in from the NOAA-Fisheries National Marine Fisheries Service Alaska Regional Office, Northwest Fisheries Science Center, and Fisheries and Oceans Canada in late October. Where necessary, projections are added to approximate the total mortality through the end of the calendar year. For the 2020 mortality limit projections, discard mortality in non-directed fisheries has been updated to reflect final 2019 estimates available 6 January 2020.

sampling and expansions (in IPHC Regulatory Areas 3A and 3B). Routine updates of logbook records from the 2017-18 directed commercial fishery, as well as age-frequency observations from both commercial fishery and survey catches were also included. Since 2015, individual Pacific halibut weights collected during port sampling of commercial fishery landings are used to describe the commercial fishery. For 2019, individual weights were also collected during FISS operations such that use of the historical weight-length relationship was not necessary to calculate WPUE and stock distribution estimates. All mortality estimates (including changes to the existing time-series where new estimates have become available) were extended to include 2019. All available information was finalized on 31 October 2019 in order to provide adequate time for analysis and modeling. As has been the case in all years, some data are incomplete (i.e. commercial fishery logbook and age information), or include projections for the remainder of the year (i.e. mortality estimates for ongoing fisheries or for fisheries where final estimation is still pending).

The 2019 FISS detailed a coastwide aggregate NPUE (modelled via the space-time methodology) which showed a third consecutive year of decrease, down 4% from 2018 with 2017-19 each representing the lowest in the time-series (Figure 3). Biological Region 3 declined by 10% to the lowest estimate in the time-series while Biological Regions 2, 4, and 4B all increased slightly, but remain near historical lows. The 2019 modelled coastwide WPUE of legal (O32) Pacific halibut, the most comparable metric to observed commercial fishery catch rates, was lower (5%) than 2018, down for the third consecutive year and at the lowest value in the time series. Individual IPHC Regulatory Areas varied from a 26% increase (Regulatory Area 3B) to a 17% decrease (Regulatory Area 3A; Figure 4). The FISS sampling associated with the expansion in Biological Region 3 resulted in lower estimated catch-rates in this Region compared to the rest of the coast, and reduced the uncertainty in the index both for Region 3 and coastwide.

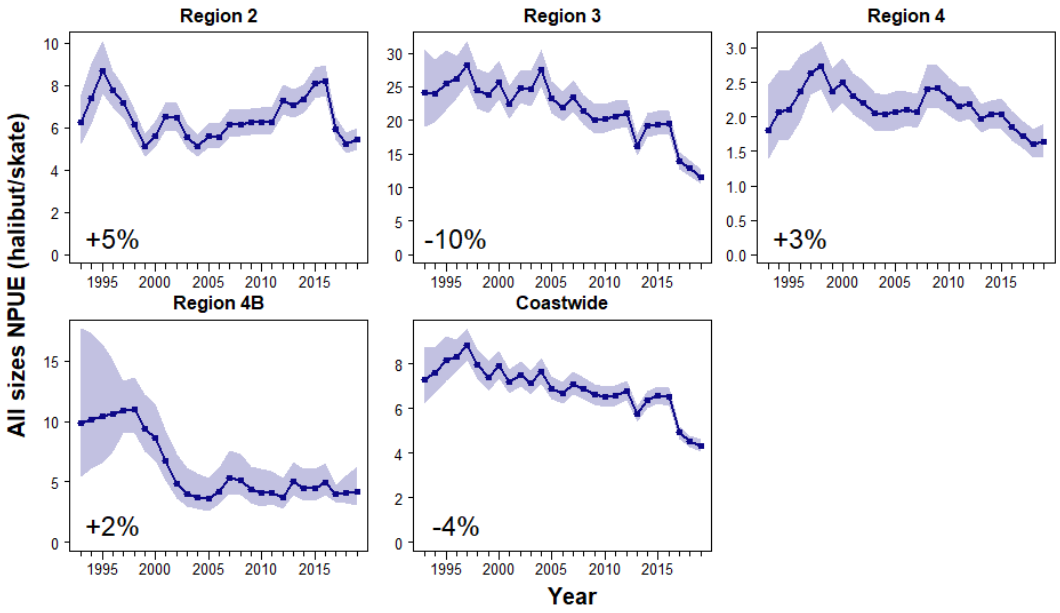

FIGURE 3. Trends in modelled FISS NPUE by Biological Region, 1993-2019. Percentages indicate the change from 2018 to 2019. Shaded zones indicate approximate 95% credible intervals.

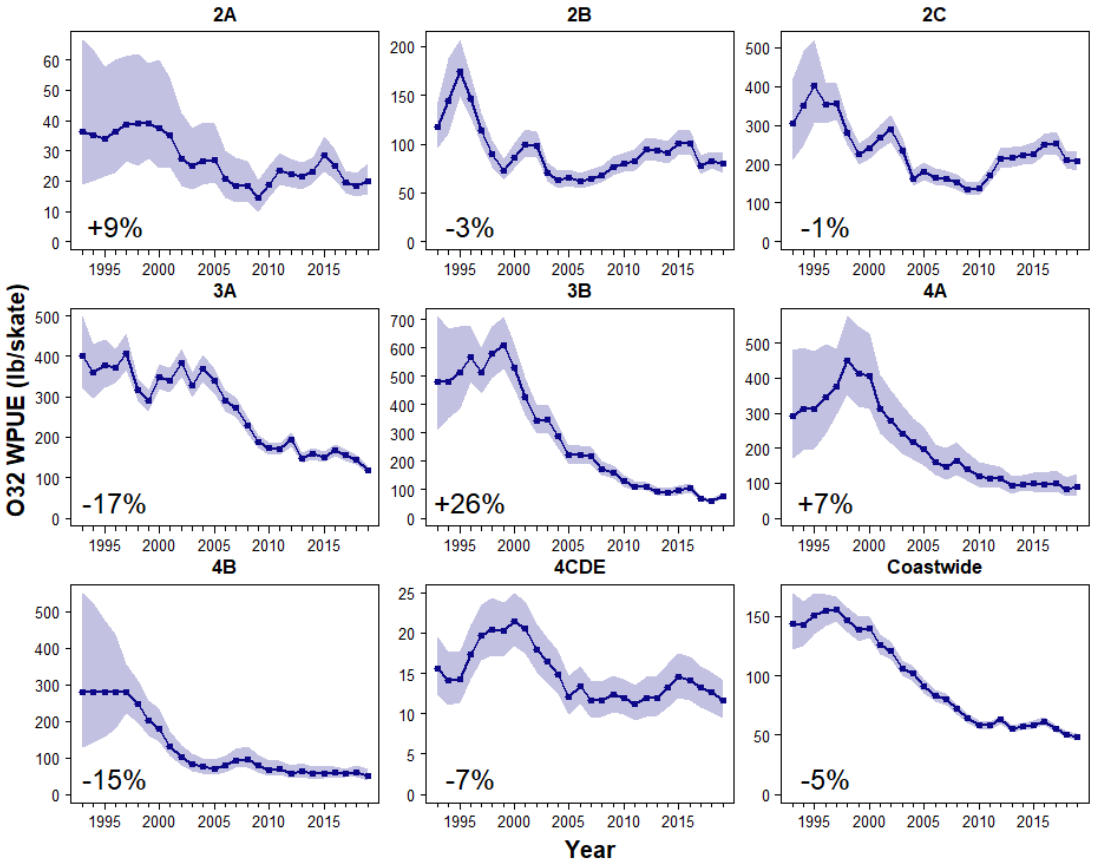

FIGURE 4. Trends in modelled FISS legal (O32) WPUE by IPHC Regulatory Area, 1993-2019. Percentages indicate the change from 2018 to 2019. Shaded zones indicate approximate 95% credible intervals.

Commercial fishery WPUE (based on extensive, but incomplete logbook records available for this assessment) increased 4% coastwide, with mixed performance across IPHC Regulatory Areas (Figure 5). A bias correction (to account for additional logbooks compiled after the fishing season, standard practice in recent years) resulted in an estimate of a 1% increase coastwide. As in 2018, fisheries and gear types are reported separately to allow more detailed evaluation of fishery performance (Figure 5).

Biological information (ages and lengths) from the commercial fishery continue to show the 2005 year-class as the largest contributor (in number) to the fish encountered. In the FISS age-frequency data, 2011 and 2012 cohorts (7 and 8 years old, following a series of weak cohorts from 2006-10) represented the largest proportions in some IPHC Regulatory Areas for the total catch, and the largest proportions coastwide for sublegal female Pacific halibut. At the coastwide level, individual size-at-age continues to be very low relative to the rest of the time-series and there has been no clear trend across ages over the last several years. For the first time, direct estimates of the sex-ratio at age for the directed commercial fishery were available for the IPHC's stock assessment. Data from sampled Pacific halibut in 2017 indicated a very high proportion female coastwide (82%), and a range from 65% in Biological Region 4B to 92% in Biological Region 4. Data from 2018 reflected very similar patterns, with females comprising 80% of the coastwide commercial landings (by number).

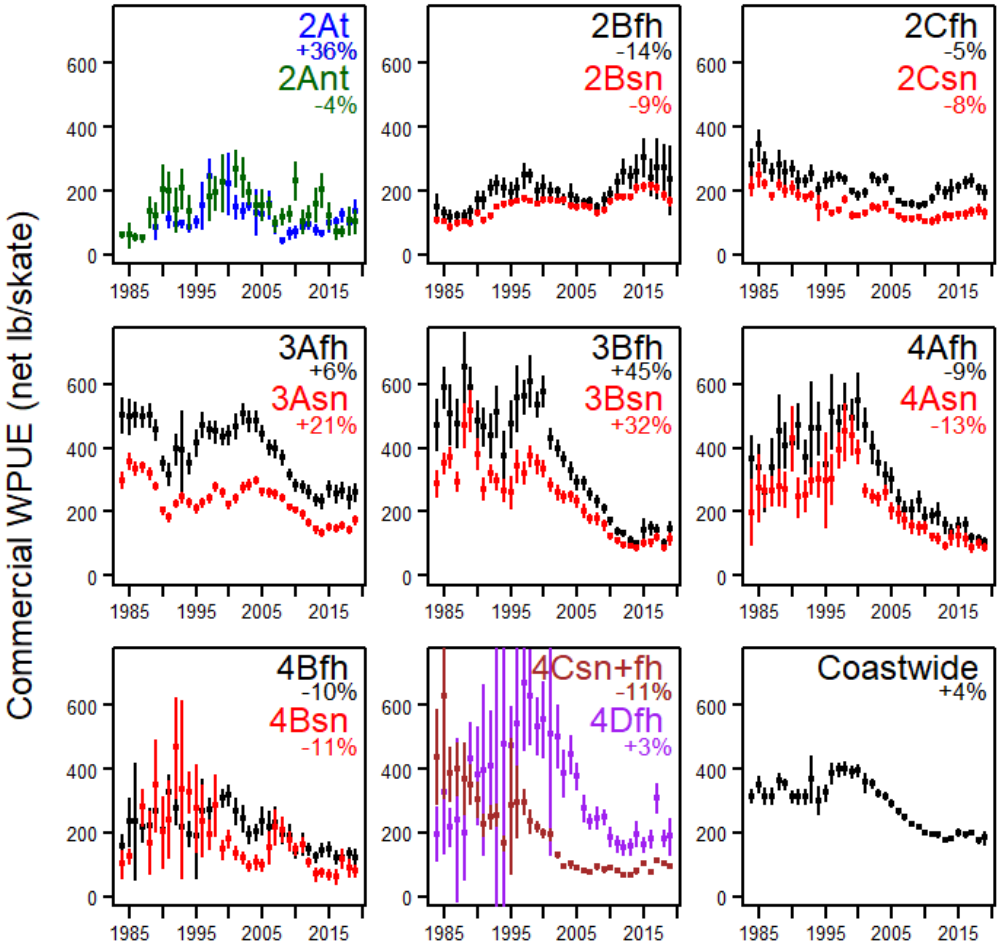

FIGURE 5. Trends in commercial fishery WPUE by IPHC Regulatory Area and fishery or gear, 1984-2019. The tribal fishery in 2A is denoted by "2At", nontribal by "2Ant", fixed hook catch rates by "fh" and snap gear catch rates by "sn" for IPHC Regulatory Areas 2B-4D. Percentages indicate the change from 2018 to 2019 uncorrected for bias due to incomplete logbooks (see text above). Vertical lines indicate approximate 95% confidence intervals.

Biological stock distribution

Updated trends indicate that population distribution (measured via the modelled FISS catch in weight of all Pacific halibut) has been decreasing in Biological Region 3 since 2004, and increasing in Biological Regions 2 and 4 (Figure 6; recent years in Table 1). Survey data are insufficient to estimate stock distribution prior to 1993. It is therefore unknown how historical distributions, and the average distribution likely to occur in the absence of fishing mortality may compare with recent observations.

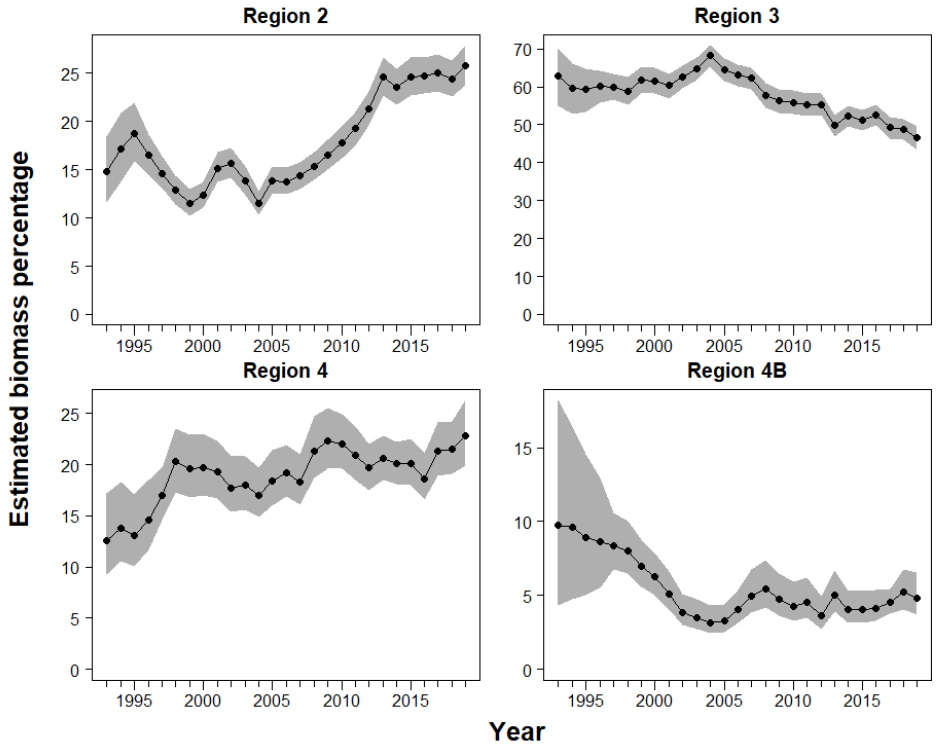

FIGURE 6. Estimated stock distribution (1993-2019) based on modelled survey catch of all sizes of Pacific halibut. Shaded zones indicate approximate 95% credible intervals.

TABLE 1. Recent stock distribution estimates by Biological Region based on modelling of all Pacific halibut captured by the FISS.

Year	Region 2 (2A, 2B, 2C)	Region 3 (3A, 3B)	Region 4 (4A, 4CDE)	Region 4B
2015	24.6%	51.3%	20.1%	4.0%
2016	24.7%	52.5%	18.7%	4.1%
2017	25.0%	49.2%	21.3%	4.5%
2018	24.4%	48.9%	21.5%	5.2%
2019	25.8%	46.5%	22.8%	4.8%

STOCK ASSESSMENT

This stock assessment continues to be implemented using the generalized software stock synthesis (Methot and Wetzel 2013). The analysis consists of an ensemble of four equally weighted models: two long time-series models, reconstructing historical dynamics back to the beginning of the modern fishery, and two short time-series models incorporating data only from 1992 to the present, a time-period for which estimates of all sources of mortality and survey indices are available for all regions. For each time-series length, there are two models: one fitting to coastwide aggregate data, and one fitting to data disaggregated into the four geographic regions. This combination of models includes uncertainty in the form of alternative hypotheses about several important axes of uncertainty, including: natural mortality rates (estimated in the

long time-series models, fixed in the short time-series models), environmental effects on recruitment (estimated in the long time-series models), and other model parameters.

The 2019 stock assessment included a complete re-evaluation of all data sources and modelling choices. Although the basic ensemble approach and four structural models remain consistent with previous analyses, several key improvements were made including: extending the short time-series models back to 1992 to utilize the full modelled FISS index (beginning in 1993), additional flexibility in modelling fishery selectivity enabled by newly available sex-ratio at age data, and re-weighting the contributions of each type of data to the stock assessments based on the goodness of fit to index and age frequencies. The sex-ratio data were critically important to this assessment, as they allowed for direct estimation of parameters describing the scale of male selectivity in each of the individual models.

As has been the case since 2012, the results of this stock assessment are based on the approximate probability distributions derived from the ensemble of models, thereby incorporating the uncertainty within each model (parameter or estimation uncertainty) as well as the uncertainty among models (structural uncertainty). This approach reduces the potential for abrupt changes in management quantities as improvements and additional data are added to individual models, and provides a more realistic perception of uncertainty than any single model, and therefore a stronger basis for risk assessment. For 2019, the four models were again equally weighted. Within-model uncertainty from each model was propagated through to the ensemble results via the maximum likelihood estimates and an asymptotic approximation to their variance. Point estimates in this stock assessment correspond to median values from the ensemble: with the simple probabilistic interpretation that there is an equal probability above or below the reported value.

BIOMASS AND RECRUITMENT TRENDS

The results of the 2019 stock assessment indicate that the Pacific halibut stock declined continuously from the late 1990s to around 2012 (Figure 7). That trend is estimated to have been largely a result of decreasing size-at-age, as well as somewhat weaker recruitment strengths than those observed during the 1980s. The spawning biomass (SB) is estimated to have increased gradually to 2016, and then decreased to an estimated 194 million pounds (~87,850 t) at the beginning of 2020, with an approximate 95% confidence interval ranging from 133 to 248 million pounds (~60,500-112,500 t; Figure 8). Comparison with previous stock assessments indicates that over the last decade the 2019 results are very close to estimates from the 2012 through 2018 assessments. Prior to that period, the current 2019 assessment indicates a high probability of larger biomass than estimated in previous assessments (Figure 9); this is largely the result of the new sex-ratio information for the directed commercial landings indicating more females than in past analyses. All assessments since 2015 have indicated a decreasing spawning biomass in the terminal year.

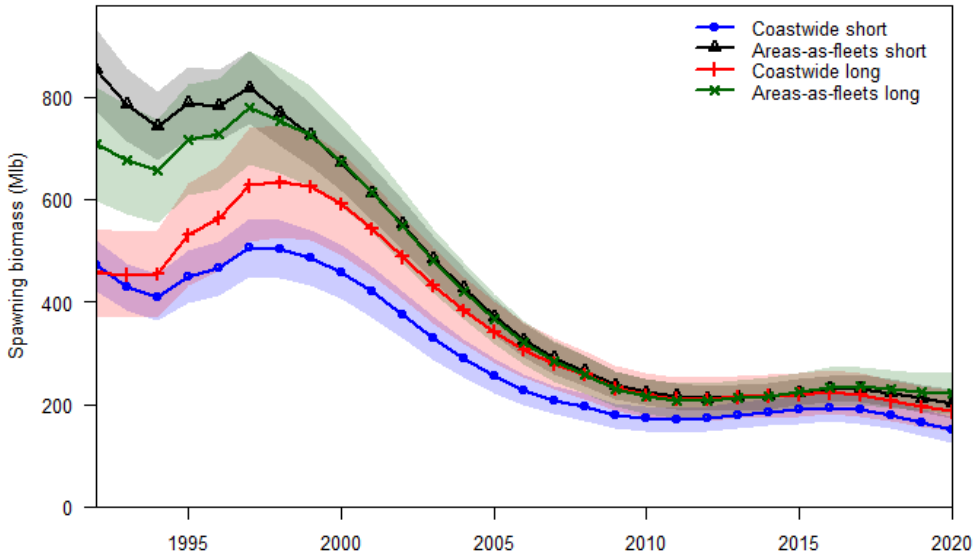

FIGURE 7. Estimated spawning biomass trends (1992-2020) based on the four individual models included in the 2019 stock assessment ensemble. Series indicate the maximum likelihood estimates; shaded intervals indicate approximate 95% credible intervals.

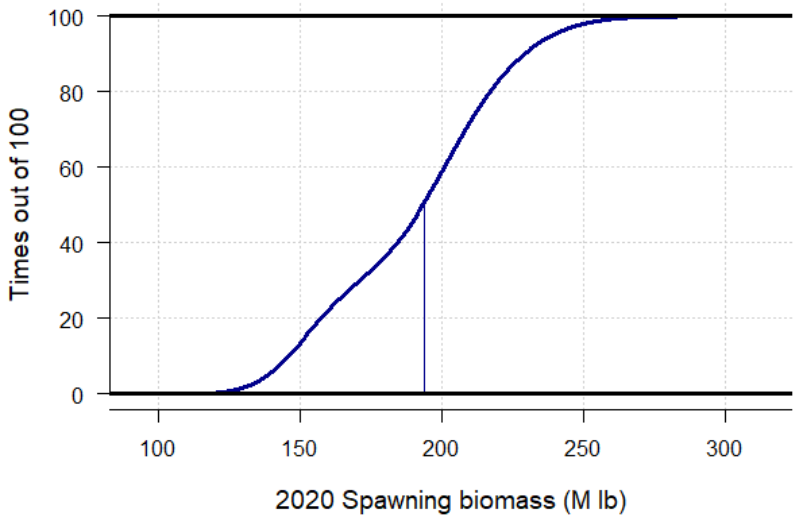

FIGURE 8. Cumulative distribution of the estimated spawning biomass at the beginning of 2020. Curve represents the estimated probability that the biomass is less than or equal to the value on the x-axis; vertical line represents the median (194 million pounds, ~87,850 t).

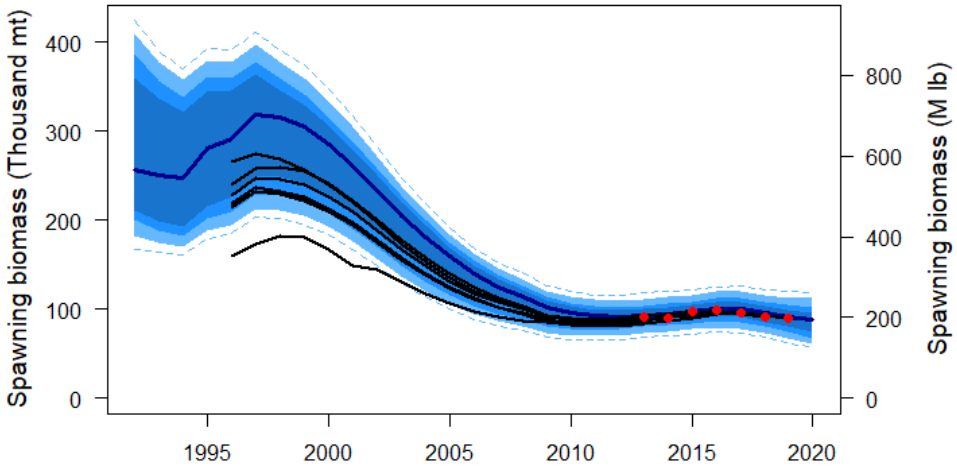

FIGURE 9. Retrospective comparison among recent IPHC stock assessments. Black lines indicate estimates of spawning biomass estimated by assessments conducted from 2012-2018 with the terminal estimate shown as a point, the shaded distribution denotes the 2019 ensemble: the dark blue line indicates the median (or "50:50 line") with an equal probability of the estimate falling above or below that level; colored bands moving away from the median indicate the intervals containing 50/100, 75/100, and 95/100 estimates; dashed lines indicating the 99/100 interval.

Average Pacific halibut recruitment is estimated to be higher (69 and 76% for the coastwide and AAF models respectively) during favorable Pacific Decadal Oscillation (PDO) regimes, a widely used indicator of productivity in the north Pacific. Historically, these regimes included positive conditions prior to 1947, poor conditions from 1947-77, positive conditions from 1978-2006, and poor conditions from 2007-13. Annual averages from 2014 through September 2019 have been positive; however, over this period many other environmental indicators, current and temperature patterns have been anomalous. Therefore, historical patterns of productivity related to the PDO may not be relevant to the most recent few years, and it will be years or decades before this can be verified via observed recruitment strengths. Pacific halibut recruitment estimates show the largest recent cohorts in 1999 and 2005 (Figure 10). Cohorts from 2006 through 2010 are estimated to be much smaller than those from 1999-2005 which results in a high probability of decline in both the stock and fishery yield as these low recruitments become increasingly important to the age range over which much of the harvest and spawning takes place. Based on age data from the 2019 survey, this assessment estimated the 2011 and 2012 year-classes to be similar to those in 2000-04. This is consistent with the appearance of these cohorts in the 2018 assessment, although they remain below the level of the 1999 and 2005 year-classes even with second year of observation. The projected spawning biomass over the next 2-4 years includes the effects of these year classes maturing at ages 8-13.

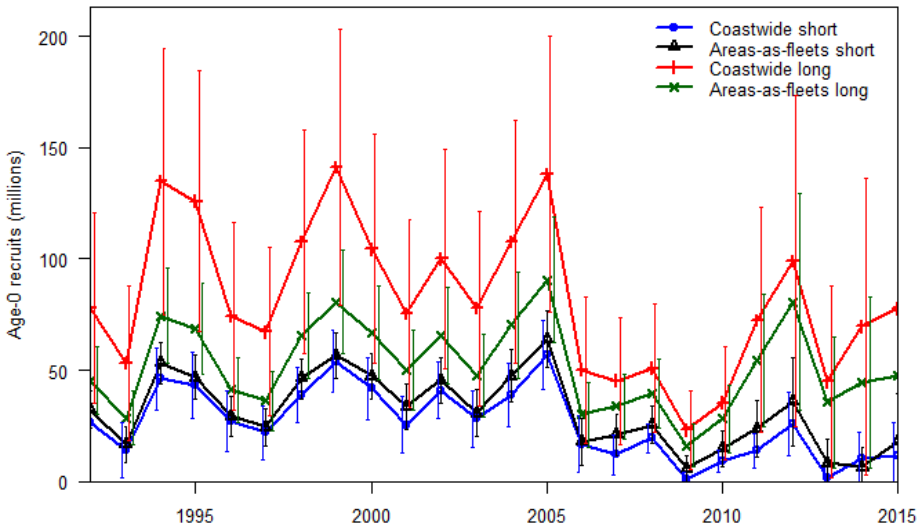

FIGURE 10. Estimated age-0 recruitment trends (1992-2015) based on the four individual models included in the 2019 stock assessment ensemble. Series indicate the maximum likelihood estimates; vertical lines indicate approximate 95% credible intervals.

The IPHC's interim management procedure uses a relative spawning biomass of 30% as a trigger, to begin reducing the target fishing intensity to a limit at 20%, where directed fishing is halted due to the critically low biomass condition. The relative spawning biomass has historically been calculated based on an arbitrary choice of 'good' weight-at-age and 'poor' recruitment levels estimated decades ago. The 2019 assessment, after Scientific Review Board and external review, and following the developments in the IPHC's Management Strategy Evaluation (MSE) process, has updated this calculation to include recent biological conditions. By using current weight-at-age and estimated recruitments influencing the current stock only, the 'dynamic' calculation measures the effect of fishing on the spawning biomass. This avoids the potential situation where environmental and biological conditions could be conflated with fishing effects. The 'historical' static relative spawning biomass was declining rapidly (although estimated to be higher in the 2018 assessment), where the dynamic calculation has been lower (estimated to be 32% in 2020; approximate credible interval: 22-46%) but more stable (Table 2). This result reflects the greater effects of reduced recruitment, rather than fishing in the last few years. The probability that the stock is below the $SB_{30\%}$ level is estimated to be 46% at the beginning of 2020, with less than a 1% chance that the stock is below $SB_{20\%}$. The two long time-series models (coastwide and areas-as-fleets) show different results when comparing the current stock size to that estimated at the historical low in the 1970s. The AAF model estimates that recent stock sizes are below those levels, and the coastwide model above. The relative differences among models reflect both the uncertainty in historical dynamics as well as the importance of spatial patterns in the data and population processes, for which all of the models represent only simple approximations.

TABLE 2. Comparison of 'historical' and 'dynamic' relative spawning biomass estimates from the 2018 and current 2019 stock assessments. Percentage indicates the relative spawning biomass estimated for that year with approximate 95% credible intervals in parentheses; *P(SB<SB$_{XX\%}$)* indicates the probability that the relative spawning biomass in that year is below the reference point (either 20 or 30%).

Year	**2018 Assessment** ('Historical' relative *SB*)	**2019 Assessment** ('Dynamic' relative *SB*)
2019	43% (27-63%) *P(SB<SB30%)* = 11% *P(SB<SB20%)* = <1%	32% (23-46%) *P(SB<SB30%)* = 44% *P(SB<SB20%)* = <1%
2020	38% (22-51%) *P(SB<SB30%)* = 25% *P(SB<SB20%)* = <1%	32% (22-46%) *P(SB<SB30%)* = 46% *P(SB<SB20%)* = <1%

The IPHC's interim management procedure specifies a target level of fishing intensity of a Spawning Potential Ratio (SPR) corresponding to an $F_{46\%}$; this equates to the level of fishing that would reduce the lifetime spawning output per recruit to 46% of the unfished level given current biology, fishery characteristics and demographics. Based on the 2019 assessment, and including the higher proportion of females in the directed commercial landings than previously understood, the 2019 fishing intensity is estimated to correspond to an $F_{42\%}$ (credible interval: 29-57%; Table 3). Comparing the relative spawning biomass and fishing intensity over the recent historical period provides for an evaluation of trends conditioned on the currently defined reference points; this type of comparison is commonly called a 'phase' plot. The phase plot for Pacific halibut shows that the relative spawning biomass decreased as fishing intensity increased through 2010, then increased as the fishing intensity decreased through 2016, and has been relatively stable since then (Figure 11).

TABLE 3. Status summary of Pacific halibut in the IPHC Convention Area at the end of 2019.

Indicators	Values	Trends	Status
Total mortality 2019: Retained catch 2019: Average removals 2015–19:	39.67 MLBS, 17,996 T[1] 32.21 MLBS, 14,608 T 40.93 MLBS, 18,567 T	MORTALITY INCREASED FROM 2018 TO 2019	**2019 MORTALITY NEAR 100-YEAR LOW**
SPR_{2019}: P(SPR<46%): P(SPR<limit):	42% (29-57%)[2] 59% LIMIT NOT SPECIFIED	FISHING INTENSITY INCREASED FROM 2018 TO 2019	**FISHING INTENSITY ABOVE REFERENCE LEVEL**[3]
SB_{2020} (MLBS): SB_{2020}/SB_0: $P(SB_{2020}<SB_{30})$: $P(SB_{2020}<SB_{20})$:	194 MLBS (133–248) 32% (22-46%) 46% <1%	SB DECREASED FROM 2016 TO 2020	**NOT OVERFISHED**[4]
Biological stock distribution:	SEE TABLES AND FIGURES	REGION 3 DECREASING	**REGION 2 AND 4 AT HISTORICAL HIGHS**

[1] Weights in this document are reported as 'net' weights, head and guts removed; this is approximately 75% of the round (wet) weight.
[2] Ranges denote approximate 95% credible intervals from the stock assessment ensemble.
[3] Status determined relative to the IPHC's interim reference Spawning Potential Ratio level of 46%.
[4] Status determined relative to the IPHC's interim management procedure biomass limit of $SB_{20\%}$.

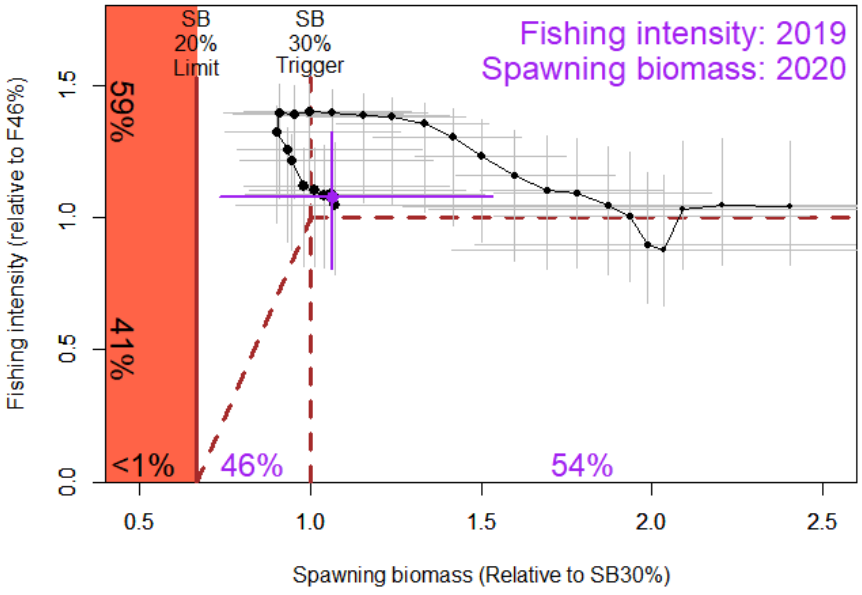

FIGURE 11. Phase plot showing the time-series (1992-2020) of estimated spawning biomass and fishing intensity relative to the reference points specified in the IPHC's interim management procedure. Dashed lines indicate the $F_{46\%}$ (horizontal) reference fishing intensity, with linear reduction below the $SB_{30\%}$ (vertical) trigger, the red area indicates relative spawning biomass levels below the $SB_{20\%}$ limit. Each year of the time series is denoted by a solid point (credible intervals by horizontal and vertical whiskers), with the relative fishing intensity in 2019 and spawning biomass at the beginning of 2020 shown as the largest point (purple). Percentages along the y-axis indicate the probability of being above and below $F_{46\%}$ in 2019; percentages on the x-axis the probabilities of being below $SB_{20\%}$, between $SB_{20\%}$ and $SB_{30\%}$ and above $SB_{30\%}$ at the beginning of 2020.

MAJOR SOURCES OF UNCERTAINTY

This stock assessment includes uncertainty associated with estimation of model parameters, treatment of the data sources (e.g. short and long time-series), natural mortality (fixed vs. estimated), approach to spatial structure in the data, and other differences among the models included in the ensemble. Although this is an improvement over the use of a single assessment model, there are important sources of uncertainty that are not included.

The 2019 assessment utilizes two years (2017-18) of sex-ratio information from the directed commercial fishery landings. However, uncertainty in historical ratios, and the degree of variability likely present in those and future fisheries remains unknown. Additional years of data are likely to further inform selectivity parameters and cumulatively reduce uncertainty in stock size in the future. The treatment of spatial dynamics and movement rates among Biological Regions, which are represented via the coastwide and AAF approaches, has large implications for the current stock trend, as evidenced by the different results among the four models comprising the stock assessment ensemble. Further, movement rates for adult and younger Pacific halibut (roughly ages 2-6, which were not well-represented in the PIT-tagging study), particularly to and from Biological Region 4 (and especially to and from the Eastern Bering Sea), are important and uncertain components in understanding and delineating between the distribution of recruitment among biological Regions, and other factors influencing stock distribution and productivity. This assessment also does not include mortality, trends or explicit demographic linkages with Russian waters, although such linkages may be increasingly important as warming waters in the Bering Sea allow for potentially important exchange across the international border.

Additional important contributors to assessment uncertainty (and potential bias) include factors influencing recruitment, size-at-age, and some estimated components of the fishery removals. The link between Pacific halibut recruitment strengths and environmental conditions remains poorly understood, and although correlation with the Pacific Decadal Oscillation is currently useful, it may not remain so in the future. Therefore, recruitment variability remains a substantial source of uncertainty in current stock estimates due to the lack of mechanistic understanding and the lag between birth year and direct observation in the fishery and survey data (6-10 years). Reduced size-at-age relative to levels observed in the 1970s has been the most important driver of recent decade's stock trends, but its cause also remains unknown. Like most stock assessments, mortality estimates are assumed to be accurate. Therefore, uncertainty due to discard mortality estimation (observer sampling and representativeness), discard mortality rates, and any other unreported sources of removals in either directed or non-directed fisheries (e.g., whale depredation) could create bias in this assessment.

Maturation schedules are currently under renewed investigation by the IPHC. Currently used historical values are based on visual field assessments, and the simple assumption that fecundity is proportional to spawning biomass and that Pacific halibut do not experience appreciable skip-spawning (physiologically mature fish which do not actually spawn due to environmental or other conditions). To the degree that maturity, fecundity or skip spawning may be temporally variable, the current approach could result in bias in the stock assessment trends and reference points. New information will be incorporated as it becomes available; however, it may take years to better understand these biological processes.

Due to the many remaining uncertainties in Pacific halibut biology and population dynamics, a high degree of uncertainty in both stock scale and trend will continue to be an integral part of an

annual management process. Potential solutions include management procedures that utilize multi-year management approaches, which are being tested with the MSE framework.

OUTLOOK

Stock projections were conducted using the integrated results from the stock assessment ensemble in tandem with summaries of the 2019 directed fisheries and other sources of mortality. The harvest decision table (Table 4) provides a comparison of the relative risk (in times out of 100), using stock and fishery metrics (rows), against a range of alternative harvest levels for 2020 (columns). The block of rows entitled "Stock Trend" provides for evaluation of the risks to short-term trend in spawning biomass, independent of all harvest policy calculations. The remaining rows portray risks relative to the spawning biomass reference points ("Stock Status") and fishery performance relative to the approach identified in the interim management procedure. The alternatives (columns) provided include several coarsely spaced levels of mortality intended for evaluation of stock dynamics including:

- No mortality (useful to evaluate the stock trend due solely to population processes),
- A 10 million pound (~4,500 t) 2020 Total Constant Exploitation Yield (TCEY[4])
- A 50 million pound (~22,700 t) 2020 TCEY
- A 60 million pound (~27,200 t) 2020 TCEY
- The mortality at which there is a 50% chance that the spawning biomass will be smaller in three years than in 2020 ("*3-year surplus*")
- The mortality consistent with the "Reference" SPR ($F_{46\%}$) level.
- The mortality consistent with repeating the TCEYs set for 2019 (*"status quo"*).

A grid of alternative TCEY values corresponding to SPR values from 40% to 58% is also provided. For each row of the decision table, the mortality (including all sizes and sources), the coastwide TCEY and the associated level of fishing intensity projected for 2020 (median value with the 95% credible interval below) are reported.

The stock is projected to decrease with at least a 51% chance over the period from 2021-23 for all TCEYs greater than the "3-year surplus" of 18.4 million pounds (~8,350 t), corresponding to a projected SPR of 63% (credible interval 44-75%; Table 4, Figure 12). At the reference level (a projected SPR of 46%) the probability of spawning biomass decline to 2021 is 89%, decreasing to 75% in three years, as the 2011 and 2012 cohorts mature. At the *status quo* TCEYs (38.61 million lb, (~17,500 t), the probability of spawning biomass declines is 97 and 87% for one and three years respectively. The one-year risk of the stock dropping below $SB_{30\%}$ ranges from 43% (at the 3-year surplus level) to 49% at the *status quo* TCEYs. Over three years these probabilities range from 37% to 50% depending on the level of mortality.

[4] The TCEY corresponds approximately to all mortality of Pacific halibut, except non-directed discard mortality of fish less than 26 inches (66 cm) in length.

TABLE 4. Harvest decision table for 2020 mortality limits. Columns correspond to yield alternatives and rows to risk metrics. Values in the table represent the probability, in "times out of 100" (or percent chance) of a particular risk.

		2020 Alternative			3-Year Surplus				*Reference SPR=46%*						Status quo		
		Total mortality (M lb)	0.0	11.6	20.0	23.6	27.6	32.3	33.5	34.6	35.7	36.8	37.8	38.9	40.2	61.6	
		TCEY (M lb)	0.0	10.0	18.4	22.0	26.0	30.7	31.9	33.0	34.1	35.2	36.2	37.3	38.6	60.0	
		2020 fishing intensity	$F_{100\%}$	$F_{78\%}$	$F_{63\%}$	$F_{58\%}$	$F_{53\%}$	$F_{47\%}$	$F_{46\%}$	$F_{45\%}$	$F_{44\%}$	$F_{43\%}$	$F_{42\%}$	$F_{41\%}$	$F_{40\%}$	$F_{27\%}$	
		Fishing intensity interval	--	59-87%	44-75%	39-71%	35-67%	31-62%	30-61%	29-60%	28-59%	28-58%	27-57%	26-56%	25-56%	17-43%	
Stock Trend (spawning biomass)	In 2021	Is less than 2020	1	29	61	71	79	87	89	91	93	94	95	96	97	>99	a
		Is 5% less than 2020	<1	<1	11	23	30	42	46	50	54	58	61	64	67	98	b
	In 2022	Is less than 2020	<1	16	50	60	68	77	79	81	83	85	87	89	90	>99	c
		Is 5% less than 2020	<1	1	23	33	45	59	61	64	66	68	69	71	74	99	d
	In 2023	Is less than 2020	1	22	50	58	65	73	75	77	79	81	83	85	87	>99	e
		Is 5% less than 2020	<1	6	33	43	53	62	64	66	67	69	71	73	75	99	f
Stock Status (Spawning biomass)	In 2021	Is less than 30%	35	39	43	44	46	47	48	48	48	48	48	49	49	51	g
		Is less than 20%	<1	<1	<1	<1	<1	1	1	1	2	2	2	3	3	16	h
	In 2022	Is less than 30%	26	31	40	43	46	48	48	49	49	49	49	50	50	54	i
		Is less than 20%	<1	<1	<1	1	2	6	7	8	9	11	12	14	15	27	j
	In 2023	Is less than 30%	18	27	37	41	45	48	49	49	49	49	50	50	50	60	k
		Is less than 20%	<1	<1	<1	2	6	13	15	17	18	20	21	22	23	40	l
Fishery Trend (TCEY)	In 2021	Is less than 2020	0	<1	11	24	36	50	51	52	54	57	59	63	67	>99	m
		Is 10% less than 2020	0	<1	1	12	25	40	44	46	48	50	51	52	53	>99	n
	In 2022	Is less than 2020	0	<1	11	25	39	50	51	52	54	56	59	62	66	>99	o
		Is 10% less than 2020	0	<1	2	14	27	43	46	48	49	50	51	52	54	>99	p
	In 2023	Is less than 2020	0	<1	13	27	41	50	51	52	54	56	58	61	65	>99	q
		Is 10% less than 2020	0	<1	4	16	30	45	47	48	49	50	51	52	54	>99	r
Fishery Status (Fishing intensity)	In 2020	Is above $F_{46\%}$	0	<1	7	22	31	48	50	51	53	55	57	60	64	>99	s

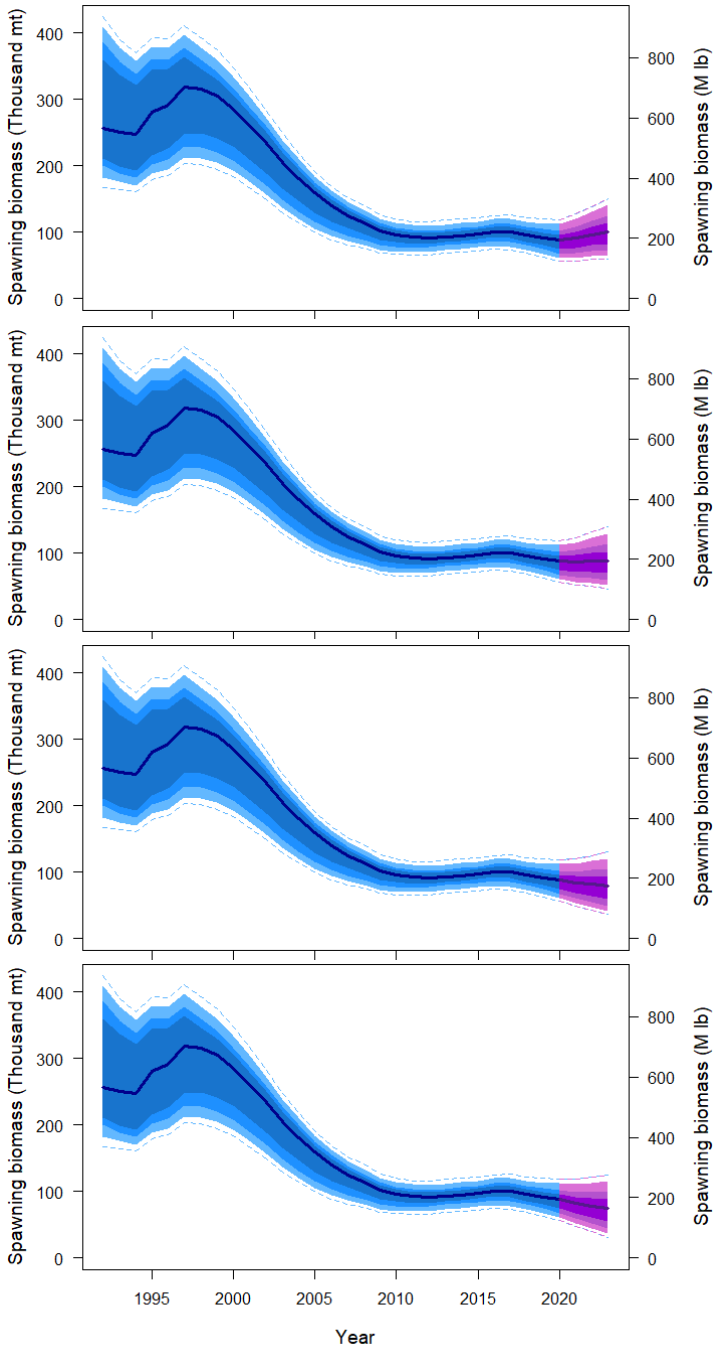

FIGURE 12. Three-year projections of stock trend under alternative levels of mortality: no fishing mortality (upper panel), the 3-year surplus (18.4 million pounds, ~8,350 t; second panel), the TCEY projected for the IPHC's interim management procedure (31.9 million pounds, 14,500 t; third panel) and a TCEY of 38.61 million pounds (~17,500 t, the *status quo* TCEYs from 2019; lower panel).

SCIENTIFIC ADVICE

Sources of mortality: In 2019, total Pacific mortality due to fishing was up slightly to 39.67 million pounds (17,996 t) from 38.5 million pounds (17,461 t) in 2018 (updated for this assessment). Of that total, 81% comprised the retained catch, down from 82% in 2018 (Table 3).

Fishing intensity: The 2019 mortality corresponded to a point estimate of SPR = 42%; there is a 59% chance that fishing intensity exceeded the IPHC's reference level of 46% (Table 3). The Commission does not currently have a coastwide fishing intensity limit reference point.

Stock status (spawning biomass): Current female spawning biomass is estimated to be 194 million pounds (87,856 t), which corresponds to an 46% chance of being below the IPHC trigger reference point of $SB_{30\%}$, and less than a 1% chance of being below the IPHC limit reference point of $SB_{20\%}$. The stock is estimated to have been declining since 2016 and is currently at 32% of the unfished state. Therefore, the stock is considered to be '**not overfished**'. Projections indicate that mortality consistent with the interim management procedure reference fishing intensity ($F_{46\%}$) is likely to result in further declining biomass levels in the near future.

Stock distribution: The proportion of the coastwide stock represented by Biological Region 3 has been decreasing since 2004 (Figure 6), with Biological Regions 2 and 4 increasing. Although comprising 46.5% of the coastwide surveyed biomass in 2019, the decreasing trend suggests that surplus production has likely been exceeded in Biological Region 3 over the last 15 years to a greater degree than in other Biological Regions.

RESEARCH PRIORITIES

Research priorities for the stock assessment and related analyses have been consolidated with those for the IPHC's MSE and the Biological Research program. These ranked and categorized priorities will soon be available on the IPHC's website.

DETAILED MANAGEMENT INFORMATION

The IPHC's interim management procedure includes a coastwide TCEY (and corresponding total mortality) as described above, and also a method for distributing that TCEY among IPHC Regulatory Areas. The distribution method consists of the following steps:

1) Determine the stock distribution of Pacific halibut greater than 32-inches (82.5 cm, O32) from the modeled survey WPUE and geographic extent of each IPHC Regulatory Area.
2) Assign relative harvest rates of 1.0 to IPHC Regulatory Areas 2A-3A and 0.75 to IPHC Regulatory Areas 3B-4CDE.
3) Generate a target TCEY distribution, as the normalized (sums to 100%) product of steps 1 and 2 (Table 5).

TABLE 5. Interim management procedure steps 1-3 (prior to adjustments for 2A and 2B).

	2A	2B	2C	3A	3B	4A	4B	4CDE	Coastwide
O32 stock distribution	2.0%	12.5%	15.3%	30.3%	12.1%	9.3%	5.2%	13.2%	100%
Relative harvest rate	1.0	1.0	1.0	1.0	0.75	0.75	0.75	0.75	NA
TCEY distribution	2.2%	13.9%	17.0%	33.6%	10.1%	7.7%	4.3%	11.0%	100%

During AM095 two additional steps were requested by the Commission, to apply to mortality limits for 2019-2022:

4) Set the IPHC Regulatory Area 2A TCEY to a value of 1.65.
5) Set the IPHC Regulatory Area target TCEY percentage to a weighted average of 20% (weight = 0.7) and the result of step 3 (weight = 0.3).
6) In order to satisfy the coastwide TCEY as well as steps 4-5, reduce the target TCEY percentages for IPHC Regulatory Areas 2C-4CDE in proportion to the result of step 3.

Finally, at IM095 (Req.03, para. 49) an additional adjustment was added as a basis for the 2020 mortality projection tool:

7) Remove all non-directed commercial discard ('bycatch') mortality of Pacific halibut less than 26 inches in length (66 cm; U26) occurring in Alaska from the projections.
8) Recalculate the TCEY (using the stock assessment ensemble) that corresponds to the reference fishing intensity (coastwide) and the distribution percentages from step 6.
9) Compare the recalculated TCEYs to those from step 6 to determine the yield gained in IPHC Regulatory Area 2B.
10) Add the "yield gained" result for IPHC Regulatory Area 2B of step 9 to that from step 6.
11) In order to satisfy the coastwide TCEY as well as steps 6 and 10, reduce the target TCEY percentages for IPHC Regulatory Areas 2C-4CDE in proportion to the result of step 6 (also equivalent to step 3).

An updated mortality projection tool including the results of steps 1-11 is now available for use in evaluating 2020 mortality limits.

During IM095 the Commission requested three additional analyses for comparison with the adjusted interim management procedure results:

1) IM095-Req.02 (para. 37): *"NOTING that the Interim Management Procedure uses the previous year's estimated discard mortality in non-directed fisheries as the basis for mortality projections, and that the actual estimates the following year can differ from those predictions due to changes in both the Pacific halibut stock and in the non-directed fisheries, and noting that the Commission is seeking to generate a bycatch estimate that is as accurate as possible, the Commission REQUESTED an additional projection be prepared for comparison at AM096 based on an average of the most recent 3-years of discard mortality in non-directed fisheries."*

2, 3) IM095-Req.04 (para. 50): "*The Commission REQUESTED that the IPHC Secretariat prepare the following alternatives for presentation at AM096:*

a) changing the relative harvest rate for IPHC Regulatory Area 4CDE to a value of 1.0 (from 0.75) after the adjustments to the Interim Management Procedure; and

b) comparing the adjusted management procedure (as presented, and including the U26 non-directed fishery discard mortality mitigation) further modified to add the TCEY pounds additional to the historical Interim Management Procedure calculation for IPHC Regulatory Areas 2A and 2B to the total TCEY."

The results of these requests are provided in Appendix A.

ADDITIONAL INFORMATION

A more detailed description of the data sources and stock assessment results is available on the IPHC's website stock assessment page. That page also includes peer review documents and previous stock assessments. Further, the IPHC's website contains many interactive tools for both FISS and commercial fishery information, as well as historical data series that replace appendices and tables from previous year's documents.

RECOMMENDATION/S

That the Commission:

a) **NOTE** paper IPHC-2020-AM096-09 Rev_1 which provides a summary of data, the 2019 stock assessment and the harvest decision table for 2020.
b) **REQUEST** any modifications to the IPHC's interim management procedure for use in describing 2021 mortality limits during next year's meetings (IM096 and AM097).

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APPENDIX A
ANALYSES REQUESTED DURING IM095

1. *Mortality projections based on a 3-year non-directed discard mortality average.*

This analysis includes:

a) Recalculating the total TCEY (given the 3-year average, rather than the 2019 non-directed discard mortality) corresponding to the reference $F_{46\%}$ level of fishing intensity.
b) Recalculating the interim management procedure steps and adjustments including the U26 non-directed discard mortality mitigation.

The three-year average discard mortality from non-directed fisheries was 0.27 million pounds (~120 t) less than that estimated for 2019 (Table A1; including the post-year update available 7 January 2020). With such a small change in the total and no difference in the U26 non-directed discard mortality, the total TCEY corresponding to the reference $F_{46\%}$ level of fishing intensity was unchanged from the reference case. Therefore, the IPHC Regulatory Area TCEYs were also unchanged

TABLE A1. Recent discard mortality from non-directed fisheries ('bycatch') of Pacific (million net pounds).

Over 26 inches in length (66cm, O26)											
Year	**2A**	**2B**	**2C**	**3A**	**3B**	**4A**	**4B**	**4CDE**	**Canada**	**U.S.**	**Coastwide**
2017	0.13	0.23	0.05	1.11	0.73	0.28	0.20	1.72	0.23	4.23	4.46
2018	0.11	0.27	0.08	1.39	0.44	0.19	0.14	2.05	0.27	4.39	4.66
2019	0.12	0.22	0.09	1.37	0.42	0.20	0.15	2.40	0.22	4.76	4.97
3-year average	0.12	0.24	0.07	1.29	0.53	0.22	0.16	2.06	0.24	4.46	4.70
Under 26 inches in length (66cm, U26)											
Year	**2A**	**2B**	**2C**	**3A**	**3B**	**4A**	**4B**	**4CDE**	**Canada**	**U.S.**	**Coastwide**
2017	0.00	0.02	0.00	0.32	0.22	0.15	0.01	1.03	0.02	1.74	1.75
2018	0.00	0.03	0.00	0.28	0.07	0.14	0.01	0.93	0.03	1.42	1.45
2019	0.00	0.02	0.00	0.27	0.06	0.15	0.01	1.09	0.02	1.59	1.61
3-year average	0.00	0.02	0.00	0.29	0.12	0.14	0.01	1.02	0.02	1.58	1.61

The distribution of the TCEYs to individual sectors resulted in changes to IPHC Regulatory Area FCEYs after differing levels of non-directed discard mortality were removed. Specifically, the largest increase in FCEY occurred for IPHC Regulatory Area 4CDE, and the largest decrease in 3B (Table A2).

TABLE A2. Detailed mortality projections based on the adjusted interim management procedure and including a 3-year average discard mortality in non-directed fisheries (million net pounds).

	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
Commercial Discard Mortality	0.03	0.12	NA	NA	0.14	0.12	0.04	0.04	0.49
O26 Non-Directed Discard Mortality	0.12	0.24	0.07	1.29	0.53	0.22	0.16	2.06	4.69
Recreational	NA	0.04	1.15	1.66	0.00	0.01	0.00	0.00	2.87
Subsistence	NA	0.41	0.37	0.19	0.02	0.01	0.00	0.04	1.03
Total non-FCEY	0.15	0.80	1.59	3.14	0.69	0.37	0.20	2.14	9.08
Commercial Discard Mortality	NA	NA	0.05	0.21	NA	NA	NA	NA	0.26
Recreational	0.61	0.79	0.60	1.23	NA	NA	NA	NA	3.23
Subsistence	0.03	NA	NA	NA	NA	NA	NA	NA	0.03
Commercial Landings	0.87	4.62	2.64	5.05	2.20	1.85	1.05	1.02	19.29
Total FCEY	1.50	5.41	3.30	6.49	2.20	1.85	1.05	1.02	22.82
							4C FCEY	0.47	
							4D FCEY	0.47	
							4E FCEY	0.07	
TCEY	1.65	6.22	4.88	9.63	2.89	2.22	1.25	3.16	31.90
U26 Non-Directed Discard Mortality	0.00	0.02	0.00	0.29	0.12	0.14	0.01	1.02	1.60
Total mortality	1.65	6.24	4.88	9.92	3.01	2.36	1.26	4.18	33.50

2. *Setting the relative harvest rate in IPHC Regulatory Area 4CDE to 1.0.*

This alternative occurs after the 2A and 2B adjustments have been made, such that it generates differing target TCEY distributions only for IPHC Regulatory Areas 2C-4CDE. All other steps in the interim management procedure remain unchanged. The original and revised target TCEY distribution (prior to 2A and 2B adjustments) are provided in Table A3.

TABLE A3. Comparison of the interim management procedure (prior to adjustments for 2A and 2B) to an alternative including a relative harvest rate of 1.0 for IPHC Regulatory Area 4CDE (million net pounds).

Original procedure									
	2A	**2B**	**2C**	**3A**	**3B**	**4A**	**4B**	**4CDE**	**Coastwide**
O32 stock distribution	2.0%	12.5%	15.3%	30.3%	12.1%	9.3%	5.2%	13.2%	100%
Relative harvest rate	1.0	1.0	1.0	1.0	0.75	0.75	0.75	0.75	NA
TCEY distribution	2.2%	13.9%	17.0%	33.6%	10.1%	7.7%	4.3%	11.0%	100%
Alternative									
Year	**2A**	**2B**	**2C**	**3A**	**3B**	**4A**	**4B**	**4CDE**	**Coastwide**
O32 stock distribution	2.0%	12.5%	15.3%	30.3%	12.1%	9.3%	5.2%	13.2%	100%
Relative harvest rate	1.0	1.0	1.0	1.0	0.75	0.75	0.75	1.0	NA
TCEY distribution	2.2%	13.4%[1]	16.4%	32.4%	9.7%	7.5%	4.2%	14.2%	100%

[1]A value of 13.9% is still be used to calculate subsequent adjustments for IPHC Regulatory Area 2B, consistent with the recommendation from AM095.

After recalculating the distribution of TCEY among IPHC Regulatory Areas 2C-4CDE with the revised relative harvest rates, the 4CDE TCEY is increased by 0.88 million pounds, with commensurate decreases in Areas 2C-4B (Table A4).

TABLE A4. Detailed mortality projections based on the adjusted interim management procedure and including a relative harvest rate of 1.0 for IPHC Regulatory Area 4CDE (million net pounds).

	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
Commercial Discard Mortality	0.03	0.12	NA	NA	0.14	0.11	0.04	0.07	0.50
O26 Non-Directed Discard Mortality	0.12	0.22	0.09	1.37	0.42	0.20	0.15	2.40	4.97
Recreational	NA	0.04	1.15	1.66	0.00	0.01	0.00	0.00	2.87
Subsistence	NA	0.41	0.37	0.19	0.02	0.01	0.00	0.04	1.03
Total non-FCEY	0.15	0.78	1.61	3.22	0.58	0.34	0.19	2.51	9.38
Commercial Discard Mortality	NA	NA	0.05	0.19	NA	NA	NA	NA	0.24
Recreational	0.60	0.80	0.56	1.13	NA	NA	NA	NA	3.10
Subsistence	0.03	NA	NA	NA	NA	NA	NA	NA	0.03
Commercial Landings	0.86	4.64	2.46	4.67	2.19	1.79	1.01	1.53	19.15
Total FCEY	1.50	5.44	3.07	6.00	2.19	1.79	1.01	1.53	22.52
							4C FCEY	0.71	
							4D FCEY	0.71	
							4E FCEY	0.11	
TCEY	1.65	6.22	4.68	9.23	2.77	2.13	1.19	4.04	31.90
U26 Non-Directed Discard Mortality	0.00	0.02	0.00	0.27	0.06	0.15	0.01	1.09	1.61
Total mortality	1.65	6.24	4.68	9.50	2.83	2.27	1.20	5.13	33.51

3. *Comparing the adjusted management procedure results to an alternative adding to the coastwide TCEY all pounds needed to satisfy the 2A and 2B adjustments.*

This alternative requires the following steps:

a) Determining the TCEYs for all IPHC Regulatory Areas that result from the interim management procedure (without adjustments made to IPHC Regulatory Areas 2A and 2B).
b) Adding the difference between step (a) for IPHC Regulatory Area 2A and 1.65 to IPHC Regulatory Area 2A and to the total TCEY.
c) Adding the difference between step (a) for IPHC Regulatory Area 2B and the coastwide percentage resulting from the weighted average as well as the U26 non-directed discard mortality mitigation to the total coastwide TCEY.
d) Simultaneously increasing both the coastwide TCEY and the 2B TCEY until the adjusted TCEY percentage plus the U26 mitigation is achieved.
e) Comparing the fishing intensity and total TCEY to the reference and interim management procedure results.

This alternative results in an increase to the coastwide TCEY from 31.9 to 35.24 million pounds (Table A5). IPHC Regulatory Area 2A remains fixed at 1.65 million pounds. IPHC Regulatory Area 2B increases by 0.61 million pounds, reflecting the same adjusted percentage (18.2%) of a larger total, and a slightly larger U26 mitigation of 0.430 million pounds. IPHC Regulatory Areas 2C-4CDE TCEYs are identical to those that result from the Interim Management Procedure prior to any adjustment (the percentages from Table 5 applied to a coastwide TCEY of 31.9 million pounds). The increased coastwide TCEY results in a projected level of fishing intensity of F43% in 2020, and associated increased risk reported in the harvest decision table (Table 4).

TABLE A5. Detailed mortality projections based on the adjusted interim management procedure and adding to the total TCEY to make those adjustments (million net pounds).

	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
Commercial Discard Mortality	0.03	0.13	NA	NA	0.17	0.13	0.04	0.05	0.55
O26 Non-Directed Discard Mortality	0.12	0.22	0.09	1.37	0.42	0.20	0.15	2.40	4.97
Recreational	NA	0.05	1.15	1.66	0.00	0.01	0.00	0.00	2.88
Subsistence	NA	0.41	0.37	0.19	0.02	0.01	0.00	0.04	1.03
Total non-FCEY	0.15	0.80	1.61	3.22	0.61	0.36	0.19	2.49	9.43
Commercial Discard Mortality	NA	NA	0.06	0.24	NA	NA	NA	NA	0.30
Recreational	0.60	0.89	0.70	1.42	NA	NA	NA	NA	3.61
Subsistence	0.03	NA	NA	NA	NA	NA	NA	NA	0.03
Commercial Landings	0.86	5.15	3.07	5.84	2.61	2.11	1.20	1.03	21.87
Total FCEY	1.50	6.03	3.83	7.50	2.61	2.11	1.20	1.03	25.81
							4C FCEY	0.48	
							4D FCEY	0.48	
							4E FCEY	0.07	
TCEY	1.65	6.83	5.44	10.72	3.22	2.47	1.39	3.52	35.24
U26 Non-Directed Discard Mortality	0.00	0.02	0.00	0.27	0.06	0.15	0.01	1.09	1.61
Total mortality	1.65	6.85	5.44	11.00	3.28	2.62	1.39	4.61	36.85

Options for the treatment of U26 discard mortality from non-directed fisheries (*bycatch*) within a total mortality limit

PREPARED BY: IPHC SECRETARIAT (I. STEWART, 16 DECEMBER 2019)

PURPOSE

To provide the Commission with a set of options and a discussion of those options in response to:

> *"AM095–Rec.04 (para. 66) The Commission **RECOMMENDED** evaluating and redefining TCEY to include the U26 component of discard mortalities, including bycatch, as steps towards more comprehensive and responsible management of the resource, in coordination with the IPHC Secretariat and Contracting Parties. The intent is that each Contracting Party to the Treaty would be responsible for counting its U26 mortalities against its collective TCEY. This change would be intended to take effect for TCEYs established at the 2020 Annual Meeting."*

BACKGROUND

The IPHC's process for setting annual mortality limits has changed appreciably over its history. Historically, the IPHC set limits called Fishery Constant Exploitation Yields[1] (FCEYs) which constrained the retained catch of the directed commercial Pacific halibut fishery. Due to the 32 inch (81.3 cm) minimum size limit (MSL), in place since 1973 (Myhre 1973), the FCEY only applied to mortality above the MSL. In only IPHC Regulatory Areas 2A and 2B recreational mortality was also included in the FCEY. Harvest strategy calculations consisted of calculating the Total Constant Exploitation Yield (TCEY), then subtracting off the projected levels of "other removals" consisting of all recreational and subsistence mortality, as well as discard mortality from non-directed fisheries (bycatch) and directed commercial Pacific halibut fishery discard mortality estimates of fish over 32" to get the FCEY. Discussion of 'regularizing' the treatment of discard mortality from non-directed fisheries (bycatch) and directed commercial discard mortality to be consistent with the treatment of recreational and subsistence mortality began in 2006 (Hare and Clark 2007). In 2011 the mortality represented by 'other removals' was extended to add fish over 26 inches (66 cm) in length (O26), thereby adding to the deductions made from the TCEY to get to the FCEY (Hare 2011a, 2011b). Prior to the 2012 stock assessment, projections of the total mortality from all sources and sizes of Pacific halibut, and TCEYs associated with the mortality limits (FCEYs) adopted by the Commission each year were not routinely reported. In 2014, Catch Sharing Plans (CSPs) were adopted in IPHC Regulatory Areas 2C and 3A which resulted in the inclusion of the charter recreational mortality in the FCEY rather than the 'other removals'.

More recently, the Commission directed the IPHC Secretariat to provide for setting mortality limits based on the TCEY for 2018:

> *"AM093–Rec.05 (para. 30) NOTING that the Commission has indicated its interest in clearer accounting for all mortality, and that Canada has put forward catch limit allocation principles proposing that catch limits include all sources of mortality for each regulatory area, the Commission RECOMMENDED that the presentation of harvest advice be changed to be based on the TCEY, which includes all O26 commercial, sport, personal*

[1] Definitions: https://www.iphc.int/the-commission/glossary-of-terms-and-abbreviations

> *use/subsistence, bycatch and wastage removals, for the 2018 Annual Meeting cycle, as a step towards more comprehensive and responsible management of the resource that will result in the negotiation of Regulatory Area-specific catch limits based on TCEYs."*

This change clarified the components included in the adopted mortality limits and standardized these components across all IPHC Regulatory Areas regardless of the CSPs in place for Pacific halibut. As of 2019, all sources of Pacific halibut mortality except for discard mortality from non-directed fisheries (bycatch) of U26 fish were included in the adopted mortality limits (TCEYs).

At the 95th Session of the IPHC Annual Meeting (AM095) the Commission provided further direction on setting mortality limits on all sizes:

> AM095–Rec.04 (para. 66) *"The Commission RECOMMENDED evaluating and redefining TCEY to include the U26 component of discard mortalities, including bycatch, as steps towards more comprehensive and responsible management of the resource, in coordination with the IPHC Secretariat and Contracting Parties. The intent is that each Contracting Party to the Treaty would be responsible for counting its U26 mortalities against its collective TCEY. This change would be intended to take effect for TCEYs established at the 2020 Annual Meeting."*

This paper provides a set of options for addressing limits on U26 discard mortality from non-directed fisheries (bycatch) and a discussion of those options.

IMPORTANCE OF THE U26 DELINEATION

The historical choice of U26 (and earlier U32) on which to delineate the accounting of mortality was based on three primary considerations:

1) These young fish are highly mobile and much less likely than older fish to be found in the same IPHC Regulatory Area (or Biological Region) in the upcoming year in which mortality limits would apply. Therefore, the effects of U26 mortality on potential O26 yield are likely to be distributed broadly across the stock in subsequent years.
2) The IPHC's Fishery Independent Setline Survey (FISS) captures Pacific halibut that are approximately O26, providing an annually updated scientifically-based measure of the stock distribution across the IPHC Convention Area. There is currently no reliable tool for describing the annual distribution of U26 fish across the Convention Area.
3) Mortality of U26 fish has a different effect on the Spawning Potential Ratio (SPR; a measure of the fishing intensity describing the effect on the lifetime spawning output per recruit) than that of older fish. Although this is the case for any category of size/age delineation, previous work suggests that the effects change most rapidly around this size. This concept is further illustrated as part of the options provided below.

All three of these factors suggest that addressing U26 mortality separately from O26 mortality may in some way be warranted when setting catch limits. Therefore, the options provided below allow for consideration of both separate and partitioned limits for U26 and O26 within a total mortality limit.

USE OF THE TERMS FCEY AND TCEY

The Contracting Party CSPs (and in some cases other regulations) currently in place in many IPHC Regulatory Areas are based on the terms FCEY and TCEY. In order to provide for the time needed to adjust the wording of CSPs to match the IPHC's mortality limit setting process (noting that none have yet caught up to the change to the Commission setting TCEYs beginning in 2018), it could be beneficial to temporarily retain the calculation of FCEYs and TCEYs, and enhance these terms with a total, partitioned total or separate U26 limit per the options below.

DESCRIPTION OF OPTIONS

There are two key aspects to both the IPHC's interim management procedure and the Management Strategy Evaluation (MSE) process:

1) the scale of mortality limits is done at the coastwide level, and;

2) the distribution of those mortality limits occurs among Biological Regions and IPHC Regulatory Areas.

The options for managing U26 mortality provided below are therefore divided into those two aspects; one option will need to be selected to determine the coastwide scale of U26 mortality, and one to determine the distribution of U26 mortality.

Scale

For this initial discussion paper, three U26 mortality scale options are provided:

Scale Option 1. The *status quo* (no change to the current approach of setting TCEYs):

> Predicted U26 discard mortality from non-directed fisheries (bycatch) is currently based on the previous year's estimate (https://www.iphc.int/data/projection-tool). At the request of the Commission, in some years differing levels of projected discard mortality from non-directed fisheries (bycatch) have been used to construct alternative mortality tables for use in decision-making (Stewart 2018). This option allows for a direct evaluation of the projected effects of discard mortality from non-directed fisheries (bycatch), but offers the Commission no explicit accounting method for comparing predicted and observed U26 mortality after the limits have been set. It is important to note that O26 mortality for all fisheries (directed and non-directed) is already part of the TCEY, and therefore changes in the overall magnitude of O26 discard mortality from non-directed fisheries (bycatch) will be evident in comparisons of mortality limits with the previous year's estimates (e.g. Table 1 in https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-05.pdf).

Scale Option 2. Setting a total mortality limit

> The Commission could set a single mortality limit including all sources and sizes of Pacific halibut. This approach has a potentially important shortcoming in that there will be differences in the SPR resulting from a single catch limit given varying levels/proportion of U26 discard mortality from non-directed fisheries (bycatch). To illustrate these potential effects within a single catch limit, the 2019 projected mortality levels were evaluated using the preliminary 2019 stock assessment (IPHC-2019-SRB014-07). Holding the total mortality constant at the projected magnitude, the SPR was compared under three scenarios:
>
> 1) 2019 discard mortality from non-directed fisheries (bycatch) mortality with the O26:U26 ratio exactly matching the projections;
> 2) all projected discard mortality from non-directed fisheries (bycatch) mortality taken as U26;
> 3) all projected discard mortality from non-directed fisheries (bycatch) taken as O26 (see Appendix A for a description of how this was conducted).
>
> The results of these alternative projections indicted that the change in SPR could range from –4% to 0% under current conditions (Table 1). This range represents extreme

values, as actual discard mortality from non-directed fisheries (bycatch) is unlikely to comprise all or no U26; however, discard mortality from non-directed fisheries (bycatch) is currently at a historical low which reduces the magnitude of the effect on SPR. This source of variability in projected SPR would be in addition to the considerable annual variability in realized vs. projected SPR caused by revised estimates of model parameters (biomass levels and recruitment), and differences between the projected and actual magnitude of mortality.

TABLE 1. Percent change in SPR with different treatments of recent discard mortality from non-directed fisheries (bycatch) mortality of Pacific halibut.

Discard mortality from non-directed fisheries (bycatch) scenario for 2019	Change in SPR
All mortality as U26	-4%
U26:O26 ratio as projected	0%
All mortality as O26	0%

Scale Option 3. Separate TCEY and U26 discard mortality from non-directed fisheries (bycatch) limits summing to a total mortality limit, or via a partitioned total mortality limit:

This option allows for the Commission to set limits that fully describe all sizes and sources of Pacific halibut mortality and also increases the predictability of the SPR resulting from these limits. It could consist of two limits: one for the TCEY and one for the U26 discard mortality from non-directed fisheries (bycatch), or a combined limit with an explicit partition (percentage) assigned to either the U26 discard mortality from non-directed fisheries (bycatch) or TCEY components.

It is important to note that even though these options treat the management of U26 discard mortality from non-directed fisheries (bycatch) differently, the stock assessment projections provided for management will be conducted in the same way regardless of the option chosen. For all three options, the decision-making tables presented as part of the stock assessment (decision table and mortality limits table) will have the same structure as in 2019:

- For the *status quo* option, the previous year's U26 mortality amount is predicted.
- For option 2 (total mortality limit), the percentage of U26 mortality will be predicted.
- For option 3 (separate limits) the management decision for U26 mortality will be projected.
- For all options, alternative predictions (such as full Prohibited Species Catch limit usage) can also be considered.

Distribution

For this initial discussion paper, four U26 mortality distribution options are provided:

Distribution Option 1. The *status quo* (no change to the current approach – most recent year):

Predicted U26 discard mortality from non-directed fisheries (bycatch) mortality by IPHC Regulatory Area (distributed) is currently based on the most recent year's estimates (https://www.iphc.int/data/projection-tool). This approach implicitly assumes that the effects of U26 discard mortality from non-directed fisheries (bycatch) on the Pacific halibut stock are accounted for in the coastwide SPR, and that the most recent estimates of stock

distribution reflect the most likely distribution of the U26 fish comprising the mortality in future years.

Distribution Option 2. Recent use (several years):

This option would use additional information prior to the most recent year to distribute U26 discard mortality from non-directed fisheries (bycatch) mortality. Specifically, the average U26 mortality observed over a recent period (e.g., 3- 5- or 10-years; Table 2) could be used to distribute the U26 limit among IPHC Regulatory Areas.

TABLE 2. Recent discard mortality from non-directed fisheries (fisheries that cannot legally retain Pacific halibut; bycatch) of Pacific halibut <26 inches in length (U26; million net pounds).

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Canada	U.S.	Coastwide
2009	0.04	0.02	0.01	0.87	0.37	0.67	0.14	1.56	0.02	3.65	3.67
2010	0.00	0.01	0.01	0.81	0.33	0.45	0.14	1.63	0.01	3.36	3.38
2011	0.00	0.02	0.01	0.87	0.33	0.42	0.14	1.18	0.02	2.95	2.96
2012	0.01	0.03	0.01	0.61	0.34	0.63	0.08	1.66	0.03	3.32	3.35
2013	0.00	0.02	0.00	0.48	0.33	0.38	0.02	1.81	0.02	3.01	3.03
2014	0.00	0.02	0.00	0.58	0.27	0.23	0.02	1.60	0.02	2.71	2.73
2015	0.00	0.03	0.00	0.73	0.22	0.26	0.01	1.34	0.03	2.56	2.58
2016	0.00	0.02	0.00	0.53	0.43	0.16	0.01	0.93	0.02	2.05	2.07
2017	0.00	0.02	0.00	0.32	0.21	0.14	0.01	1.03	0.02	1.71	1.73
2018	0.00	0.02	0.00	0.37	0.11	0.10	0.01	1.12	0.02	1.71	1.73
3-year average	0.00	0.02	0.00	0.41	0.25	0.13	0.01	1.03	0.02	1.82	1.84
5-year average	0.00	0.02	0.00	0.51	0.25	0.18	0.01	1.20	0.02	2.15	2.17
10-year average	0.01	0.02	0.00	0.62	0.29	0.34	0.06	1.38	0.02	2.70	2.72

Distribution Option 3. Proportions of the total mortality by IPHC Regulatory Area (set proportions):

This option would distribute the U26 discard mortality from non-directed fisheries (bycatch) limit as a set proportion of the total mortality in each IPHC Regulatory Area (Table 3). The proportions could be determined from the recent year's U26 estimate (similar to Distribution Option 1), or from the recent history of U26 mortality estimates (similar to Distribution Option 2; Table 4).

TABLE 3. Recent mortality of Pacific halibut from all sources by IPHC Regulatory Area (million net pounds).

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Canada	U.S.	Coastwide
2009	1.58	8.71	8.15	30.50	12.88	4.30	2.07	7.45	8.71	66.92	75.63
2010	1.22	8.77	7.20	28.85	12.16	3.55	2.34	7.62	8.77	62.95	71.72
2011	1.09	8.83	4.00	22.76	9.26	3.50	2.57	6.67	8.83	49.85	58.68
2012	1.22	7.85	4.81	18.23	6.75	3.19	2.03	6.71	7.85	42.93	50.79
2013	1.17	7.75	5.77	17.53	5.41	2.20	1.43	6.82	7.75	40.32	48.07
2014	1.16	7.75	6.05	13.88	4.24	1.76	1.31	6.16	7.75	34.56	42.31
2015	1.17	8.01	6.52	14.59	3.59	2.11	1.37	4.75	8.01	34.09	42.10
2016	1.32	8.13	6.73	13.57	3.84	2.03	1.32	4.84	8.13	33.66	41.79
2017	1.46	8.27	6.98	13.47	4.24	1.77	1.33	4.47	8.27	33.73	41.99
2018	1.36	7.20	6.31	13.30	3.18	1.61	1.31	4.48	7.20	31.54	38.74
3-year average	1.38	7.87	6.68	13.45	3.76	1.80	1.32	4.60	7.87	32.98	40.84
5-year average	1.29	7.87	6.52	13.76	3.82	1.85	1.33	4.94	7.87	33.52	41.39
10-year average	1.27	8.13	6.25	18.67	6.56	2.60	1.71	6.00	8.13	43.05	51.18

TABLE 4. Recent percentage of discard mortality from non-directed fisheries (fisheries that cannot legally retain Pacific halibut; bycatch) of Pacific halibut <26 inches in length (U26; million net pounds) relative to mortality of Pacific halibut from all sources.

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Canada	U.S.	Coastwide
2009	2.6%	0.2%	0.1%	2.9%	2.9%	15.6%	6.5%	21.0%	0.2%	5.5%	4.9%
2010	0.3%	0.2%	0.1%	2.8%	2.7%	12.8%	6.0%	21.3%	0.2%	5.3%	4.7%
2011	0.2%	0.2%	0.1%	3.8%	3.6%	11.9%	5.4%	17.6%	0.2%	5.9%	5.1%
2012	0.4%	0.4%	0.1%	3.3%	5.0%	19.8%	3.7%	24.7%	0.4%	7.7%	6.6%
2013	0.1%	0.3%	0.0%	2.7%	6.1%	17.1%	1.3%	26.5%	0.3%	7.5%	6.3%
2014	0.2%	0.3%	0.0%	4.2%	6.3%	13.2%	1.7%	26.0%	0.3%	7.8%	6.5%
2015	0.2%	0.3%	0.0%	5.0%	6.2%	12.3%	0.8%	28.1%	0.3%	7.5%	6.1%
2016	0.1%	0.3%	0.0%	3.9%	11.2%	7.9%	0.5%	19.1%	0.3%	6.1%	5.0%
2017	0.1%	0.2%	0.0%	2.4%	4.9%	7.9%	0.6%	23.0%	0.2%	5.1%	4.1%
2018	0.1%	0.3%	0.0%	2.8%	3.4%	6.0%	0.7%	25.0%	0.3%	5.4%	4.5%
3-year average	0.1%	0.3%	0.0%	3.0%	6.6%	7.3%	0.6%	22.3%	0.3%	5.5%	4.5%
5-year average	0.1%	0.3%	0.0%	3.7%	6.5%	9.6%	0.9%	24.4%	0.3%	6.4%	5.2%
10-year average	0.5%	0.3%	0.0%	3.3%	4.5%	13.2%	3.3%	23.1%	0.3%	6.3%	5.3%

Distribution Option 4. Management-based limits (Negotiated):

There is no currently available information to inform the relative value of U26 Pacific halibut occurring in one IPHC Regulatory Area over another (but see below for research avenues). Therefore, at present, the distribution of U26 discard mortality from non-directed fisheries (bycatch) represents a management decision. As long as a formulaic approach was taken, or specific distribution scenarios were provided, the IPHC Secretariat could provide mortality projections for any such decision or distribution rule. The policy implications between and within

the domestic agencies of such a decision that differed appreciably from the *status quo* are beyond the scope of this technical analysis.

POTENTIAL FUTURE RESEARCH

Additional research would be needed to provide a scientifically-based U26 stock distribution estimate (analogous to that for the O26 biomass based on the modelled FISS). Several avenues could be explored including habitat-based methods, oceanographic models linking spawning areas to settlement and areas occupied at early life-stages, as well as trawl survey-based modelling. Some previous work has investigated survey-based estimates of younger age-classes from trawl data and geostatistical models (e.g., Ono et al. 2018). However, although moderately correlated with subsequently observed recruitment, this type of approach has not proven to be a good indicator of the scale of strong year-classes (i.e., the size of the 2005 cohort is grossly overestimated by the Bering Sea trawl survey; Stewart and Webster 2019; Stewart and Hicks 2019), and therefore also may not be a good indicator of distribution. Further development consolidating all available trawl data including the Bering Sea, Aleutian Islands, Gulf of Alaska, B.C. and U.S.A. West Coast and conducting the analysis by age (rather than size, which may miss-assign strong cohorts) could be pursued. One shortcoming of these data is that comprehensive trawl data (all portions of the stock range) is not available on an annual basis.

MANAGEMENT PERFORMANCE

The IPHC's current management procedure accounts for U26 mortality, but does not actively manage its magnitude or distribution. These components could be included in the set of potential management procedures under development via the IPHC's Management Strategy Evaluation (MSE) process. MSE is the most appropriate tool for more extensive evaluation of downstream effects, specific biological implications, and effects on management performance (relative to objectives) of the scale of U26 mortality and the distribution of U26 mortality.

RECOMMENDATION/S

That the Commission:

a) **NOTE** paper IPHC-2020-AM096-10 which provides a summary of options for setting annual mortality limits.

b) **REQUEST** that the IPHC MSE process:

   i. continue to evaluate status quo management related to discard mortality for non-directed fisheries (bycatch) under the current program of work for delivery of full MSE results at AM097 in 2021, noting that this source of mortality is currently modelled as a fixed component of the total (with variability), ***OR***

   ii. explicitly consider one or more of the options described here when evaluating management procedures.

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APPENDICES

Appendix A: Description of projections under alternative U26:O26 discard mortality in non-directed fisheries (bycatch) proportions.

APPENDIX A

Description of projections under alternative U26:O26 discard mortality in non-directed fisheries (bycatch) proportions.

In order to estimate the variability in SPR that may arise due to differences in the relative magnitude of U26 and O26 mortality, this analysis used the preliminary 2019 stock assessment models (IPHC-2019-SRB014-07). Specifically, alternative projections of the 2019 mortality from all sources were constructed under two scenarios replacing the U26 and O26 mortality projected based on the 2018 estimates: 1) all projected discard mortality in non-directed fisheries (bycatch; with the same scale and distribution) would occur as U26, and 2) all projected discard mortality in non-directed fisheries (bycatch; with the same scale and distribution) would occur as O26. In order to estimate the resulting SPR values from each of the two alternative 2019 projections the following steps were taken:

1) Approximate the U26 to O26 delineation in age at age-5.
2) For scenario 1 (all projected discard mortality in non-directed fisheries (bycatch) as U26), the selectivity for 2019 discard mortality in non-directed fisheries (bycatch) was forced to decay immediately after age-5 by setting the descending width and final selectivity parameters to extremely small values (-10 on a log scale). For scenario 2 (all projected discard mortality in non-directed fisheries (bycatch) as O26), the selectivity for all ages less than 5 was set to a value of zero directly in the model parameterization.
3) Each of the four stock assessment models was then used to project the 2019 SPR under the two alternative discard mortality in non-directed fisheries (bycatch) scenarios without changing the parameter estimates (using a .par file).
4) The results of the four models were integrated, as in the standard assessment projections to obtain a median SPR for each scenario.
5) The median projected SPR under each scenario was compared to the standard projection and the difference reported for this working paper.

IPHC 5-year Biological and Ecosystem Science Research Plan: Update (J. Planas)

PREPARED BY: IPHC SECRETARIAT (J. PLANAS, 16 DECEMBER 2019)

PURPOSE

To provide the Commission with a description of progress on Biological and Ecosystem Science Research by the IPHC Secretariat.

BACKGROUND

The main objectives of Biological and Ecosystem Science Research at IPHC are to:

1) identify and assess critical knowledge gaps in the biology of the Pacific halibut;
2) understand the influence of environmental conditions; and
3) apply the resulting knowledge to reduce uncertainty in current stock assessment models.

The primary biological research activities at IPHC that follow Commission objectives are identified and described in the Five-Year Research Plan for the period 2017-21. These activities are summarized in five broad research areas designed to provide inputs into stock assessment and the management strategy evaluation processes (Appendix I), as follows:

1) Migration. Studies are aimed at further understanding reproductive migration and identification of spawning times and locations as well as larval and juvenile dispersal.
2) Reproduction. Studies are aimed at providing information on the sex ratio of the commercial catch and to improve current estimates of maturity.
3) Growth and Physiological Condition. Studies are aimed at describing the role of some of the factors responsible for the observed changes in size-at-age and to provide tools for measuring growth and physiological condition in Pacific halibut.
4) Discard Mortality Rates (DMRs) and Survival. Studies are aimed at providing updated estimates of DMRs in both the longline and the trawl fisheries.
5) Genetics and Genomics. Studies are aimed at describing the genetic structure of the Pacific halibut population and at providing the means to investigate rapid adaptive changes in response to fishery-dependent and fishery-independent influences.

UPDATE ON PROGRESS ON THE MAIN RESEARCH ACTIVITIES

1. Migration.

   Knowledge of Pacific halibut migration throughout all life stages is necessary in order to gain a complete understanding of stock distribution and the factors that influence it.

   1.1. Larval distribution and connectivity between the Gulf of Alaska and Bering Sea. A manuscript resulting from work on the cooperative project between NOAA EcoFoci and the IPHC has been drafted and is being edited for submission to a peer-reviewed journal. Two year classes, 2005 and 2009, were chosen as the primary focus of this project based on the fact that these represented relatively large and weak year classes,

and “warm” and “cold” environmental regimes in the Bering Sea, respectively. Additional “warm” and “cold” years were added to the larval advection modeling component to study the environmental linkage. Larval advection modeling produced information about dispersal pathways and degree of connectivity between spawning and settlement grounds both within and between the Bering Sea and Gulf of Alaska. Results suggest that up to half of the larvae spawned in the western Gulf of Alaska have the potential to be advected into the Bering Sea through Unimak Pass, AK. While Bering Sea environmental regime did not appear to strongly correlate to region of larval delivery in the Bering Sea, there was annual variation. Application of the IPHC-developed space-time model was used to assess distribution of young fish from 2-6 years old as they move away from the settlement grounds. Dispersal is widespread with young Pacific halibut moving further offshore and to deeper depths as they age. A portion of the young fish, especially evident when modeling the 2009 cohort due to higher densities, appeared to move out of Bristol Bay southward along the Alaska Peninsula, arriving at Unimak Pass within 2-3 years. Results from this project provide a new understanding of linkages between spawning grounds, eventual settlement, and subsequent migration of young fish, as well as variability in these pathways under different environmental scenarios. This work fills a gap in knowledge of early life history dispersal and ontogenetic migration utilized by young Pacific halibut.

1.2. Wire tagging of U32 Pacific halibut. Wire tagging of Pacific halibut caught in the NOAA/NMFS trawl surveys, which began in 2015, was continued in 2019. In 2019, 963 and 811 Pacific halibut were tagged in the Bering Sea and Gulf of Alaska, respectively. The wire tagging effort of U32 Pacific halibut that has taken place during the IPHC’s Fishery Independent Setline Survey (FISS) in recent years was not implemented in 2019 due to work load commitments on the surveys. However, through 2019, a total of 10,770 U32 Pacific halibut had been wire tagged and 110 of those have been recovered to date.

1.3. Electronic archival tagging. In 2019, as part of a collaborative research project with the Norton Sound Economic Development Corporation (NSEDC) and the University of Alaska Fairbanks, Pacific halibut were tagged in the eastern Bering Sea shelf with pop-up archival satellite (PAT) tags. Pacific halibut (U32 and O32) were tagged in the Norton Sound and St. Lawrence Island regions (n = 56). The PAT tags were programmed to release from their host fish and report their location and archived data during three periods: January 2020 (representing the spawning season); summer of 2020 (investigating site fidelity versus emigration); and summer of 2021 (examining longer-term dispersal). Tags provided by the IPHC were used to tag relative small fish (i.e., 70-90 cm) and were accompanied by tagging of large (>100 cm) Pacific halibut using tags that were purchased by NSEDC. This is designed to produce data that are comparable to the IPHC’s prior PAT-tagging research that was conducted to examine adult connectivity and spawning stock structure throughout the managed range, while expanding the work to examine considerably broader stock demographics than any prior electronic archival tagging experiment. Of particular interest is anecdotal information that suggest that the northeastern Bering Sea Pacific halibut population may be composed of two functional components: one that moves seasonally between this

region and the continental shelf edge in US waters (e.g. Middle and Pervenets Canyons in Area 4D), and another that may spawn in Russian waters (e.g. Navarin Canyon) be largely derived of individuals that are reared in Russian nurseries.

2. Reproduction.

Efforts at IPHC are currently underway to address two critical issues in stock assessment for estimating the female spawning biomass: the sex ratio of the commercial landings and maturity estimations.

2.1. Sex ratio of the commercial landings. For the first time, the IPHC has generated sex information of the entire set of aged commercial landings in 2017 and 2018. Genetic assays developed in collaboration with the University of Washington have been conducted at the IPHC biological laboratory using a QuantStudio6 instrument. Fin clips from over 10,000 aged Pacific halibut collected coastwide by IPHC port samplers in 2017 were genotyped and the results indicated that commercial landings were 82% female coastwide. A similar number of tissues from commercial landings collected in 2018 have been genotyped and the results indicate that landings were 81% female coastwide, consistent with the results from the previous year. Plans are underway to genotype the entire set of aged commercial samples collected in 2019 and, therefore, the sex ratio data from commercial landings will be available for three consecutive years (2017, 2018 and 2019). The sex ratio data of the commercial landings are currently being used in stock assessment.

2.2. Maturity estimations. In order to characterize the gonadal maturation schedule, the IPHC is conducting a full characterization of the annual reproductive cycle in female and male Pacific halibut. Biological samples (gonads, blood, pituitary, otolith, fat content) were collected at monthly intervals from female (N=30) and male (N=30) Pacific halibut captured from the Portlock region in the central Gulf of Alaska throughout an entire calendar year, from September 2017 until August 2018 (Figure 1). Formalin-fixed gonadal samples were processed for histology in early 2019 and duplicate histological slides for each sampled Pacific halibut gonad (N = 360 per sex) were stained with Hematoxylin and Eosin and are now available for staging. An MSc student from Alaska Pacific University, with funding from IPHC, was trained for this purpose in March 2019 and began staging the entire collection of ovarian histological samples in June 2019. The revision of maturity schedules and the comparison of macroscopic and microscopic ovarian staging will constitute the basis of her MSc dissertation.

We have completed the analysis of the temporal progression of the four maturity classification stages (macroscopic) used for staging females in the IPHC FISS (Figure 1) and of the gonadosomatic index (gonad weight/round weight x 100; GSI) as well as the hepatosomatic index (liver weight/round weight x 100; HSI) for both females and males (Figure 2). In addition, we have described the four maturity classification stages in relation to the GSH and the HSI (Figure 3) and established criteria for the classification of the different oocyte developmental stages that is critical for accurate staging.

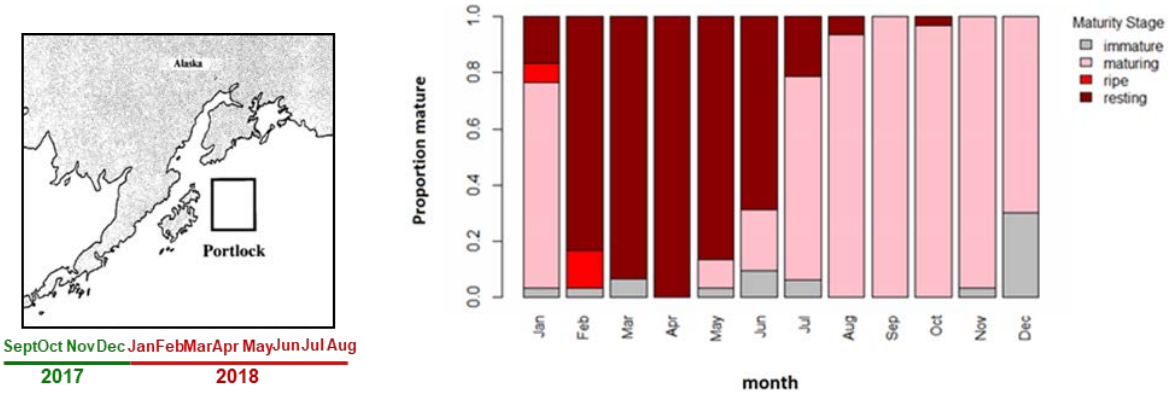


Figure 1. *Left.* Monthly sampling schedule in the Portlock area (Central Gulf of Alaska). *Right*. Temporal changes in the proportion of female Pacific halibut staged macroscopically according to the maturity classification criteria used in the FISS throughout an entire calendar year.

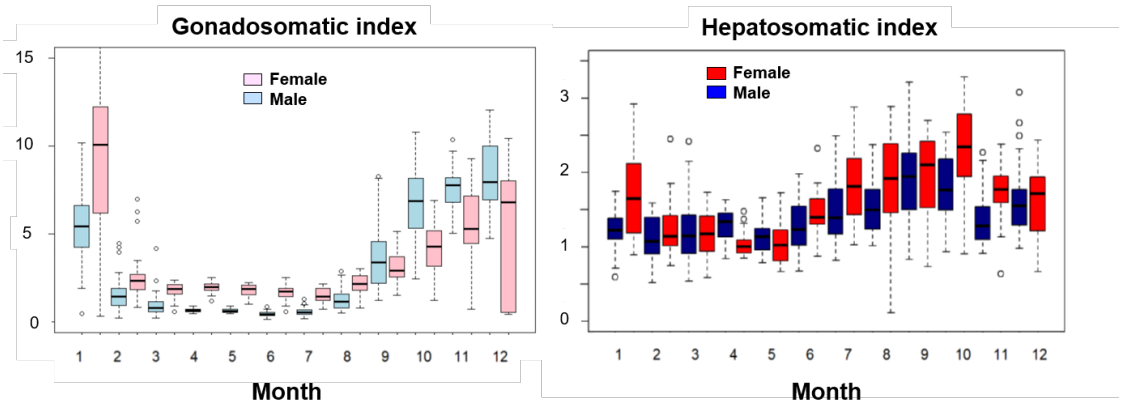


Figure 2. Temporal changes in the gonadosomatic (left) and hepatosomatic (right) indices in female and male Pacific halibut.

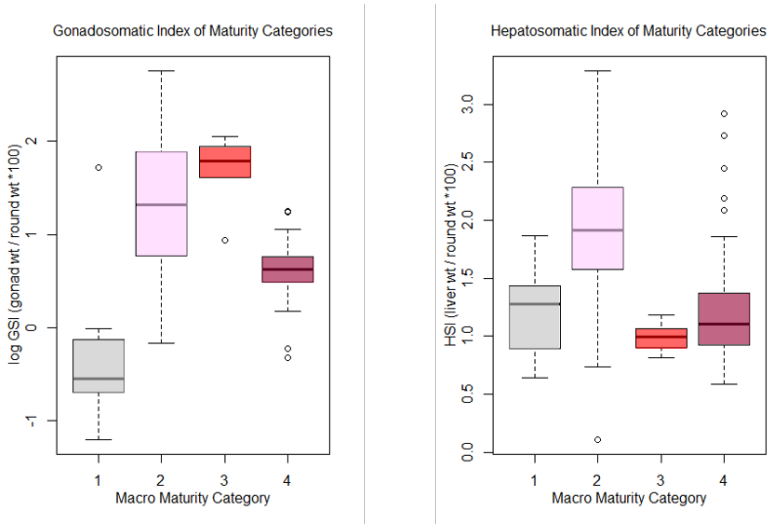


Figure 3. Macroscopic maturity categories in relation to the gonadosomatic (left) and hepatosomatic (right) indices in female Pacific halibut.

We have also identified and characterized two important physiological markers of reproductive status in the pituitary gland of female Pacific halibut: follicle stimulating hormone (FSH) and luteinizing hormone (LH). Assays to measure the gene expression levels of FSH and LH in the pituitary of female Pacific halibut have been developed. With the use of these assays, we have determined that the gene expression levels of LH are higher than FSH in pituitaries of spawning fish. In addition, the gene expression levels of FSH and LH are higher in spawning over non-spawning female Pacific halibut.

Future studies are aimed at characterizing the temporal profiles of reproductive hormones in the blood and of the gene expression profiles of FSH and LH, known key markers of the reproductive process, in the pituitary of female Pacific halibut. In addition to characterizing the progression of reproductive development throughout an entire annual reproductive cycle (intraseasonal) reproductive samples, the IPHC collected samples in June 2019 in the Portlock region to compare with those collected in the same location in June 2018 and June 2017 in order to evaluate possible differences in interseasonal variation in maturity schedules. Ovarian samples from these three years have been processed for histology and are in the process of being analyzed.

In order to determine whether there are spatial differences in maturity schedules, ovarian samples will be collected during the 2020 FISS season from a number of collection areas corresponding to the four biological regions.

3. Growth.

In order to improve our understanding of the possible role of growth alterations in the observed historical changes in size-at-age in Pacific halibut, the IPHC Secretariat is conducting studies aimed at: 1) the identification and validation of physiological markers for growth; and 2) the use of growth markers for evaluating growth patterns in the Pacific halibut population and the effects of environmental influences. The IPHC Secretariat is conducting

investigations on the effects of temperature variation on growth performance, as well as on the effects of density, hierarchical dominance and handling stress on growth in juvenile Pacific halibut in captivity (Figure 4). These studies are partially funded by a grant from the North Pacific Research Board to the IPHC (Appendix II) and the results on the effects of temperature on growth physiological indicators are being prepared for publication in a peer-reviewed journal.

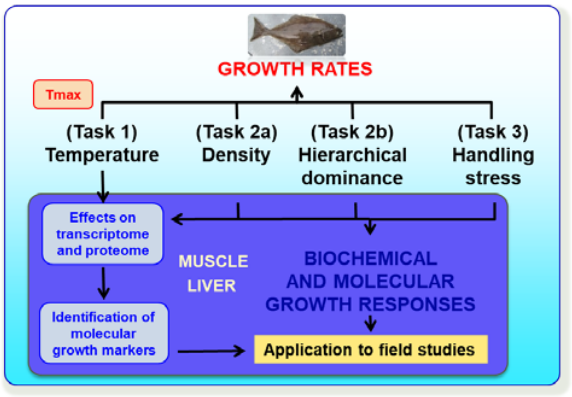


Figure 4. Diagram of the objectives of the NPRB-funded project with indication of the different tasks.

4. Discard Mortality Rates (DMRs) and Survival Assessment. In order to better estimate post-release survival of Pacific halibut caught incidentally in the directed longline fishery, the IPHC Secretariat is conducting investigations to understand the relationship between fish handling practices and fish physical and physiological condition and survival post-capture as assessed by tagging. These studies are partially funded by a grant from the Saltonstall-Kennedy Grant Program NOAA to IPHC (Appendix II).

   4.1. Evaluation of the effects of **hook release techniques** on injury levels and association with the physiological condition of captured Pacific halibut. The IPHC has evaluated the effects of different release techniques on injury levels (Figure 5) and the results indicate that a majority (more than 70%) of Pacific halibut released by careful shake and by gangion cutting are classified in the excellent injury category. In contrast, Pacific halibut that encounter the hook stripper are primarily classified in the medium and poor injury categories.

   The physiological condition of Pacific halibut subjected to the different hook release techniques is currently being assessed by relating the injury category assigned to each fish with the condition factor, fat levels and levels of blood stress indicators.

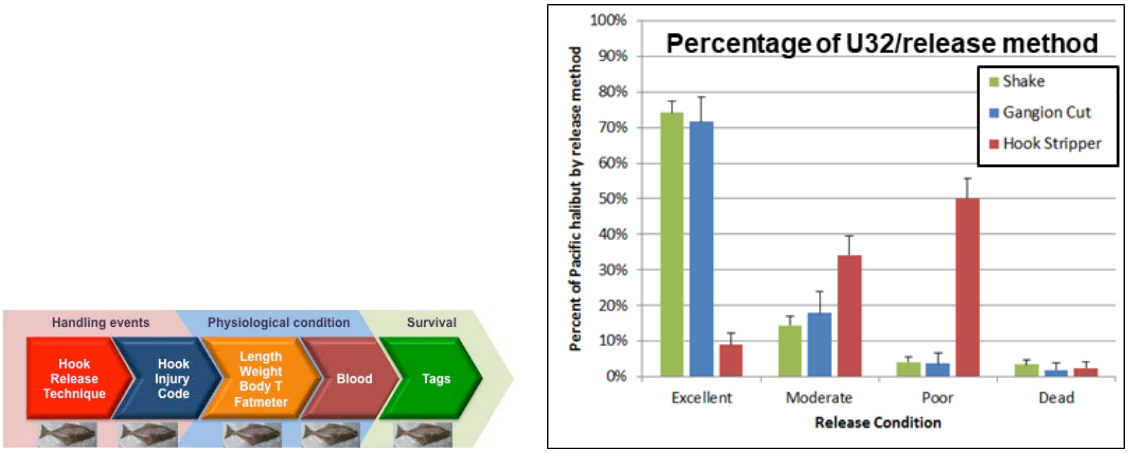


Figure 5. *Left***.** Schematic diagram of workflow. *Right***.** Prevalence of types of injuries (as indicated by injury classification or release condition) in U32 fish released by different hook release techniques (careful shake, gangion cut and hook stripper).

4.2. Post-release survival estimations. In order to evaluate the survival of discarded fish, two types of tagging approaches were used. 1) Classical mark-and-recapture of released fish with wire tags: 1,027 fish (under 33 inches in length) were tagged. 2) Biotelemetric monitoring of released fish with the use of satellite-transmitting electronic archival tags equipped with accelerometers: results from a total of 79 Pacific halibut ranging from 53-81 cm FL allowed us to estimate that the DMR of U32 Pacific halibut that were categorized as being in excellent-condition at the time of their release was approximately 4%.

4.3. Application of electronic monitoring (EM) for capturing the hook release methods. Evaluation of EM data whereby reviewers recorded the release method and condition of released fish evidenced a high degree (95%-100%) of agreement between the actual release method used and that captured by EM. Therefore, once the survival estimates of fish released by the different hook release techniques are determined, these results strongly suggest that mortality rates could be deduced from EM-captured hook release techniques.

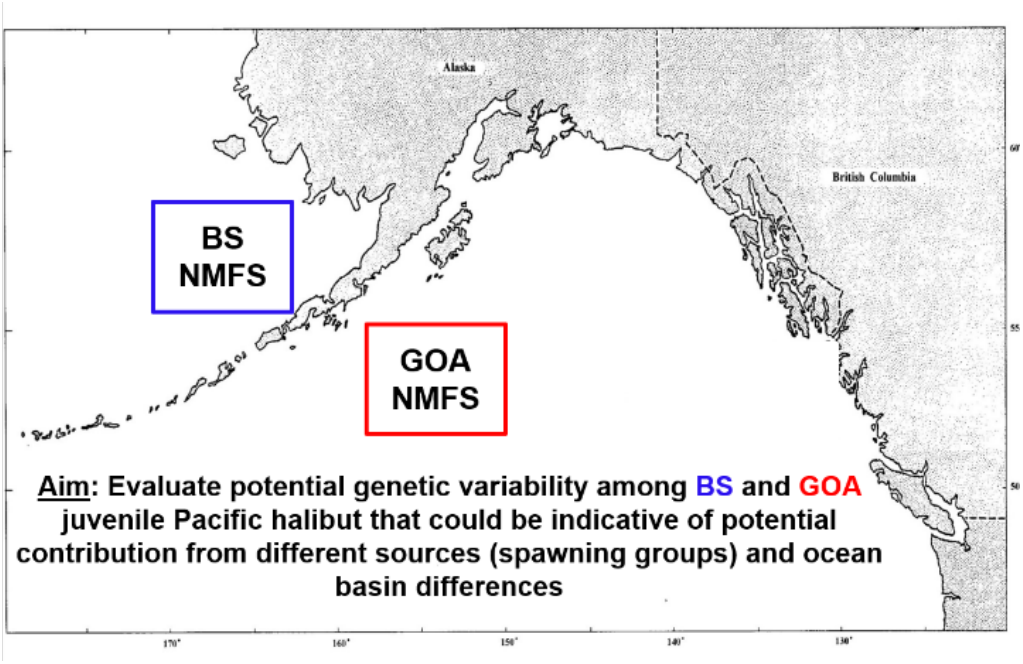
4.4. Discard mortality rates of Pacific halibut in the charter recreational fishery. The IPHC has initiated in 2019 a research project aimed at experimentally deriving DMRs from the charter recreational fishery for the first time. This project has received funding from the National Fish and Wildlife Foundation (Appendix II). As an initial step in this project, information from the charter fleet on types of gear and fish handling practices used was collected through stakeholder meetings and on dock interviews with charter captains and operators. This information will inform the design of the experimental test fishing that will take place in 2020 and in which fish mortality will be estimated as described in 4.2.

5. Genetics and genomics. The IPHC Secretariat is exploring avenues for incorporating genetic approaches for a better understanding of population structure and distribution and is also building genomic resources to assist in genetics and molecular studies on Pacific halibut.

   5.1. Genetics. The main purpose of the proposed studies is to incorporate genetic analyses into migration-related research in order to improve our understanding of Pacific halibut movement and dispersal and of the genetic structure of the Pacific halibut population. Three specific topics will be investigated:

      5.1.1. *Analysis of genetic variability among juvenile Pacific halibut in the Bering Sea and the Gulf of Alaska*. The aim of this study is to evaluate the genetic variability among juvenile Pacific halibut in a given ocean basin in order to infer information on the potential contribution from fish spawned in different areas to that particular ocean basin. We hypothesize that genetic variability among juvenile Pacific halibut captured in one particular ocean basin (e.g. eastern Bering Sea) may be indicative of mixing of individuals originating in different spawning grounds and, therefore, of movement. By comparing the genetic variability of fish between two ocean basins (i.e. eastern Bering Sea and Gulf of Alaska), we will be able to evaluate the extent of the potential contribution from different sources (e.g. spawning groups) in each of the ocean basins and provide indications of relative movement of fish to these two different ocean basins. The use of genetic samples from juvenile Pacific halibut collected in the NMFS trawl survey in the eastern Bering Sea and in the Gulf of Alaska, aged directly or indirectly through the length-age key, will allow us to provide genetic information from fish that are at or near their settlement or nursery grounds.

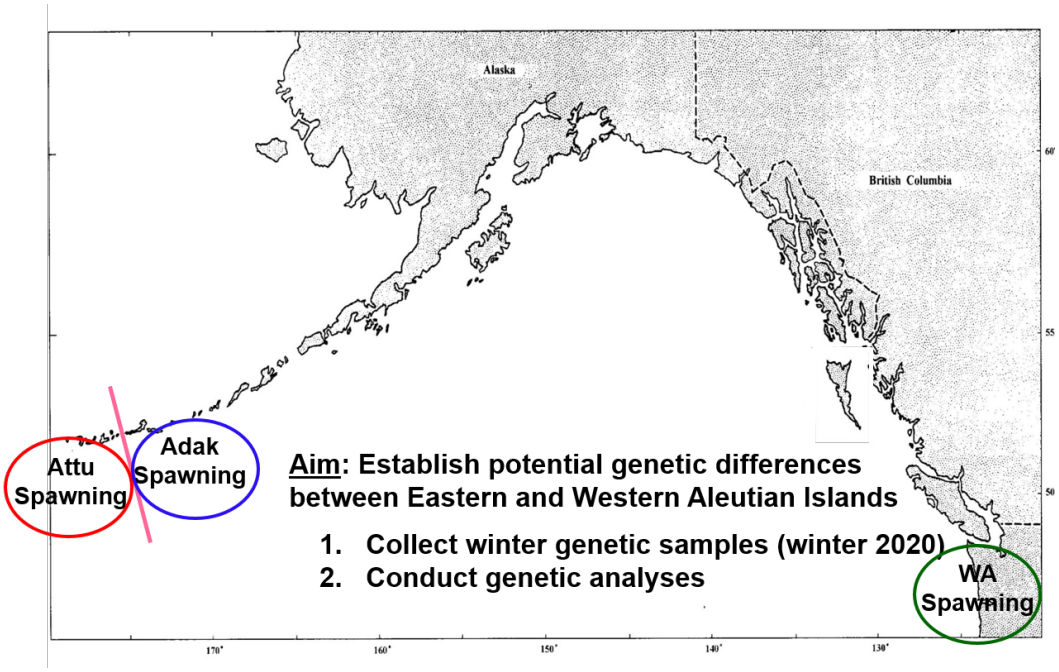
      Fin clips from 150 fish from the eastern Bering Sea and from 150 fish from the Gulf of Alaska, all between 2 and 3 years of age, will be used for DNA extraction and purification. A pooled-sequencing approach will be used to obtain genome-wide data resulting from the sequencing of two libraries, each composed of all the individuals from each of the two areas. Pooled heterozygosity will be estimated for each of the two ocean basins as well as the mean difference in pooled heterozygosity between the two sample groups (i.e. ocean basins). For fish of unknown sex, genetic sex will be determined using SNPs to two sex-linked loci previously developed and used to determine the genetic sex of the commercial Pacific halibut landings.



5.1.2. *Analysis of genetic population structure in IPHC Regulatory Area 4B***.** Understanding population structure is imperative for sound management and conservation of natural resources. Pacific halibut in US and Canadian waters are managed as a single, panmictic population on the basis of tagging studies and historical (i.e., pre-2010) analyses of genetic population structure that failed to demonstrate significant differentiation in the eastern Pacific. However, recent studies have reported significant genetic population on the basis of microsatellites that suggest that Pacific halibut residing in the Aleutian Islands may be genetically distinct from other regions. In particular, differentiation of the population on either side of Amchitka Pass is indicated, suggesting a possible basis for separating IPHC Regulatory Area 4B into two management subareas. However, in order to evaluate that possibility, it would be advisable to re-assess those conclusions using samples specifically collected to evaluate the implied stock delineation. In particular, the existing analyses employed tissue samples collected in the summer (i.e. non-spawning season) west of Amchitka Pass and may or may not be representative of the local spawning population. Although unlikely, one cannot exclude the possibility that the observed differentiation in the Aleutian Islands may be representative of differentiation caused by dilution of the west Aleutian sample by individuals from some other regions. The proposed work would sample the local population on either side of Amchitka Pass during the spawning season so as to best-characterize spawning structure and provide management advice regarding the relative justifiability for considering the western Aleutians as a genetically-distinct substock. Subsequently, genetic analyses will be conducted to evaluate the level of genetic differentiation between the two sampled areas. In addition, migration analyses have suggested that spawning occurs off the Washington coast, which would represent a component of the spawning population that has never before

been studied. In a number of northern fish populations it has been shown that fish at the southern edge of the range display unique genetic composition.

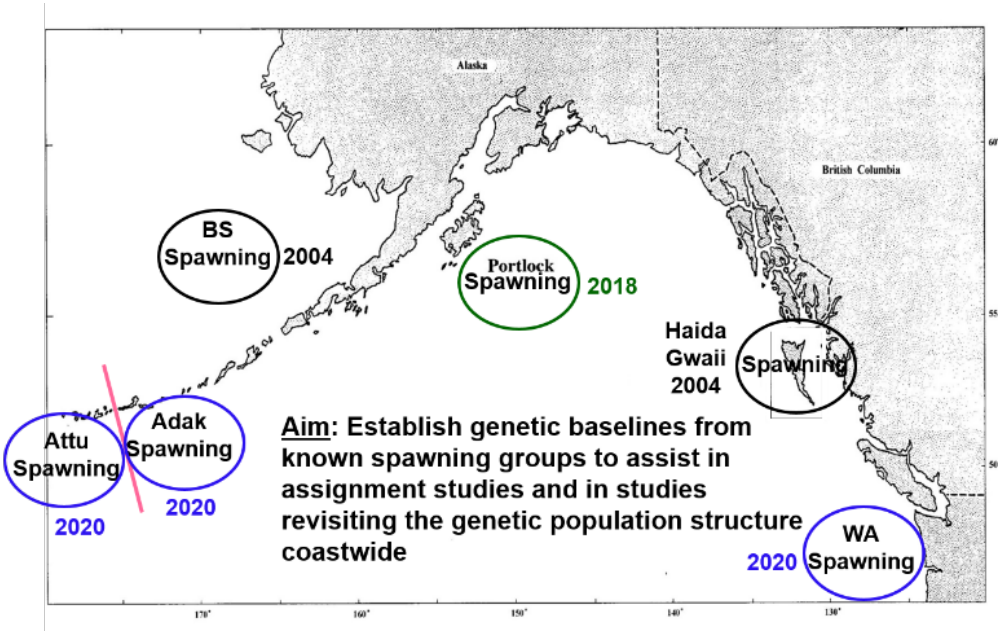
Sample collection will take place west and east of Amchitka Pass, and off the Washington coast, during the winter of 2020 in order to collect fish during the spawning season. Commercial fishing vessels will be chartered specifically for the purpose of collecting approximately 50 adult fish from each area and those samples will be subjected to DNA extraction and purification. A pooled-sequencing approach will be used to obtain genome-wide data resulting from the sequencing of three libraries, one from each area sampled.



5.1.3. *Identification of potential genetic signatures of origin or spawning groups to revise population structure*. In order to expand our proposed studies evaluating the Pacific halibut population genetic structure to the entire northeast Pacific Ocean covering the IPHC Convention Area, a broader genetic study is proposed that aims at establishing genetic baselines from known spawning groups throughout the geographic area in question. With the genetic samples that are planned to be collected in the winter of 202, together with winter samples collected in the Portlock area (i.e. central Gulf of Alaska) in 2018 and in Haida Gwaii in 2004 and in the Bering Sea (i.e. Pribilof Canyon) in 2004, we plan on establishing genetic signatures of these spawning groups to revise the genetic population structure with up-to-date genetic techniques.

Fin clips from 50 fish from each of the six sampled geographic areas will be used for DNA extraction and purification. A pooled-sequencing approach will be used to obtain

genome-wide data resulting from the sequencing of 6 libraries, each composed of all the individuals from each of the six areas sampled.



In order to be able to conduct the proposed genetic studies, Mr. Andy Jasonowicz was initially hired as Research Biologist with a one-year contract starting in 26 August 2019.

5.2. Genomics. The IPHC Secretariat is currently conducting a project aimed at generating a first draft sequence of the Pacific halibut genome in collaboration with the French National Institute of Agricultural Research (INRA, Rennes, France) and the School of Aquatic and Fishery Science of the University of Washington (Seattle, WA). An initial sequencing effort using genomic DNA from one Pacific halibut female in half an Illumina lane in 2 x 250 pair end mode resulted in a total size of assembled scaffolds of 700 Mb, likely corresponding to the size of the Pacific halibut genome. This non-contiguous genomic sequence is currently being complemented by long read sequencing using the Nanopore technology (i.e. PromethION) combined with Hi-C sequencing for chromosome-scale scaffolding of the genome assembly. The sequencing effort is expected to be completed by the Spring of 2020. In addition to genome sequencing, the IPHC Secretariat has completed transcriptome sequencing of a wide variety of tissues (12) in Pacific halibut including white and red skeletal muscle, liver, heart, ovary, testis, head kidney, brain, gill, pituitary, spleen and retina. Current plans regarding this extensive transcriptomic dataset include generating a reference transcriptome for the species and to create a user-friendly, searchable database to be made public in the IPHC website.

RECOMMENDATIONS

That the Commission **NOTE** paper IPHC-2020-AM096-11 which outlines progress on Biological and Ecosystem Science Research by the IPHC Secretariat.

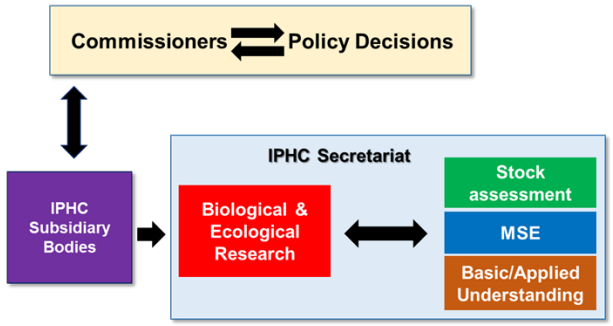
APPENDICES

Appendix I: Integration of biological research, stock assessment and harvest strategy policy

Appendix II: Summary of external research projects awarded for funding

APPENDIX I

Integration of biological research, stock assessment and harvest strategy policy



Biological research		Stock assessment	Stock assessment MSE
Research areas	*Research projects*	*Relevance for stock assessment*	*Inputs to stock assessment and MSE development*
Migration	Larval distribution Juvenile and adult migratory behavior and distribution	Geographical selectivity Stock distribution	Information for structural choices Recruitment indices Migration pathways and rates Timing of migration
Reproduction	Sex ratio Spawning output Age at maturity	Spawning biomass scale and trend Stock productivity Recruitment variability	Sex ratio Maturity schedule Fecundity
Growth	Identification of growth patterns Environmental effects on growth Growth influence in size-at-age variation	Temporal and spatial variation in growth Yield calculations Effects of ecosystem conditions Effects of fishing	Predicted weight-at-age Mechanisms for changes in weight-at-age
Discard Survival	Bycatch survival estimates Discard mortality rate estimates	Scale and trend in mortality Scale and trend in productivity	Bycatch and discard mortality estimates Variability in bycatch and uncertainty in discard mortality estimates
Genetics and Genomics	Genetic structure of the population Sequencing of the Pacific halibut genome	Spatial dynamics Management units	Information for structural choices

APPENDIX II

Summary of current awarded research grants

Project #	Grant agency	Project name	PI	Partners	IPHC Budget ($US)	Management implications	Grant period
1	**Saltonstall-Kennedy NOAA**	Improving discard mortality rate estimates in the Pacific halibut by integrating handling practices, physiological condition and post-release survival (Award No. NA17NMF4270240)	IPHC	Alaska Pacific University	$286,121	Bycatch estimates	September 2017 – August 2020
2	**North Pacific Research Board**	Somatic growth processes in the Pacific halibut (*Hippoglossus stenolepis*) and their response to temperature, density and stress manipulation effects (NPRB Award No. 1704)	IPHC	AFSC-NOAA-Newport, OR	$131,891	Changes in biomass/size-at-age	September 2017 – February 2020
3	**Bycatch Reduction Engineering Program - NOAA**	Adapting Towed Array Hydrophones to Support Information Sharing Networks to Reduce Interactions Between Sperm Whales and Longline Gear in Alaska	Alaska Longline Fishing Association	IPHC, University of Alaska Southeast, AFSC-NOAA	-	Whale Depredation	September 2018 – August 2019
4	**Bycatch Reduction Engineering Program - NOAA**	Use of LEDs to reduce Pacific halibut catches before trawl entrainment	Pacific States Marine Fisheries Commission	IPHC, NMFS	-	Bycatch reduction	September 2018 – August 2019
5	**National Fish & Wildlife Foundation**	Improving the characterization of discard mortality of Pacific halibut in the recreational fisheries (NFWF Award No. 61484)	IPHC	Alaska Pacific University, U of A Fairbanks, charter industry	$98,902	Bycatch estimates	February 2020 – January 2021
	Total awarded ($)				**$516,914**		

IPHC Management Strategy Evaluation (MSE): update

PREPARED BY: IPHC SECRETARIAT (A. HICKS, P. CARPI, S. BERUKOFF & I. STEWART; 13 DECEMBER 2019)

PURPOSE

To provide an update of International Pacific Halibut Commission (IPHC) Management Strategy Evaluation (MSE) activities including definition of scale and distribution objectives, development of a framework to evaluate management procedures for distributing the TCEY, identification of management procedures to evaluate, and a summary of the MSE program of work.

ABSTRACT

The Management Strategy Evaluation (MSE) at the International Pacific Halibut Commission (IPHC) completed an initial phase of evaluating management procedures relative to the coastwide scale of the Pacific halibut stock and fishery and is now in the next phase of investigating management procedures consisting of scale and distribution components. Coastwide and area-specific objectives used for evaluation are defined under four general objectives: 1) keep female spawning biomass above a limit to avoid critical stock sizes and conserve spatial population structure, 2) maintain spawning biomass around a level that optimizes fishing activities, 3) limit catch variability, and 4) provide directed fishing yield. Using coastwide objectives updated in 2019, the best performing management procedures used fishing intensities (procedural Spawning Potential Ratio, SPR) in the range of 40% to 46% with a 30:20 control rule and one of three constraints on the annual change in the total mortality. A framework has been developed to assist the development of management procedures for distributing the TCEY to IPHC Regulatory Areas, and many potential elements to use in that framework were identified. Ten procedures for distributing the TCEY were identified for evaluation at MSAB015 along with a range of procedural SPRs and three types of constraints on the annual change in the TCEY. The program of work for 2020 includes completing the multi-area simulation framework and evaluating results at MSAB015 and MSAB016 before presentation of the MSE product at AM097 in 2021 with recommendations on scale and distribution components of the management procedure.

INTRODUCTION

The Management Strategy Evaluation (MSE) at the International Pacific Halibut Commission (IPHC) completed an initial phase of evaluating management procedures relative to the coastwide scale of the Pacific halibut stock and fishery. Results of the MSE simulations were presented at the 95th Session of the IPHC Annual Meeting (AM095), the 13th Session of the IPHC Management Strategy Advisory Board (MSAB013), and the 14th Session of the IPHC Management Strategy Advisory Board (MSAB014). The next phase investigates management procedures related to the distribution of the Total Constant Exploitation Yield (TCEY). The TCEY is the mortality limit composed of mortality from all sources except under- 26-inch (66.0 cm, U26) non-directed discard mortality, and is determined by the Commission at each Annual Meeting for each IPHC Regulatory Area.

1 GOALS AND OBJECTIVES

The MSAB currently has four goals, each with multiple objectives related to scale and distribution. The four goals and their primary general objectives are:

1. **Biological Sustainability** (a conservation goal)
   1.1. Keep female spawning biomass above a limit to avoid critical stock sizes and conserve spatial population structure
2. **Optimize directed fishing opportunities** (a fishery goal)
   2.1. Maintain spawning biomass around a level that optimizes fishing activities
   2.2. Limit catch variability
   2.3. Provide directed fishing yield
3. **Minimize discard mortality in directed fisheries**
4. **Minimize discards and discard mortality in non-directed fisheries** (previously termed bycatch)

The biological sustainability goal (conservation) reflects the long-term need for sufficient spawning biomass distributed across the geographical range of the stock. The goal "optimize directed fishing opportunities" reflects the needs of the directed fisheries to optimize fishery yield with respect to stability and sustainability while ensuring access to the resource. Goals related to discard mortality in directed fisheries and non-directed fisheries have not yet been specifically considered in the current implementation of the MSE but are identified as important considerations for the future (i.e., after results are presented in 2021).

The general objectives 'keep the spawning biomass above a limit' and 'maintain the spawning biomass around a level that optimizes fishing activities' are prioritized over fishery stability and yield objectives. Management procedures that meet the defined tolerance of those two general objectives are then evaluated using fishery stability objectives (limit catch variability) and fishery yield objectives (provide directed fishing yield), taking into account the trade-offs that are inherently present (e.g., higher catch typically results in less stability). This initially reduces the set of management procedures for further evaluation while still allowing for flexibility in addressing trade-offs.

There are two major components of the harvest strategy: coastwide scale and TCEY distribution (Figure 1). The MSE has recently focused on coastwide scale with an input fishing mortality rate based on Spawning Potential Ratio (F_{SPR}) and various control rules determining the total coastwide mortality, thus focus has been on defining objectives at the coastwide level. The MSE program of work is now focusing on both components with the intent to refine coastwide objectives and define regional- and area-specific distributional objectives. The primary general objectives identified by the MSAB and the Commission for evaluating MSE results contain more specific (measurable) coastwide and area-specific objectives. Many more secondary objectives and performance metrics were identified (IPHC-2019-MSAB013-07 Appendix I) to further evaluate MSE results. Metrics not specifically associated with an objective were labeled as "statistics of interest."

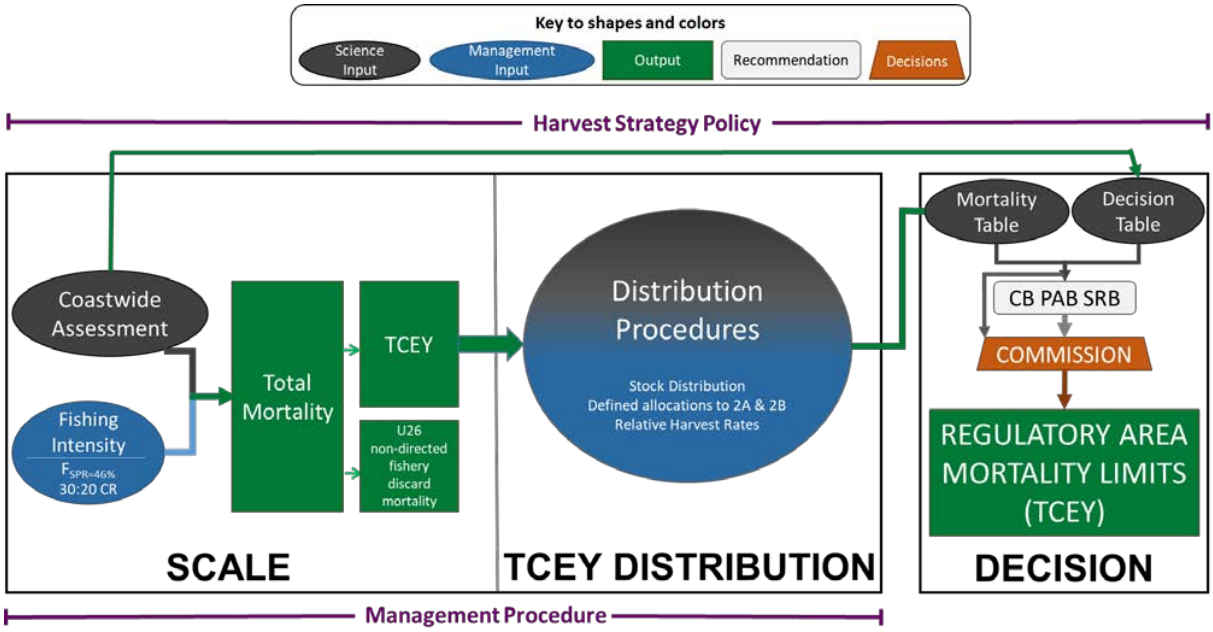


Figure 1: Illustration of the Commission interim IPHC harvest strategy policy (as revised for 2019-2022) process showing the coastwide scale and TCEY distribution components that comprise the management procedure. The decision component is the Commission decision-making procedure, which considers inputs from many sources.

1.1 OBJECTIVES RELATED TO COASTWIDE SCALE

Subsequent to the presentation of coastwide objectives and MSE results at the 95th Annual Meeting (AM095), the following paragraphs from the Report of the 95th Annual Meeting (IPHC-2019-AM095-R) have guided further refinement of coastwide objectives.

> **AM095-R, para 59a.** *The Commission **ENDORSED** the primary objectives and associated performance metrics used to evaluate management procedures in the MSE process (as detailed in paper IPHC-2019-AM095-12)*
>
> **AM095-R, para 59c.** *The Commission **RECOMMENDED** the MSAB develop the following additional objective, as well as prioritize this objective in the evaluation of management procedures, for the Commission's consideration.*
>
> *i. A conservation objective that meets a spawning biomass target.*

The MSAB reconsidered the biological sustainability objective to maintain the spawning biomass above a limit to avoid critical stock sizes. A review of the policies and MSE objectives of other processes in the United States, Canada, and around the world revealed various proxies for a biomass limit and tolerances for falling below that limit. To remain consistent with other fisheries management approaches, the MSAB retained the spawning biomass limit at 20% of unfished

spawning biomass for the biological sustainability objective and updated the tolerance to 5% (Table 1).

The development of a spawning biomass target (i.e., a biomass level with a 50% probability of being above or below) was discussed extensively at MSAB013 and MSAB014. Noting that the current IPHC harvest strategy policy (https://iphc.int/the-commission/harvest-strategy-policy) suggests using a proxy for Maximum Economic Yield (MEY), which is related to Maximum Sustainable Yield (MSY), much of the discussion focused around these quantities and what appropriate proxies may be. In the absence of a bio-economic model of the fishery, a proxy for MEY may be obtained from MSY. For example, the Australian government's harvest strategy policy uses the relationship: $SB_{MEY} = 1.2 \times SB_{MSY}$ (Rayns, 2007), and Pascoe *et al*. (2014) suggested that $SB_{MEY} = 1.45 \times SB_{MSY}$ may be appropriate for data-poor single-species fisheries.

Considering changes in productivity over time, an analysis of dynamic equilibrium reference points was performed to determine an appropriate MSY-based biomass proxy. Document IPHC-2019-SRB015-11 Rev_1 describes the methods and results from this analysis, with estimates of the dynamic equilibrium relative spawning biomass (RSB) at MSY (RSB_{MSY}) for Pacific halibut likely in the range of 20% to 30% and the Spawning Potential Ratio at MSY (SPR_{MSY}) likely between 30% and 35%. A reasonable RSB_{MSY} proxy, including a precautionary allowance for unexplored sources of uncertainty, would be 30%, putting a proxy for SB_{MEY} between 36% and 44% given the recommendations of Rayns (2007) and Pascoe *et al.* (2014). The MSAB determined that an appropriate target spawning biomass is 36% of unfished spawning biomass, which addresses uncertainty in estimating MSY and also offers benefits of catch stability and conservation (paragraph 34 of IPHC-2019-MSAB014-R), but at the cost of some foregone yield.

The objective of maintaining the spawning biomass around a target or above a level that optimizes fishing activities can be viewed as a fishery objective (e.g., maximize yield) as well as a biological sustainability objective (e.g., maintain a sustainable biomass). However, sustainability of the Pacific halibut stock would be satisfied by meeting the objective of avoiding low stock sizes that may result in an impairment to recruitment. Therefore, the primary biological sustainability objective is to avoid a minimum stock size threshold (i.e. SB_{Lim}) with a high probability (Table 1). Maintaining the biomass around a target of $SB_{36\%}$ was defined as a fishery objective (Table 1) with a tolerance of 0.50.

The MSAB discussed the coastwide objective to limit annual changes in the TCEY and defined two metrics. The average annual variability (AAV) is an average of the annual change in the catch limit taken over a ten-year period. Using AAV means that even when meeting the objective (a defined threshold of 15% with a tolerance of 0.25) some of those annual changes in the TCEY will exceed the defined threshold. Additionally, MSAB members were more interested in the actual annual change from year to year and to limit it to a threshold that is never exceeded more than three times in a ten-year period. The MSAB therefore defined a new statistic called Annual Change (AC) to represent the actual annual change in the TCEY for each year in the ten year period, which can then be summarized using various statistics (e.g., maximum change in that period, probability any year exceeds a threshold, etc.). Both metrics are used since they both provide different interpretations of variability in the TCEY (paragraph 35 of IPHC-2019-

MSAB014-R). The tolerance for the stability objectives were not defined to allow for the examination of trade-offs between yield and variability.

1.2 OBJECTIVES RELATED TO THE DISTRIBUTION OF THE TCEY

1.2.1 Biological sustainability

In paragraph 31 of IPHC-2018-SRB012-R, "*the SRB AGREED that the defined Bioregions (i.e. 2,3,4, and 4b described in paper IPHC-2018-SRB012-08) are presently the best option for implementing a precautionary approach given uncertainty about spatial population structure and dynamics of Pacific halibut.*" Therefore, objectives related to conserving some level of spatial population structure should be included under the Biological Sustainability goal. The *ad hoc* working group that met in July 2019 discussed spatial biomass objectives (IPHC-2019-MSAB014-INF01).

Conserving spatial population structure includes maintaining the current biomass distribution across regions, maintaining the proportion of spawning biomass in each Biological Region (Figure 2) within a specified range, or maintaining a minimum spawning biomass or proportion of spawning biomass in each Biological Region. An *ad hoc* working group of the MSAB proposed objectives to maintain a defined minimum proportion of spawning biomass in each Biological Region, which will complement the coastwide biological sustainability objective of maintaining the coastwide spawning biomass above a limit. The IPHC Secretariat proposed minimum proportions of 5%, 33%, 10%, and 2% for Biological Regions 2, 3, 4, and 4B, respectively after qualitatively investigating the modelled survey proportions of O32 stock distribution in each Biological Region since 1993 (the earliest period for which this information is available). Recognizing the short time-series, these minimum proportions were selected to be less than the lowest proportions observed, but no less than 40% of those values. These proportions will be discussed at future MSAB meetings.

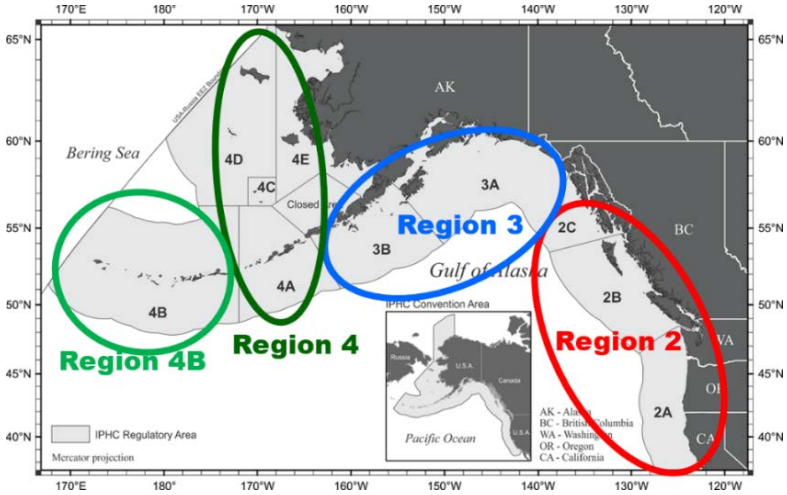


Figure 2. Biological Regions overlaid on IPHC Regulatory Areas with Region 2 comprised of 2A, 2B, and 2C, Region 3 comprised of 3A and 3B, Region 4 comprised of 4A and 4CDE, and Region 4B comprised solely of 4B.

Table 1: Primary measurable objectives, evaluated over a simulated ten-year period, recommended at MSAB014. Objective 1.1 is a biological sustainability (conservation) objective and objectives 2.1, 2.2, and 2.3 are fishery objectives.

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
1.1. KEEP FEMALE SPAWNING BIOMASS ABOVE A LIMIT TO AVOID CRITICAL STOCK SIZES AND CONSERVE SPATIAL POPULATION STRUCTURE	Maintain a female spawning stock biomass above a biomass limit reference point at least 95% of the time	*SB* < Spawning Biomass Limit (SB_{Lim}) SB_{Lim}=20% unfished spawning biomass	Long-term	0.05	$P(SB < SB_{Lim})$
	Maintain a defined minimum proportion of female spawning biomass in each Biological Region	$p_{SB,2} > 5\%$ $p_{SB,3} > 33\%$ $p_{SB,2} > 10\%$ $p_{SB,2} > 2\%$	Long-term	0.05	$P(p_{SB,R} < p_{SB,R,min})$
2.1 MAINTAIN SPAWNING BIOMASS AROUND A LEVEL THAT OPTIMIZES FISHING ACTIVITIES	Maintain the coastwide female spawning biomass above a biomass target reference point at least 50% of the time	*SB*<Spawning Biomass Target (SB_{Targ}) SB_{Targ}=$SB_{36\%}$ unfished spawning biomass	Long-term	0.50	$P(SB < SB_{Targ})$
2.2. LIMIT CATCH VARIABILITY	Limit annual changes in the coastwide TCEY	Annual Change (*AC*) > 15% in any 3 years	Short-term		$P(AC_3 > 15\%)$
		Median coastwide Average Annual Variability (AAV)	Short-term		*Median AAV*
	Limit annual changes in the Regulatory Area TCEY	Annual Change (*AC*) > 15% in any 3 years	Short-term		$P(AC_3 > 15\%)$
		Average AAV by Regulatory Area (AAV_A)	Short-term		*Median* AAV_A
2.3. PROVIDE DIRECTED FISHING YIELD	Optimize average coastwide TCEY	Median coastwide TCEY	Short-term		*Median* $\overline{TCEY}$
	Optimize TCEY among Regulatory Areas	Median $TCEY_A$	Short-term		*Median* $\overline{TCEY_A}$
	Optimize the percentage of the coastwide TCEY among Regulatory Areas	Median $\%TCEY_A$	Short-term		*Median* $\overline{\left(\frac{TCEY_A}{TCEY}\right)}$
	Maintain a minimum TCEY for each Regulatory Area	Minimum $TCEY_A$	Short-term		*Median Min(TCEY)*
	Maintain a percentage of the coastwide TCEY for each Regulatory Area	Minimum $\%TCEY_A$	Short-term		*Median Min(%TCEY)*

1.2.2 Optimize Directed Fishing Opportunities

Three general objectives are currently defined for the fishery goal: 1) maintain the spawning biomass around a level that optimizes fishing activities, 2) limit catch variability, and 3) provide directed fishing yield. Under each general objective, there are coastwide TCEY measurable objectives, and distribution objectives are defined for the latter two. While Biological Regions are the spatial scale for the biological sustainability goal, fishery objectives are related to IPHC Regulatory Areas and Management Zones (the aggregation of IPHC Regulatory Areas that does not match Biological Regions) because quotas are defined within these areas and are therefore of interest to a quota holder. A finer spatial scale than IPHC Regulatory Areas may be important to individual fishers and may be considered in future evaluations.

1.2.2.1 Maintain the spawning biomass around a level that optimizes fishing activities

There are no primary distribution objectives defined for this general objective, but secondary objectives may be defined at future meetings.

1.2.2.2 Limit catch variability

The MSAB discussed the coastwide objective to limit annual changes in the TCEY and proposed that the same objective be defined for IPHC Regulatory Areas with both the AC and AAV reported. This objective would capture the objective for stability in a stakeholder's area of interest and recognize that part of the variability in IPHC Regulatory Area catch limits is due to uncertainty in the distribution procedure. The MSAB decided to define both coastwide and distribution objectives for the time being, and to evaluate potential redundancy when results become available.

1.2.2.3 Maximize fishery yield

The MSAB defined two different types of area-specific yield objectives: 1) actual TCEY in an IPHC Regulatory Area and 2) a percentage of the coastwide TCEY in an IPHC Regulatory Area. Both types are useful to report since they suggest separate concepts. Use of the actual TCEY value is an objective specific to a desired mortality limit within an IPHC Regulatory Area, while using the percentage of the coastwide TCEY captures sharing among IPHC Regulatory Areas. The median of the average TCEY, the percentage of the TCEY over a ten-year period, the median minimum TCEY, and the minimum percentage of the TCEY over a ten-year period were defined as metrics.

The catch variability and yield objectives did not have a tolerance defined, thus performance metrics related to these objectives will be reported and used to evaluate the management procedures against each of the objectives as well as examine the trade-offs between the objectives and across IPHC Regulatory Areas.

2 FURTHER INVESTIGATIONS OF COASTWIDE FISHING INTENSITY

Simulation results presented at MSAB012 (IPHC-2018-MSAB012-07) showed that no management procedure met the primary stability objective defined at that time (average annual variability of the mortality limit less than 15% at least 75% of the time) when lacking a constraint on the change in annual mortality limit, as noted in paragraph 59,e in IPHC-2019-AM095-R. Therefore, various constraints on the change in the annual mortality limit were introduced into

the management procedure for evaluation (as was also recommended by the SRB in document IPHC-2018-SRB013-R, para. 29). Document IPHC-2019-MSAB013-08 summarizes results pertaining to a constraint on the annual mortality limit that were presented at MSAB013. A maximum annual change in the catch limit of 15% ('maxChangeBoth15%'), an implemented annual change of 50% upwards and 33% downwards ('slowUpFastDown'), and setting the catch limit every third year ('multiYear') performed the best and were carried forward for additional analysis. Details of the coastwide closed-loop simulations can be found in IPHC-2018-MSAB012-07.

To summarize the results from the coastwide investigation of fishing intensity, long-term performance metrics showed little risk of falling below the 20% biomass limit for nearly all management procedures evaluated, except when no control rule was used (Figure 3). A procedural SPR value greater than 40% met the biomass target objective for all management procedures that used a 30:20 control rule (Figure 3). In the medium-term, variability in catches increased with higher fishing intensities (i.e., lower SPR), and only management procedures with a constraint met the stability objective (Figure 4). Median total mortality (TM) limits increased slightly with greater fishing intensity and the probability that the total mortality was less than 34 Mlbs (15,400 t, the historical minimum that occurred in the 1970s) was minimized in the range of 40% to 46% for management procedures using a 30:20 control rule (Figure 4).

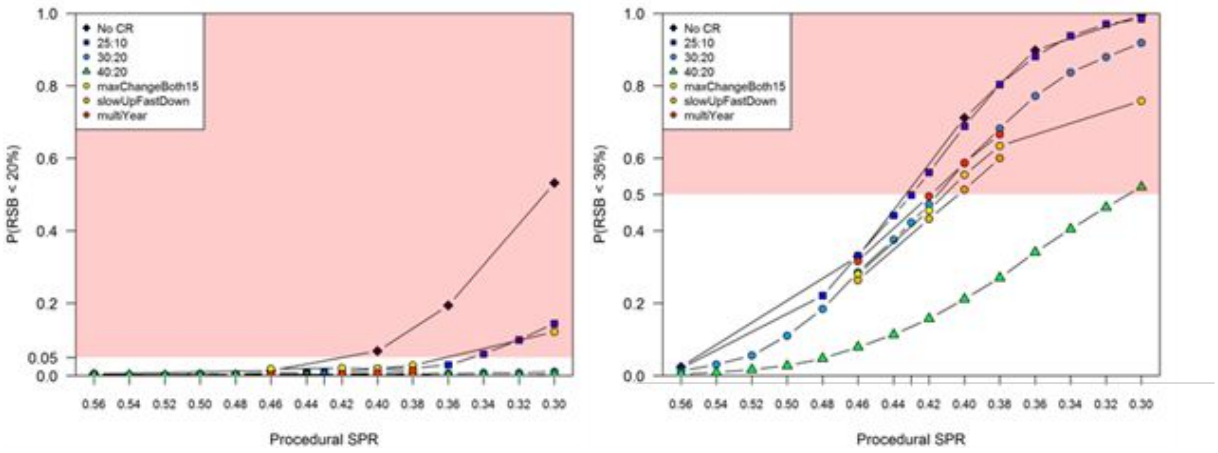


Figure 3: Performance metrics for the MSE simulation results when using 40:20, 30:20, and 25:10 control rules as well as no control rule, and constraints applied when using the 30:20 control rule. The left plot shows the probability that the relative spawning biomass (RSB) is less than the biomass limit (20%) and the right plot shows the probability that the RSB is less than the biomass target (36%). Pink colored areas indicate where the objective is not met (i.e., exceeds the defined tolerance).

Constrained management procedures reduced the annual variability in catch limits while meeting the biomass limit and biomass target objectives. If a constraint is implemented, it may be useful to introduce a precaution, such as defining a procedure where the constraint should not be

applied if the estimated stock status is nearing or is below the biomass limit. Vice versa, a measure may be applied that allows for increased harvest if the stock status is highly likely to be much greater than the target biomass. . These additional controls have not yet been tested, but could be prioritized after initial results are available in 2021.

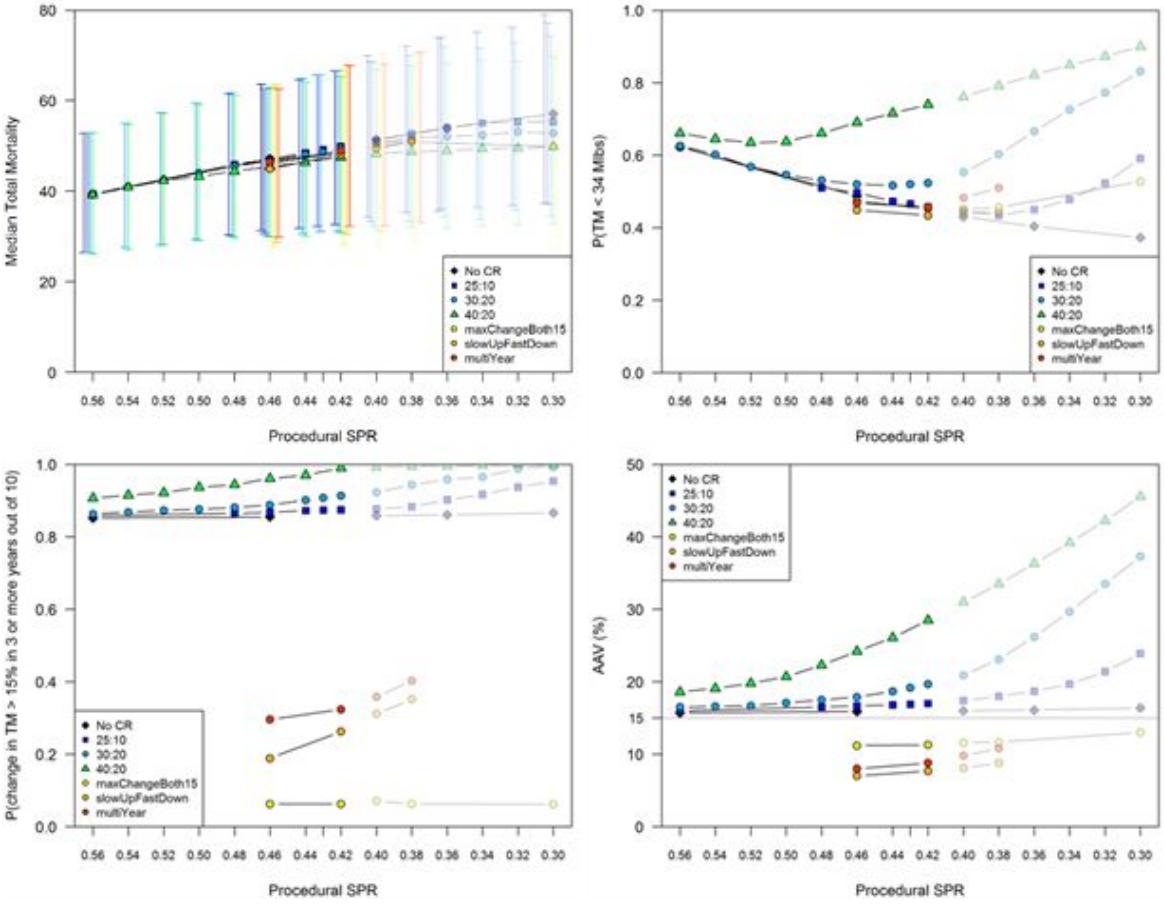


Figure 4: Performance metrics for the MSE simulation results when using 40:20, 30:20, and 25:10 control rules as well as no control rule, and constraints applied when using the 30:20 control rule. The lighter points and lines are SPR values that did not meet the objectives shown in Figure 3 for the 30:20 control rule and constraints. The top plots are related to yield and show the median total mortality with 25th to 75th percentiles shown as vertical lines and the probability that the total mortality is less than 34 Mlbs. The bottom plots are related to variability in catch limits and show the probability that the change in the total mortality is greater than 15% for at least 3 years out of 10, and the average annual variability (AAV) which is a measure of the average variability over a 10-year period.

The full set of simulated management procedures and performance metrics are available for interactively viewing at [http://shiny.westus.cloudapp.azure.com/shiny/sample-apps/IPHC-MSAB013/.](http://shiny.westus.cloudapp.azure.com/shiny/sample-apps/IPHC-MSAB013/)

3 MANAGEMENT PROCEDURES FOR COASTWIDE SCALE AND DISTRIBUTION OF THE TCEY

The report from the 95th Session of the IPHC Annual Meeting (AM095) contained one paragraph that noted the TCEY distribution component of the IPHC harvest strategy policy (IPHC-2019-AM095-R):

> *62. The Commission **RECOMMENDED** that the MSAB and IPHC Secretariat continue its program of work on the Management Procedure for the Scale portion of the harvest strategy, NOTING that Scale and Distribution components will be evaluated and presented no later than at AM097 in 2021, for potential adoption and subsequent implementation as a harvest strategy.*

3.1 COMMISSION INTERIM MANAGEMENT PROCEDURE TO DISTRIBUTE THE TCEY

3.1.1 Stock distribution

The IPHC uses a space-time model to estimate annual Weight-Per-Unit-Effort (WPUE) for use in estimating the annual stock distribution of Pacific halibut (IPHC-2019-AM095-07). Briefly, the observed WPUE for Pacific halibut is fitted with a model that accounts for correlation between relative density observed at setline survey stations over time (years) and space (within Regulatory Areas). Competition for hooks by Pacific halibut and other species, the timing of the setline survey relative to annual fishery mortality, and observations from other fishery-independent surveys are also accounted for in the approach. This fitted model is then used to predict WPUE (a measure of relative density) of Pacific halibut for every setline survey station in the design, including all setline survey expansion stations, regardless of whether it was fished in a particular year. These predictions are then averaged within each IPHC Regulatory Area, and combined among IPHC Regulatory Areas, weighting by the "geographic extent" (calculated area within the survey design depth range) of each IPHC Regulatory Area. It is important to note that this produces relative indices of abundance and biomass but does not produce an absolute measure of abundance or biomass because it is weight-per-unit-effort scaled by the geographic extent of each IPHC Regulatory Area. These indices are useful for determining trends in stock numbers and biomass and in estimating the geographic distribution of the stock. The current interim management procedure uses the proportion of estimated over-32-inch (81.3 cm; O32) biomass in each IPHC Regulatory Area to determine stock distribution.

3.1.2 Relative Harvest Rates

The target distribution of the TCEY is shifted from the estimated stock distribution based on relative harvest rates of 1.00 for IPHC Regulatory Areas 2A–3A and 0.75 for IPHC Regulatory Areas 3B–4CDE. The lower harvest rates in IPHC Regulatory Areas 3B, 4A, 4CDE, and 4B, compared to IPHC Regulatory Areas 2 and 3A, were first implemented over a number of years starting at least in 2004 (Clark & Hare 2005, Hare 2005, Hare 2006, Hare 2009). The reductions in harvest rates were partly described as 'precautionary' based on declining trends in spawning biomass and CPUE, the presence of small fish, differences in yield-per-recruit, differences in emigration and immigration, and greater uncertainty in the data and analyses available at the time (Hare 2009). For example, the reduction in the harvest rate in IPHC Regulatory Area 3B was described as a precautionary decision after observing steady declines in catch rates, sharp declines in survey WPUE, an increase in effort expended to take the mortality limit, a contracted

age distribution, indication that emigration is greater than immigration, and observed results of reduced harvest rates in IPHC Regulatory Areas 4A, 4B, and 4CDE (Hare 2009). The full MSE will evaluate management procedures with different harvest rates and distribution components that will account for these and other factors simultaneously.

3.1.3 Defined shares

Two different concepts of implementing defined shares for IPHC Regulatory Areas 2A and 2B were defined at AM095 (IPHC-2019-AM095-R paragraphs 69 b and c).

> *b) a share-based allocation for IPHC Regulatory Area 2B. The share will be defined based on a weighted average that assigns 30% weight to the current interim management procedure's target TCEY distribution and 70% on 2B's recent historical average share of 20%. This formula for defining IPHC Regulatory Areas 2B's annual allocation is intended to apply for a period of 2019 to 2022. For 2019, this equates to a share of 17.7%; and*
>
> *c) a fixed TCEY for IPHC Regulatory Area 2A of 1.65 mlbs is intended to apply for a period from 2019-2022, subject to any substantive conservation concerns.*

These two adjustments are applied by first applying the estimated stock distribution and relative harvest rates to generate a TCEY distribution. Next the percentage for 2B is adjusted via the weighted average above, then the TCEY is calculated for that area based on the total coastwide TCEY. Next, the 2A TCEY is set to 1.65. Finally, the remaining IPHC Regulatory Areas are scaled in proportion to the original TCEY distribution until the total coastwide TCEY is achieved, given the previously fixed values for 2A and 2B.

3.2 ALTERNATIVE APPROACHES TO THE DISTRIBUTION OF THE TCEY

Distributing the TCEY can be made up of multiple components such as those described above in Section 3.1. Below, alternative approaches to stock distribution and relative harvest rates are described.

3.2.1 Stock Distribution

The overarching conservation goal for Pacific halibut is to maintain a healthy coastwide stock, which implies an objective to retain viable spawning activity in geographic components of the stock. This requires defining the scale of spawning components from which distribution is to be conserved and balancing the removals to protect against depletion of spatial and demographic components of the stock that may produce differential recruitment success under changing environmental and ecological conditions. Splitting the coast into many small areas to satisfy conservation objectives can result in complications, including i) making it cumbersome to determine if conservation objectives are met, ii) making it difficult to accurately determine the proportion of the stock in that area resulting in inter-annual variability in estimates of the proportion, iii) forcing arbitrary delineation among areas despite evidence of strong stock mixing, and iv) not representing biological importance. Biological Regions, defined earlier and shown in Figure 2, are considered by the IPHC Secretariat, and supported by the SRB (paragraph 31 IPHC-2018-SRB012-R), to be the best currently available scale at which to meet management needs and conserve spatial population structure. Biological Regions are also the most logical

scale over which to consider conservation objectives related to distribution of the fishing mortality.

In addition to using Biological Regions for stock distribution, the “all sizes” WPUE from the space-time model, which is largely composed of O26 Pacific halibut due to the selectivity of the setline gear, is more congruent with the TCEY (O26 catch levels) than O32 WPUE. Therefore, when distributing the TCEY to Biological Regions, the estimated proportion of “all sizes” WPUE from the space-time model would be most logically consistent.

3.2.2 Additional distribution procedures

Additional distribution procedures may be used to adjust the distribution of the TCEY among Biological Regions and subsequent distribution among IPHC Regulatory Areas within Biological Regions. Modifications at the level of Biological Regions or IPHC Regulatory Areas may be based on differences in productivity between areas, observations in each area relative to other areas (e.g., fishery-dependent WPUE), uncertainty of data or mortality in each area, defined allocations, national shares, or other methods.

3.2.2.1 Yield-per-recruit analysis

A yield-per-recruit analysis by Biological Region was performed to examine differences in productivity between the four Biological Regions (Figure 2). A yield-per-recruit analysis provides the harvest rate at which the yield would be optimized given natural mortality, fishery selectivity, and weight-at-age. The actual harvest rate is not of interest for this analysis, but relative harvest rates across Biological Regions provides information on relative productivity among regions. This method does not account for recruitment dynamics or movement rates, which would be addressed in the MSE.

The yield-per-recruit at various harvest rates and the harvest rates relative to Biological Region 3 were estimated for each Biological Region at three different points in time: 1985, 1999, and 2018. The year 1985 was used because weight-at-age was then very high in Biological Regions 2 and 3. The year 1999 was used because it is representative of data from a period that would have informed previous yield-per-recruit analyses performed to justify reductions in harvest rates in western IPHC Regulatory Areas (e.g., Hare 2009), and because annual changes in selectivity curves were estimated from 1997 to 2018 in the stock assessment for Biological Regions 4 and 4B. The year 2018 represents the current state. Weight-at-age and selectivity for each year and Biological Region were used in the yield-per-recruit analysis.

During the 1980s and the 1990s, the relative estimated harvest rates were similar for Biological Regions 2 and 3, near 0.8 for Biological Region 4, and 0.5 for Biological Region 4B (Table 2). However, using weight-at-age and selectivity from 2018 showed a relative harvest rate of 1.0 for Biological Region 4. This supports the application of a lower relative harvest rate in western areas in the historical harvest strategy, but also shows changes in productivity over time that may affect the appropriate current application of relative harvest rates. An MSE is the most appropriate tool to evaluate management procedures with static or annual adjustments (based on data and observations to reflect changing conditions) to relative harvest rates because an MSE also accounts for other factors such as movement, recruitment dynamics, and the effects

of harvest levels in other areas. Therefore, a more complete investigation of relative harvest rates will be carried out using the MSE framework.

Table 2: Estimated harvest rates from the yield-per-recruit analysis in each Biological Region relative to Biological Region 3.

		Biological Region			
Weight-at-age	**Selectivity**	**2**	**3**	**4**	**4B**
1985	1985	1.0	1.0	0.7	0.5
1999	1999	1.0	1.0	0.8	0.5
2018	2018	1.0	1.0	1.0	0.5

3.2.2.2 Net movement in and out of Biological Regions

The net movement of Pacific halibut in and out of Biological Regions is an important factor to consider when determining appropriate relative harvest rates. It is generally understood that the net movement of Pacific halibut is from west to east and the net movement out of Biological Region 4 is likely greater than movement of adults into it. The connection of Biological Region 4B to the other Biological Regions is not well understood and there is a possibility that 4B is the most demographically distinct of the four. Considerable movement of older Pacific halibut is estimated to occur between Biological Regions 3 and 2. It is currently understood that Pacific halibut move considerably within (and, to a small extent among) Biological Regions within a year. The section on movement rates among Biological Regions in IPHC-2019-AM095-08 provides a summary of the current understanding of Pacific halibut movement and IPHC staff are currently writing a review of Pacific halibut movement and migration.

3.2.2.3 Uncertainty of productivity and harvest levels in Biological Regions

Additional justification, other than yield-per-recruit, for reducing harvest rates in IPHC Regulatory Areas 3B, 4A, 4B, and 4CDE (e.g., Hare 2009) included varying levels of uncertainty in each area. For example, the historical harvest in Biological Regions 4 and 4B developed after the fisheries in Biological Regions 2 and 3, and a shorter time-series of observations is available from 4 and 4B. This results in an increased historical uncertainty about productivity and optimal harvest levels in these Biological Regions. However, recent modelled survey information is of roughly equal and adequate precision for all Biological Regions (IPHC-2019-AM095-08).

Overall, science (e.g., analysing data and understanding the life-history of Pacific halibut) and policy (e.g., examining observations and uncertainty) in each Biological Region will help inform the construction of management procedures related to distributing the TCEY among Biological Regions and IPHC Regulatory Areas. The scale of IPHC Regulatory Areas is likely too small to make conclusions regarding differences in productivity, but other tools, such as fishery-dependent WPUE, may be used to develop distribution procedures to distribute the TCEY to IPHC Regulatory Areas. The MSE will evaluate the different procedures with respect to defined objectives.

3.2.2.4 Tools to distribute the TCEY

The MSAB013 report (IPHC-2019-MSAB013-R, paragraph 60) listed eleven potential tools for use in developing distribution procedures (both at a regional and at a regulatory area level), which were discussed at MSAB014. The Commission adopted two tools (minimum catch limit and a percent share) for IPHC Regulatory Areas 2A and 2B (IPHC-2019-AM095-R, paragraph 69) that could easily be incorporated into a management procedure (or objectives as noted in Section 1.2.2.3). Incorporating these tools in a management procedure can be done by defining specific steps, as in the example framework below (Section 3.3).

3.3 A Framework for Distributing the TCEY among IPHC Regulatory Areas

The harvest strategy policy begins with the coastwide TCEY determined from the stock assessment and fishing intensity determined from a target SPR (Figure 1). To distribute the TCEY among regions, stock distribution (Section 3.2.1) between Biological Regions may occur first to satisfy conservation objectives. This is followed by adjustments across Biological Regions and IPHC Regulatory Areas based on distribution procedures to further encompass conservation objectives and consider fishery objectives. A constraint could be enforced such that given relative adjustments, the overall fishing intensity (i.e. target SPR) is maintained (i.e. a zero-sum game relative to fishing intensity) or a maximum fishing intensity (minimum SPR) is not exceeded (also a zero-sum game when the maximum is exceeded). Using a target SPR that is maintained within the management procedure is consistent with the management of many fisheries around the world., If a target SPR were not maintained within the management procedure, the minimum SPR value (maximum fishing intensity) in the range produced by the management procedure would likely be considered both the target and limit by many reviewers of the harvest policy.

A general framework for a management procedure encompassing conservation and fishery objectives that ends with a TCEY for each IPHC Regulatory Area is described below. Only steps 1 (coastwide) and 3 (IPHC Regulatory Area) are essential; step 2 is optional. Some sub-components of each step are also optional.

1. **Coastwide (*required*)**

    1.1. **Estimation model (science-based, *required*)**: A statistical analysis of data to inform the current status of the stock and possibly projections given various mortality limits. This may be as complex as a stock assessment or as straightforward as the estimate of relative coastwide abundance/biomass from the modelled survey index.

    1.2. **Target Fishing Intensity (management-derived, *required for an assessment-based approach*):** Determine the coastwide total mortality using a target SPR that is most consistent with IPHC coastwide objectives defined by the Commission, removing the U26 non-directed fishing discard mortality from the Total Mortality to determine the coastwide TCEY.

2. **Regional (*optional*)**

    2.1. **Regional Stock Distribution (science-based, *required when using the Regional step*):** Distribute the coastwide TCEY to four (4) biologically-based Regions (Figure 2) using the proportion of the stock estimated in each Biological Region for all sizes of

Pacific halibut using information from the IPHC space-time model. “All sizes” WPUE is the most congruent metric to distribute the TCEY at this scale.

2.2. **Regional Relative Fishing Intensity (science-based, *optional*):** Adjust the distribution of the TCEY among Biological Regions to account for migration, productivity, and other biological characteristics of the Pacific halibut observed in each Biological Region.

2.3. **Regional Allocation Adjustment (management derived, *optional*):** Adjust the distribution of the TCEY among Biological Regions to account for other factors. This may include evaluation of recent trends in estimated quantities (such as fishery-independent WPUE), inspection of historical trends in fishing intensity, recent or historical fishery performance, and uncertainty. Regional relative harvest rates may also be determined through negotiation, leading to an allocation agreement for further regional adjustment of the TCEY.

3. **Regulatory Area Allocation (*required with at least one sub-option*)**

3.1. **Regulatory Area Stock Distribution (science-based):** Distribute the coastwide (if step 2 is omitted) or regional TCEY to IPHC Regulatory Areas using the proportion of the stock estimated in each IPHC Regulatory Area for all sizes or O32 Pacific halibut using information from the IPHC space-time model.

3.2. **Regulatory Area Allocation (management derived):** Apply IPHC Regulatory Area allocation to the coastwide TCEY (if step 2 is omitted) or within each Biological Region to distribute the TCEY to Regulatory Areas. This management or policy decision may be informed by data or defined by an allocation agreement. For example, recent trends in estimated all sizes WPUE from the modelled survey or fishery data, age composition, or size composition may be used to distribute the TCEY to IPHC Regulatory Areas. Inspection of historical trends in fishing intensity or catches by IPHC Regulatory Area may also be used. Finally, predetermined fixed percentages are also an option. This allocation to IPHC Regulatory Areas may be a procedure with multiple adjustments using different information or agreements.

The steps described above would be contained within the IPHC Harvest Strategy Policy as part of the Management Procedure and are predetermined steps with a predictable outcome. The decision-making process would then occur (Figure 1).

4. **Annual Regulatory Area Adjustment (policy, *optional*)**: Adjust individual Regulatory Area TCEY limits to account for other factors as needed. This is the policy component of the harvest strategy policy and occurs as a final step where other objectives are considered (e.g., economic, social, etc.). A departure from the target SPR may be a desired outcome for a particular year (short-term, tactical decision making based on current trends estimated in the stock assessment) but would deviate from the management procedure and the long-term management objectives. Departures from the management procedure could take advantage of current situations but may result in unpredictable longer-term outcomes.

3.4 MANAGEMENT PROCEDURES TO EVALUATE

At MSAB014, the MSAB recommended management procedures to evaluate that include both scale and distribution components (IPHC-2019-MSAB014-R, paragraphs 49 & 56).

3.4.1 Scale elements of management procedures.

The coastwide MSE investigated only the scale component of the management procedure and identified procedural SPR values, fishery triggers, and fishery limits, of the harvest control rule (Figure 5) as well as constraints that satisfied the coastwide objectives. The investigation of management procedures incorporating scale and distribution components will focus on the scale elements that satisfied the coastwide objectives, but span a wide range of SPR values (Table 3).

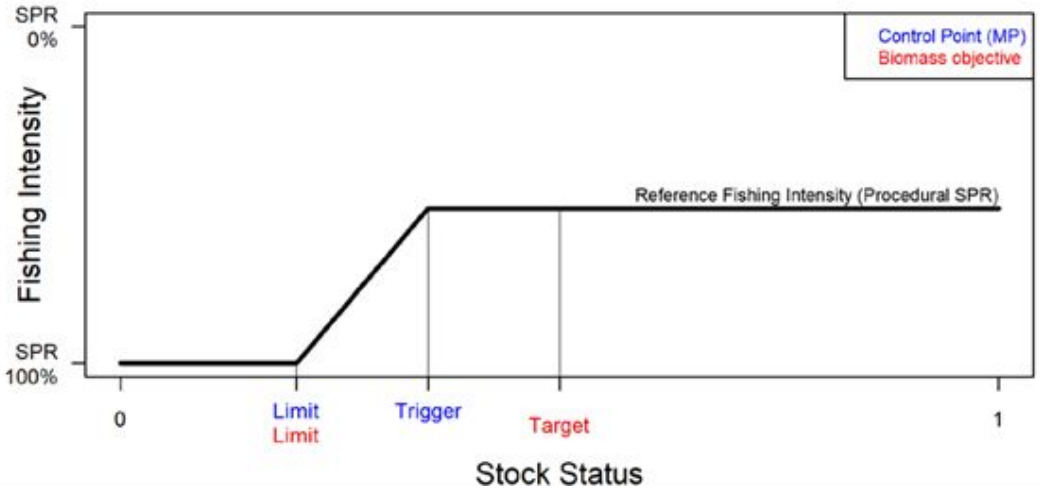


Figure 5: Example harvest control rule responsive to stock status based on Spawning Potential Ratio (SPR) to determine applied fishing intensity (vertical axis), a fishery trigger level of stock status that determines when the fishing intensity begins to be linearly reduced, and a fishery limit based on stock status that determines when there is theoretically no fishing intensity (SPR=100%). Quantities potentially related to objectives (biomass limit, and biomass target) may or may not align with the control points in the management procedure.

Table 3: Elements of the coastwide component of the management procedures to be evaluated at MSAB015.

Procedural SPR	Control Rule	Constraints
30%, 34%, 38%, 42%, 46%, 50%	30:20	• maxChange15% • SlowUupFastDown • MultiYear • maxChange15% combined with either of above

3.4.2 Distribution elements of management procedures

Appendix VI in IPHC-2019-MSAB014-R presents distribution management procedures to be evaluated at MSAB015. These ten management procedures contain various scale and distribution elements, as identified in paragraph 55 of IPHC-2019-MSAB014-R.

> MSAB014-R, para. 55: *The MSAB **REQUESTED** that a number of elements in distribution management procedures be included for evaluation at MSAB015:*
>
> a) *A coastwide constraint using a slow-up, fast-down approach with a maximum change in the TCEY of 15%;*
>
> b) *evaluating different relative harvest rates across IPHC Regulatory Areas or Biological Regions;*
>
> c) *distributing the TCEY directly to IPHC Regulatory Area;*
>
> d) *A fixed shares concept for all or some IPHC Regulatory Areas, Biological Regions, or Management Zones with options to distribute the TCEY to the areas without a fixed share. The determination of these shares may be fixed or varying over time; and*
>
> e) *A maximum fishing intensity defined by an SPR of 36% to act as a buffer when distributing the TCEY to IPHC Regulatory Areas.*

The concept of a buffer allows the fishing intensity to increase from the reference fishing intensity due to constraints on the TCEY and other elements that may result in a change to the coastwide SPR. However, the management procedure fishing intensity cannot exceed the defined maximum fishing intensity.

4 DEVELOPMENT OF THE CLOSED-LOOP SIMULATION FRAMEWORK

The MSE at IPHC has completed an initial phase of evaluating management procedures relative to the coastwide scale of the Pacific halibut stock and fishery. Results of the MSE simulations were presented at the 95th Session of the IPHC Annual Meeting (AM095) and at MSAB013. The next phase, which is underway, is to investigate management procedures related to the distribution of the TCEY. Document IPHC-2019-MSAB014-08 outlines the recent efforts related to developing the software underpinning the MSE simulations.

4.1 FRAMEWORK ELEMENTS

The MSE framework includes elements that simulate the Pacific halibut population and fishery (Operating Model, OM) and management procedures with a closed-loop feedback (Figure 6). Specifications of some elements are described below, with additional technical details in document IPHC-2019-MSAB014-INF02, which is a living document that is being updated as development occurs.

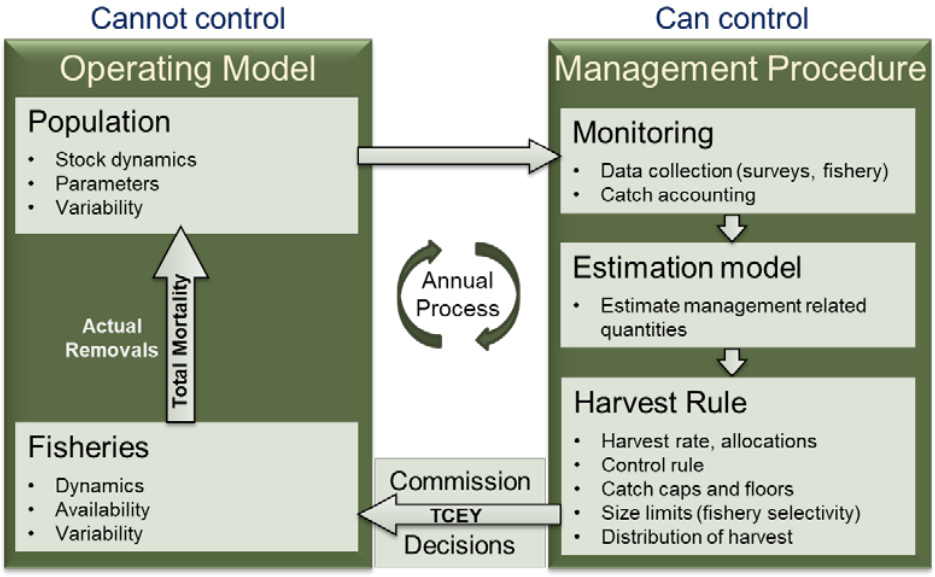


Figure 6: Illustration of the closed-loop simulation framework with the operating model (OM) and the Management Procedure (MP). This is the annual process on a yearly timescale.

4.1.1 Multi-area operating model

The generalized operating model will be able to model multiple spatial components, which is necessary because Pacific halibut migrate considerable distances and mortality limits are set at the IPHC Regulatory Area level and some objectives are defined at that level. Inter-annual population dynamics will be modelled by Biological Region and fisheries by IPHC Regulatory Area.

4.1.2 Management Procedure

The management procedure consists of three elements (Figure 6). Monitoring (data generation) is the code that simulates the data from the operating model and is used by the estimation model. It simulates the data collection and sampling process and can introduce variability, bias, and any other properties that are desired. The Estimation Model is analogous to the stock assessment and simulates estimation error in the process. Using the data generated, it produces an annual estimate of stock size and status and provides the output necessary for setting the mortality levels for the next time step. The estimation model may also consist of a simulated survey index. The Harvest Rule is the application of the estimation model output along with the scale and distribution management procedures to produce the catch limit for that year. Simulated management procedures must be clearly specified so that they can be implemented by computer code within the framework.

4.2 TECHNICAL DEVELOPMENT

In concert with the ongoing scientific and procedural elaboration of the MSE framework, the initial development of computer software to simulate the population and offer input to analysis and management strategy is underway. Generally, the software underpinning the MSE

simulations and analysis and reporting tools must be robust, return reproducible results, and be easy to use and well-documented so that the MSE scientific staff can focus on analysis rather than technical issues. From an engineering perspective, the software must be performant to reduce lengthy run times and extensible to facilitate the addition of new features, and therefore written with standard software development and testing processes and tools. Structurally, the software will include forecast models conditioned on historical data that characterize the stock, and results from a management procedure to be evaluated against conservation and fishery objectives.

Additional stages of development will focus on testing of the implemented algorithms and ongoing performance optimization.

5 MSE PROGRAM OF WORK

The presentation of results for the MSE investigating the full harvest strategy policy is scheduled to occur at the 97th Annual Meeting in early 2021. The tasks to be delivered at each MSAB, SRB, and Annual meeting before then are listed in Table 4 and Figure 7. An independent peer review is scheduled to occur in spring of 2020 with a follow-up in late summer of 2020.

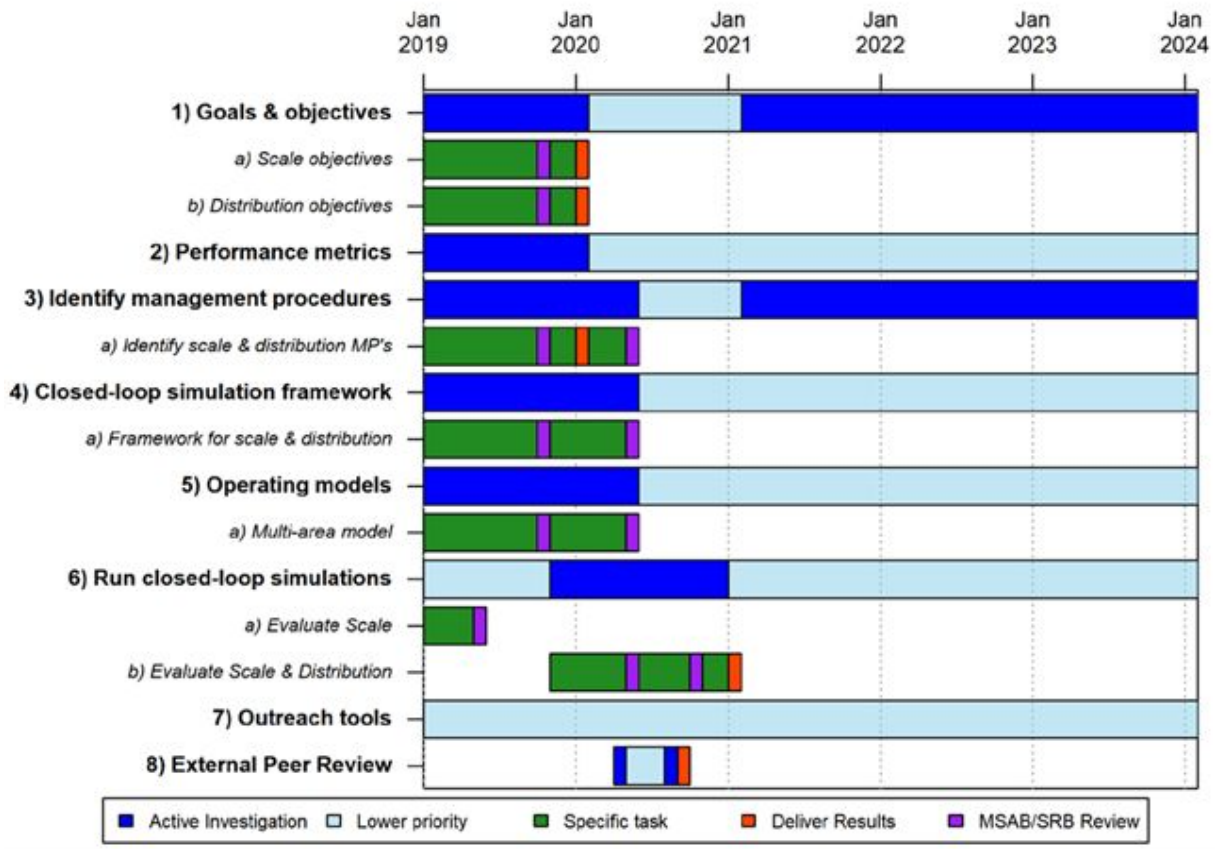


Figure 7: Five-year program of work shown as a Gantt chart format showing tasks down the right side and time along the horizontal axis.

Table 4: Program of work and tasks for 2019 and 2020 leading up to the delivery of the full MSE results at the 97th Annual Meeting in early 2021.

13th Session of the IPHC MSAB (MSAB013) - May 2019	**Status**
Evaluate additional Scale management procedures	Completed
Review goals and objectives	Completed
Spatial model complexity	Completed
Identify management procedures (Scale & Distribution)	Completed
Review Framework	Completed
14th Session of the IPHC MSAB (MSAB014) - October 2019	
Review Framework	Completed
Review multi-area model development	Completed
Spatial Model Complexity	Completed
Define Goals and Objectives (Scale & Distribution)	Completed
Identify management procedures (Scale & Distribution)	Completed
96th Session of the IPHC Annual Meeting (AM096) – January 2020	
Update on progress	
15th Session of the IPHC MSAB (MSAB015) - May 2020	
Review goals and objectives (Scale & Distribution) Review simulation framework Review multi-area model Review preliminary results Identify management procedures (Scale & Distribution)	
16th Session of the IPHC MSAB (MSAB016) - October 2020	
Review final results Provide recommendations on management procedures	
97th Session of the IPHC Annual Meeting (AM097) – January 2021	
Presentation of complete MSE product to the Commission Recommendations on Scale and Distribution management procedures	

6 RECOMMENDATIONS

That the Commission:

a) **NOTE** paper IPHC-2020-AM096-12 which provides the Commission with an update on the IPHC MSE process including defining objectives, developing management procedures for scale and distribution, a framework for distributing the TCEY, and a program of work.
b) **RECOMMEND** that the primary coastwide biological sustainability objective of maintaining the female spawning biomass above a biomass limit of $SB_{20\%}$ at least 95% of the time be used to evaluate management procedures.
c) **RECOMMEND** primary coastwide fishery objectives to be used for evaluation of management procedures (Table 1), including
    a. maintain the female spawning biomass around a proxy target biomass of $SB_{36\%}$;
    b. limit annual changes in the TCEY; and
    c. optimize directed fishing yield.
d) **RECOMMEND** that the primary biological sustainability objective of conserving spatial population structure across Biological Regions be used to evaluate management procedures.
e) **RECOMMEND** primary fishery objectives at the IPHC Regulatory Area scale for evaluation of management procedures (Table 1), including
    a. limit annual changes in the TCEY for each IPHC Regulatory Area;
    b. optimize the TCEY among IPHC Regulatory Areas;
    c. optimize a percentage of the coastwide TCEY among IPHC Regulatory Areas;
    d. maintain the TCEY above a minimum absolute level within each IPHC Regulatory Area; and
    e. maintain a percentage of the coastwide TCEY above a minimum level within each IPHC Regulatory Area;
f) **RECOMMEND** that given the results from the coastwide MSE, the following elements from the scale (coastwide) component of the management procedure meet the coastwide objectives
    a. SPR values greater than 40%
    b. A control rule of 30:20,
    c. Constraints on the annual change in the TCEY that limit it to 15%, use a slow-up, fast-down approach, and fix the mortality limits for three-year periods.
g) **RECOMMEND** a reference SPR fishing intensity of 43% with a 30:20 control rule and allocations to 2A and 2B, as defined in IPHC-2019-AM095-R paragraphs 69 b and c, be used as an updated interim harvest policy consistent with MSE results pending delivery of the final MSE results at AM097.
h) **NOTE** that the various elements of the scale and distribution components of the management procedure, including those listed in IPHC-2019-MSAB014-R will be evaluated for consideration at AM097 in 2021.
i) **NOTE** that an independent peer review of the MSE will take place in April 2020 and August 2020 with a report supplied to the SRB, MSAB, and Commission.

j) **NOTE** that the SRB will review MSE results in September 2020, and these results including scale and distribution management procedures will be presented to the Commission at AM097 in 2021.

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Implementation Notes: 2020 regulatory proposals

PREPARED BY: IPHC SECRETARIAT (3 & 31 JANUARY 2020)

PURPOSE

To provide the Commission with the required '*Implementation Notes*' for regulatory proposals received by the IPHC Secretariat for consideration at the 96th Session of the IPHC Annual Meeting (AM096).

BACKGROUND

On behalf of the Commission, the IPHC Secretariat has received regulatory proposals for consideration at the 96th Session of the IPHC Annual Meeting (AM096), as indicated in Table 1.

In accordance with the process established for handling regulatory proposals, the IPHC Secretariat has developed *Implementation Notes* for each proposal to aid Commissioners in their deliberations. These are provided in the discussion section of this paper and are linked through Table 1.

Table 1. Regulatory proposals received from Contracting Parties and stakeholders by the proposal deadline of 04 January 2020.

Regulatory proposals for 2020		
		Sector (Region)
Contracting Party (Agency) regulatory proposals		
IPHC-2020-AM096-PropB1 Rev_1	Charter Management Measures in IPHC Regulatory Areas 2C And 3A (NOAA Fisheries) *(Revision 1 to this proposal received 31 January 2020)*	Recreational (2C and 3A)
IPHC-2020-AM096-PropB2	Definition of Subarea 2A-1 in IPHC Regulatory Area 2A (NOAA Fisheries)	All (2A)
Other Stakeholder regulatory proposals		
IPHC-2020-AM096-PropC1	Alaska recreational fisheries (J. Kearns)	Recreational (2C, 3, 4)
IPHC-2020-AM096-PropC2	Alaska recreational fisheries (L. Jarrett)	Recreational (2C, 3, 4)

DISCUSSION

IMPLEMENTATION NOTES FOR CONTRACTING PARTY (AGENCY) REGULATORY PROPOSALS

IPHC-2020-AM096-PropB1 Rev_1	**Charter Management Measures in IPHC Regulatory Areas 2C And 3A**	**Recreational (2C and 3A)**

The proposal suggests that the Commission adopt the recreational charter management measures approved by the North Pacific Fishery Management Council (NPFMC) for IPHC Regulatory Areas 2C and 3A. The proposed management measures are linked to the distributed mortality levels (TCEY) approved for those Regulatory Areas, and thus will be finalized for adoption during the course of AM096 after the relevant TCEY decisions are made.

Suggested action:

1) The IPHC Secretariat recommends adoption of the recreational charter management measures for IPHC Regulatory Areas 2C and 3A as outlined in the revised proposal, noting that the text can be finalized only after the relevant TCEY decisions are made during AM096.

IPHC-2020-AM096-PropB2	**Definition of Subarea 2A-1 in IPHC Regulatory Area 2A (NOAA Fisheries)**	**All (2A)**

The proposal suggests a revision to the definition of Subarea 2A-1 in IPHC Regulatory Area 2A. This revision is the result of recent domestic legal cases concerning the fishing rights of the Treaty Indian Tribes in the state of Washington.

Suggested action:

1) The IPHC Secretariat recommends that the Commission adopt this proposal, which removes outdated information and unnecessary domestic detail from the IPHC Fishery Regulations, with the addition of the geographic reference for Point Chehalis (46° 53.30' N. lat.), which has been agreed to by the proponent.

IMPLEMENTATION NOTES FOR OTHER STAKEHOLDER REGULATORY PROPOSALS

IPHC-2020-AM096-PropC1	**Alaska recreational fisheries (J. Kearns)**	**Recreational (2C, 3, 4)**

The proposal suggests a series of common regulations to be applied to all recreational fisheries in Alaska.

Suggested action:

1) The IPHC Secretariat recommends that the Commission not adopt this proposal, as the recreational fisheries in Alaska are managed by the Contracting Party's domestic fishery management system. The IPHC Secretariat recommends that the Commission refer the proponent to the North Pacific Fishery Management Council (NPFMC) as the more appropriate forum for consideration of this proposal.

IPHC-2020-AM096-PropC2	**Alaska recreational fisheries (L. Garrett)**	**Recreational (2C, 3, 4)**

The proposal suggests a common daily bag limit for all non-resident fishers in the Alaska recreational fisheries.

Suggested action:

1) The IPHC Secretariat recommends that the Commission not adopt this proposal, as the recreational fisheries in Alaska are managed by the Contracting Party's domestic fishery management system. The IPHC Secretariat recommends that the Commission refer the proponent to the North Pacific Fishery Management Council (NPFMC) as the more appropriate forum for consideration of this proposal.

2nd IPHC Performance Review (PRIPHC02): Update

PREPARED BY: IPHC SECRETARIAT (D. WILSON; 6 DECEMBER 2019)

PURPOSE

To provide the Commission with an opportunity to consider the Report of the 2nd Performance Review of the IPHC (PRIPHC02), and direct the IPHC Secretariat accordingly in terms of addressing recommendations from the PRIPHC02.

BACKGROUND

2019

The PRIPHC02 was carried out over the course of 2019 via three face-to-face meetings, one in Seattle, USA (4-6 June 2019); one in New York City, USA (25 August 2019); and one in Ottawa, Canada (7-11 October 2019). The Panel held several additional tele-conferences, both among themselves, and with stakeholders.

The meeting was also supported by Independent Legal and Science Experts who each dedicated additional working days to providing technical reviews and reports on specific components of the review criteria relevant to their areas of expertise.

The PRIPHC02 utilised documentation and presentations provided by the IPHC Secretariat, as well as feedback from Contracting Parties, Commissioners, and officers of the Commission's subsidiary bodies. During each discussion with these various group representatives, the PRIPHC02 pursued three basic themes:

- Impressions on progress since the first review in 2012 (or, for those who may not have been engaged in the IPHC then, thoughts on engagement with IPHC to date);
- View of the current status of the IPHC and the support/functioning of the IPHC Secretariat;
- Thoughts about what is needed for the future of IPHC – from the Secretariat and/or other engagements.

In accordance with Rule 15 (Reports and Records) of the IPHC Rules of Procedure (2019), the final Report of the 2nd Performance Review of the IPHC (PRIPHC02), IPHC-2019-PRIPHC02-R (adopted on 11 October 2019), was provided to the Commission via IPHC Circular 2019-21 on 15 October 2019, and again at the 95th Session of the Interim Meeting (IM095) in November 2019 for consideration (IPHC-2019-IM095-16).

The report is also available for download from the IPHC website: https://www.iphc.int/ or directly at the following link: https://www.iphc.int/library/documents/post/iphc-2019-priphc02-r-report-of-the-2nd-performance-review-of-the-international-pacific-halibut-commission-priphc02

The Panel for the 2nd Performance Review of the IPHC is as follows:

a) Chairperson: **Mr Terje Løbach** (Norway).
b) Contracting Parties: **Mr Robert Day** (Canada); **Ms Staci MacCorkle** (U.S.A.).
c) Science Advisor: **Dr Kevin Stokes** (New Zealand).
d) Regional Fishery Management Organisations: **Mr Peter Flewwelling** (North Pacific Fisheries Commission);
e) Regional Fishery Management Organisations: **Mr Jeongseok Park** (North Pacific Anadromous Fish Commission).

f) Non-Governmental Organisations: **Ms Amanda Nickson** (The PEW Charitable Trusts).
g) IPHC Secretariat: **Dr David T. Wilson** (Facilitator)

2018

At the 94th Session of the IPHC Annual Meeting (AM094 in January 2018, the Commission adopted Terms of Reference, criteria, process and budget to conduct the 2nd Performance Review of the IPHC:

> Terms of Reference, criteria, process, and budget to conduct the 2nd Performance review of the IPHC (Adopted 26 January 2018)

Also at the AM094, the Commission agreed to defer the 2nd IPHC Performance Review until FY2019 (1 Oct. 2018 to 30 Sept. 2019), due to budget limitations in the current financial year (para. 94 of IPHC-2018-AM094-R).

The "*Terms of Reference and Criteria to Conduct the 2nd Performance Review of the IPHC*," includes six specific criteria for the review. Criteria 1, "*Legal analysis of the Convention to ensure its adequacy relative to current global best practice principles of fisheries management*," is the foundation element, upon which the rest of the review will rest.

2017

At the 93rd Session of the IPHC Annual Meeting (AM093) in January 2017, the Commission noted paper IPHC-2017-AM093-18, which outlined planning for the 2nd IPHC Performance Review, and provided the following direction to the IPHC Secretariat:

> AM093–Rec.13 (para. 153) *The Commission **RECOMMENDED** that the IPHC Secretariat finalise the draft performance review terms of reference and criteria to conduct the review, and implement the 2nd Performance Review throughout 2017, for presentation to the Commission at its 94th Annual Meeting in 2018.*

2014

In January 2014, the Commission issued a Progress Report, documenting the Commission's response to the 1st IPHC Performance Review (PERFORMANCE REVIEW 2012: A Progress Report). At Interim and Annual Meetings since then, Contracting Parties have noted the status of implementation of each of the recommendations arising from the report of the 1st IPHC Performance Review.

2011-12

In response to calls from the international community for a review of the performance of Regional Fisheries Management Organizations (RFMOs), the International Pacific Halibut Commission (IPHC) agreed in 2011 to implement a process of Performance Review. The IPHC contracted with CONCUR, Inc., a U.S.-based firm, to undertake the review. CONCUR performed its work independently of IPHC Commissioners and staff, and concluded its report to the Commission in April 2012. In undertaking the Performance Review, the contractor relied on the following approaches to assess the Commission's work and practices, track effectiveness, and gauge the need for revised approaches:

1) Conducting a set of 43 in-depth interviews with a representative and diverse set of stakeholders;
2) Observing the 2011 Interim and 2012 Annual Meetings and reviewing Commission background materials;
3) Reviewing practices at other regional fishery management organizations; and
4) Drawing on its professional judgment and experience.

In 2012, the contractor published a report outlining 12 recommendations (containing 39 parts) to improve the functioning of the IPHC (McCreary & Brooks, CONCUR, Inc. 2012).

DISCUSSION

At the 95th Session of the IPHC Interim Meeting (IM095), the Commission considered the report of the PRIPHC02 and made the following request of the IPHC Secretariat:

> ***Report of the 2nd IPHC Performance Review (PRIPHC02)***
>
> IM095-Req.09 (para. 104) "***NOTING*** *the 26 recommendations arising from the PRIPHC02, the Commission* ***REQUESTED*** *that the IPHC Secretariat prepare a table for consideration at AM096 which would include each recommendation, and proposed/draft 1) responsibilities, 2) timeline, 3) priorities; and 4) any initial comments of relevance. The intention will be for the Commission to review the table at AM096, modify and adopt plan for implementation moving forward.*"

Provided at **Appendix A** is the requested table for Commission consideration.

RECOMMENDATION

That the Commission **NOTE** paper IPHC-2020-AM096-14 which provides the Commission with an opportunity to consider the Report of the 2nd Performance Review of the IPHC (PRIPHC02), and direct the IPHC Secretariat accordingly in terms of addressing recommendations from the PRIPHC02.

APPENDICES

Appendix A: Table of recommendations arising from the PRIPHC02, including the Commission requested proposed/draft 1) responsibilities, 2) timeline, 3) priorities; and 4) any initial comments of relevance.

Appendix A
RECOMMENDATIONS OF THE 2ND PERFORMANCE REVIEW OF THE INTERNATIONAL PACIFIC HALIBUT COMMISSION (PRIPHC02)

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
PRIPHC02 –Rec.01 (para. 32)	***Legal analysis of the IPHC Convention*** The PRIPHC02 **RECOMMENDED** that consideration be given to updating the Convention at the next opportunity, to become consistent with newer international legal instruments, and specifically consider including the following elements: a) – z)	Low	Commission	5-10 years	**Pending**
PRIPHC02 –Rec.02 (para. 33)	The PRIPHC02 **RECOMMENDED** to update the Convention, while in the interim period seek alternate mechanisms to implement international best practices and legal principles.	High	Commission	2020-24	**In progress**: The IPHC Rules of Procedure and the IPHC Financial Regulations will be periodically updated and where possible, should accommodate applicable improvements as recommended in the legal review.
PRIPHC02 –Rec.03 (para. 44)	***Science: Status of living marine resources*** The PRIPHC02 **RECOMMENDED** that opportunities to engage with western Pacific halibut science and management agencies be sought, to strengthen science links and data exchange. Specifically, consider options to investigate pan-Pacific stock structure and migration of Pacific halibut.	High	IPHC Secretariat	2020-24	**In progress**: There are three non-Contracting Parties who exploit Pacific halibut: Russia, Rep. of Korea and Japan. Most recently we have engaged Russian scientists working on Pacific halibut through PICES (https://meetings.pices.int/).
PRIPHC02 –Rec.04 (para. 45)	The PRIPHC02 **RECOMMENDED** that: a) further efforts be made to lead and collaborate on research to assess the ecosystem impacts of Pacific halibut fisheries on incidentally caught species (retained and/or discarded); b) where feasible, this research be incorporated within the IPHC's 5-Year Research Plan (https://www.iphc.int/uploads/pdf/besrp/2019/iphc-2019-besrp-5yp.pdf); c) findings from the IPHC Secretariat research and that of the Contracting Parties be readily accessible via the IPHC website.	Medium	IPHC Secretariat	2020-24	**In progress**: The IPHC's work in this area has been limited to date. However, some efforts to incorporate ecosystem considerations into the MSE work has commenced.

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
PRIPHC02 –Rec.05 (para. 63)	***Science: Quality and provision of scientific advice*** The PRIPHC02 **RECOMMENDED** that simplified materials be developed for RAB and especially MSAB use, including training/induction materials.	High	IPHC Secretariat	2020-24	**In progress**: The IPHC Secretariat continues to seek ways to ensure broad stakeholder understanding of our work. For the MSAB and associated MSE work, a webpage is in development to provide a user friendly means to explore and understand the utility of MSE and the simulation results arising.
PRIPHC02 –Rec.06 (para. 64)	The PRIPHC02 **RECOMMENDED** that consideration be given to amending the Rules of Procedure to include appropriate fixed terms of service to ensure SRB peer review remains independent and fresh; a fixed term of three years seems appropriate, with no more than one renewal.	Medium	Commission; IPHC Secretariat	2020	**In progress**: The IPHC Secretariat will provide with Commission with revised Rules of Procedure for consideration at AM096.
PRIPHC02 –Rec.07 (para. 65)	The PRIPHC02 **RECOMMENDED** that the peer review process be strengthened through expanded subject specific independent reviews including data quality and standards, the FISS, MSE, and biological/ecological research; as well as conversion of "grey literature" to primary literature publications. The latter considered important to ongoing information outreach efforts given the cutting-edge nature of the Commission's scientific work.	Medium	Commission; IPHC Secretariat	2020	**Pending**:
PRIPHC02 –Rec.08 (para. 66)	The PRIPHC02 **RECOMMENDED** that the IPHC Secretariat develop options for simple graphical summaries (i.e. phase plot equivalents) of fishing intensity and spawning stock biomass for provision to the Commission.	High	IPHC Secretariat	2020	**In progress**: The IPHC Secretariat has provided a number of examples of phase plots over the past years, with the most recent examples being presented at IM095 (IPHC-2019-IM096-09 Rev_1). Additional options will be provided at AM096.
PRIPHC02 –Rec.09 (para. 73)	***Conservation and Management: Data collection and sharing*** The PRIPHC02 **RECOMMENDED** that observer coverage be adjusted to be commensurate with the level of fishing intensity in each IPHC Regulatory Area.	High	Contracting Parties	2020-24	**Pending**:

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
PRIPHC02 –Rec.10 (para. 82)	***Conservation and Management: Consistency between scientific advice and fishery Regulations adopted*** The PRIPHC02 **RECOMMENDED** that the development of MSE to underpin multi-year (strategic) decision-making be continued, and as multi-year decision making is implemented, current Secretariat capacity usage for annual stock assessments should be refocused on research to investigate MSE operating model development (including consideration of biological and fishery uncertainties) for future MSE iterations and regularised multi-year stock assessments.	Low	IPHC Secretariat	2021-24	**Pending**: To be considered once the initial MSE products are delivered at AM097 in January 2021.
PRIPHC02 –Rec.11 (para. 83)	The PRIPHC02 **RECOMMENDED** that ongoing work on the MSE process be prioritised to ensure there is a management framework/procedure with minimal room for ambiguous interpretation, and robust pre-agreed mortality limit setting frameworks.	High	IPHC Secretariat	2020-21	**In progress**: See current status IPHC-2020-AM096-12.
PRIPHC02 –Rec.12 (para. 88)	***Fishing allocations and opportunities*** The PRIPHC02 **STRONGLY URGED** the Commission to conclude its MSE process and **RECOMMENDED** it meet its 2021 deadline to adopt a harvest strategy.	High	IPHC Secretariat	2020-21	**In progress**: See current status IPHC-2020-AM096-12.
PRIPHC02 –Rec.13 (para. 96)	***Compliance and enforcement: Port State measures*** The PRIPHC02 **RECOMMENDED** that Contracting Party enforcement agencies adopt common standards for assessment of implementation of the principles of port State measures.	Low	Contracting Parties	2020-24	**Pending**: Potentially to be incorporated into the Contracting Party National Reports at each Annual Meeting.
PRIPHC02 –Rec.14 (para. 105)	***Compliance and enforcement: Monitoring, control and surveillance (MCS)*** The PRIPHC02 **RECOMMENDED** enhancement of coordination of MCS activities to result in a common, integrated enforcement report for each Contracting Party to facilitate assessment of compliance efforts, trends and input into management decisions.	Medium	Contracting Parties	2021-24	**Pending**: Potentially to be incorporated into the Contracting Party National Reports at each Annual Meeting.

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
PRIPHC02 –Rec.15 (para. 106)	The PRIPHC02 **RECOMMENDED** that the Commission re-assess the 'derby-style' fisheries management concept in operation in IPHC Regulatory Area 2A in terms of available resources, impact on validity of monitoring results, and safety of fishers, and amend the management processes, if and as necessary.	High	IPHC Secretariat; Commission	2020	**In progress**: The IPHC Secretariat is coordinating with relevant Contracting Party domestic agencies regarding shifting management of all Pacific halibut fisheries in IPHC Regulatory Area 2A from the IPHC to the relevant domestic agencies. At IM095, the Commission requested: IM095 (para. 89) *The Commission **WELCOMED** the PFMC's commitment to transition management of Pacific halibut fisheries in IPHC Regulatory Area 2A from the IPHC to domestic agencies and **REQUESTED** that the IPHC Secretariat continue to support this process in the short-term, with the aim of transitioning management of the fishery to the domestic agencies at the earliest opportunity.*
PRIPHC02 –Rec.16 (para. 108)	***Compliance and enforcement: Follow-up on infringements*** The PRIPHC02 **RECOMMENDED** that the IPHC request information regarding Contracting Party follow-up of infringements, to assist in determining the overall efficacy of MCS and enforcement activities. This would support best practices with respect to transparency.	High	IPHC Secretariat; Commission	2020	**In progress**: The IPHC Secretariat has requested this information be provided by domestic agencies via the Contracting Party National Reports to the Commission.
PRIPHC02 –Rec.17 (para. 109)	The PRIPHC02 **RECOMMENDED** that the Commission improve the process of Contracting Party reporting to the Commission by aggregating individual agency reports into a consolidated, standardised, Contracting Party report to the Commission.	Medium	IPHC Secretariat; Contracting Parties	2020	**In progress**: The IPHC Secretariat has requested this information be provided by domestic agencies via a consolidated Contracting Party National Report to the Commission. This will likely take several years to become an efficient process of reporting.
PRIPHC02 –Rec.18 (para. 124)	***Governance: Decision-making*** The PRIPHC02 **RECOMMENDED** that the IPHC Rules of Procedure be modified to include a clear category and recognition for observer organisations, which would be in addition to the general public.	Low	IPHC Secretariat	2020-21	**Pending**: The IPHC Secretariat may table an example for AM096 should time permit.
PRIPHC02 –Rec.19 (para. 128)	***Governance: Dispute settlement*** The PRIPHC02 **RECOMMENDED** updating the rules of procedure to reflect intersessional decision making approaches.	Medium	IPHC Secretariat	2020-21	**Pending**: The IPHC Secretariat may table an example for AM096 should time permit.

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
PRIPHC02 –Rec.20 (para. 137)	***Governance: Transparency*** The PRIPHC02 **RECOMMENDED** that the significant level of transparency achieved across Commission business continue to be improved.	High	Commission; IPHC Secretariat;	2020-24	**In progress**:
PRIPHC02 –Rec.21 (para. 146)	***International cooperation: Relationship to non-Contracting Parties*** The PRIPHC02 **RECOMMENDED** that the Commission prioritise scientific work to confirm the full range of the Pacific halibut stock.	High	IPHC Secretariat;	2020-24	**In progress**: There are three non-Contracting Parties who exploit Pacific halibut: Russia, Rep. of Korea and Japan. Most recently we have engaged Russian scientists working on Pacific halibut through PICES (https://meetings.pices.int/).
PRIPHC02 –Rec.22 (para. 147)	The PRIPHC02 **RECOMMENDED** that if the full range of the Pacific halibut stock extends outside the Convention Area, the Contracting Parties invite collaboration with all parties involved in the harvest of this stock, to ensure science and management includes accurate data regarding all removals from the stock.	Low/ Medium	IPHC Secretariat	2020-24	**Pending**:
PRIPHC02 –Rec.23 (para. 156)	***Efficiency and transparency of financial and administrative management: Availability of resources for IPHC activities*** The PRIPHC02 **RECOMMENDED** the continued establishment of a Business Continuity Plan (BCP), which will serve to strengthen the long-term viability of IPHC Secretariat functioning and accountability, in line with best practices of an organisation of its size and breadth. Prioritising a financial and administrative BCP, with the ultimate goal of establishing a comprehensive BCP for the IPHC Secretariat as a whole.	High	IPHC Secretariat; FAC	2020	**In progress**: The IPHC Secretariat has been developing a BCP for the Administrative Services Branch (financial and administrative BCP) over the past months, and will move to consolidate with other Branches of the organization throughout 2020.
PRIPHC02 –Rec.24 (para. 162)	***Efficiency and transparency of financial and administrative management: Efficiency and cost-effectiveness*** The PRIPHC02 **RECOMMENDED** the FAC produce a report detailing the actual FAC meeting and that the presentation of the report be incorporated into the Annual Meeting agenda and report, along with the final decisions of the Commission.	High	FAC; IPHC Secretariat	2020-24	**Pending**: The IPHC Secretariat will assist the Commission meet this recommendation at the FAC and subsequent Annual Meeting in February 2020.

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
PRIPHC02 –Rec.25 (para. 165)	***Efficiency and transparency of financial and administrative management: Advisory structure*** The PRIPHC02 **RECOMMENDED** that when revisiting PRIPHC01 Recommendation 3.1 on unifying subsidiary bodies, treat the CB and PAB as non-science process and maintain separated RAB and MSAB at least until the 2021 adoption and implementation of a new management strategy.	Low	Commission	2020-24	**Pending**:
PRIPHC02 –Rec.26 (para. 166)	The PRIPHC02 **RECOMMENDED** that continued support for high quality stakeholder engagement through the science-focused subsidiary bodies (RAB and MSAB) or any future subsidiary bodies be maintained.	High	Commission; IPHC Secretariat	2020-24	**In progress**:

IPHC meetings calendar (2020-22)

PREPARED BY: IPHC SECRETARIAT (10 DECEMBER 2019)

PURPOSE

To provide the Commission with an opportunity to consider the IPHC meetings calendar (2020-22) (Appendix I).

BACKGROUND

Commission: The Commission's annual cycle of meetings is built around the management needs of the Pacific halibut fishery. The IPHC Interim Meeting (IM) follows the completion of the commercial fishing period, and is timed to allow the IPHC Secretariat to incorporate data from that fishing period into the stock assessment and harvest decision support for the coming season. The IPHC Annual Meeting (AM) is scheduled to allow harvest and regulation decisions to be made by the Commission and implemented by the Contracting Parties in time for the opening of the next commercial fishing period.

Subsidiary bodies: The Finance and Administration Committee (FAC), Conference Board (CB) and Processor Advisory Board (PAB) meet adjacent to or during the course of the Annual Meeting. The Scientific Review Board (SRB) and Management Strategy Advisory Board (MSAB) each meet at least twice during the course of the year, in a sequence that supports both their mutual collaboration and the timing of their advice for the Commission. The Research Advisory Board (RAB) meets in February, when its members are best able to convene and consider the IPHC's scientific program of work.

DISCUSSION

Meetings of the Commission and its subsidiary bodies are of interest to the Pacific halibut stakeholder community and the general public, and the publication of their schedule as far in advance as possible enhances meeting preparation and collaboration among stakeholders and Contracting Party agencies.

The IPHC calendar provided in Appendix I includes the dates and locations for meetings in 2020 and 2021 approved by the Commission at its 95th Annual Meeting (AM095). The following changes to the approved calendar have arisen since then:

- The dates of the 96th Annual Meeting (AM096) were shifted from 27-31 January to 3-7 February 2020 to resolve a conflict with the North Pacific Fishery Management Council meeting dates. (See IPHC Circular 2019-008.)
- At the 20th Session of the Research Advisory Board (RAB020) in February 2019, the board requested consideration of new dates for RAB021 and RAB022.

  From IPHC-2019-RAB020-R:

  *58. The RAB **REQUESTED** that the IPHC Secretariat consider dates earlier in February for RAB021 and RAB022 in order to enable better participation by current or potential RAB members.*

The date for RAB021 (2020) could not be changed, but in response to the RAB's request earlier dates for RAB022 (2021) and RAB023 (2022) are proposed in the calendar provided in Appendix I.

- At the 2019 Work Meeting, the Commission discussed possible locations for MSAB015, which had originally been scheduled for Port Hardy, BC, Canada. At IM095, the Commission noted plans to hold the meeting at a Vancouver Island location readily accessible to stakeholders.

From IPHC-2019-IM095-R:

*The Commission **NOTED** that the 15th Session of the Management Strategy Advisory Board (MSAB015) will be held on Vancouver Island, BC, Canada.*

Courtenay, BC, Canada has been selected for MSAB015.

Dates for IPHC meetings in 2022 are proposed in the calendar for the Commission's consideration. Note that the location for the 98th Session of the IPHC Annual Meeting (AM098) in 2022, hosted by the USA, should be decided at AM096 in order to plan for the meeting and contract for the necessary meeting venue.

RECOMMENDATIONS

That the Commission:

1) **NOTE** paper IPHC-2020-AM096-15, which provides the Commission with an opportunity to consider the IPHC Meetings Calendar (2020-22).
2) **APPROVE** the IPHC Meetings Calendar (2020-22).

APPENDICES

Appendix I: IPHC Meetings Calendar (2020-22)

APPENDIX I

IPHC Meetings Calendar (2020-22)

	2020			2021			2022		
Meeting	**No.**	**Dates**	**Location**	**No.**	**Dates**	**Location**	**No.**	**Proposed Dates**	**Location**
Annual Meeting (AM)	**96th**	**3-7 Feb**	**Anchorage, USA**	**97th**	**25-29 Jan**	**Victoria, Canada**	**98th**	**24-28 Jan**	**TBD, USA**
Finance and Administration Committee (FAC)	96th	3 Feb	Anchorage, USA	97th	25 Jan	Victoria, Canada	98th	24 Jan	TBD, USA
Conference Board (CB)	90th	4-5 Feb	Anchorage, USA	91st	26-27 Jan	Victoria, Canada	92nd	25-26 Jan	TBD, USA
Processor Advisory Board (PAB)	25th	4-5 Feb	Anchorage, USA	26th	26-27 Jan	Victoria, Canada	27th	25-26 Jan	TBD, USA
Research Advisory Board (RAB)	21st	26 Feb	Seattle, USA	22nd	10 Feb	Seattle, USA	23rd	9 Feb	Seattle, USA
Management Strategy Advisory Board (MSAB)	15th	11-14 May	Courtenay, Canada	-	-	-	-	-	-
	16th	19-22 Oct	Seattle, USA	-	-	-	-	-	-
Scientific Review Board (SRB)	16th	23-25 June	Seattle, USA	18th	22-24 June	Seattle, USA	20th	21-23 June	Seattle, USA
	17th	22-24 Sept	Seattle, USA	19th	21-23 Sept	Seattle, USA	21st	20-22 Sept	Seattle, USA
Work Meeting (WM)	--	16-17 Sept	Bellingham, USA	--	15-16 Sept	Bellingham, USA	--	14-15 Sept	Bellingham, USA
Interim Meeting (IM)	**96th**	**1-2 Dec**	**Seattle, USA**	**97th**	**30 Nov-1 Dec**	**Seattle, USA**	**98th**	**29-30 Nov**	**Seattle, USA**

IPHC Contracting Party Report: Canada

DATE: 18/DEC/2020, REVISED 31/JAN/2020

CONTRACTING PARTY: CANADA

AGENCY:

Fisheries and Oceans Canada,

Adam Keizer, Regional Manager, Groundfish,

Adam.Keizer@dfo-mpo.gc.ca

Province of British Columbia, Minister of Agriculture

Mike Turner, Senior Manager, Intergovernmental Relations, Fisheries, and Aquaculture,

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Kevin Romanin, Senior Seafood Analyst,

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FISHERY SECTOR/S

All

IPHC REGULATORY AREA/S

IPHC Regulatory Area 2B (Canada: British Columbia)

DISCUSSION

Each year Fisheries and Oceans Canada provides harvest opportunities to First Nations for food, social and ceremonial (FSC) purposes (or domestic purposes for First Nations with modern treaties), and the commercial and recreational fisheries. First Nations, recreational, and commercial fisheries on the Pacific coast of Canada have long harvested groundfish. Groundfish serve as a source of food, they provide jobs, income, and enjoyment for individuals, businesses, and coastal communities and they play key roles in natural ecosystems.

The B.C. Ministry of Agriculture is responsible for collection and reporting of data and statistics for the agri-food sector. An important part of that mandate is to analyze the impact of various sectors, including fisheries and seafood to the broader provincial economy. B.C. commercially harvests and reports on over 25 wild fisheries including Pacific halibut which is within B.C.'s top most valuable wild fishery commodities.

Indigenous fisheries

In the 1990 Sparrow decision, the Supreme Court of Canada found that where an Indigenous group has an Indigenous right to fish for food, social, and ceremonial (FSC) purposes, it takes priority, after conservation, over other uses of the resource. Fisheries are authorized via a Communal Licence issued by the Department under the Aboriginal Communal Fishing Licences Regulations.

Commercial fisheries

There are seven distinct commercial groundfish sectors: Groundfish trawl, Halibut, Sablefish, Inside Rockfish, Outside Rockfish, Lingcod, and Dogfish fisheries that are managed according to the measures set out in the Integrated Fisheries Management Plan (IFMP). The management of these sector groups is integrated, with all groups subject to 100% at-sea monitoring and 100% dockside monitoring, individual vessel accountability for all catch (both retained and released), individual transferable quotas (ITQ), and reallocation of these quotas between vessels and fisheries to cover catch of non-directed species. There are approximately 308 active commercial groundfish vessels. Information on licensed vessels is available online at the DFO website: http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.htm.

The 2019 commercial fishery is described in appendix 1 of this report, "Fisheries and Oceans Canada 2019 IPHC Annual Report," and appendix 3 of this report, "Halibut Compliance and Enforcement."

Recreational fisheries

A recreational fishery may occur where authorized by a valid Tidal Waters Sport Fishing licence, which is required for the recreational harvest of all species of fish. Approximately 300,000 Tidal Waters Sport Fishing licences are sold each year. Tidal Waters Sport Fishing Licences can be purchased online by using the DFO website: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/application-eng.html

The 2019 recreational fishery is described in appendix 2 of this report, "2019 Canadian Recreational Fishery Halibut Catch Report," and appendix 3 of this report, "Halibut Compliance and Enforcement."

RECOMMENDATIONS

That the Commission:

1) **NOTE** paper IPHC-2020-AM096-NR01 Rev_1 which provides the Commission with a summary from Fisheries and Oceans Canada of Halibut fisheries in IPHC Regulatory Area 2B.

REFERENCES

Integrated Fisheries Management Plan for Groundfish, effective February 21, 2019. https://waves-vagues.dfo-mpo.gc.ca/Library/40804343.pdf

APPENDICES

Appendix 1: Fisheries and Oceans Canada 2019 Fishery Overview Report
Appendix 2: Fisheries and Oceans Canada 2019 Recreational Fishery Report
Appendix 3: Fisheries and Oceans Canada 2019 Enforcement Report
Appendix 4: Province of British Columbia 2019 Annual Report

APPENDIX 1

Fisheries and Oceans Canada 2019 Fishery Overview Report

PREPARED BY: Fisheries and Oceans Canada (18Dec2019)

DATE: 18/DEC/2019

CONTRACTING PARTY: CANADA

AGENCY:

Fisheries and Oceans Canada

CONTACT:

Maureen Finn, Halibut Coordinator, Maureen.Finn@dfo-mpo.gc.ca

FISHERY SECTOR/S:

All

IPHC REGULATORY AREA:

IPHC Regulatory Area 2B (Canada: British Columbia)

Discussion

Catch Limits

Fisheries and Oceans Canada follows an allocation policy that defines access to the Pacific Halibut Canadian Total Allowable Catch (CTAC) for Canadian commercial, recreational, and food, social, and ceremonial (FSC) fisheries. For 2019, the CTAC was 6,395,969 net pounds (fresh, head-off, dressed weight). The CTAC is composed of the catch limit for regulatory area 2B and an allocation for FSC. In addition to the CTAC, a carryover of quota from previous seasons is allocated to some licences.

Priority access is provided to the CTAC for FSC purposes, while commercial and recreational access is divided between the sectors 85% / 15% respectively. The 2019 Commercial and Recreational catch limit for allocation purposes was 6,155,000 net pounds. The net carryover from 2018 to 2019 was 118,232 net pounds between the commercial and Experimental Recreational Halibut fishery pilot program (XRQ fishery). The resulting TAC for commercial and recreational harvest in 2019 was 6,031,401 net pounds[1].

[1] Quota totalling 30,855 net pounds have been set aside for treaty mitigation and as part of the Pacific Integrated Commercial Fisheries Initiative (PICFI). See Table 1 for more details.

Commercial and Recreational Fishery Summaries

For allocation purposes, the commercial / recreational total allowable catch (TAC) is equal to the Canadian catch limit, plus “O26” wastage mortality. The TAC is then allocated between the commercial and recreational sectors, and the “O26” wastage mortality is removed from the commercial and recreational TACs (Table 1). The combined commercial and recreational TAC, including carryover adjustments, for 2019 was 6,031,401 net pounds. As of December 18, 2019, the combined commercial and recreational halibut catch (including landed catch and mortality associated with all released fish in the commercial groundfish fisheries) was 5,788,475 net pounds.

Commercial Fishery Summary

The 2019 Canadian commercial Halibut TAC, including the catch limit allocation and carryover, was 5,112,542 net pounds. Halibut may be caught and retained by all commercial hook and line, and trap groundfish fisheries in Canada. This includes category L, K, ZN, and Schedule II licences.

In 2019, the Canadian commercial Halibut catch totalled 4,954,112 net pounds (Table 2). This catch, reported by all hook and line/trap groundfish fisheries in area 2B, includes both landed and released at-sea mortality. Given that non-halibut groundfish fisheries continue throughout the Halibut winter closure, additional released at-sea mortality will continue to be attributed to the 2019 Halibut catch until February 20, 2020, after which released at-sea mortality will be attributed to the 2020 TAC. As such the 2019 commercial catch is current as of December 18, 2019.

Commercial Integrated Management Plan

First introduced as a pilot program in 2006, the Commercial Groundfish Integration Program (CGIP) was made permanent in January 2010 to manage groundfish fisheries, including Pacific Halibut, in British Columbia. The objectives of the CGIP are to improve and maintain groundfish harvest sustainability and management through improved catch monitoring and catch accountability. The CGIP implemented individual vessel accountability for all catch, both retained and released, via individual transferable quotas which may be reallocated between licences and fisheries to cover non-directed catch. In addition these management tools are supported by 100% at-sea monitoring and 100% dockside monitoring for all groundfish vessels.

Notable management changes for the 2019 season include the ongoing rebuilding measures for Yelloweye Rockfish and Bocaccio in all commercial groundfish fisheries, and the establishment of several protected areas. These protected areas have been established to conserve the biological diversity, structural habitat, and ecosystem function in various areas across the Pacific coast. For more information on these closures and other work planned between now and 2021, refer to section 5.2 of the of the front section of the IFMP, and Appendix 10 of the IFMP. In particular, harvesters are reminded that as of May 1, 2019, South Moresby and Lyell Island RCAs have been superseded and replaced by the strict protection zones of the Gwaii Haanas National Marine Conservation Area Reserve.

The 2020/2021 commercial groundfish fishing season will commence February 21, 2020, at which time the renewed Groundfish Integrated Fisheries Management Plan (IFMP) will be available. All commercial groundfish management measures are detailed in the IFMP, which can be requested once available at: http://www.pac.dfo-mpo.gc.ca/fm-gp/ifmp-eng.html#Groundfish

Recreational Fishery Summary

There are two opportunities for recreational halibut fishing in area 2B, the recreational fishery, and the Experimental Recreational Halibut fishery pilot program (XRQ fishery). The 2019 recreational Halibut TAC was 890,013 net pounds. The XRQ fishery has acquired 28,846 net pounds, resulting in a combined recreational and XRQ fishery TAC of 918,859 net pounds as of December 18, 2019 (Table 3). The estimated 2019 Canadian recreational Halibut catch totalled 819,085 net pounds, including 17,724 net pounds of catch in the XRQ fishery. The estimation methods of the recreational catch are outlined in *2019 Canadian Recreational Fishery Halibut Catch Report*. Management measures for the 2019 recreational fishery are summarised in the Area 2B Recreational Fishery Halibut Catch Report.

Halibut Experimental Recreational Fishery Program

The Experimental Recreational Halibut fishery pilot program allows individual anglers as well as guides, charters, lodges, marinas and other fishing experience providers to lease Halibut quota and subsequently retain Halibut that is in excess of the regular recreational fisheries daily and possession limits, and maximum size limits. An XRQ licence holder is permitted to fish for and retain Halibut from April 1 – December 31, even if the traditional recreational fishery is closed prior to December 31. Participants in the XRQ fishery must complete logbooks and submit them electronically within seven days of retaining a Halibut.

The XRQ fishery has operated as a pilot program since 2011, and was continued for a ninth season in 2019. A regulatory process is underway to create a category of annual sport fishing licence in s.17 of the *British Columbia Sport Fishing Regulations, 1996*. Public consultations about the regulatory changed were held throughout 2012/2013, and a Regulatory Impact Assessment Statement that summarizes feedback from the public meetings on the experimental licence and regulatory change has been presented to the Minister. A regulatory intent document will be presented for additional public comment prior to the proposed regulatory changes being posted in Canada Gazette 1.

The 2019 XRQ fishery has reallocated 21,547 net pounds of quota (as of December 18, 2019) from the commercial groundfish fisheries, and has carried over 7,299 net pounds of uncaught quota from the 2018 season (Table 3). Reallocations into and out of the XRQ fishery are permitted until January 31, 2020. Any uncaught quota may be reallocated back to the commercial fishery or it may be carried over into the 2020 XRQ fishery (the greater of the 200 net pounds or 10% of the total quota on the licence).

Additional details about the XRQ program are available online: http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/ground-fond/index-eng.html

Canadian Aquaculture Research

There were no halibut aquaculture research or production activities in area 2B for 2019.

Food, Social and Ceremonial and Treaty Fishery

The estimated Food, Social, and Ceremonial (FSC) halibut catch in area 2B is 405,000 pounds. Since 2009, new conditions have been applied to commercial Halibut licences and many communal halibut permits, to improve catch reporting of FSC caught fish on commercial trips. Of the total FSC halibut caught in 2019, approximately 37,317 net pounds were caught in conjunction with commercial fishing trips and were subject to all commercial monitoring requirements, including 100% at-sea and 100% dockside monitoring. In addition, First Nations engaging in fishing only for FSC used tools such as catch calendars, some dockside monitoring and phone surveys to estimate their catch. Fisheries and Oceans Canada continues to work with First Nations to improve catch reporting within the FSC fisheries.

In April 2011 the Maa-nulth Final Agreement came into effect. The agreement allocates 26,000 pounds of FSC Halibut (part of the 405,000 pounds described above) plus 0.39% of the total CTAC to the Maa-nulth First Nations for FSC purposes (equivalent to 50,944 pounds in 2019). In 2011 DFO mitigated for the additional treaty allocation through acquisition of 0.47% of the commercial TAC which is set aside for the Maa-nulth First Nation on an annual basis (identified as part of the "net reallocations into/out of the commercial fishery" in Table 1). To date, the 2019 Maa-nulth First Nation's FSC Halibut catch totaled 40,490[2] net pounds of a total 50,944 net pounds allocated under the Maa-nulth Final Agreement.

RECOMMENDATIONS: NA

REFERENCES: See hyperlinks above

[2] The Maa-nulth FSC catch estimate is an in-season estimate which will continue to be updated throughout the year. As such the 2019 Maa-nulth catch is current as of December 18, 2019 and is included in the 405,000 pound estimate.

Appendices

Tables

Table 1. Halibut allocations in 2B as of December 18, 2019. All values in net pounds.

Commercial / recreational TAC for allocation		6,155,000
Commercial allocation	x 85%	
O26 wastage	- 130,794	
2018 Underages [A]	+ 179,916	
2018 Overages [B]	- 68,983	
Net carryover	+ 110,933	
Net reallocations into/out of the commercial fishery [C]	- 39,301	
Commercial TAC		5,112,542

Recreational allocation	x 15 %	
O26 wastage	- 33,237	
Recreational TAC		890,013
XRQ allocation	x 0 %	
XRQ acquired quota	+ 21,547	
2018 XRQ Underages [A]	+ 7,348	
2018 XRQ Overages [B]	- 49	
Net carryover	+ 7,299	
XRQ TAC [D]	28,846	
Recreational and XRQ TAC [D]		918,859

2B commercial and recreational TAC [D]	6,031,401
2B commercial and recreational catch [E]	5,788,475

A Underage. Unfished quota equaling 10% or less of a commercial licence's individual transferable quota is carried over into the following year.

B Overage. All catch that exceeds the available quota on an individual commercial licence at the end of a given fishing season is deducted from the individual commercial licence the following season.

C Net reallocations include quota reallocated from the commercial halibut sector to Maa-nulth First Nations Treaty, the Pacific Integrated Commercial Fisheries Initiative (PICFI), and Allocation Transfer Program (ATP), as well as the Halibut Experimental Recreational Fishery pilot program. Of the current net reallocations, 30,855 net pounds have been set aside for treaty mitigation and as part PICFI, and are unavailable to either the commercial or recreational fisheries. This value is current as of December 18, 2019.

D There is no initial allocation provided to XRQ fishery, though quota may be transferred into the XRQ fishery from commercial Halibut fisheries. As a result the XRQ TAC changes proportionately with the commercial TAC as quota is transferred between fisheries.

E Catch includes all landed fish, as well as the mortality associated with legal-sized released fish in the commercial fishery.

Table 2. Halibut for 2B commercial groundfish fisheries as of December 18, 2019. All values in net pounds.

Commercial TAC	5,112,542
Commercial Groundfish catch	4,954,112

Table 3. Halibut for 2B recreational and the Halibut Experimental Recreational pilot program (XRQ) fisheries as of December 18, 2019. All values in net pounds.

Recreational TAC	890,013
Recreational catch	816,639
XRQ TAC	28,846
XRQ catch	17,724 [F]
Recreational and XRQ TAC [D]	918,859
Recreational and XRQ catch [E]	834,363

D There is no initial allocation provided to XRQ fishery, though quota may be transferred into the XRQ fishery from commercial Halibut fisheries. As a result the XRQ TAC changes proportionately with the commercial TAC as quota is transferred between fisheries.

E Catch includes all landed fish.

F Effective December 18, 2019.

APPENDIX 2

Fisheries and Oceans Canada 2019 Recreational Fishery Report

PREPARED BY: Fisheries and Oceans Canada (18December2019)

DATE: 18/DEC/2019

CONTRACTING PARTY: CANADA

AGENCY:

Fisheries and Oceans Canada

CONTACT:

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FISHERY SECTOR/S:

Recreational

IPHC REGULATORY AREA:

IPHC Regulatory Area 2B (Canada: British Columbia)

DISCUSSION

Table of Contents

1. Overview

This report summarizes the 2019 harvest and biological data from the Canadian recreational Halibut fishery in the tidal waters of British Columbia (BC). The recreational total allowable catch for 2019 was 890,013 pounds[3] and the estimated harvest is 816,639 pounds (73,374 pound underage). The estimated harvest by pieces is 57,364.

The 2019 season opened on March 1 and closed on December 31. Traditional monitoring and reporting programs, such as logbooks, lodge manifests and recreational creel surveys, collected catch, effort and biological data during peak months and areas of the fishery. Estimates of catch in months and areas not monitored by traditional programs were generated from data collected during DFO's internet-based recreational survey (iREC). Initiated in 2012, the iREC survey collects catch and effort information from recreational licence holders on a monthly basis throughout the recreational fishing year[4].

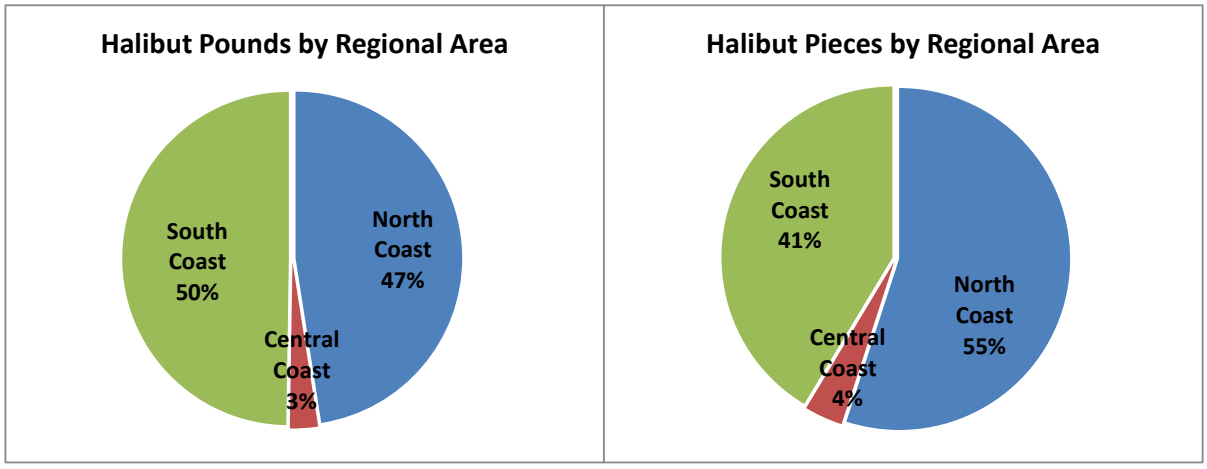
Final estimates are anticipated to be available by the spring of 2020. Estimated harvest in pieces and net weight by regional areas are noted below.

1.1. Harvest

Table 1. Estimated Harvest in Pieces and Pounds by Regional Area

Area	Pieces	Pounds
North Coast	31,577	387,948
Central Coast	2,092	22,285
South Coast	23,695	406,407
Totals	**57,364**	**816,639**

Figure 1. Percentage of Halibut harvested by piece and weight by Regional Area



[3] Pounds in this document refer to net weight (head off, dressed) pounds. See Biological Sampling section for the equations used to convert round weight (head on, undressed) and fork length to net weight.
[4] For more information on the Internet Recreational Effort and Catch (iREC) Survey please visit the following internet site; http://www.dfo-mpo.gc.ca/csas-sccs/publications/sar-as/2015/2015_059-eng.html.

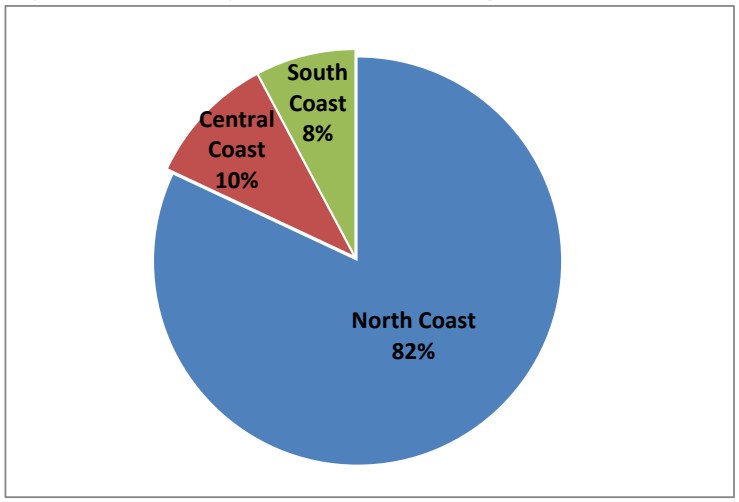
1.2. Biological Samples

A coast wide total of 18,417 halibut were biologically sampled for either length or weight in 2019, representing 32% of the estimated harvest. The number of biological samples collected by regional areas is noted below.

Table 2. Number of Halibut Biologically Sampled by Regional Area

Area	Samples
North Coast	15,097
Central Coast	1,886
South Coast	1,434
Totals	**18,417**

Figure 2. Percentage of Halibut size samples taken from each regional area.



1.3. Fishery Logistics

Catch monitoring of the recreational fishery in BC is extremely challenging given the large geographic area (numerous remote areas), the diversity of fishing opportunities and the diversity of participants.

Starting in 2015, Tidal Waters Sport Fishing Licences included Conditions of Licence that make catch reporting mandatory. Specifically, the conditions state that "*The licence holder shall provide accurate information regarding their catch and fishing activities upon request of a Creel Surveyor or an on-line surveyor, authorities designated under s.61(5) of the Fisheries Act".* Conditions of Licence also included regulations related to possession limits, size limits and an annual limit.

In response to the IPHC's 2012 request for data collection programs on recreational discards, Fisheries and Oceans Canada reviewed its existing recreational halibut catch and release information and examined options

for the estimation of release mortalities. DFO obtains information from anglers on the number of halibut releases through creel surveys, logbooks and internet surveys. In BC, anglers are not required to keep any records of released Halibut. Fishers are not required to record sizes of released Halibut in part because Such a practice may increase release mortality and present challenges in terms of angler safety, and provide data of variable quality.. Size limits and angler preference are some reasons why released halibut may be a different average size compared to the average size of retained fish. Given these various limitations of the information available, DFO does not currently use recreational release data for the purposes of recreational halibut management or allocation decisions.

DFO estimates recreational fishery discard mortality based on the ratio of recreational halibut discard mortality to landed catch in adjacent management areas. The current ratio is 3.6%. Applying this ratio to the 2019 landed catch results in an estimate of 29,399 pounds. This discard mortality is accounted for before the 2B recreational catch limit is established and thus is not included in the calculation of catch relative to the recreational catch limit described elsewhere in this report.

DFO continues to work with the recreational fishery sector in BC to improve recreational fishery monitoring and catch reporting. While the focus remains on strengthening data collection and monitoring for retained catch in recreational fisheries, new reporting tools such as the iREC survey of recreational harvesters include questions about anglers' releases. As the survey continues to be refined and improved, DFO will be exploring how the data gathered on releases may be used to inform management.

2. MANAGEMENT, MONITORING and POLICY DEVELOPMENT

2.1. 2019 Recreational Fishery Management Plan

The current domestic sharing arrangement between commercial and recreational fisheries is 85% of the resource allocated to the commercial sector and 15% to the recreational sector, after accounting for First Nations' Food, Social, and Ceremonial requirements. The 15% recreational share in 2019 equates to a total allowable catch of 890,013 pounds.

The recreational halibut fishery opened on March 1, 2019. The fishery operated under 2018 recreational management conditions until March 31. On April 1, the 2019 management measures entered into effect. The 2019 measures included:

- A maximum length of 126cm (approx. 49inches) head-on length
- A possession limit is either of:
    - one (1) Halibut measuring from 90-126cm head-on length, OR;
    - two (2) Halibut measuring under 90cm head on length
    - NOTE: if in possession of one (1) Halibut 90cm head-on length or longer, you shall not possess any other Halibut
- An annual limit of six (6) in aggregate, from April 1, 2019 to March 31, 2020
- All halibut retained must be recorded on the Tidal Waters Licence plus the date and area from which each halibut is caught and its length
- A mandatory Condition of Licence to report catch when surveyed.

The opening was for all Pacific Fishery Management Areas (PFMAs) with the exception of portions of Area 121. Anglers were not permitted to fish for nor retain halibut in Area 121 outside the twelve nautical mile limit and in the waters of Swiftsure Bank.

DFO and the Halibut Sub-committee of the Sport Fishing Advisory Board (SFAB) reviewed in-season catch estimates on a monthly basis. By the end of October, it was determined that the estimated harvest to date plus the forecasted catch to December 31 would likely not exceed the 890,013 pound Total Allowable Catch.

In October, DFO announced the fishery would remain open until further notice.

For 2020, the SFAB is considering various management options they may recommend to DFO. These options include considering changes to:

- Minimum and Maximum size limits
- Individual annual limits
- Daily and total possession limits
- Season length
- Time and area closures

2.2. Halibut Experimental Recreational Fishery Program

In 2011, the Department piloted an experimental fishery program where interested recreational stakeholders, such as individual recreational harvesters, lodges, charters, guides or marinas, could request an experimental licence that would allow them to lease quota from commercial harvesters through a market based transfer mechanism. The experimental licence permits licence holders to fish halibut beyond the limits and times of the regular recreational licence.

In 2012, the Minister of Fisheries and Oceans Canada confirmed that the experimental licence would continue to be available and announced the Department was moving forward with a regulatory proposal to continue the experimental fishery for the long term.

This year, the experimental fishery commenced April 1 and remained open until December 31, 2019. For the 2019 season, 21,547 pounds of halibut quota was transferred from the commercial sector to experimental licence holders, of which 17,724 pounds of halibut was caught.

3. RECREATIONAL CATCH MONITORING and REPORTING PROGRAMS

3.1. Background

Marine creel surveys in BC began in 1980. Originally developed to estimate the catch of chinook and coho salmon in the Strait of Georgia, the geographical scope expanded to include Barkley Sound and Alberni Inlet in 1984, the entire West Coast of Vancouver Island (WCVI) in 1991, Haida Gwaii and the rest of the North Coast in 1995, and most recently Johnstone Strait in 1998. The objectives of the creel survey have been expanded to include estimates for most recreationally caught finfish, including halibut. In 2019, creel programs were implemented in peak fishing times and areas with specific emphasis on halibut and chinook fishing activities.

Lodges operating along the coast provide census data to the Department through the logbook program, manifest data or the electronic log (elog) pilot program. The Department also receives data from some independent guides and avid anglers via logbook programs. These data are combined with the creel survey data to produce estimates of catch for each PFMA by month where traditional monitoring and reporting programs exist.

To address monitoring gaps in the recreational fishery the Department has been using and enhancing an online survey since 2012. The Internet Recreational Effort and Catch (iREC) survey was peer reviewed by the Canadian Scientific Advisory Secretariat (CSAS) in 2015. The iREC survey was developed to provide catch and effort estimates for all areas, months, fishing methods, and species harvested by the recreational sector. To minimize the effect of potential biases in iREC survey estimates, a calibration procedure was developed to relate iREC survey estimates and creel survey estimates in areas and times not covered by a creel survey.

3.2. 2019 Recreational Fishery Catch Monitoring

DFO has been working with the Sport Fishing Advisory Board on an implementation plan to strengthen recreational fishery monitoring and catch reporting in the Pacific Region. For the 2019 recreational halibut fishery, DFO used estimates from three sources; the iREC survey, logbook and lodge manifest program, and creel surveys.

As in previous years, traditional monitoring and catch reporting programs such as logbook, lodge manifest and the creel survey were used during peak months and areas of the recreational fishery. In areas and months where traditional programs were not implemented in 2019, DFO used in-season iREC survey catch estimates.

3.3. Haida Gwaii

Haida Gwaii recreational monitoring and reporting programs include a lodge logbook program and a creel survey. Lodge logbook data accounts for approximately 85% of the estimated halibut catch in Areas 1 and 2.

The Haida Gwaii Creel Survey (HGCS) estimates recreational catch from Areas 1 and 2 surrounding Haida Gwaii. Since 1995, the program has conducted creel surveys to estimate catch from recreational anglers in Masset Inlet, Naden Harbour, Langara Island, Skidegate Channel, Cartwright Sound and Rennell Sound. Fish caught in Haida Gwaii by recreational harvesters are also subject to random audits by the Haida Watchmen (Guardians) through the HGCS, which operates in the main fishing months in Area 1 and parts of Area 2.

Information collected from the creel survey is combined with data submitted through the lodge logbook program to generate total catch estimates for Areas 1 and 2. In 2019, 14,385 halibut were sampled for either length or weight.

3.4. North Coast Creel Survey

The North Coast Creel Survey program collects catch information from the recreational fishery surrounding Prince Rupert and Port Edward on the North Coast of B.C. It is focused in Areas 3 and 4, comprising the waters of Chatham Sound between the mouths of the Nass and Skeena Rivers. Chatham Sound is bordered by the Alaska/BC border to the north, Dundas and Stephens Island groups to the west and Porcher Island to the south, covering an area of approximately 4,200 km^2.

The North Coast Creel Survey program has a hybrid design with four components: an access point angler interview survey, an aerial effort count survey, a trailer census and a fishing lodge logbook program. The study design is similar to the one used in the South Coast Creel Survey.

Access point angler interview surveys collect catch information, angling activity times and biological samples of selected species from anglers at the completion of the fishing trip. The data is used to calculate species specific Catch per Unit Effort (CPUE) values and create angler activity profiles. Aerial surveys are conducted to capture the 'instantaneous' counts of the number of boats fishing at the time of the flight and are expanded using the angler effort profiles generated from the ground surveys to produce an estimate of total daily effort. Lodges in the area submit logbooks to DFO post-season. Lodge data is treated as a complete census of catch, is summed and added to the creel estimates to get an estimate of total catch. To prevent bias in the effort estimates from lodge boats counted during the aerial surveys, a temporal-spatial analysis is conducted of lodge logbook data for days when the overflight occurs and any boats that were fishing in the survey area during the time of the flight are removed from the final count of boats fishing in the area.

In 2019, 712 halibut were sampled for either length or weight.

3.5. Central Coast

Catch information in Areas 7, 8 and 9 on the Central Coast is collected from lodges and some charter operators operating in these areas, primarily through the logbook program. Most lodges participate in the logbook program and collect catch, effort and biological data that are submitted to the Department on a monthly basis. There is no creel program to estimate the number of halibut caught by independent anglers or guides in these areas due to challenges with implementing a survey in this remote and geographically dispersed fishery.

This year a total of 13 lodges\charter operators reported the number of halibut kept in their logbook along with their associated round weights (i.e. biological samples). In 2019, 1,886 biological samples were reported.

3.6. South Coast Creel Survey

In the southern waters of BC creel surveys are the main tool to estimate catch of halibut. Surveys are conducted in select fishery strata based on: the highest catch of halibut and chinook, the highest effort, in-season management requirements, and potential impact on stocks of concern. Creel surveys consist of effort surveys and estimation of catch per boat trip based on fishery observers at selected ramps and marinas.

Data collected during angler interviews are recorded in the South Coast Marine Creel Survey form and provide average catch per unit effort by species and fishing times, while aerial counts from chartered aircraft capture ‘instantaneous’ counts of the number of recreational boats fishing on randomly selected dates. Fishing times obtained from angler interviews are used to generate daily fishing activity profiles which are used to expand the ‘instantaneous’ aerial counts to estimate the number of boats fishing each day. The estimate of boats fishing is multiplied by the average catch to estimate the total number of halibut caught each day. Estimates are generated monthly, or occasionally for two week periods where samples rates are high. The estimates are stratified by weekend and holidays vs. weekday dates. In addition, logbook catch data submitted by remote fishing lodges, independent guides and expert anglers are incorporated into creel estimates post season. The survey in Kyuquot Sound (PFMA's 26, 126) is entirely logbook-based, as fishing from lodges represents essentially all recreational effort in this remote area; in 2018 estimates were improved through use of iREC survey information on the proportion of guided to unguided trips.

Catch and effort is estimated by creel sub-area and rolled up to DFO PFMAs by month. South Coast waters include PFMAs11 through 29. The Port Hardy survey also collects information from recreational fishing trips in Area 10.

Creel surveys are active during the peak season of recreational angling and vary in duration depending on location. The spatial and temporal coverage of the survey program can vary year to year in response to budget and fishery priorities. In 2019 surveys were conducted in months outlined in Tables 3 and 4 below.

Table 3. South Coast surveys in inside waters (Johnstone and Georgia and Juan de Fuca Straits)

Location	PFMAs	Duration
Port Hardy	11, 12	Jun. – Aug.
Campbell River	13, 14	Jun.- Sep.*
Sunshine Coast	15, 16	Jun. – Sep.*
Nanaimo	17, 18	Jun. - Sep.*
Victoria	19, 20	Mar. - Sep.
Vancouver	28, 29	Jun. – Sep.*

Note:
*coverage may be incomplete during these months

Table 4. South Coast surveys in outside waters (West Coast of Vancouver Island)

Location	PFMAs	Duration
Port Renfrew	20, 21, 121	Jun. – Sep.
Barkley Sound	123	Jun. – Sep.
Port Alberni	23	Jun. – Sep.
Tofino	124, 123	Jul. – Sep.
Tahisis/Nootka	25, 125	Jul. – Sep.
Kyuquot	26, 126	Jun. – Aug.
Winter Harbour	27, 127	Jul.– Aug.

For further details on the methodology and results of the South Coast Creel survey, including catch and effort estimates with level of uncertainty, please visit:

http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/salmon/sc%20stad/bulletins.htm

In 2019, 1,434 halibut were sampled for length or weights during the South Coast Creel survey interviews.

3.7. Biological Sampling

A total of 18,417 halibut were sampled for lengths or weights, representing 32% of the total estimated coastwide harvest. Samples were collected from lodges, guides and independent anglers interviewed at access points and converted to net weight, head off and dressed, using the following formulas developed by the IPHC:

$$\text{Round Weight} = \text{Fork Length (cm)}^{3.24} \times (6.921 \times 10^{-6})$$
$$\text{Net Weight} = \text{Round Weight} \times 0.75$$

Average net weights were calculated for each Area on a monthly basis to generate estimates of total net weight by month and area caught in the fishery.

4. APPENDICES

The following tables provide detailed catch and biological information collected during the 2019 recreational halibut fishery in BC. Note: these figures are preliminary and subject to change.

Table 5. Summary of the 2019 Recreational Halibut Catch by Pacific Fishery Management Area (PFMA)

Regional Area	PFMA	Est. Piece Count	Est. Total Net Wt. (lbs)
North Coast	1	12,350	129,246
	2	4,550	61,703
	3	3,864	51,947
	4	8,541	114,794
	5/6	2,272	30,259
Central Coast	7/8/9	2,092	22,285
South Coast	10/11	720	13,397
	12	902	11,140
	13/14	530	7,811
	15-18/28/29	86	1,080
	19	1,849	37,694
	20	763	12,223
	21/121	7,666	132,321
	23/123	4,183	70,312
	24/124	807	15,328
	25/125	1,248	18,523
	26/126	3,637	64,372
	27/127	1,304	22,204
Total Landed in Canada		57,603	816,639
Rec TAC (15% of total CDN)			890,013
Estimated Balance (net wt lbs) - END OF DECEMBER			73,374

Table 6. Recreational Halibut Monthly Catch Estimates (net wt. lbs) for 2017, 2018 and 2019

Month	Net Weight (lbs)			Cumulative Net Weight (lbs)		
	2017	2018	2019	2017	2018	2019
Feb	17,199	0	0	17,199	0	0
March	17,868	16,029	8,172	35,068	16,029	8,172
April	16,985	15,715	10,259	52,053	31,744	18,432
May	62,654	58,494	40,988	114,706	90,239	59,420
June	273,084	176,370	152,282	387,790	266,608	211,702
July	437,991	296,745	336,520	825,782	563,354	548,221
Aug	285,783	237,880	207,866	1,111,565	801,234	756,088
Sept	26,302	25,484	53,956	1,137,867	826,718	810,044
Oct	-	14,053	834	-	840,771	810,878
Nov	-	3,866	0	-	844,638	810,878
Dec	-	3,406	5,761	-	848,044	816,639
Total	1,137,867	848,044	816,639	3,682,029	5,129,380	4,850,474
					Recreational Allocation (15% of Canadian TAC)	890,013
					Estimated Total Catch	816,639
					Estimated Balance (net wt lbs) - END OF DECEMBER	73,374

Table 7. 2019 Estimated 2019 Halibut Catch in Pieces by Area and Month

2019 i-Rec data	Fishery Closed	Summary of 2019 In-season Recreational Halibut Catch Estimated Halibut Pieces Retained by Area and Month												
3-yr iRec avg. (2016-'18)	2019 catch monitoring program ('creel') data	Feb	March	April	May	June	July	August	Sep	Oct	Nov	Dec	Estimated Total Pieces by Area	% of Total Pieces by Area
PFMA	1	0	0	0	100	3050	4100	4300	800	0	0	0	12,350	22%
	2	0	0	0	250	1250	1200	1200	650	0	0	0	4,550	8%
	3	0	77	0	346	716	1241	1450	33	0	0	0	3,864	7%
	4	0	0	48	631	2147	2711	2502	503	0	0	0	8,541	15%
	5/6	0	0	75	51	565	806	592	184	0	0	0	2,272	4%
	7	0	0	0	43	111	465	348	60	0	0	0	1,027	2%
	8	0	0	0	25	41	200	229	0	0	0	0	495	1%
	9	0	0	0	25	92	181	149	123	0	0	0	570	1%
	10/11	0	0	19	51	182	303	166	0	0	0	0	720	1%
	12	0	0	38	40	158	201	395	0	70	0	0	902	2%
	13/14	0	0	0	15	57	91	60	307	0	0	0	530	1%
	15-18/28/29	0	0	0	15	35	0	36	0	0	0	0	86	0%
	19	0	280	243	237	237	93	7	485	0	0	0	1,849	3%
	20	0	77	132	266	46	112	68	62	0	0	267	763	1%
	21/121	0	0	26	85	691	5670	1155	39	0	0	0	7,666	13%
	23/123	0	0	19	95	152	2076	1621	220	0	0	0	4,183	7%
	24/124	0	0	41	56	435	239	16	20	0	0	0	807	1%
	25/125	0	0	19	184	124	685	161	75	0	0	0	1,248	2%
	26/126	0	0	0	0	607	2393	595	42	0	0	0	3,637	6%
	27/127	0	0	0	165	260	539	321	19	0	0	0	1,304	2%
2019 Totals	Monthly	0	434	658	2,681	10,956	23,306	15,371	3,622	70	0	267	57,364	
	Cum.	0	434	1,092	3,773	14,729	38,034	53,405	57,027	57,097	57,097	57,364		

Table 8: 2019 Average 2019 Net Weight Estimates of Retained Halibut by Area and Month

PFMA	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	10	9	11	12	10	11	10	13	11	11	11
2	13	12	14	13	14	14	13	12	13	13	13
3	14	12	14	15	13	13	13	13	13	13	13
4	14	13	14	15	13	13	13	13	13	13	13
5/6	13	13	13	13	13	13	13	13	13	13	13
7/8/9	14	14	14	14	16	11	12	12	12	12	12
10/11	9	10	8	8	8	8	8	8	8	8	8
12	9	9	8	9	8	9	11	10	10	10	10
13/14	17	16	18	18	17	19	21	20	20	20	20
15-18/28/29	13	14	13	13	14	12	12	12	12	12	12
19	18	18	15	19	11	16	14	15	15	15	15
20	13	13	13	13	13	12	12	12	12	12	12
21/121	18	21	16	18	20	22	22	23	22	22	22
23/123	20	20	16	16	20	16	16	16	16	16	16
24/124	15	11	19	19	22	16	19	19	19	19	19
25/125	17	15	17	17	19	15	19	17	17	17	17
26/126	19	16	19	19	19	19	19	19	19	19	19
27/127	16	16	16	16	19	14	14	14	14	14	14

Table 9. 2019 Estimated 2019 Halibut Catch in Net Weight (lbs) by Area and Month

PFMA		Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1		0	0	0	1,223	30,538	43,853	43,360	10,271	0	0	0	129,246
2		0	0	0	3,354	17,145	16,926	16,155	8,122	0	0	0	61,703
3		0	906	0	5,086	9,380	16,660	19,466	449	0	0	0	51,947
4		0	0	661	9,276	28,126	36,395	33,589	6,746	0	0	0	114,794
5/6		0	0	995	672	7,489	10,687	7,950	2,465	0	0	0	30,259
7/8/9		0	0	0	1,024	2,894	8,690	7,668	2,008	0	0	0	22,285
10/11		0	0	334	902	3,066	5,684	3,412	0	0	0	0	13,397
12		0	0	471	503	2,150	2,317	4,865	0	834	0	0	11,140
13/14		0	0	0	285	623	1,489	813	4,602	0	0	0	7,811
15-18/28/29		0	0	0	200	454	0	426	0	0	0	0	1,080
19		0	5,758	3,832	4,283	4,812	2,007	151	11,089	0	0	5,761	37,694
20		0	1,508	2,064	4,154	718	1,749	1,062	968	0	0	0	12,223
21/121		0	0	503	1,639	15,457	91,711	22,259	752	0	0	0	132,321
23/123		0	0	321	1,629	2,903	31,525	30,209	3,725	0	0	0	70,312
24/124		0	0	770	1,065	8,264	4,541	304	384	0	0	0	15,328
25/125		0	0	306	3,003	2,317	9,585	2,261	1,052	0	0	0	18,523
26/126		0	0	0	0	12,334	42,571	8,521	945	0	0	0	64,372
27/127		0	0	0	2,692	3,611	10,129	5,395	377	0	0	0	22,204
2019 Totals	**Monthly**	0	8,172	10,259	40,988	152,282	336,520	207,866	53,956	834	0	5,761	816,639
	Cum.	0	8,172	18,432	59,420	211,702	548,221	756,088	810,044	810,878	810,878	816,639	

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APPENDIX 3

Fisheries and Oceans Canada 2019 Enforcement Report

PREPARED BY: Fisheries and Oceans Canada (20December2019)

DATE: 20/DEC/2019

CONTRACTING PARTY: CANADA

AGENCY:

Fisheries and Oceans Canada

CONTACT:

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FISHERY SECTOR/S:

All

IPHC REGULATORY AREA:

IPHC Regulatory Area 2B (Canada: British Columbia)

DISCUSSION

Halibut Compliance and Enforcement – Commercial Halibut Summary 2019

2019 Commercial Halibut Fishery

The 2019 commercial halibut fishery opened at 12:00 hours local time on March 15, 2019 and closed at 12:00 hours local time on November 14, 2019. A total of 156 vessels and 526 fishing trips were recorded during the 2019 commercial halibut fishing season.

Compliance and Enforcement Priorities – 2019

Groundfish, including commercial Halibut, enforcement priorities for 2019 were identified in the Groundfish Integrated Fisheries Management Plan and by the Groundfish Enforcement Coordinator as follows:

- Fishing in closed areas such as Rockfish Conservation Areas (RCAs), sponge reef marine protected areas and in season closures;
- Dockside Observer Treatment Issues – not providing all reasonable assistance to the DFO designated observers;
- Non-compliance with the Dockside Monitoring Program (DMP) including hails;
- Retention of groundfish caught, retained, or possessed without authority of a licence. Priority will be placed on occurrences where retention for the purpose of sale is indicated;
- Unauthorized dual fishing. Dual fishing is defined as ‘fishing for and retaining groundfish under the authority of a Commercial Groundfish Licence and a Communal Groundfish Licence during the same fishing trip’;
- Non-compliance with electronic monitoring (EM) conditions of licence, especially time gap occurrences;
- False and misleading information provided to dockside observers.
- Non-deployment of seabird avoidance gear as required by conditions of licence.

Links to Pacific Region Groundfish Integrated Fisheries Management Plan – 2019:

Summary:

http://www.pac.dfo-mpo.gc.ca/fm-gp/ifmp-eng.html#Groundfish

Full Text:

https://cat.fsl-bsf.scitech.gc.ca/record=4076516&searchscope=06

Occurrences

Occurrences are reported or observed incidents which are potential violations of any Act or Regulation which falls under the mandate of a Canadian fishery officer.

Halibut Compliance and Enforcement – Recreational Halibut Summary - 2019

2019 Recreational Halibut Fishery

The 2019 recreational halibut fishery opened coast-wide at 00:01 hours on March 1, 2019 until further notice and with management measures in effect until March 31, 2019. On April 1, 2019 and effective from 00:01 hours until further notice recreational fishing for halibut opened coast-wide. Between January 1, 2019 and November 30, 2019 a total of 320,099 recreational licences were issued.

Halibut Compliance and Enforcement – Halibut Experimental Recreational Program - 2019

2019 Halibut Experimental Recreational Fishery

The halibut experimental recreational fishery (XRQ) opened on April 1, 2019 and closed on December 31, 2019. Two hundred and forty-three (243) licences were issued in 2019. There continues to be a staff member in the Groundfish Management Unit who closely tracks and sends out information to licence holders. This has resulted in an increased ability to identify non-compliance issues.

Additional details about the XRQ program are available online: http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/ground-fond/index-eng.html

Halibut Compliance and Enforcement – Commercial, Food, Social and Ceremonial (FSC) and Treaty Fisheries - 2019

For all dual fishing (commercial and FSC) halibut trips the vessel master is responsible for following the conditions of licence specific to dual fishing. All of the fish require 100% monitoring at-sea and 100% monitoring at the dock. In 2019 forty-eight (48) commercial halibut vessels hailed out for one hundred and twenty-six (126) dual fishing trips.

FSC halibut fishing does not have the same monitoring requirements as commercial and dual halibut fishing. DFO is working with indigenous nations to improve catch monitoring and reporting.

RECOMMENDATIONS: NA

REFERENCES: See hyperlinks above

APPENDICES ***Pages***

Appendix 1: Tables - Occurrences

Table 1: ***Commercial Halibut Fishery*** *Occurrences - January 1, 2019 to November 30, 2019*[5]

Occurrence Type (not all are found to be violations)	**Number of Occurrences**
Observer Treatment	1
Area/Time (closed area)	10
Dual Fishing	138*****
EM System Issues	1
Sea Birds Caught	7
Gear Illegal/Used Illegally	3
Piece Count Issues	3
Registration / Licence	2
Hails	2
Release Rockfish	29**
Reported Overages	2
Species/Size Limit	1
Hold Check Not Completed	6
Halibut Tagging Issues	5
Scale Related	2
Total	**212**

[1]Source: DFO *Departmental Violations System (DVS) and Archipelago Marine Research Ltd. Portal for Clients*

***** *Most of the Dual Fishing occurrences are of a minor administrative nature.*

****** *Seven rockfish releases will be investigated further.*

Table 2: ***Recreational Halibut Fishery*** *Occurrences - January 1, 2019 to November 30, 2019*[6]

Occurrence Type	Number of Occurrences
Reporting	5
Quota/Bag Limits	11
Area/Time	1
Species/Size Limit	12
Registration/Licence	6
Illegal Buy/Sell/Possess	4
Illegal Transportation	4
Other Legislation	2
Assault/Obstruct	1
Total	**46**

[2]Source: DFO *Departmental Violations System (DVS*)

Table 3: ***Aboriginal Halibut Fishery*** *Occurrences - January 1, 2019 to November 30, 2019*[7]

Occurrence Type	Number Of Occurrences
Illegal Buy/Sell/Possess	8
Registration/Licence	1
Gear – Illegal/Used Illegally	2
Total	**11**

[3]Source: DFO *Departmental Violations System (DVS*)

Appendix 2: Tables – Fishery Officer Enforcement Effort Summary

Table 4: *2017, 2018, & 2019 C&P Fishery Officer Groundfish enforcement hours for aboriginal, commercial, and recreational Halibut fisheries and recreational hours comparing halibut to finfish and salmon in tidal waters*[4]

ENFORCEMENT ACTIVITY – Comparison of years 2017, 2018, and 2019 (January 1, 2018 to November 30, 2018)						
HALIBUT DEDICATED HOURS and % of TOTAL ENFORCEMENT EFFORT FOR PACIFIC REGION						
	2017	**2017**	**2018**	**2018**	**2019**	**2019**
FISHERY TYPE	**HOURS**	**% TOTAL ENF. EFFORT**	**HOURS**	**% TOTAL ENF. EFFORT**	**HOURS**	**% TOTAL ENF. EFFORT**
ABORIGINAL HALIBUT	427.5	0.6%	220.75	0.3%	392	0.5%
COMMERCIAL HALIBUT	592.25	0.8%	318.75	0.5%	666.5	0.85%
RECREATIONAL HALIBUT	500.5	0.7%	520.75	0.8%	693.75	0.89
TOTAL	**1520.5**	**2%**	**1060.25**	**1.6%**	**1,752.25**	**2.24%**
RECREATIONAL HOURS and % of TOTAL ENFORCEMENT EFFORT FOR PACIFIC REGION						
RECREATIONAL HALIBUT	500.5	0.65%	520.75	0.8%	729.75	0.94%
RECREATIONAL FINFISH – TIDAL WATERS	1366.25	1.77%	2057.25	3.1%	2,502.5	3.2%
RECREATIONAL SALMON – TIDAL WATERS	5025.5	6.5%	6280.75	9.4%	4667	6.02%
TOTAL	**6892.25**	**8.92%**	**8858.75**	**13.3**	**7,899.25**	**10.16**

***Note**: The recreational patrols are typically conducted on a "multi species" or "multi fishery" basis with the predominant effort in recreational tidal directed toward salmon and other finfish. Halibut checks are conducted on these patrols so they are included as part of enforcement effort directed towards recreational halibut fishing.*

[4] Source: DFO *Fisheries Enforcement Activity Tracking System (FEATS)*

Appendix 3: Tables – Aerial Surveillance Patrol Summary

Table 5: *2019, 2018, 2017, & 2016 C&P Aerial Surveillance Patrols – number of missions, total hours spent flying, and number of halibut vessels viewed during missions*[9]

AERIAL SURVEILLANCE PROGRAM (ASP) ACTIVITY			
Air Patrols	***Missions***	***Hours***	***Total Halibut Vessels Recorded Per Year***
January 1, 2019 – November 30, 2019	185	1036.59	146 (130 L, 16 FL)
January 1, 2018 – November 30, 2018	178	1057	294 (263 L, 31 FL)
January 1, 2017 – December 15, 2017	166	879.49	500 (461 L, 39 FL)
January 1, 2016 – December 15, 2016	154	876.04	388 (338 L, 50 FL).

L = commercial halibut licence FL= communal commercial halibut licence

[5]Source: Provincial Aerospace Limited - Surveillance Information System (SIS)

Appendix 4: Tables – Violation Summaries

Table 6: *2016, 2017, 2018 & 2019 Violations for Aboriginal, Commercial and Recreational Halibut – Charges Laid, Charges Pending/Under Review, and Tickets/Warnings Issued*[10]

PACIFIC REGION

VIOLATIONS	2016	2017	2018	2019	GRAND TOTAL
ABORIGINAL GROUNDFISH – HALIBUT	**5**	**14**	**2**	**14**	**35**
CHARGES LAID					
CHARGES PENDING/UNDER REVIEW	4	13	1	12	**23**
TICKET ISSUED				1	**1**
WARNING ISSUED	1	1	1		**3**
NATIVE PROTOCOL				1	**1**
COMMERCIAL GROUNDFISH - HALIBUT	**12**	**25**	**12**	**4**	**53**
CHARGES LAID	1			2	3
CHARGES PENDING/UNDER REVIEW	11	5	3	2	21
TICKET ISSUED		7			7
WARNING ISSUED		13	9		22
RECREATIONAL GROUNDFISH - HALIBUT	**51**	**80**	**64**	**85**	**280**
CHARGES LAID	5	8	1	6	20
CHARGES PENDING/UNDER REVIEW	5	10	6	38	59
TICKET ISSUED	20	26	21 (1 XRQ)	25	92

[10]Source: DFO Departmental Violations System (DVS)

VIOLATIONS	2016	2017	2018	2019	GRAND TOTAL
WARNING ISSUED	21	36	36 (2 XRQ)	16	109
GRAND TOTAL	**68**	**119**	**78**	**103**	**368**

[6]Source: DFO Departmental Violations System (DVS)

SIGNIFICANT CONVICTIONS:

- ***Closed Area Fishing – Hecate Glass Sponge Reef Marine Protected Area (MPA) – Commercial Halibut -*** $45,000.00 fine. First successful conviction for Glass Sponge Reef MPA under *Oceans Act* and *Fisheries Act*.

SIGNIFICANT 2019 INVESTIGATIONS and/or PENDING INVESTIGATIONS:

- *Seven Unauthorized Dual Fishing Trips*
- *Two No Seabird Avoidance Gear Deployed*
- *One Marina & Lodge Recreational Fishing Operator – Halibut Experimental Recreational Licence*

Link to DFO Conviction Tables**:**

http://dfo-mpo.gc.ca/media/charges-inculpations/pac-eng.htm

Appendix 5: Background Information

In 2016 the Government of Canada took action to strengthen and restore lost protections and incorporate modern safeguards to the *Fisheries Act*. In June 2019 Bill C-68, an Act to amend the *Fisheries Act* passed Parliament. On June 21, 2019 the amended *Fisheries Act* entered into force.
Fish and Fish Habitat Protection provisions came into force on August 28, 2019. New regulations are coming into force. Training for Fishery Officers is continuing.

COMPLIANCE ISSUES AND STRATEGIES

Overview

Fisheries and Oceans Canada (DFO) is a natural resource management organization with an infrastructure necessary to support professional law enforcement activities. The enforcement policies and activities of DFO with respect to regulatory compliance of aboriginal, commercial and recreational fisheries, is the responsibility of the Conservation and Protection (C&P) program.
The program is delivered through a three pillar enforcement approach which includes:

- Promotion of compliance through education and shared stewardship;
- Monitoring, control and surveillance activities; and,
- Management of major cases/special investigations in relation to complex compliance issues.

C & P, Pacific Region, is responsible for providing monitoring, control and surveillance activity along a coastline of 27,000 kilometers extending from the southern tip of Vancouver Island to northern British Columbia and the Yukon Territory.

Management of the groundfish fisheries off the west coast of Canada is described within the Groundfish Integrated Fishery Management Plan (IFMP). The IFMP is not enforceable; rather, fishery officers rely on

conditions of licence, variation orders and acts and regulations for enforcement purposes.

There are currently 160 fishery officers in the Pacific Region, the majority of which are located within four distinct operational Areas and the Aquaculture Enforcement unit. These areas/units are supported by the National Fisheries Intelligence Service. Currently C&P is staffing up to fill a number of vacancies in the region.

More information about DFO Compliance and Enforcement is available at the following website: http://www.dfo-mpo.gc.ca/fm-gp/enf-loi/index-eng.htm

Sanctions and Deterrence

DFO's C&P program pursues violations of fisheries legislation and regulations in three ways.

1. For violations that are considered minor, an officer may issue warning letters or tickets that will form part of the fisher's compliance history and will be considered when investigating future occurrences.
2. Alternative Measures Agreements are now a part of the new amended *Fisheries Act* and include a range of different types of agreements which may be used as an alternative to prosecution in the court system. The focus is on the rehabilitation of the offender and the public interest which may be better served outside of the traditional criminal process. Restorative Justice (RJ) is one example of such an agreement and is a community based approach.
3. Finally, serious or repeat offenders are dealt with through the provincial and federal courts where sentencing may include significant fines, prohibitions, licence suspensions and jail time.

MONITORING, CONTROL AND SURVEILLANCE

National Aerial Surveillance Program in Pacific Region

C&P operates a coastal air surveillance program utilizing a specially configured aircraft with a Fishery officer on board all flights. Close monitoring of the halibut fleet for compliance with hail-out, use of seabird avoidance gear, and area closures such as Rockfish Conservation Areas is an integral element of all patrols. Patrol coverage also monitors vessel activity within Canada's Exclusive Economic Zone. Air surveillance resources are utilized weekly throughout the year subject to weather conditions and conflicting requirements.

Information collected on the flights is available to fishery officers via an internet-based flight information system.

Fisheries Patrol Vessels

Inshore and near shore patrols are conducted by fishery officers using program vessels, which are primarily rigid hull inflatable boats, 7.33, 7.53, 8.5 and 10 meters in length.

Marine Patrol Program

There are two Canadian Coast Guard (CCG) mid-shore patrol vessels (MSPV) based in the southern and northern patrol areas. Each of the ships is dedicated to the C&P program and annually conduct 22 patrols each, resulting in between 286 to 309 operational days per year. There are two to three fishery officers on each patrol.

The National Aerial Surveillance Program and the Marine Patrol Program work together to ensure

effective and efficient use of C&P assets.

Fisheries Observer Programs

Additionally, certified fisheries observers, both dockside and at-sea, are designated under Section 39. (1) of the *Fishery (General) Regulations* and perform duties related to monitoring of fishing activities, examination and measurement of fishing gear, collection of biological samples, recording of scientific data, monitoring of the landing of fish and verification of the weight and species of fish caught and retained. Fisheries observers are not armed and do not have authority to enforce the law. They perform an observe, record and report function.

TRANSFORMATION OF THE CONSERVATION AND PROTECTION PROGRAM

C&P continues to develop into a fully integrated, risk-based and intelligence-led program.

National Fisheries Intelligence Service (NFIS) and Major Case Management

In 2019 NFIS continued to develop its intelligence-led program. In the Pacific Region this program will improve C&P's ability to set priorities and make decisions which focus on activities that are most harmful to fisheries and ocean resources. The western region of NFIS is almost fully staffed.

The application of Major Case Management (MCM) principles and practices will enable the C&P program to focus its resources on investigations that lead to successful prosecutions and sanctions. Currently a dedicated MCM unit is being developed and staffed. It will work with NFIS and Fishery Officers in the Pacific Region.

NFIS has developed a national verification program and the Pacific Region and now has three (3) fishery officers trained in the Pacific Region. In 2019 trained fishery officers started verifying that the dockside observers were carrying out their duties as required by regulation and national and regional policies and procedures. As well, two (2) verifications of DFO designated observer companies were completed by Ottawa NFIS staff.

This national initiative along with the Marine Patrol Program and Aerial Surveillance Program round out C&P's commitment to improved compliance monitoring and enforcement.

HALIBUT ENFORCEMENT OVERVIEW

Fisheries observers and electronic monitoring (EM) systems perform a key role in observing and documenting fishing-related occurrences. Fishery officers have access to EM and observer data for enforcement purposes.

Fishery officers conduct inspections both dockside and at sea for compliance with licence conditions. Directed enforcement effort on the Halibut fishery is dependent on work load and the priorities identified by the respective C&P Area Chiefs.

The hook and line halibut fishery has 100% monitoring through the use of sophisticated GPS, hydraulic sensors and video imaging equipment, logbooks and dockside observers. This along with significant court sanctioned penalties has resulted in a high rate of compliance.

Commercial Licence Categories

A Commercial Halibut category ‘L’ or Communal Commercial Halibut category ‘FL’ licence is required to participate in the directed commercial Pacific Halibut fishery.

Category ‘L’ Halibut eligibilities are limited entry and vessel-based. Category ‘FL’ eligibilities are party-based; an indigenous group or organization is the licence eligibility holder and the eligibility must be designated to a commercially registered fishing vessel.

Vessels are permitted to conduct combined Halibut ‘L’ or ‘FL’ and Sablefish ‘K’ or ‘FK’ trips. These vessels are required to identify their intentions at the time of hail-out.

DFO INTERNATIONAL CONSERVATION & PROTECTION

The Pacific Region has a Senior Compliance Program Officer involved in monitoring and addressing illegal, unregulated and unreported (IUU) fishing in international waters. They are seeing a shifting dynamic in the “legal” fleets operating further north and east in the Pacific Ocean due to shifting climate and economics (collapse of their local stocks).

Links to International Illegal, Unregulated, Unreported (IUU) Fishing articles:

https://www.cbc.ca/news/canada/nova-scotia/satellites-illegal-fishing-radarsat-constellation-1.5256197

https://seapowermagazine.org/coast-guard-cutter-mellon-returns-after-80-day-patrol-of-pacific-ocean/

https://www.maritime-executive.com/article/chinese-and-u-s-coast-guards-partner-for-driftnet-bust

Prepared by Groundfish Enforcement Coordinator 2019-12-20

APPENDIX 4

Province of British Columbia 2019 Annual Report

PREPARED BY: British Columbia Ministry of Agriculture

DATE: 21/DEC/2019

CONTRACTING PARTY: CANADA

AGENCY:

The Province of British Columbia represented by the Minister of Agriculture.

CONTACT:

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FISHERY SECTORS:

All sectors within British Columbia.

IPHC REGULATORY AREA

IPHC Regulatory Area 2B (Canada: British Columbia)

DISCUSSION

The Province of British Columbia (B.C.) has a long history of involvement with the Pacific halibut fishery and the International Pacific Halibut Commission (IPHC). B.C recognizes the importance of Canada working bilaterally with the United States through the Pacific Halibut Treaty as well as the work done by the IPHC to develop and conserve Pacific halibut stocks. The significant history of this Treaty as one of the first Canadian international agreements and the near-century of mutual benefit to both countries serves as a tremendous example to the fisheries management world. B.C. commends the efforts made by the Commission to reach agreement during the 2019 IPHC Annual Meetings. Thousands of jobs rely on the continued cooperation and it is critical that this history of collaboration continues.

The B.C. Ministry of Agriculture is responsible for collection and reporting of data and statistics for the agri-food sector. An important part of that mandate is to analyze the impact of various sectors, including fisheries and seafood to the broader provincial economy. B.C. commercially harvests and reports on over 25 wild fisheries including Pacific halibut which is within B.C.'s top most valuable wild fishery commodities[1]. The Pacific halibut fishery supports significant commercial harvests in Canada's waters while providing many fishing and processing jobs and is significantly important to small coastal communities and First Nations across the Canadian west coast. The Province licences seafood processors and annually collects data on the volumes and values of the various seafood products. In 2018, the surveys showed the processing of 3,300 tonnes (7.2M lbs) of Pacific halibut, which also includes imported halibut processed in B.C. The survey also showed landed and wholesale values of $44.1M and $63.2M respectively. Pacific halibut account for roughly 10% of the wholesale value of all B.C.'s wild fisheries including all groundfish, salmon, and shellfish. In 2018, B.C. exported 1.5M kilograms (3.3M lbs) of halibut products worth $33M. The Province also conducts a seafood sector employment survey every three years which provides data on jobs, wages, and

seafood processing activities. In 2016, there were 85 processing facilities that reported processing halibut and generated 319 jobs with an estimated $14M paid in wages. An average of 50 companies annually have reported wholesale sales of halibut products within the last three years[2].

In addition, the recreational halibut fishery supports the hundreds of fishing lodges, charter companies, and individuals that also contribute tremendously to the economies of coastal communities. In 2019 there were severe restrictions on salmon fishing in B.C. which amplified the importance of the recreational halibut fishery to the sector, helping contribute to its over $1B impact on the B.C. Gross Domestic Product. B.C. is pleased to understand that the IPHC has contracted a fisheries economist to investigate the broader socioeconomic impacts and downstream effects of the Pacific halibut fishery and looks forward to working together through the Ministry of Agriculture as B.C.'s agency responsible for fisheries and seafood economic data.

First Nations are entitled to a Food, Social and Ceremonial (FSC) allocation of the TAC, and many jobs within the halibut fishery and halibut processing facilities are held by members of First Nations in British Columbia. In the commercial halibut fishery, approximately 23% of licenses are held by B.C. First Nations. B.C. recently became the first province in Canada to introduce legislation aimed at adopting the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), that mandates that government bring its laws and policies into harmony with the aims of the declaration. The B.C. government has set Indigenous reconciliation as a top priority and is actively working to ensure that First Nations are meaningfully included in management of all B.C. fisheries.

B.C. has an integrated groundfish fishery with 100 per cent monitoring and 100 per cent bycatch accountability. This well-developed program, which includes at-sea observers and electronic monitoring solutions, is regarded as one of the most well monitored fisheries in the world. In September 2009, the B.C. Pacific halibut fishery earned Marine Stewardship Council certification for being a sustainable and well-managed fishery. These extensive fisheries monitoring programs come at a direct cost to fishermen and license holders as they are entirely funded by industry. West coast Canadian fishers respect that the monitoring programs level the playing field by keeping all fishery participants compliant with the rules that help to ensure sustainable stocks and the future of their industry.

The decisions made annually by the IPHC greatly impact the livelihood of many coastal B.C. residents and local economies. With the extensive and costly efforts of accounting for all halibut bycatch in place, B.C. expects that all fishers who share access to the Pacific halibut stocks should be held to similar standards of catch accounting. B.C. fishers need to be assured that the decisions made by the IPHC are based on the best data and science possible by ensuring that all contributing data sources are as thorough and reliable as what they contribute. Fishers deserve a return on the investment they put in to the detailed and reliable data that provide full accounting of nearly every fish pulled from B.C. waters.

Research indicates there is a net southeasterly migration of juvenile halibut from the Bering Sea and the Gulf of Alaska into B.C.[3] This pattern allows Alaskan fisheries to intercept the halibut stocks prior to them entering B.C. and southern U.S. state waters. Incomplete monitoring and Alaskan bycatch of halibut in trawl fisheries impact recruitment of juvenile halibut to the fishery as many halibut caught in industrial trawl nets do not survive release, resulting in significant mortality in juvenile halibut that might otherwise grow and become available for other areas such as 2A, 2B and 2C. Uncertainty regarding post-release mortality rates and its implication for total removals adds to these concerns. The 2019 IPHC Fishery Statistics report confirms continued low observer coverage and poor bycatch mortality estimates in area 3 as well as a significant increase of halibut bycatch mortality in area 4CDE[4].

With the overall TAC decreasing again this year, it is exceedingly important that the issues of bycatch uncertainty and lack of bycatch accountability are addressed as soon as possible. Allowing these issues to continue in areas known to have higher levels of U26 halibut could hinder recruitment and impact future sustainability for all regulatory areas. The Province of B.C. supports more robust monitoring programs to ensure that fisheries are held accountable for their catch and bycatch,

especially in areas with incomplete and/or less reliable data. The integrity of the data collected in all areas is important to managing Pacific halibut as a shared resource.

The Province of B.C. commends the Commission's decision during the 2019 IPHC Annual Meeting to recommend evaluating and redefining TCEY to include the U26 component of discard mortalities, including bycatch, as steps towards more comprehensive and responsible management of the resource. B.C. supports the intent that each Contracting Party to the Treaty would be responsible for counting its U26 mortalities against its collective TCEY, and the intent that this change would take effect for TCEYs established at the 2020 Annual Meeting.

RECOMMENDATION

The Government of British Columbia's position is that the IPHC must exercise its authority to regulate the incidental catch of Pacific Halibut in all regulatory areas by:

1. **developing a framework for addressing poor bycatch mortality estimates, and**
2. **developing a robust method of accountability for U26 bycatch.**

REFERENCES

1. *British Columbia Ministry of Agriculture. (2019). The B.C. Seafood Industry Year in Review.* https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/statistics/industry-and-sector-profiles/year-in-review/bcseafood_yearinreview_2017.pdf
2. *British Columbia Ministry of Agriculture. (2018). British Columbia Fish Processing Employment 2016.* https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/statistics/industry-and-sector-profiles/employment/2016_british_columbia_seafood_processing_employment.pdf
3. *IPHC Management Strategy Evaluation (MSE): update. (A. Hicks, P. Carpi, S. Berukoff & I. Stewart; 25 October 2019). IPHC-2019-IM095-14*
4. *Fishery Statistics (2019). (L. Erikson, H. Tran, and T. Kong; 20 November 2019.) IPHC-2019-IM095-05 Rev_1*

IPHC Contracting Party Report: United States of America

DATE:

PART I - WEST COAST REGION = 03 JAN 2020

PART II – ALASKA REGION = 10 JAN 2020

CONTRACTING PARTY: UNITED STATES OF AMERICA

AGENCY:

Various, noted within the report

FISHERY SECTORS

ALL

IPHC REGULATORY AREAS

IPHC Regulatory Areas 2A, 2C, 3, and 4 (USA: West Coast and Alaska)

DISCUSSION

Part I, beginning on page 3, presents the IPHC Contracting Party Report for IPHC Regulatory Area 2A (California, Oregon, and Washington).

Part II, beginning on page 45, presents the IPHC Contracting Party Report for IPHC Regulatory Areas 2C, 3, and 4 (Alaska).

RECOMMENDATIONS

That the Commission:

1) **NOTE** paper IPHC-2020-AM096-NR02 Rev_1, which presents the Contracting Party Report for the United States of America;
2) **NOTE** the catch sharing plans in place for IPHC Regulatory Areas 2A, 2C/3A, and 4CDE.

ATTACHMENTS

Part I (pages 2-42):	IPHC Contracting Party Report for IPHC Regulatory Area 2A
Part II (page 43-89):	IPHC Contracting Party Report for IPHC Regulatory Areas 2C, 3, and 4

Part I
IPHC Contracting Party Report for IPHC Regulatory Area 2A

DATE: 03 Jan 2020

CONTRACTING PARTY: United States of America

AGENCY:

National Marine Fisheries Service

Frank Lockhart, Senior Policy Advisor

Frank.Lockhart@noaa.gov

FISHERY SECTORS

All

IPHC REGULATORY AREA/S

IPHC Regulatory Area 2A (United States: Washington, Oregon, California)

DISCUSSION

Since 1988, NMFS has implemented annual Catch Sharing Plans that allocate the IPHC regulatory Area 2A Pacific halibut catch limit between treaty Indian and non-Indian harvesters, and among non-Indian commercial and recreational (sport) fisheries. The Pacific Fishery Management Council (Council) develops Catch Sharing Plans in accordance with the Halibut Act. In 1995, the Council recommended, and NMFS approved and implemented a long-term Area 2A Catch Sharing Plan (60 FR 14651; March 20, 1995). NMFS has been implementing adjustments to the Area 2A Catch Sharing Plan based on Council recommendations each year to address the changing needs of these fisheries.

The 2019 catch limit for Area 2A was 1,500,000 pounds and allocated according to the Catch Sharing Plan as follows:

Treaty Tribes	525,000 (35%)
Non-Tribal Total	975,000 (65%)
Non-Tribal Commercial	299,325
Washington Sport	347,100
Oregon Sport	289,575
California Sport	39,000

Commercial fisheries

There are three commercial fisheries in Area 2A: 1) a directed longline fishery targeting halibut south of Point Chehalis, WA; 2) an incidental catch fishery during the salmon troll fisheries off Washington, Oregon, and California; 3) an incidental catch fishery during the primary sablefish fishery north of Point Chehalis, WA.

Directed fishery targeting halibut

A quota of 254,426 pounds (85% of the non-tribal commercial fishery allocation) was allocated to the directed longline fishery targeting halibut in southern Washington, Oregon, and California. The June 26, July 10 and 24 directed commercial open periods resulted in a catch of approximately 264,000 pounds. IPHC announced closure of the directed fishery on July 31, 2019.

Incidental halibut catch in the salmon troll fishery

A quota of 44,899 pounds of Pacific halibut (15% of the non-tribal commercial fishery allocation) was allocated to the non-tribal commercial salmon troll fishery in Area 2A as incidental catch during salmon troll fisheries.

Halibut retention was permitted in the salmon troll fisheries beginning May 1, with the following ratio: one halibut (minimum 32 inches) per two Chinook salmon landed by a salmon troller, except that one halibut could be landed without meeting the ratio requirement, and no more than 35 halibut could be landed per trip. On July 1, the landing limit was revised to one Pacific halibut per two Chinook salmon, except one Pacific halibut may be possessed or landed without meeting the ratio requirement, and no more than 15 halibut may be possessed or landed per trip. The landing limit was lowered from 15 to four halibut per vessel per trip on July 19, and further reduced on July 27 from four to two halibut per vessel per trip. The fishery is estimated to have taken 43,417 pounds and closed on October 31, 2019.

Incidental halibut catch in the sablefish primary longline fishery north of Point Chehalis, WA

The Catch Sharing Plan provides that incidental halibut retention in the sablefish primary fishery north of Pt. Chehalis, WA, will be allowed when the Washington recreational catch limit is 224,110 (101.7 mt) or greater, provided that a minimum of 10,000 lb (4.5 mt) is available. A quota of 70,000 pounds was allocated to this fishery in 2019. This fishery only occurs off the coast of Washington; more detail is provided in the Washington Department of Fish & Wildlife report (Appendix 1).

Recreational fisheries

675,675 pounds were allocated between sport fisheries in Washington (35.6% of non-tribal share, minus 70,000 pounds allocated to the incidental catch in the sablefish primary fishery), Oregon (29.7% of the non-tribal share), and California (4.0% of the non-tribal share). The allocations were further subdivided as quotas among six geographic subareas. The recreational fishery in Washington is described in Appendix 1. The recreational fishery in Oregon is described in Appendix 2. The recreational fishery in California is described in Appendix 3.

West Coast Enforcement Division

The NOAA Office of Law Enforcement provides marine enforcement and compliance assistance for the west coast of the continental United States, and has ongoing formal Cooperative Enforcement Agreements (CEA) and Joint Enforcement Agreements (JEA) with all three West Coast States: California Department of Fish and Wildlife (CDFW) – Law Enforcement Division, Oregon State Police (OSP) – Fish and Wildlife Division, and Washington Department of Fish and Wildlife (WDFW)– Police. Appendix 4 describes efforts by NOAA's OLE, and California, Oregon, and Washington enforcement divisions.

Treaty Tribes

The 2019 treaty halibut allocation was 525,000 pounds, of which 497,000 pounds was the commercial Total Allowable Catch (TAC), and 28,000 pounds were set aside for the Ceremonial and Subsistence (C&S) fishery. Thirteen tribes have treaty-reserved rights to Pacific halibut located in the International Pacific Halibut Commission (IPHC) management area 2A: the Coastal Tribes: Hoh, Makah, Quileute, Quinault; and the Puget Sound Tribes: Jamestown S'Klallam, Lower Elwha Klallam, Lummi, Nooksack, Port Gamble S'Klallam, Skokomish, Suquamish, Swinomish, and Tulalip. Appendix 5 summarizes the 2019 tribal halibut season.

REFERENCES

2020 Pacific Halibut Catch Sharing Plan for Area 2A. https://www.pcouncil.org/pacific-halibut/background-information/

APPENDICES

Appendix 1: Washington Department of Fish & Wildlife 2019 Annual Report

Appendix 2: Oregon Department of Fish & Wildlife 2019 Annual Report

Appendix 3: California Department of Fish & Wildlife 2019 Annual Report

Appendix 4: NOAA Fisheries, Office of Law Enforcement, West Coast Division Report to the International Pacific Halibut Commission, February 2020

Appendix 5: 2019 Treaty Tribes Halibut Summary

APPENDIX 1

WASHINGTON DEPARTMENT OF FISH & WILDLIFE 2019 ANNUAL REPORT

PREPARED BY: WASHINGTON DEPARTMENT OF FISH & WILDLIFE (DECEMBER 20, 2019)

DATE: December 20, 2019

CONTRACTING PARTY:

United States of America

AGENCY:

Washington Department of Fish and Wildlife

CONTACT:

Heather Hall, Ocean Policy Coordinator, Heather.Hall@dfw.wa.gov

FISHERY SECTORS:

RECREATION/COMMERCIAL

IPHC REGULATORY AREA:

The Washington and Columbia River portion of IPHC regulatory area 2A (Area 2A).

DISCUSSION

2019 Washington Recreational Fishery Overview

Management Areas

Washington's halibut fisheries are managed under the Pacific Fishery Management Council's (Council) Pacific Halibut Catch Sharing Plan (CSP) for Area 2A. The CSP specifies how the Area 2A total allowable catch (TAC), as defined by IPHC, is allocated or "shared" among various state commercial and recreational sectors. The Washington Department of Fish and Wildlife (WDFW) manages its recreational fisheries by subarea. These subareas (Figure 1) are, Puget Sound (Washington Marine Areas 5 - 10); North Coast (Washington Marine Areas 3 and 4); South Coast (Washington Marine Area 2), and Columbia River (Washington Marine Area 1 to Cape Falcon, Oregon).

Allocation

The Washington recreational fishery receives 35.6 percent of the Area 2A allocation. In 2019, that amount was 277,100 pounds. As specified in PFMC CSP, this amount was further divided amongst the Washington subareas including a 2.3 percent contribution from the Oregon recreational allocation to the Columbia River subarea; allocations to each subarea are shown in Table 1. Note that subarea allocations do not total the Washington recreational allocation because a portion of the Washington recreational

allocation is used to allow incidental halibut retention in the primary sablefish fishery north of Point Chehalis, Washington. More details on this allocation are provided in the commercial fishery section of the report.

Recreational Catch Monitoring

WDFW port samplers meet recreational anglers as they return to the dock where they collect interview information on the number of Pacific halibut retained and released. Samplers also collect length data which is converted to weight using the IPHC conversion chart. Weekly estimates of catch and effort are produced to manage the fishery relative to available allocation. Managers track catch throughout the season and coordinate with IPHC, the National Marine Fisheries Service (NMFS), and other state managers to close when catch is projected to reach the subarea allocation. In 2019, 36 percent of the halibut landed coastwide were sampled for lengths (Table 2).

2019 Summary of Recreational Seasons by Subarea

WDFW worked with stakeholders to construct seasons that provide meaningful recreational fishing opportunity and maximize the season length. Since 2016, season dates have been structured to overlap across subareas as much as possible in order to; provide as much fishing opportunity to each subarea as possible, spread the season out, and keep catch within the Washington recreational allocation.

The 2A allocation was approved in January 2019 and was substantially higher than anticipated when the 2019 season dates were set in the fall of 2018. In addition to a higher than expected allocation, early season catch in the Puget Sound region was hampered by low CPUE and poor weather combined with significantly reduced fishing effort during the month of June. WDFW worked with stakeholders to provide as much fishing opportunity to Washington anglers as possible. Shifting allocation between subareas is allowed through the CSP and provides an opportunity to recognize differences in catch per unit effort in each of the subareas and adjust remaining allocations later in the season to provide some increased opportunity to recreational anglers in all subareas. Unharvested allocation in the Puget Sound region was used to provide additional fishing days in both the Puget Sound subarea and other Washington subareas including the Columbia River. The overall recreational Pacific halibut catch was 272,371 pounds or, 96 percent of the Washington recreational halibut allocation. A brief description of the 2019 season by subarea is provided below. See Table 3 for a complete summary of season and catch in all Washington subareas.

Columbia River Subarea (Washington Marine Area 1 to Cape Falcon, OR)

The Columbia River subarea is co-managed with ODFW and was structured to have similar open days as other Washington subareas as much as possible. The Columbia River season opened May 2 and was structured to be open two days per week, Thursdays and Sundays through May 26. Two additional all depth days were opened on June 20 and June 28. Total catch in the all depth fishery was 17,040 pounds out of the

14,627-pound allocation. 15,316 pounds of the all depth catch was landed into Washington, 1,724 pounds were landed into Oregon.
Five hundred pounds of the Columbia River subarea allocation is reserved to provide for a nearshore fishery that is open three days per week, Monday through Wednesday. Effective June 6, the nearshore fishery was open seven days per week and closed on September 30. Total catch in the nearshore fishery was 219 pounds out of the 500-pound allocation with all of the nearshore catch landed into Washington.

South Coast Subarea (Marine Area 2)

The south coast subarea opened on Thursday, May 2 and was generally structured to be open two days per week, Tuesday and Sunday. The south coast subarea was open a total of nine days and closed on June 29. The total catch was 74,801 pounds out of the 62,896-pound subarea allocation.

North Coast Subarea (Marine Areas 3 and 4)

The north coast subarea opened on Thursday, May 2 and lasted a total of 15 days. The season was structured to be open two days per week (Thursday and Saturday), although the final weekend was open, Thursday, Friday and Saturday. The fishery in this subarea closed on June 29th. The total catch was 141,608 pounds out of the 128,187-pound allocation.

Puget Sound Subarea (Marine Areas 5 – 10)

The Puget Sound subarea opened on Thursday, May 4 and was open a total of 18 days. The season was generally structured to be open two days per week, Thursday and Saturday. The fishery closed on June 29. The total catch was 38,703 pounds out of the 77,550-pound allocation. The remaining allocation was used to offset catch in other subareas resulting from opening additional all depth fishing dates (Table 3).

2019 Washington Commercial Fisheries

Incidental Halibut Retention in the Primary Sablefish Fishery North of Point Chehalis, Washington

The CSP provides for incidental landings of halibut in the primary sablefish fishery, which is open from April 1 until October 31, in the area north of Pt. Chehalis, Washington. The allocation to the primary sablefish fishery comes from the Washington recreational allocation and is only allowed when the 2A TAC is enough to provide meaningful opportunity for both sectors. When the 2A TAC is 1.5 million pounds or more, as it was in 2019, the allocation is 70,000 pounds.

Beginning April 1, the incidental landing limit was 200 pounds of halibut per 1,000 pounds of sablefish limit per landing with up to two additional halibut in excess of the 2 landings ratio allowed per landing (both dressed weight, halibut with head-on). Effective

August 2, the landing limit was changed to 250 pounds dressed weight of halibut for every 1,000 pounds dressed weight of sablefish landed and up to two halibut in excess of the landing ratio.

In 2019, 19 vessels made 88 landings that included 79,360 pounds of halibut in the primary sablefish fishery north of Pt. Chehalis at the conclusion of the fishery, which is 113 percent of the established quota. Incidental halibut landings in the sablefish fishery north of Point Chehalis from 2015-2019 are summarized in Table 4.

Directed Commercial Fishery South of Point Chehalis, Washington

The CSP apportions 85 percent of the 2A commercial allocation to allow for a directed commercial fishery south of Point Chehalis, Washington, which was 254,426 pounds in 2019. The Directed fishery is a small but important fishing opportunity for commercial fishery participants in Washington. In 2019, twenty vessels made 47 landings into Washington ports totaling 86,263 pounds (Table 5). In 2019, total pounds landed into Washington represented 34 percent of the allocation compared to 16 percent in 2014.

Canadian Halibut Landed into Neah Bay

As part of WDFW's port sampling efforts for recreational halibut fisheries, halibut caught in Canadian waters and landed into Neah Bay is also sampled from March through October. A summary of Canadian halibut landed into Neah Bay is provided in Table 6. Effort and landings of Canadian halibut into the port of Neah Bay has been relatively stable in recent years although significantly lower than in 2000 when 2,007 boats with 6,857 anglers reported landing 10,880 Canadian caught halibut.

RECOMMENDATIONS

WDFW worked with stakeholders to evaluate the results of the 2019 Pacific Halibut fisheries in Washington and propose changes to the CSP for 2020 including season dates for recreational fisheries. WDFW supports the Council's recommended changes to the CSP for 2020.

REFERENCES

N/A

APPENDICES – WDFW IPHC Annual Report Tables and Figures

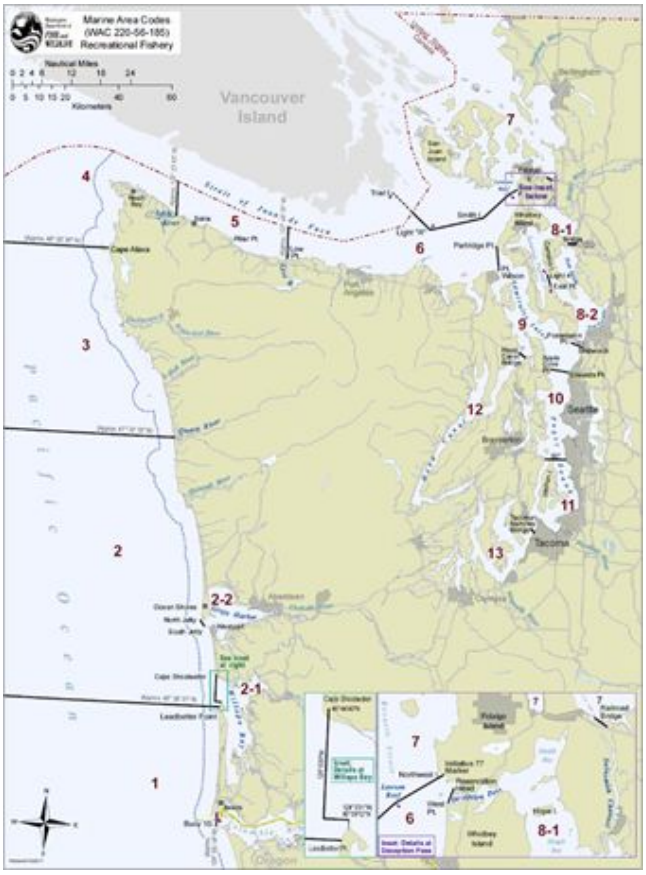

Figure 1[1]. Washington recreational management areas

Table 1. Washington recreational allocations by subarea

Subarea	Allocation (lbs.)
Puget Sound	77,550
North Coast	128,187
South Coast	62,896
Columbia River	15,127

[1] The Washington Administrative Code (WAC) described in the figure has been update to WAC 220-301-020. Please see Department of Fisheries and Oceans - Pacific Region for details on Canadian management areas and fishery restrictions.

Table 2. 2019 recreational sampling rate by subarea

Subarea	Halibut Landed	Lengths Collected	Sample Rate
Puget Sound	2056	794	39%
North Coast	8,011	2,036	25%
South Coast	4,138	1,445	35%
Columbia River	1,082	869	80%
WA Total	15,287	5,144	34%

Table 3: Washington statewide season summary

Subarea	Open dates	Allocation	Catch	Difference
North Coast	May 2, 4, 9, 11, 18, 24, 26, June 6, 8, 15, 20, 22, 27, 28, 29	**128,187**	**141,608**	**-13,421**
South Coast	May 2, 5, 9, 12, 24, June 6, 20, 28, 29	44,341	54,149	-9,808
	Nearshore: N/A	-	-	-
	South Coast Total	**62,896**	**74,801**	**-11,905**
Puget Sound	May 2, 4, 9, 11, 18, 24, 26, June 6, 8, 13, 15, 20, 22, 27, 28, 29	**77,550**	**38,703**	**38,847**
Columbia River	All-depth: May 2, 5, 9, 12, 24, 26, June 20, 28	14,627	17,040	-2,413
	Nearshore: M-W, May 6 – June 5; 7 days/wk. June 6 – Sep 30	500	219	281
	CR Total	**15,127**	**17,259**	**-2,694**
Washington Total		**284,260**	**272,371**	**11,390**

Table 4. Incidental halibut retention in the primary sablefish fishery north of Point Chehalis, WA

Year	Vessels	Landings	Quota	Catch	% of Quota
2019	19	88	70,000	79,360	113.4
2018	17	72	50,000	43,716	87.4
2017	15	67	70,000	35,866	51.8
2016	16	64	49,686	39,376	79.2
2015	8	37	10,348	9,797	94.7

Table 5. Directed Pacific halibut landings into Washington ports 2015-2019

Year	Net wt. lbs.	Fish Tickets	Vessels
2019	86,263	47	20
2018	61,177	35	15
2017	59,949	43	18
2016	55,055	45	21
2015	33,448	21	12

Table 6. Canadian halibut landings into Neah Bay, Washington, 2015-2019.

Year	# Boats	# Anglers	# Halibut
2019	238	666	403
2018	233	653	343
2017	169	419	245
2016	230	608	304
2015	254	648	434

APPENDIX 2

DATE: 12 DEC 2019

CONTRACTING PARTY: UNITED STATES OF AMERICA

AGENCY:

Oregon Dept. of Fish and Wildlife
Lynn Mattes or Maggie Sommer
2040 SE Marine Science Dr., Newport, OR 97365
541-867-4741
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FISHERY SECTOR/S

Recreational / Commercial

IPHC REGULATORY AREA/S

IPHC Regulatory Area 2A (USA: Washington, Oregon, California)

DISCUSSION

Topic 1. 2019 Recreational Fisheries in Oregon

Allocation

In 2019, the Oregon recreational Pacific halibut fishery received 20.0 percent of the Area 2A Total Allowable Catch (TAC), or catch limit as indicated in the Pacific Fishery Management Council (PFMC) "Pacific Halibut Catch Sharing Plan" (CSP).

Recreational Catch Monitoring

Catch estimates are derived using data obtained from the Oregon Recreational Boat Survey (ORBS). Catches, by port and boat type (charter or private), were calculated by applying trip level data obtained from dockside sampling (mean anglers per boat, mean fish weight, mean fish per angler, proportion of trips targeting Pacific halibut, proportion of non-targeted trips with incidental catch of Pacific halibut) to total effort counts (boats). Samplers were instructed to measure the lengths of all Pacific halibut from every other boat sampled, for both the private and charter fleets. This information was used to estimate total weight of fish landed. In 2019, statewide, 3,037 Pacific halibut were sampled, which was 35.1 percent of the estimated 8,652 Pacific halibut landed into Oregon (Table 1).

Groundfish Retention and Yelloweye Rockfish Conservation Area Closure

For 2019, retention of all groundfish except other flatfish species, sablefish and Pacific cod was once again prohibited in the Columbia River and Oregon Central Coast all-depth fisheries if Pacific halibut were aboard the vessel, to reduce incidental take of yelloweye rockfish.

Since 2005, the high relief area of Stonewall Bank, located approximately 15 miles off Newport, has been closed to halibut fishing (Figure 2). The intent of this provision is also to reduce the incidental take of yelloweye rockfish.

Columbia River Subarea (Leadbetter Point, Washington to Cape Falcon, Oregon)

The WDFW section of this report has details on the Columbia River Subarea fisheries and the total landings. An estimated 1,723 pounds (10.1 percent of the total subarea catch) were landed into Oregon ports, all from the all-depth season (Table 1). The total Oregon contribution to the subarea catch limit was 6,660 pounds, 2.3 percent of the Oregon recreational allocation.

Oregon Central Coast Subarea (Cape Falcon to Humbug Mountain)

The fishery in this subarea has two components: a shallow nearshore fishery and a directed all-depth fishery (spring and summer seasons).

Nearshore fishery (inside 40 fathoms)

In 2019, the central coast nearshore fishery opened on June 1, with an initial allocation of 32,591 pounds. Total catch was 14,806 pounds, which was 17,785 pounds (54.6 percent) under the original allocation. Ocean and bar conditions and winds hampered fishing for much of the early part of the season. Additionally, the gravel bar approximately 3 miles offshore of the Yaquina Head lighthouse seemed to have been sanded over by winter storms. That area often accounts for 50-70 percent of the total landings from this fishery but was not a productive location in 2019. Once weather calmed down, opportunities for salmon and albacore tuna drew effort away from halibut. These factors are the reason that so much of the allocation was left unharvested.

All-depth fishery

The all-depth fishery, split into spring (May-July) and summer (August-October) seasons, receives 88 percent of the Oregon Central Coast subarea catch limit. In 2019, 71.6 percent of that amount (171,103 pounds) was allocated to the spring fishery and the remainder to the summer fishery (67,898 pounds).

The 2019 spring season was managed in two periods, each with fishing allowed Thursday, Friday and Saturday. As has occurred since 1995, in the first period, fixed open dates were set preseason with the intent to not exceed the spring catch limit. Make-up dates, to be open if poundage remained available following the fixed dates, were also set preseason. In 2019, 15 fixed dates were open: May 9-11; May 16-18; May 23-23; May 30-Jun 1; and June 6-8. During these five openings, two that had low effort and landings due to weather and ocean conditions, two had medium effort and landings, and only one had high effort and landings. After the fixed dates, enough quota remained (65 percent) for nine back-up days (Jun 20-22; July 4-6; and July 18-20). The total catch from the spring season was 89,062 pounds (Table 1), or 53.1 percent of the spring all-depth catch limit. The remaining 82,041 pounds was then available to be shifted to another Oregon fishery inseason.

The 2019 summer fishery was set preseason to open every other Friday and Saturday from August 2 through October 31. Weather and ocean conditions for the first open periods limited effort and landings. Under the Catch Sharing Plan's flexible inseason management provisions, the daily bag limit was increased to two fish per day on Aug 23, and beginning Sept 8 the fishery was opened 3 days per week. These actions were taken to provide additional opportunities to harvest the allocation. Even with those changes, total catch in the summer fishery was 50,742 pounds (Table 1), under the catch limit by 17,156 pounds (25.3 percent). Similar to the nearshore fishery, good salmon and albacore tuna fishing drew anglers away from halibut for much of the summer.

Combined Nearshore and All-Depth Fisheries

The combined catch from the nearshore and all-depth fisheries was 154,610 pounds, or 56.1 percent of the 271,592 pound total allocation for the Oregon Central Coast subarea.

Southern Oregon Subarea

In 2019, the Southern Oregon subarea received 3.91 percent of the Oregon recreational allocation (11,322 pounds). As in previous years, effort and catch picked up in late July when other opportunities began to decrease and the weather and ocean became more favorable. Unlike many previous years, there was some effort or catch in this subarea after Labor Day weekend. Estimated catch in the Southern Oregon subarea was 3,972 pounds, 65 percent (7,350 pounds) under the allocation.

Summary

The combined catch of Pacific halibut in the 2019 Oregon recreational fisheries is estimated at 160,305 pounds. The catch was comprised of an estimated 8,652 fish averaging 18.5 pounds net weight (Table 1). An estimated 15,000 halibut-targeted angler trips contributed $2.5 million, via spending on trip- and fishing-related expenses such as hotels, lodging, tackle, and other items.

Topic 2. 2019 Commercial Fishery

Oregon-registered vessels with an IPHC license for commercial halibut in Area 2A are shown in Table 7. Approximately 57 percent of those vessels that had directed commercial licenses made deliveries of Pacific halibut in 2019; as did approximately 49 percent of those with incidental troll salmon licenses.

Harvesting and Processing

During the directed fishery, there were approximately 199,000 round weight pounds landed into Oregon at an ex-vessel value of $1.12 million in 2019 (Table 8). During the incidental to salmon troll fishery, there were 8,405 pounds round weight landed into Oregon, for an ex-vessel value of $51,000 in 2019. Halibut ex-vessel prices averaged $5.66 per round weight pound in 2019. There were a total of 148 unique vessels that had shoreside halibut landings in Oregon in 2019. Of the 148 vessels, 57 vessels landed halibut with troll gear (i.e., the incidental salmon fishery), and 74 landed halibut with longline or hook and line gears (i.e., the directed fishery). There were 168 deliveries in the directed fishery and 189 deliveries in the incidental salmon troll fishery (Table 8). Forty nine percent of the vessels in the directed fishery had less than $10,000 in ex-vessel revenue in 2019, while only four percent had over $50,000 in ex-vessel revenue. The

average ex-vessel revenue in 2019 was $15,156, while the median was approximately $13,800.

Sixteen processors or buyers purchased over $10,000 of landed halibut each in 2019, and this comprised over 97 percent of all halibut landings in Oregon. The top four processors or buyers purchased about 62 percent of all Oregon halibut landings. Three processors purchased less than $1,000 of landed halibut each, with one purchasing less than $100.

RECOMMENDATION/S

ODFW concurs with the Pacific Fishery Management Council's recommendation for three-day fishing periods (0800 day 1 to 1800 day 3, 58 hours) for the Area 2A commercial non-tribal directed Pacific halibut fishery in 2020, beginning the fourth Monday in June.

REFERENCES

None

APPENDICES

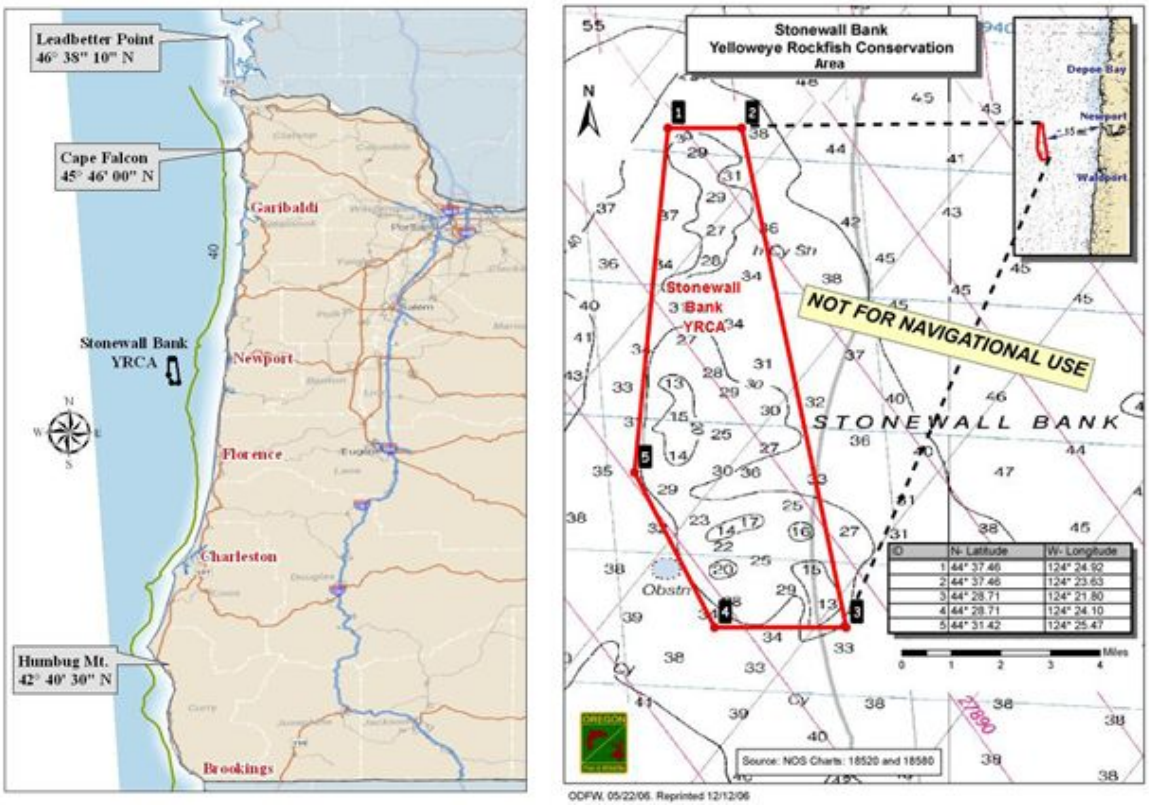

Figure 2. Maps with Oregon Pacific halibut recreational regulation locations, including Stonewall Bank Yelloweye Rockfish Conservation Area.

Table 6. 2019 Oregon Pacific halibut recreational fishery catch data.

Subarea	Season	No. of Halibut Sampled	Average Weight (net lbs.)	No. of Halibut Harvested	Total Pounds (Net Weight)
Columbia River	All-Depth	81	12.6	137	1,723
	Nearshore	0	N/A	0	0
Central Oregon Coast	Spring All-Depth	1,801	17.7	5,026	89,062
	Summer All-Depth	928	18.1	2,802	50,742
	Nearshore	144	29.3	506	14,806
Southern Oregon Subarea		83	21.9	181	3,972
Total		3,037	18.5	8,652	160,305

Table 7. Number of Oregon-registered vessels with an IPHC license for commercial halibut fisheries in Area 2A, 2013-2019

Oregon Registered Vessels	2013	2014	2015	2016	2017	2018	2019
Directed Commercial	88	99	92	109	135	128	130
Incidental Sablefish (N of Pt. Chehalis)	0	2	0	1	1	3	4
Directed and Incidental Sablefish	8	5	5	1	3	6	3
Incidental Troll Salmon	192	239	230	193	116	116	116

Table 8. Summary of Oregon commercial Pacific halibut fisheries information for 2019.

Sector	# of Vessels	# of Deliveries	Pounds Landed	Avg. Ex-Vessel Price per Pound	Total Ex-Vessel Value
Directed fishery (non-tribal)	74	168	198,797	$5.71	$1,121,558
Incidental with salmon	57	189	8,405	$6.17	$51,847
Total	**131**	**357**	**207,202**	**$5.66**	**$1,173,405**

APPENDIX 3

2019 California Department of Fish and Wildlife Report to the International Pacific Halibut Commission

The California coastline plays a unique part in Pacific halibut management as it is located at the southern extent of the population range. Fishery participation in California has historically been a minor and irregular contributor to harvest removals compared to other management areas. In 2019, nine vessels successfully participated in the Area 2A Non-Tribal Directed Commercial fishery in Northern California. Landings totaled 10,186 pounds dressed (head on, gutted) and resulted in an estimated $67,417 in ex-vessel revenue for northern California coastal communities; landings and revenue in 2019 set a record high for the recent fishery in California. California Department of Fish and Wildlife staff were present during the offloading of vessels in Eureka and conducted biological sampling in accordance with the International Pacific Halibut Commission's (IPHC) protocols. Ageing structures and tissue samples for Pacific halibut were collected and provided to the IPHC for inclusion in the stock assessment.

The recreational fishery in California was open May 1 through October 31 for a total of 184 days. Estimated catch in this fishery was 17,440 net pounds, or 44.7 percent of the 39,000 net pound quota. The average estimated weight per fish was 23.8 net pounds, approximately the same average weight as seen in 2018. Catch and effort in the 2019 recreational Pacific halibut fishery off California was anomalously low. Anecdotal information suggests several factors may have contributed to the low catch and effort and include: availability of other targets such as salmon, California halibut inside Humboldt Bay, and albacore in August and September; poor ocean and weather conditions during many of the summer months; and difficulty locating and catching fish on the "halibut grounds."

For more information about California's Pacific halibut fishery, contact:

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APPENDIX 4

NOAA FISHERIES

Annual Report to the International Pacific Halibut Commission

West Coast Enforcement

Division January 2020

NOAA Fisheries, Office of Law Enforcement, West Coast Division Report to the INTERNATIONAL PACIFIC HALIBUT COMMISSION

January 2020

TABLE OF CONTENTS

West Coast Enforcement Division Overview

Staffing Snapshot

37 Full-Time Employees

- 17 Special Agents
- 6 Enforcement Officers
- 7 Mission Support
- 6 Investigative Support
- 1 Contractor

Annual Budget:

$8.3 million

Headquarters

7600 Sand Point Way
NE Seattle, WA 98115

Field Offices

Alameda, CA
Astoria, OR
Bellingham,
WA Coos Bay,
OR Lacey, WA

Long Beach,
CA Monterey,
CA Newport,
OR Portland,
OR
Sacramento,
CA San Diego,
CA Santa Rosa,
CA Seattle, WA
Westport, WA

The National Oceanic and Atmospheric Administration (NOAA) Fisheries, Office of Law Enforcement (OLE), West Coast Division (WCD) provides marine enforcement and compliance assistance for the west coast of the continental United States, primarily California, Idaho, Oregon and Washington, but the area of responsibility also includes Arizona, Colorado, Montana, Nevada, North Dakota, South Dakota, Utah, and Wyoming. Our staff includes Special Agents, Enforcement Officers, and support personnel stationed in California, Oregon, and Washington. The states of Washington, Idaho, Montana, and North Dakota include 1,327 miles of international border with Canada and the states of California and Arizona include 513 miles of international border with Mexico. There are 1,293 miles of rigorous Pacific Ocean coastline and 7,863 miles of tidal shoreline, five National Marine Sanctuaries (to include 290 Marine Conservation Areas), the ecologically diverse Puget Sound, 21 major international seaports, 18 international airports, 222,471 square nautical miles of Pacific Ocean within the Exclusive Economic Zone (EEZ), and 339,375 square miles of land encompassing numerous rivers and tributaries feeding into the Pacific Ocean.

The OLE staffing plan recommends the WCD have a staff of 59 support and sworn personnel positioned throughout Washington, Oregon, and California. OLE has prioritized filling vacant positions and is striving to meet the staffing plan within the constraints of the annual budget. The plan divides the staff between three categories: Operational – which includes sworn staff (i.e. Special Agents, Enforcement Officers), Investigative Support – which includes operational support staff (i.e. Investigative Support Technicians), and Mission Support – which includes administrative staff (e.g. information technology and administrative assistants).

During 2019, one new Special Agent reported to our Seattle District Headquarters Office, and an additional five new Special Agents and a new Enforcement Officer recently reported to our Long Beach, Santa Rosa, and Monterey Field Offices. We plan to fill several additional operational and support positons this year, including two Supervisory Enforcement Officer positions in Oregon and California, two Enforcement Officers focused on Illegal, Unreported, and Unregulated (IUU) fisheries in Washington and California, an Investigative Analyst in Seattle, and a Compliance Liaison Analyst position, which will also be located in Seattle.

The Operational staff has Special Agents (SA) organized in two districts, each with a supervisory Assistant Special Agent-in-Charge (ASAC). District One covers Washington and Oregon, with a recommended staff of seven SA positions (six currently filled). District Two covers California, with a recommended staff of seven SA positions (all currently filled).

The Operational staff also has Enforcement Officers (EO) positioned in two patrol districts – Patrol North, which covers Washington and Oregon, and Patrol South, which covers California. When fully staffed, the plan calls for three patrol districts staffed by twenty EOs, with each district having a Supervisory Enforcement Officer (SEO) assigned. Currently, the SEO positions are vacant, with one Acting SEO and six EO positions filled. We are working closely with Headquarters to fill many of the vacant SEO and EO positions this year and into the future.

Office of Law Enforcement – Enforcement Priorities

The NOAA Office of Law Enforcement released six National Priorities for Fiscal Years 2018-2022. Input from the Council, along with various stakeholders and the public greatly assisted in the development of the Priorities. A full description of OLE Enforcement Priorities is available at this link and the priorities are summarized below: OLE Enforcement Priorities, Fiscal Years 2018 - 2022

1) ***Sustainable Fisheries***: NOAA Fisheries - in close coordination with the regional fishery management councils and state partners - is responsible for fostering healthy, productive, and sustainable living marine resources and habitats. NOAA Fisheries achieves these outcomes through: effective, transparent management actions supported by strong science; habitat conservation and restoration programs; an ecosystem approach to fisheries management; partner and stakeholder coordination and communication; and effective enforcement.
2) ***Protected Resources:*** The Endangered Species Act and the Marine Mammal Protection Act were enacted to help recover species that are facing extinction and to protect marine mammals. NOAA Fisheries is responsible for the conservation and recovery of protected species and their habitats, as mandated by the MMPA and ESA, through specific efforts focused on reducing negative effects of human activities, enforcing regulations against harming marine mammals and endangered species, and developing plans to guide the recovery and conservation of these protected species.
3) ***Illegal, Unreported, and Unregulated (IUU) Fishing/International:*** The vast majority of the seafood consumed in the U.S. is imported. This demand for seafood makes the U.S. an attractive market for IUU fish and fish products, and also places pressure on wild stocks from all over the world. Like domestic regional fishery management councils, regional fisheries management organizations (RFMOs) work to ensure that seafood caught within their governing areas is taken in an authorized and sustainable manner. Those who circumvent RFMO conservation and management measures are engaged in IUU fishing. The Seafood Import Monitoring Program, or SIMP, establishes reporting and recordkeeping requirements for imports of certain seafood products, to combat IUU caught and/or misrepresented seafood from entering U.S. commerce. IUU fishing disadvantages legal fishermen globally, including U.S. fishing fleets and coastal communities, and negatively impacts global fish stocks such as salmon and tuna.
4) ***Seafood Fraud:*** Seafood fraud - typically in the form of mislabeling or other forms of deceptive misidentification of seafood products with respect to quality, quantity, origin, or species - undermines the economic viability of U.S. and global fisheries, and deceives consumers. Seafood fraud is generally driven by economic motives and can occur at multiple points along the supply chain.
5) ***Wildlife Trafficking:*** Illegal wildlife trafficking is a multi-billion-dollar-per-year enterprise that targets some of the most iconic and endangered species on the planet. As economic opportunists, wildlife traffickers are also frequently involved in other illegal activities such as human trafficking, illegal weapons sales, and the illicit drug trade.
6) ***Outreach and Education:*** A primary goal of OLE is voluntary compliance by members of the public or regulated industries with marine resource protection laws and implementing regulations. Engaging in outreach and education activities to foster voluntary compliance is the cornerstone of this goal. While conducting patrol efforts, OLE enforcement officers have day-to-day interactions with industry members and the general public, and use these daily opportunities to answer questions and provide information. As part of the Vessel Monitoring System (VMS) program, OLE investigative support technicians routinely answer calls from industry members concerning regulations and make proactive contact with owners of vessels.

Office of Law Enforcement – WCD Cooperative Enforcement Program

Under the Federally-funded NOAA Cooperative Enforcement Program (CEP), OLE has ongoing formal Cooperative Enforcement Agreements (CEA) and Joint Enforcement Agreements (JEA) with all three West Coast States: California Department of Fish and Wildlife (CDFW) – Law Enforcement Division, Oregon State Police (OSP) – Fish and Wildlife Division, and Washington Department of Fish and Wildlife (WDFW) – Police. These agreements extend federal authority for state agencies to enforce specific federal laws and regulations as defined in specifically agreed upon federal priorities within each agreement. Officially affording partner officers, troopers, and wardens with formal federal deputation and specific federal marine law enforcement authority to assist NOAA.

In addition to providing reimbursement for direct federal fisheries enforcement work performed by state officers, wardens, and troopers in support of federal fisheries enforcement priorities, the agreements also provide funding for state administrative overhead and program-related direct purchases of large marine enforcement assets (e.g., boats, vehicles, etc.) as well as small or portable assets (e.g., dry suits, thermal imaging, cameras, etc.), in addition to targeted program meetings, specific training needs, and services (maintenance of equipment and vessels).

Within the framework of each agreement, there are defined marine law enforcement, compliance assistance, and living marine resource management responsibilities under (mutually agreed upon) federal priorities; these typically include both land-based and at-sea services, and may include air services, if available within a state partner agency and if determined to be of added value in support of one or more federal priorities.

Under the 2019 agreement, the performance threshold requires a minimum of 75% be directed toward execution priorities designated by OLE, with the remaining balance being assigned to general enforcement priorities. Execution priorities are formally defined and funding, performance, and reporting requirements are specified. The federal funding for JEA 2019 in the WCD was $2.633M, up 1.7% from 2018. The overall amount is equitably distributed to our three state partner agencies.

These agreements foster a cooperative environment, producing a viable collaborative approach to federal and state living marine resources enforcement and management. There are consistent ongoing cooperative efforts between WDFW, OSP, CDFW, OLE, and the U.S. Coast Guard (USCG) for the enforcement, preservation, and management of living marine resources. In addition to the states, the USCG is a valuable federal partner, providing premier at-sea and air resources, and willingly supporting state partner and federal operations. WDFW Officers, CDFW Wardens, and OSP Troopers ensure comprehensive protection and compliance through the monitoring of directed and incidental commercial, recreational, and tribal fisheries. This is accomplished by conducting vessel boardings, monitoring off-loads, inspections of processors, wholesalers, dealers, markets, buyers, restaurants, air and sea ports, and cold storage facilities, as well as through follow-up, surveillance, investigations, and collaborative operations. The significant contributions of our West Coast Cooperative Enforcement Program Partners (CDFW, OSP, WDFW), and the USCG, formulate the foundation of our successful coastal living marine resource protection and compliance.

California Department of Fish & Wildlife (CDFW) – Law Enforcement Division

CDFW Pacific halibut land-based enforcement activities include conducting dockside patrols to monitor catch off-loads, including incidental catch, and individual and vessel licenses; activities also include other compliance and verification checks and conducting collaborative enforcement efforts. CDFW at-sea responsibilities include patrolling the Pacific Ocean, conducting operations, joint enforcement, and inspecting at-sea vessels and personnel for licenses, federal permits, logbooks, marine permits and registration, and catch on board, with emphasis on activities within the Exclusive Economic Zone. Most CDFW activities focused on Pacific halibut is isolated to the North Coast of California, from Mendocino County to the Oregon/California border.

2019 CDFW IPHC Enforcement Efforts:

During 2019, CDFW Pacific halibut patrols covered the major ports in Mendocino, Humboldt, and Del Norte Counties, and approximately 15 sport boat launch ramps. CDFW patrolled, contacted, and regularly checked 9 charter boats targeting Pacific halibut between Shelter Cove and Crescent City. Numerous dockside and at-sea contacts were made where Pacific halibut were present. Offshore Pacific halibut patrols were made in combination with salmon and rockfish patrols.

CDFW IPHC Enforcement Statistics		
	2019	**2018**
Participating CDFW Wardens	11	11
Dockside Personnel Hours	85	110
At-Sea Personnel Hours	13	64
Contacts Made (Total)	399	436
Commercial	20	56
Recreational	379	380
Enforcement Actions		
Warnings	0	25
Citations	1	3

2019 CDFW IPHC Enforcement Highlights:

One recreational citation was issued during 2019 Pacific halibut patrols involving a vessel using multiple lines offshore Eureka. CDFW worked the commercial Pacific halibut derbies with USCG and OLE Enforcement Officers in Eureka and Crescent City harbors. Great compliance was observed during the commercial Pacific halibut derbies and no citations or warnings were issued.

Oregon State Police (OSP) – Fish & Wildlife Division

OSP Pacific halibut land-based enforcement activities include conducting dockside patrols to monitor catch off-loads, including incidental catch, and individual and vessel licenses; activities also include other compliance and verification checks and conducting collaborative enforcement efforts. OSP at-sea responsibilities include patrolling the Pacific Ocean, conducting operations, joint enforcement, and inspecting at-sea vessels and personnel for licenses, federal permits, logbooks, marine permits and registration, and catch on board, with emphasis on activities within the Exclusive Economic Zone.

2019 OSP IPHC Enforcement Efforts:

During 2019, OSP committed thirteen commissioned staff to Pacific halibut enforcement activities, for a total of 434 operational (vessel and personnel) hours. In conjunction with dockside enforcement efforts, at-sea resource hours included long-range and nearshore patrols. Also, in addition to the IPHC enforcement statistics noted below, OSP observed an 87% compliance rate for recreational contacts and a 94% compliance rate for commercial vessels during 2019, as compared to 89% for recreational contacts and 89% for commercial contacts during 2018.

OSP IPHC Enforcement Statistics		
	2019	**2018**
Participating OSP Troopers	13	23
Dockside Personnel Hours	191	165
At-Sea Personnel Hours	162	183
Contacts Made (Total)	379	912
Commercial	99	53
Recreational	280	859
Enforcement Actions		
Warnings / Citations	18*	40

**1 federal referral*

2019 OSP IPHC Enforcement Highlights:

- While investigating a California commercial salmon boat fishing off Bandon, Senior Trooper Keeler located fish ticket information on a Charleston commercial salmon boat that landed one Chinook and four Halibut to a dealer in Charleston. The information was forwarded to NOAA for further investigation.

- Senior Trooper Herman and Trooper Likens conducted a boat patrol on the opening day of the Columbia River sub-area recreational Pacific halibut season. The Troopers issued two citations to individual anglers from Washington that had each caught and retained a Pacific halibut, and were still angling, but did not have halibut tags. Two Pacific halibut were seized. Two other citations were issued for *Fail to Immediately Validate Harvest Card*, along with additional warnings.

- Senior Trooper Herman and WDFW Officer Dielman conducted a second ocean boat patrol during the Columbia River sub-area recreational Pacific halibut season. Herman and Dielman issued eight citations for *Fail to Immediately Validate Harvest Card*, three citations for *Unlawful Taking Halibut No Harvest Card*, three criminal citations for *Exceed Daily Limit of Halibut*, and one criminal citation for *Unlawful Possession of Marine Fish.* In total, six Pacific halibut were seized. On one contact, Herman and Dielman contacted a boat that was headed in from the halibut grounds with six people on board. The subjects told the officers they had retained six halibut. A subsequent consent search of the boat revealed a seventh Pacific halibut in a garbage can, an eighth Pacific halibut and yellowtail rockfish in a fish hold, and a partially filleted Pacific halibut in a cooler.

- Senior Trooper Van Meter and Trooper Butler conducted an offshore ocean patrol out of Newport for the recreational all depth Pacific halibut opening weekend. During the first contact, approximately thirteen miles offshore, near the Stonewall Banks Yelloweye Rockfish Conservation Area (YRCA), the Troopers encountered an angler who had a warrant out of Linn County for failure to appear on a DUI charge. The Troopers took the individual into custody for transport on the OSP vessel to shore where a patrol Trooper then took the individual to the Lincoln County Jail. The Troopers returned back to the ocean where they found a boat fishing for Halibut near the Stonewall Banks YRCA. The anglers initially stated they only had a few Petrale flat fish, but when the Troopers inspected their cooler, where a large Lingcod was found. Lingcod is closed outside of the 40 fathom line and the boat was fishing 2.5 miles outside of that line. The angler admitted the fish was caught where they were being contacted and knew about a 40 fathom closure, but said he didn't realize it was in effect. The angler also admitted to having the 30 and 40 fathom lines marked on his plotter. When the angler was asked why he didn't disclose the Lingcod when asked about what fish were on board, he said he didn't know why. The angler was cited for *Possession of Marine Fish Closed Season.* Several other anglers were contacted who were having issues with the ODFW Electronic Licensing System (ELS) and compliance assistance was provided.

- Senior Trooper Herman, Senior Trooper O'Connor, and USCG boarding officer (and future Recruit Trooper) Jace Hughsby contacted a vessel with four anglers on board angling for Pacific halibut within the Cape Falcon Marine Reserve. The subjects had the marine reserve on their plotter but claimed that they thought they were outside of it. Further investigation revealed that one of the subjects had been buying Oregon resident angling licenses but was a Washington resident. Four citations were issued for *Angling within Marine Reserve*, and one citation was issued *for Unlawful Possession of a Falsely Applied for License*.

- Senior Trooper Van Meter responded to a commercial salmon troll boat boarded by USCG Station Yaquina Bay and found possession of too many Pacific halibut for the amount of salmon on board the vessel. Upon contact, the fisherman admitted to catching two Pacific halibut and one Chinook on the first pull. He assumed he would catch another Chinook to meet the ratio allowing for the retention of the second Pacific halibut, but unfortunately, he did not. The extra Pacific halibut was seized and the fisherman was cited for *Exceeding Incidental Halibut/Troll*.

- Senior Trooper Herman and WDFW Officer Dielman conducted an ocean boat patrol during the Columbia River sub-area recreational Pacific halibut season. Herman and Dielman issued six citations for *Fail to Immediately Validate Harvest Card* and issued a citation for *Unlawful Possession of Marine Fish* to an angler who had caught and retained a yellowtail rockfish and was using it as Pacific halibut bait.

- Senior Trooper Van Meter conducted an ocean patrol out of Newport in conjunction with USCG Cutter ORCAS for the first commercial Halibut opener. Two boarding teams were deployed and contacted commercial fishing vessels during the season to ensure fisherman were fishing in the proper areas, careful release of bycatch and undersize Halibut was occurring, as well as determining what species were being retained and license status of persons on board. Once the season closed, USCG boarding officers did numerous vessel safety checks as the boats were headed back to port. The following day, Senior Trooper Van Meter conducted dockside checks at Newport dealers for the Halibut offloads. One captain was warned for exceeding his open access sablefish quota.

- Senior Trooper Farrar was checking commercial Pacific halibut boats in Winchester Bay when he located an individual not in possession of his commercial fishing license. The fisherman said he purchased a license, but could not find it. He was issued a warning for not having his license in possession. The Trooper later checked ODFW's commercial licensing system and confirmed the license was purchased.

- Trooper Ross and Trooper Roberts worked a late evening shift in Charleston the night of a commercial Pacific halibut derby. USCG and NOAA Fisheries OLE forwarded a complaint of one commercial fishing vessel cutting another's longline. After further investigation, it was believed that two boats set their gear too close together and one accidentally ran over the other's line, cutting it with the prop. The vessel with its line cut lost approximately 33 tubs of longline gear when the other side of the line broke while pulling its gear. Well after all the other boats came into port at the end of the derby, the vessel with the lost gear was spotted entering the mouth of the river at a very slow speed with a deckhand at the very back of the boat. The Troopers contacted the vessel when they moored in Charleston. The crew and skipper were very upset and hostile since they lost almost all of their gear and landed very few fish. A consent search of the boat revealed the boat had landed one Pacific halibut, nine black cod, and one very small, fresh Chinook salmon. The Troopers attempted to determine why and how the boat had landed the salmon, but the skipper would not tell the whole story and the deckhands refused to answer questions from the Troopers. It is believed that after losing all their longline gear, they trolled for salmon on the way into port. The skipper and one deckhand were cited and released for *Possession of Undersize Salmon*. The skipper and one deckhand were also cited for *No Individual Commercial Fishing License*. The other deckhand, after being told multiple times that he was detained and not free to leave, left the area prior to receiving a citation. All crewmembers aboard the vessel stated they had an individual commercial fishing license, but did not have the license with them. The ODFW system was down and a records check could not be completed for the subjects, thus they were cited for the offense. A records check later showed none of the subjects were licensed. Additional charges were referred to the DA's office.

Washington Department of Fish & Wildlife (WDFW) – Police

WDFW Pacific halibut land-based enforcement activities include conducting dockside patrols to monitor catch off-loads, including incidental catch, and individual and vessel licenses; activities also include other compliance and verification checks and conducting collaborative enforcement efforts. WDFW at-sea responsibilities include patrolling the Pacific Ocean, conducting operations, joint enforcement, and inspecting at-sea vessels and personnel for licenses, federal permits, logbooks, marine permits and registration, and catch on board, with emphasis on activities within the Exclusive Economic Zone. Pacific halibut is shared among four user groups in Washington State: recreational, directed non-Indian commercial, non-Indian incidental, and Tribal fishermen.

2019 WDFW IPHC Enforcement Efforts:

During 2019, WDFW committed twenty-two commissioned staff to Pacific halibut enforcement activities, for a total of 729 personnel hours. In conjunction with dockside enforcement efforts, at-sea resource hours included mid-range and nearshore patrols. Also, in addition to the IPHC enforcement statistics noted below, WDFW observed an 85% compliance rate for commercial and recreational contacts.

WDFW Police developed a patrol plan for 2019 that provided comprehensive protection throughout the entire year. Pacific halibut operations focused on commercial and recreational fisheries, as well as closed season harvest. The enforcement activity was conducted through emphasis patrols. WDFW looked to sustain past successes through emphasis on the following areas: deploying additional officer presence to the highly participated-in Northern Olympic Peninsula recreational Pacific halibut fishery; investing in increased presence for “off peak” patrol hours and public safety; and conducting joint patrols with OSP, County deputies, USCG personnel, and Border Patrol to increase Pacific halibut patrol relevance and effectiveness within the local and diverse law enforcement communities. As Pacific halibut seasons and habitats overlap with other fisheries, directed Pacific halibut patrols often revealed federal and state violations related to other species.

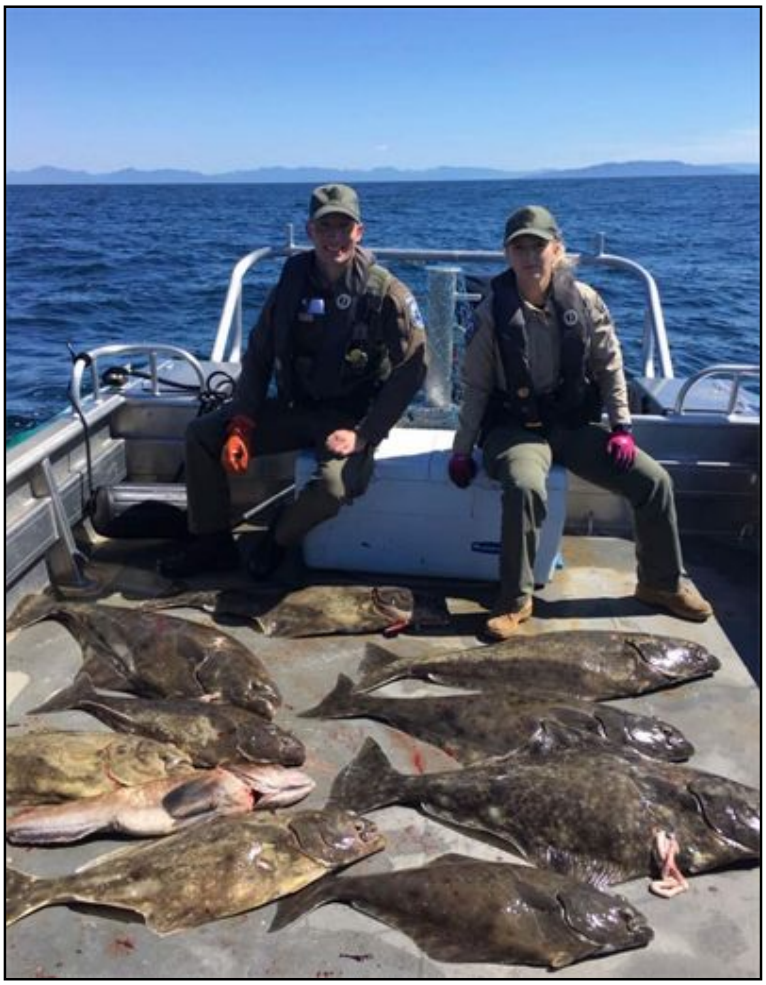
WDFW IPHC Enforcement Statistics		
	2019	**2018**
Participating WDFW Officers	22	18
Dockside Personnel Hours	299	110
At-Sea Personnel Hours	430	351
Contacts Made (Total)	752	1,444
Commercial	unk	81
Recreational	unk	1,363
Enforcement Actions		
Warnings / Citations	163	128

2019 WDFW IPHC Enforcement Highlights:

Closed Areas: "C-shaped" Yelloweye Rockfish Conservation Area (YRCA):

- The North Coast of Washington is a popular halibut fishing destination and a focus patrol area. Due to a large "C-shaped" YRCA closure, fishermen are required to steer clear to protect yelloweye rockfish populations. Despite this being a long-standing closure and with today's advanced mapping technology, there are still significant violations occurring within the closed boundaries.

  On one patrol, WDFW SGT Kit Rosenberger, Officer Tierra Wessel, and Officer Morgan Cooney contacted several boats that were fishing well inside the "C-shaped" YRCA. A total of 10 halibut were seized from several vessels unlawfully fishing in this closed area and citations were issued.



Officer Cooney and Officer Wessel with Pacific halibut seized from vessels fishing within the "C-shaped" closure.

Joint State Offshore Halibut Fishery Patrols - Washington South Coast:

- As reported by OSP on page 8 of this report, WDFW Officer Todd Dielman, along with OSP Fish and Wildlife Trooper Dave Herman, conducted a joint state (Washington and Oregon) offshore recreational Pacific halibut patrol. Numerous anglers were found failing to record their Pacific halibut. One vessel contacted was occupied by six anglers and found to be in possession of nine Pacific halibut and one closed-season rockfish. The owner of the boat was cited for the over-limit violation and the illegal Pacific halibut were seized and donated.

WDFW Officer Todd Dielman along with Oregon State Police Fish and Wildlife Trooper Dave Herman on joint state halibut patrol with seized Pacific halibut.

Public Safety Response – Vessel in Distress:

- During a Pacific halibut patrol, WDFW SGT Kit Rosenberger and now-retired Officer Greg Haw were patrolling the closed area to the southwest of LaPush, Washington when they were contacted by the USCG advising of a vessel in distress about 20 miles away. The Coast Guard was unable to respond due to another vessel in distress and requested assistance. An uncomfortable wind chop prevented a quick response, but WDFW Officers were on-scene in about 90 minutes. A three-hour tow back to LaPush finished the day for the officers on the water.

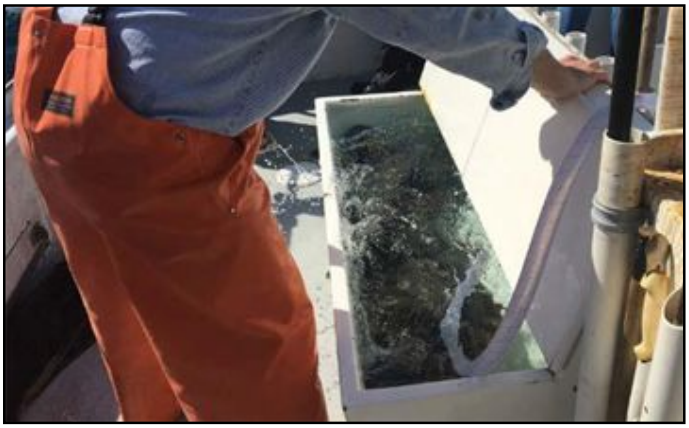
A picture of the disabled vessel towed for three hours back to the safety of the Quileute Marina.

Pacific Salmon Charters Pacific Halibut Case - Resolution:

- In 2017, WDFW investigated a Pacific halibut case involving Pacific Salmon Charters based in Ilwaco, Washington. WDFW Officer Todd Dielman led the investigation that lasted over a year and a half. It finally came to an end for two of the charter boat captains in February 2019 when they were convicted after an eight-day jury trial in a Pacific County courtroom.

  Robert Gudgel of Longview was convicted of eight counts of unlawful recreational fishing in the 2nd degree, which are misdemeanor crimes. His brother, David Gudgel of Seaview was convicted of 10 counts of unlawful recreational fishing in the 2nd degree, and one count of waste of wildlife, which is a gross misdemeanor crime.

  WDFW Police initiated the 2017 investigation in June after a client and two of his relatives went fishing on the charter boat *WESTWIND*. They told officers that during the trip some of the smaller halibut they caught were placed in a fish box filled with water that was called a "live box." Larger halibut were retained during the trip and put in a fish box without water known as the "kill box." At the end of the day, the boat was over the legal limit of fish for everyone on board. The witnesses testified that David Gudgel and his deckhand went through all of the Pacific halibut on board and threw three dead Pacific halibut overboard in exchange for larger Pacific halibut. They also testified that four additional Pacific halibut were thrown back at the end of the trip that they believed were also dead, to ensure the boat returned to port with only their legal limit. As a result of that information, WDFW Officers conducted a subsequent undercover fishing trip on a different vessel working out of the Pacific Salmon Charter Office. Similar violations were observed during that trip by the undercover officers.



A picture taken of the 'live box' used on the Pacific Salmon Charter vessels.

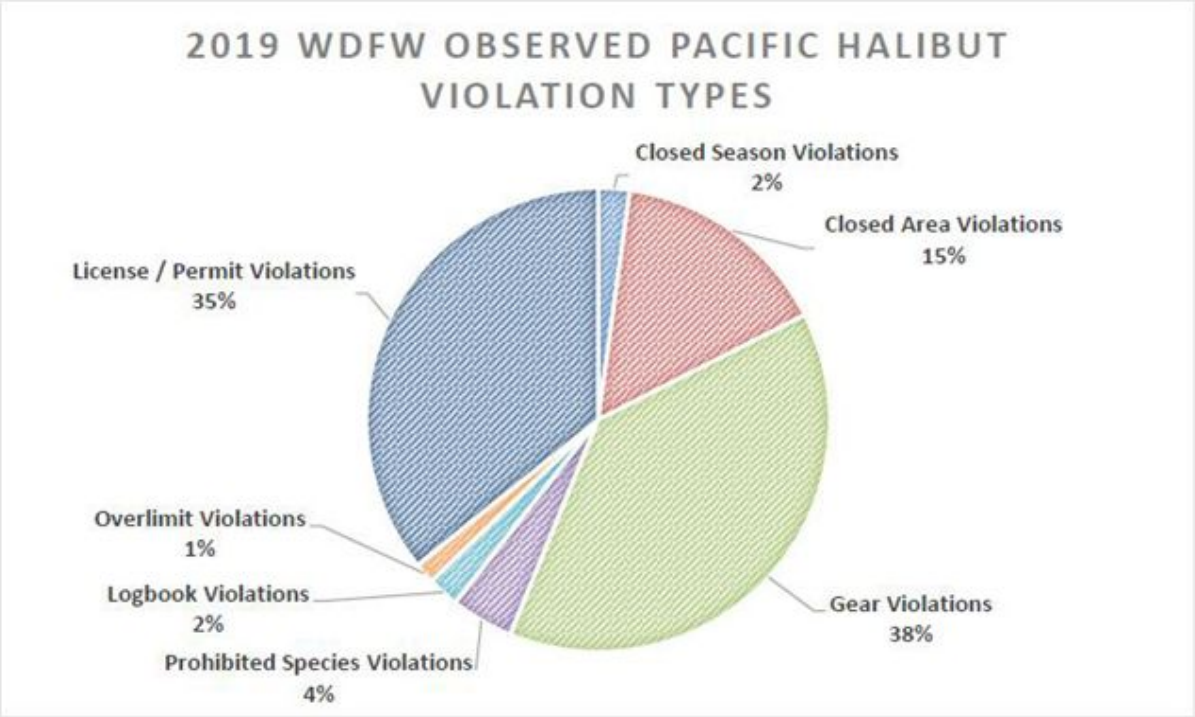
At the conclusion of the undercover fishing trip, officers obtained a search warrant for Pacific Salmon Charters to search for records related to prior Pacific halibut fishing trips. WDFW Police and NOAA OLE executed the warrant, seizing passenger manifests and vessel logs.

Many written statements were obtained by Officer Dielman who contacted more than 100 passengers. Through those verbal and written statements, many passengers described the same events as the original witnesses. Passengers said some of the Pacific halibut discarded for larger fish were observed swimming off while others were described as slowly sinking, similar to leaves falling from the sky, indicating the fish were dead.

In March 2019, after eight days of trial and a guilty verdict by six jurors, the Pacific County South District Court Judge sent a clear message that abuse of natural resources will not be tolerated, as she handed down stiff sentences to both men. Robert Gudgel received 40 days in jail, $8,000 dollars in fines, and one year suspension from fishing or being on a vessel. David Gudgel received 55 days in jail, $15,000 dollars in fines, and a year suspension from fishing or being on a vessel.

The prosecution of this case would not have been possible without the extraordinary efforts put forth by Pacific County Prosecutor Mark McClain and Deputy Prosecutors, Joe Faurholt and Ben Haslam who worked tirelessly on this case. Their diligence ensured this case had a successful outcome. The case also would not have been possible without the 19 witnesses who provided firsthand accounts of the violations. They were the eyes and ears on this case and WDFW thanks them.

WDFW recognizing Pacific County Prosecutors.


2019 WDFW OBSERVED PACIFIC HALIBUT VIOLATION TYPES
Closed Season Violations 2%
Closed Area Violations 15%
License / Permit Violations 35%
Overlimit Violations 1%
Logbook Violations 2%
Prohibited Species Violations 4%
Gear Violations 38%

NOAA Fisheries Office of Law Enforcement – West Coast Division

2019 OLE IPHC Enforcement Efforts:

During 2019, OLE's West Coast Division (WCD) worked closely with JEA partners and the USCG to monitor activity associated with Pacific halibut fisheries, pursuant to IPHC regulations. As part of an annual enforcement emphasis, OLE-WCD Enforcement Officers, along with JEA partners from WDFW, OSP, and CDFW, conducted patrols and vessel boardings, primarily in support of enforcement efforts associated with the Area 2A Pacific halibut directed commercial fishery. The IPHC established 10-hour fishing periods for Area 2A in the 2019 IPHC Fishery Regulations, adopted by federal regulation under Section 50 of the Code of Federal Regulations (CFR) at 50 CFR §300.62. Each fishing period in the Area 2A directed commercial fishery was set to begin at 8 a.m. and end at 6 p.m. local time. OLE Enforcement Officers focused enforcement activities on the first three fishing days, June 26, July 10, and July 24, 2019. The fishery was restricted to waters south of Point Chehalis, Washington, (46°53.3' North latitude), under regulations promulgated by the National Marine Fisheries Service (NMFS).

The primary focus of OLE enforcement efforts was to ensure commercial fishermen participating in the fishery followed careful release regulations for Pacific halibut, as well as gear requirements outlined in IPHC regulations. OLE's secondary focus was placed on ensuring compliance with commercial derby start and stop times, integrity of closed areas, and monitoring of offloads for compliance with catch retention requirements. In order to achieve the objectives of the mission, a tactical plan was developed to ensure partner agencies from the three Pacific Coast states and the U.S. Coast Guard worked in conjunction with NOAA OLE.

2019 OLE IPHC Enforcement Highlights:

- OLE Enforcement Officers conducted dockside boardings of 44 commercial fishing vessels participating in the fishery. Enforcement Officers teamed up with USCG flight crews to fly 9 missions, monitoring the start and stop times for each fishing period. No violations were noted during the flights. Due to limited availability of Enforcement Officers, no OLE at-sea boardings were conducted. NOAA Enforcement Officers conducted 10 dedicated dockside patrols prior to, during, and after the fishing period. The combination of air and land patrols resulted in 133 personnel hours dedicated to the mission. Enforcement Officers identified several vessels with minor violations, resulting in compliance assistance. Two vessels had improper gear markings and one vessel had a malfunctioning vessel monitoring system. Dockside offload monitoring and boardings resulted in identification of two vessels which caught and retained a total of four undersized Pacific halibut. The owners/operators were issued summary settlement fines and the undersized Pacific halibut were voluntarily abandoned.

- All OLE activity was coordinated with personnel from WDFW, OSP, CDFW, and the USCG:

    - WDFW (see pages 12-18): deployed two patrol vessels in areas known for heavy concentrations of commercial halibut fishing. During operations in conjunction with OLE, a total of six commercial fishing vessels were boarded. Several violations were noted during the boardings. WDFW cited one vessel for no state commercial fishing license and another vessel had a crew member with no commercial fishing license. One commercial halibut vessel was found to be in possession of a yelloweye rockfish and the operator was cited.

    - OSP (see pages 8-12): OSP Fish and Wildlife personnel deployed one patrol vessel in areas known for heavy concentrations of halibut fishing. During operations in conjunction with OLE, OSP Troopers boarded a total of 8 vessels at sea and five vessels dockside. No significant violations were found.

    - CDFW (see pages 6-7): CDFW Wardens began both derby days by flying missions with the USCG on board C-27 fixed wing aircraft based out of Sacramento. During operations in conjunction with OLE, CDFW surface assets boarded a total of three commercial halibut vessels. Fishing effort during Area 2A directed commercial Pacific halibut derbies is historically low in Northern California and 2019 proved to be consistent with past seasons.

    - USCG: USCG personnel were eager to work with OLE to provide a robust enforcement posture to ensure compliance with applicable regulations during Area 2A directed commercial derbies. The USCG provided a fixed wing air asset to patrol the Pacific Coast with a focus on start and stop times for the directed fishery. JEA partners provided subject matter experts to fly with the USCG on these missions in order to serve as observers to confirm if violations were detected. The USCG provided helicopters from two air stations to fly targeted missions in areas of high concentration of commercial Pacific halibut fishing vessels, with a focus on monitoring directed commercial derby start and stop times. OLE Enforcement Officers flew with the USCG on all of these missions

      The USCG also provided cutters to patrol areas of high concentrations of fishing activity. Each derby day consisted of a minimum of two cutters and a maximum of three, patrolling from Humboldt Bay, CA, to the northern extent of Area 2A at Point Chehalis, WA. USCG small boat stations also provided boarding personnel and boat patrols throughout Area 2A.

      Although USCG patrol efforts resulted in no detected violations, they provided a valuable visible enforcement presence. Numerous commercial fishing vessel operators acknowledged heavy law enforcement presence and some stated they had never seen such oversight of this fishery in years past.

OLE Investigative Support Program:

Investigative Support staff from the West Coast Division (WCD) provided valuable support to IPHC Area 2A enforcement activities. Specifically, WCD's Investigative Support Team provided daily VMS data to aid operational assets with resource allocation and positioning during dedicated enforcement operations; past Pacific halibut fishing activity was analyzed to identify potential areas and regulations requiring additional focus; and vessel monitoring system information and post-derby landing data was monitored to identify potential violations. The WCD Investigative Support team identified thirteen VMS declaration discrepancies occurring during Area 2A directed commercial Pacific halibut fishing periods.

APPENDIX 5

2019 Treaty Tribes Halibut Summary

The 2019 treaty halibut allocation was 525,000 lbs. of which 497,000 lbs. was the commercial Total Allowable Catch (TAC), and 28,000 lbs. were set aside for the Ceremonial and Subsistence (C&S) fishery. Thirteen tribes have treaty-reserved rights to Pacific halibut located in the International Pacific Halibut Commission (IPHC) management area 2A: the Coastal Tribes: Hoh, Makah, Quileute, Quinault; and the Puget Sound Tribes: Jamestown S'Klallam, Lower Elwha Klallam, Lummi, Nooksack, Port Gamble S'Klallam, Skokomish, Suquamish, Swinomish, and Tulalip.

For the 2019 tribal halibut season, the tribes agreed to a revised Memorandum of Understanding (MOU) similar to the 2018 MOU. The MOU maintained the core structure of the 2000 management plan and associated management measures. The fishery structure included an unrestricted fishery without landing limits, a restricted fishery with a 500 lb. per vessel per trip limit, and a late season/mop up fishery. The 2019 MOU enabled each tribe to prosecute their unrestricted and restricted fishery in any order with a 48-hour catch accounting period between each fishery. The 2019 MOU also permitted a second restricted fishery to occur if the initial restricted fishery did not harvest 19% of the TAC. The number of hours for each fishery, codified in the MOU, were based on a fishery model developed by Point No Point Treaty Council staff.

In the unrestricted fishery, a tribe could harvest halibut for 55 hours at a time of their choosing; this allowed tribes to avoid dates of non-treaty fishing and having to negotiate weather criteria. During the restricted fishery, a tribe could harvest halibut for 84 hours with a 500 lb. per landing per vessel limit. The unrestricted and restricted fisheries took place between March 15th (the international opening date) and May 15th. The total unrestricted catch was 374,801 lbs. over 185 landings. This resulted in an unrestricted weight-per-unit-effort of 39.81 lbs./vessel/hour. The total restricted catch was 49,456 lbs. over 207 landings constituting approximately 52.4% of the restricted TAC, or 10% of the total TAC.

Inseason the tribes agreed to a second restricted opener. In the second restricted fishery, a tribe could harvest halibut for 72 hours with a 500 lb. per landing per vessel limit with a maximum of three landings (1,500 lbs. total). The second restricted fishery harvested 68,199 lbs. over 148 landings and took place between May 20th and June 5th. The tribes held a conference call on June 11th to discuss a late season/mop-up fishery. There were relatively few pounds left in the TAC, so the tribes agreed to individual tribal shares of approximately 327 lbs. Each tribe could harvest or donate those pounds to Lummi or Port Gamble for their respective Canoe Journeys between June 11th and July 24th. The tribes harvested 2,112 lbs. over four landings in this fishery.

The 2019 tribal halibut commercial season closed to all parties on July 25, 2019. The total tribal commercial halibut catch in 2019 was 494,568 dressed lbs. which was 0.5% under the allocation. The C&S halibut fishery continued until December 31, 2019.

Part II
IPHC Contracting Party Report for IPHC Regulatory Areas 2C, 3, and 4

DATE: 10 January 2020

CONTRACTING PARTY: United States of America

AGENCY:

National Marine Fisheries Service
Glenn Merrill, Senior Policy Advisor
Glenn.Merrill@noaa.gov

FISHERY SECTORS

All

IPHC REGULATORY AREAS

Regulatory Areas 2C, 3, and 4 (USA: Alaska)

DISCUSSION

Section 1: Charter Halibut Fisheries

Harvest under 2019 Annual Management Measures in Areas 2C and 3A

The Area 2C and 3A Halibut Catch Sharing Plan was implemented in 2014, and is the method for determining allowable levels of charter halibut harvests in those areas. The Catch Sharing Plan also endorses a process through which the North Pacific Fishery Management Council (Council) recommends annual management measures to the IPHC that are likely to limit charter harvests to their annual catch limits.

In Area 2C, the 2019 charter catch limit was 820,000 pounds (lb), and the fishery was managed under a daily bag limit of one fish that had to be 38 inches or less or greater than 80 inches total length. The preliminary 2019 charter halibut harvest estimate of 667,000 lb is 18.7 percent below the catch limit.

In Area 3A, the 2019 charter catch limit was 1,890,000 lb, and the fishery was managed under a two-fish daily bag limit, with a maximum size limit of 28 inches total length on one fish, a Wednesday closure for the entire season as well as five Tuesday closures in July and August, a 4-fish annual limit, a one-trip per day per charter vessel limit, and a one-trip per day per charter halibut permit limit. A prohibition on halibut harvest by skipper and crew during charter vessel fishing trips was effective in both management areas. The preliminary 2019 charter halibut harvest estimate of 2,019,000 lb indicates that harvest exceeded the catch limit by approximately 6.8 percent.

In December 2019, the Council recommended charter management measures for the 2020 fishery.

Guided Angler Fish Program- 2019 Summary

In 2014, NMFS implemented the guided angler fish (GAF) program to authorize limited annual transfers of commercial halibut IFQ as GAF to qualified charter halibut permit holders for harvest by charter vessel anglers in Areas 2C and 3A. The GAF program allows qualified charter halibut permit holders to offer charter vessel anglers the opportunity to retain halibut up to the limit for unguided anglers when the charter management measure in place limits charter vessel anglers to a more restrictive harvest limit. In 2019, by using GAF, charter vessel anglers in Area 2C and Area 3A could harvest up to two halibut of any size per day, and GAF were not subject to the annual limit or daily closures in Area 3A. Table 1 summarizes IFQ to GAF transfers for 2014 through 2019. In 2019, approximately 97,680 lb of Area 2C IFQ was transferred as GAF and 75,039 lb was harvested in the charter fishery. In Area 2C, the pounds of IFQ harvested as GAF has increased significantly in each year since 2015. In 2019, approximately 13,500 lb of Area 3A IFQ was transferred as GAF and 10,600 lb was harvested in the charter fishery.

Table 1. Summary of IFQ to GAF transfers

Year	IPHC Regulatory Area	Number of Transfers (GAF Permits Issued)	IFQ Pounds Transferred	Number of GAF Transferred	Number of GAF Harvested (% of amount transferred)
2014	2C	92	29,498	1,117	800 (72%)
	3A	19	11,654	910	269 (30%)
	Total	111	41,152	2,027	1,069 (53%)
2015	2C	119	36,934	548	428 (78%)
	3A	25	10,337	269	143 (53%)
	Total	144	47,271	817	571 (70%)
2016	2C	132	47,064	723	529 (73%)
	3A	26	10,442	289	220 (76%)
	Total	158	57,506	1,012	749 (74%)
2017	2C	207	53,206	719	576 (80%)
	3A	22	9,786	233	157 (67%)
	Total	229	62,992	952	733 (77%)
2018	2C	332	80,656	1,222	972 (80%)
	3A	31	12,760	304	215 (71%)
	Total	363	93,416	1,526	1,187 (78%)
2019	2C	341	97,680	1,601	1,237 (77%)
	3A	29	13,524	338	266 (79%)
	Total	370	111,204	1,939	1,503 (78%)

Regulatory amendment to align the management measures for guided and unguided halibut anglers on charter vessels

In 2019, NMFS implemented halibut sport fishing regulations that apply to circumstances where both guided and unguided fishing occurs at the same time from a charter vessel. In these cases, the daily bag limits, possession limits, size restrictions, and carcass retention requirements for guided fishing also apply to unguided fishing. The regulations are intended to aid enforcement and ensure the proper accounting of halibut taken when sport fishing in Areas 2C and 3A.

Regulatory amendment to establish an annual registration requirement for Charter Halibut Permits

NMFS regulations that became effective in December, 2019 now require Charter Halibut Permits (CHPs) to be registered annually before use. The annual registration of CHPs is intended to improve the enforcement of CHP transfer limitations and ownership caps, as well as provide additional information to NMFS and the NPFMC on changes in CHP ownership, leasing, and participation.

Section 2: Commercial Groundfish Fisheries

Halibut Bycatch

Current Halibut Bycatch Amounts and Management

Halibut bycatch mortality in the Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) groundfish fisheries is highly regulated and closely managed by the Council and NMFS through the Fishery Management Plans (FMPs) for each management area. Through regulations implementing the FMPs, NMFS manages halibut bycatch by (1) establishing annual halibut prohibited species catch (PSC) limits, (2) apportioning PSC limits to fishery categories and seasons to accommodate halibut PSC needs in specific groundfish fisheries, and (3) managing groundfish fisheries to prevent PSC from exceeding the established limits.

The FMPs specify that halibut bycatch in groundfish fisheries is managed as PSC. Catch of PSC species must be avoided while fishing for groundfish and PSC species may not be retained unless required under the FMP. Halibut PSC limits are an apportioned, non-retainable amount of halibut provided to a groundfish fishery to provide an upper limit on the bycatch of halibut in a fishery. **When a halibut PSC limit is reached in an area, further fishing with specific types of gear or modes of operation is prohibited by those types of operations taking halibut PSC in that area.**

Although halibut PSC is taken by vessels using all types of gear (trawl, hook-and-line, pot, and jig gear), halibut PSC primarily occurs in the trawl and hook-and-line (non-trawl) groundfish fisheries. The Council and NMFS annually establish halibut PSC limits for vessels in the trawl and non-trawl groundfish fisheries in the BSAI and GOA. NMFS manages groundfish fisheries to ensure these limits are not exceeded.

The established halibut PSC limits and total estimated halibut PSC use for 2019 are shown in Tables 2 and 3.

Table 2. 2019 BSAI halibut PSC limits and estimated halibut PSC use

BSAI Fishery	Halibut PSC Limit metric tons (mt)	Halibut PSC Use (mt)	Remaining PSC limit (mt and %)
Trawl (Amendment 80 and BSAI Trawl Limited Access)	2,490	2,078	412 (17%)
Non-trawl	710	79	631 (89%)
Community Development Quota (trawl and non-trawl)	315	189	126 (40%)
TOTAL	3,515	2,346	1,169 (33%)

Table 3. 2019 GOA halibut PSC limits and estimated halibut PSC use

GOA Fishery	Halibut PSC Limit (mt)	Halibut PSC Use (mt)	Remaining PSC limit (mt and %)
Trawl	1,706	1,101	605 mt (35%)
Non-trawl	257	73	184 mt (72%)
TOTAL	1,963	1,174	789 mt (40%)

As shown in Figures 1-3 below, halibut PSC use has not exceeded established limits in the trawl or non-trawl fisheries in the BSAI or GOA in recent years.

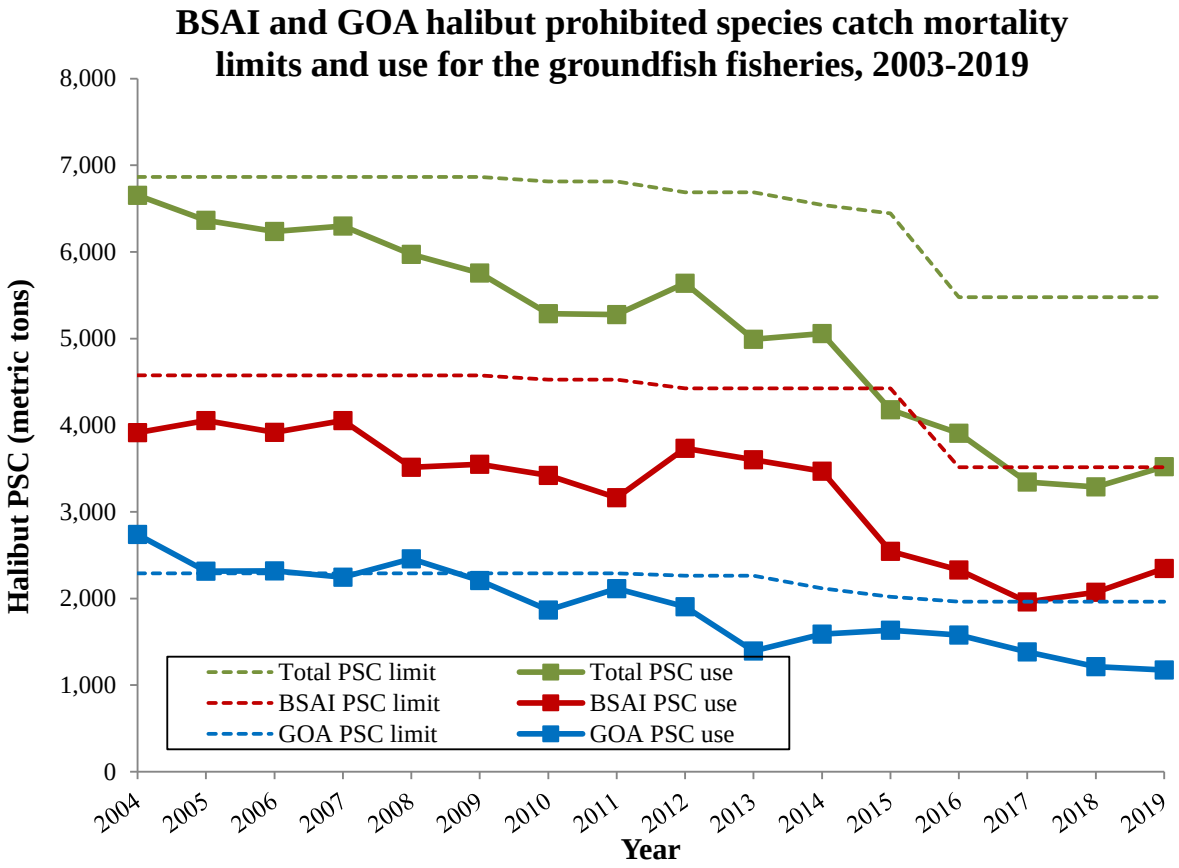


Figure 1. Total BSAI (including CDQ and deck sorting exempted fishing permit for 2016 - 2019) and GOA halibut prohibited species catch limits and use for all groundfish fisheries, 2004 through 2019.

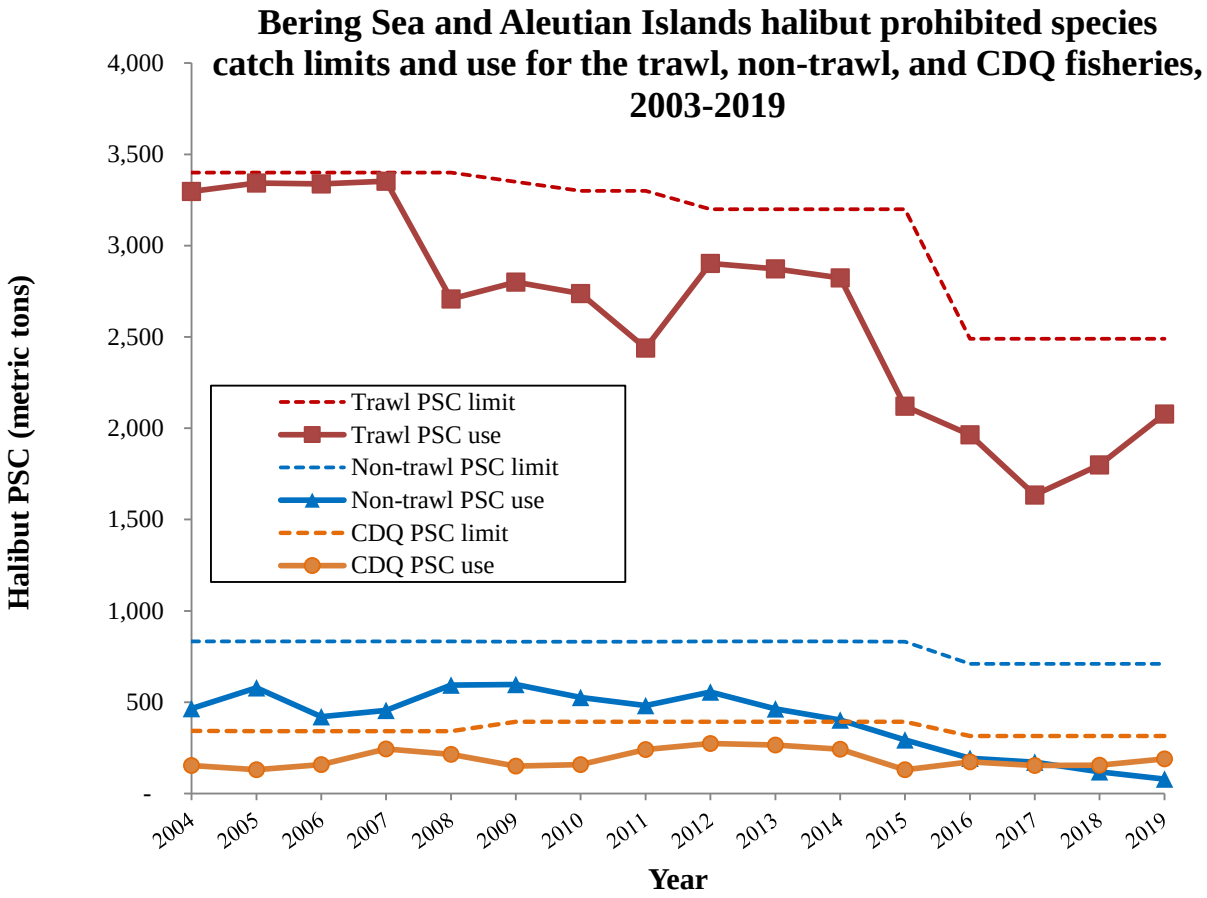


Figure 2. BSAI halibut prohibited species catch limits and use for the trawl (including deck sorting exempted fishing permit for 2016 - 2019), non-trawl, and CDQ groundfish fisheries, 2004 through 2019.

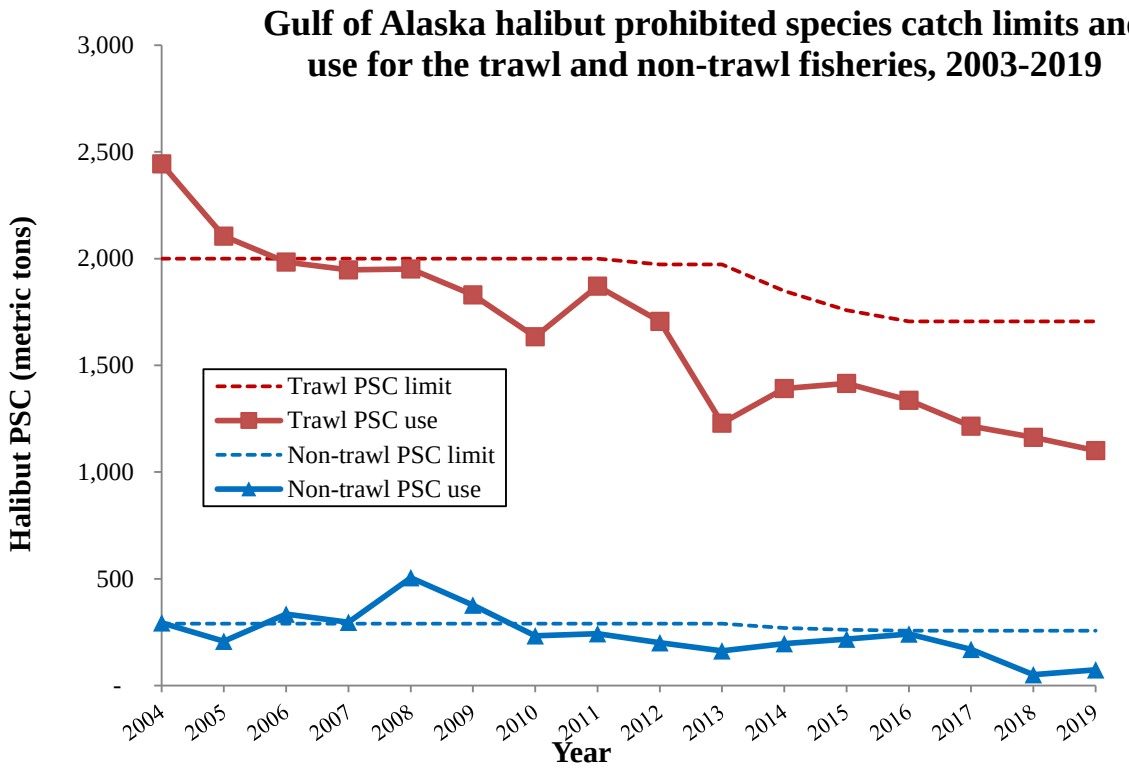


Figure 3. GOA halibut prohibited species catch limits and use for the trawl and non-trawl groundfish fisheries, 2004 through 2019.

2019 Halibut PSC Estimates

The 2019 halibut PSC estimates were developed using a method to spatially account for PSC. This is the same method developed in 2015 by NMFS in consultation with the IPHC. NMFS submitted preliminary 2019 PSC data to the IPHC for its halibut stock assessment in October 2019. NMFS provided final revised estimates to the IPHC in early January 2020 and are incorporated into Appendix 1 of this document.

Halibut Bycatch Management Actions in Progress

This report covers actions that are under development by NMFS. Please refer to the Council's management letter for actions under development by the Council.

Exempted fishing permits (EFP) to reduce halibut mortality

EFP for 2018 and 2019

NMFS issued an EFP to the Alaska Seafood Cooperative (AKSC) to permit deck sorting of halibut PSC on non-pelagic trawl catcher/processor vessels fishing for flatfish in the BSAI and the GOA on

December 20, 2017 (with modifications on 12/26/18 and 11/6/19). Twenty-two vessels participated in this EFP in 2019. The EFP is effective until December 31, 2019.

Regulatory amendment to authorize halibut deck sorting

The data collected during EFP fishing shows that the practice of deck sorting halibut can improve the viability and therefore lower the total halibut mortality estimate of the halibut encountered by the vessel. This reduction in halibut mortality benefits the trawl fleet by reducing the amount of halibut that accrues toward PSC limits. Halibut deck sorting may also benefit the directed halibut fishery by returning halibut to the water in better condition thus reducing mortality of discarded halibut and potentially increasing halibut biomass.

NMFS published a proposed rule to implement halibut deck sorting monitoring requirements on non-pollock trawl catcher/processors and motherships on April 16, 2019. The comment period closed on May 16, 2019. NMFS published the final rule on October 15, 2019 (84 FR 55044) with an effective date of November 14, 2019. A correction to this rule published December 9, 2019 (84 FR 67183).

Observer Fee Increases

In October 2019, the Council approved an increase to the observer fee that supports the deployment of observers and electronic monitoring (EM) systems in the commercial groundfish and Pacific halibut fisheries under partial coverage monitoring throughout the Gulf of Alaska and Bering Sea Aleutian Islands. The Council adopted a fee increase from the current 1.25% to 1.65%. Under the fastest implementation scenario, the change would go into effect in 2021, and the revenue would be available to affect coverage rates in mid-2022.

The Council heard extensive public testimony about controlling costs in the partial coverage observer program, and before taking action on the fee increase, passed a motion to set cost efficiency as its highest priority for work on the partial coverage observer program. The Council prioritized several immediate efforts to consider how to potentially lower costs and yet increase coverage rates for monitoring, by developing the pelagic trawl EM program, integrating EM and observer data for fixed gear, and optimizing the size and composition of fixed gear observed and EM fleets (including moving some vessels in remote ports, harvesting small amounts of fish, to zero-coverage).
Ultimately, the Council decided that because observer program data, scientifically collected, is foundational to the Council's management program, both additional revenue and mechanisms to reduce costs would be required to address projected revenue shortfalls identified in the analysis. The Council selected an amount that would improve the stability of the partial coverage observer program, increase the fee in an equitable way across sectors, and along with cost containment measures that have been initiated, ensure the Council's monitoring objectives can continue to be met.

Section 3: Commercial Halibut IFQ Program

BSAI Halibut in Pots

In October 2018, the Council took final action to allow retention of legal-size halibut in pot gear used to fish sablefish and halibut in the commercial halibut and sablefish IFQ and Community Development Quota (CDQ) fisheries in the BSAI.

In the analysis, NMFS expressed concern about the potential impact of this action to increase the use of pot gear that could increase the bycatch of Pribilof Island Blue King Crab (PIBKC) and other species of concern. The proposed action could impact PIBKC if fishing with pot gear increased in the Pribilof Island Habitat Conservation Zone (PIHCZ) or in the larger, surrounding stock boundary area. As part of this action, NMFS recommends closing the PIHCZ to all pot gear in addition to establishing inseason management authority to the halibut fisheries in the event there is a conservation concern with PIBKC. This action would give NMFS the authority to close halibut IFQ fishing in both the GOA and BSAI if an overfishing limit is approached for groundfish or shellfish that is consistent with regulations in place for groundfish.

On October 3, 2019, NMFS published a proposed rule to authorize the retention of halibut in pot gear in the BSAI. The final rule published January 8, 2020.

IFQ Medical and Beneficiary Transfer Provisions

In April 2019, the Council took final action to modify the medical and beneficiary transfer provisions of the Individual Fishing Quota (IFQ) Program for the fixed-gear commercial Pacific halibut and sablefish fisheries.

NMFS published the proposed rule on October 24, 2019 with public comments invited through November 25, 2019. This action is intended to simplify administration of the medical and beneficiary transfer provisions while promoting the long-standing objective of maintaining an owner-operated IFQ fishery. NMFS expects to publish a final rule in early 2020.

CQE Fish-Up in Area 3A

In June 2019, the Council took final action to allow category D halibut Individual Fishing Quota (IFQ) held by an Area 3A (Southcentral Alaska) Community Quota Entity (CQE) to be harvested on category C vessels from August 15 to the end of the IFQ fishing season. Modifying the regulations to allow D-category IFQ to be harvested on larger C-category vessels near the end of the IFQ season would provide more flexibility to CQE participants to fully harvest category D IFQ in Area 3A. NMFS expects to publish a proposed rule in early 2020.

Section 4. Comments on IPHC Reg Proposals

IPHC Prop A3 IPHC Fishery Regulations: minor amendments

This would reorder IPHC regulations and make other edits for clarity and emphasis. US Federal regulations at 50 CFR § 300.63(d) *Fishery Election in Area 2A* include multiple references to IPHC regulation sections 8, 24, and 26. Other areas of US Federal regulations more broadly reference the entire Commission regulation published annually in the **Federal Register** and would not be affected by the proposed reordering. Commission regulation sections 8 and 26 are proposed to be reordered to section 12 and 25, respectively. If this proposal were adopted, NMFS would need to revise US Federal regulations at § 300.63(d) to correctly reference the Commission regulations.

IPHC Prop A4 IPHC Fishery Regulations: minor amendments
This proposal is consistent with other provisions of the halibut and sablefish IFQ program recently implemented with the integration of Electronic Monitoring into the North Pacific Observer Program.

APPENDICES

Appendix 1. 2018 and 2019 Halibut PSC Use by IPHC area and Gear type in the BSAI and GOA

Appendix 2. NOAA Fisheries Office of Law Enforcement 2019 Annual Report

Appendix 3. United States Coast Guard District 17 2019 Annual Report

Appendix 4. Alaska Department of Fish and Game Halibut Subsistence and Charter Halibut Management Measures Reports

APPENDIX 1. 2018 and 2019 Halibut PSC Use by IPHC area and Gear type in the BSAI and GOA

Table 1. 2018 and 2019 Halibut PSC Use in the Gulf of Alaska and the Bering Sea and Aleutian Islands by gear type and IPHC Management Area (rounded to the nearest metric ton).

2018 Total		2019 (Predicted 10/22)	2019 Actual	Difference (Actual – Predicted)
Area 2C				
Hook-and-line (non-sablefish)	3	3	2	-1
Hook-and-Line (sablefish)	24	30	33	3
Pot	0	0	0	0
Total	**27**	**35**	**35**	**0**
Area 3A				
Trawl	906	820	894	74
Hook-and-line (non-sablefish)	37	27	49	22
Hook-and-Line (sablefish)	43	14	32	18
Pot	1	0	0	0
Total	**986**	**862**	**976**	**114**
Area 3B				
Trawl	251	174	197	23
Hook-and-line (non-sablefish)	8	7	9	2
Hook-and-Line (sablefish)	9	56	44	-12
Pot	1	1	1	0
Total	**269**	**238**	**252**	**14**

Table 1 includes estimates of halibut mortality from groundfish fisheries managed by the State of Alaska, and halibut mortality attributable to the 2018/2019 deck sorting EFP catch (in Areas 4A, 4CDE, and 4 Closed Area). Table 1 estimates the amount of halibut mortality by each gear type using a method of apportioning by IPHC area. Catch Accounting estimates through December 23, 2019 are subject to revision as new observer information is used in estimation, and existing observer information is debriefed.

Slight discrepancies may exist between Table 1 and Table 2 due to the incorporation of State of Alaska GHL fishery data in Table 1, and other minor rounding errors. Table 1 provides the most complete assessment of halibut mortality.

2018 Total		2019 (Predicted 10/22)	2019 Actual	Difference (Actual – Predicted)
Area 4A				
Trawl	164	157	169	12
Hook-and-line (non-sablefish)	17	20	18	2
Hook-and-Line (sablefish)	1	4	4	0
Pot	1	1	2	1
Total	**183**	**182**	**193**	**11**
Area 4B				
Trawl	76	92	83	-9
Hook-and-line (non-sablefish)	7	7	7	0
Hook-and-Line (sablefish)	0	0	0	0
Pot	1	1	1	0
Total	**83**	**100**	**91**	**-9**
Area 4 CDE				
Trawl	973	1,144	1,087	-57
Hook-and-line (non-sablefish)	67	56	54	-2
Hook-and-Line (sablefish)	0	0	0	0
Pot	0	0	0	0
Total	**1,040**	**1,200**	**1,141**	**-59**
Area 4 Closed				
Trawl	736	916	934	18
Hook-and-line (non-sablefish)	46	18	17	-1
Hook-and-Line (sablefish)	0	0	0	0
Pot	0	1	1	0
Total	**782**	**935**	**952**	**17**
TOTAL (All Areas)				
Trawl	3,106	3,303	3,364	61
Hook-and-line (non-sablefish)	184	138	157	19
Hook-and-Line (sablefish)	77	105	113	8
Pot	3	4	6	2
Total	**3,370**	**3,550**	**3,639**	**89**

Table 2. 2011 through 2019 BSAI and GOA Halibut PSC Use by Sector.

Halibut Mortality (Data through 1/6/20)	2011	2012	2013	2014	2015	2016	2017	2018	2019
BERING SEA AND ALEUTIAN ISLANDS									
Bering Sea and Aleutian Islands Trawl									
Non-Pelagic Trawl (Amendment 80 C/P)	1,810	1,944	2,166	2,178	1,633	1,405	1,167	1,343	1,458
Non-Pelagic Trawl (AFA C/P)	95	117	127	204	71	78	57	105	39
Non-Pelagic Trawl (Catcher Vessels)	250	497	382	305	310	410	337	309	499
Non-Pelagic Trawl (CDQ)	135	203	194	185	100	140	129	137	168
Pelagic Trawl (AFA C/P)	167	180	166	79	74	64	57	32	66
Pelagic Trawl (AFA catcher vessels)	116	165	33	57	30	19	17	10	16
Pelagic Trawl (CDQ)	38	13	12	21	8	9	6	7	17
Bering Sea and Aleutian Islands Hook-and-line and Pot gear									
Hook-and-Line	482	556	463	402	293	196	172	120	79
Hook-and-Line (CDQ Groundfish)	68	58	58	37	22	25	18	11	4
Hook-and-Line (IFQ/CDQ sablefish)	10	8	6	3	2	1	0	0	0
Pot Gear	7	6	5	4	3	3	3	2	5
Total BSAI	**3,180**	**3,747**	**3,611**	**3,476**	**2,546**	**2,350**	**1,963**	**2,075**	**2,351**
GULF OF ALASKA									
Gulf of Alaska Trawl									
Non-Pelagic Trawl (Central GOA C/Vs)	1,306	1,198	741	828	961	965	750	900	741
Non-Pelagic Trawl (Western GOA C/Vs)	37	111	93	70	47	107	18	32	18
Pelagic Trawl	20	5	20	1	13	12	14	39	15
Trawl (C/P)	509	388	377	502	375	246	433	217	328
Gulf of Alaska Hook-and-line and Pot gear									
Hook & Line (C/P)	131	53	35	76	68	77	69	10	20
Hook & Line (Catcher vessels)	114	147	130	117	153	165	105	42	55
Hook & Line - IFQ sablefish	25	37	31	29	34	29	40	75	111
Pot Gear	43	41	15	10	22	44	15	1	1
TOTAL GOA	**2,184**	**1,980**	**1,441**	**1,634**	**1,674**	**1,645**	**1,443**	**1,317**	**1,289**
TOTAL All Areas	**5,364**	**5,727**	**5,052**	**5,110**	**4,220**	**3,995**	**3,406**	**3,392**	**3,640**

Figure 1. 2018 and 2019 BSAI Trawl Halibut PSC Use by Groundfish Fishery.

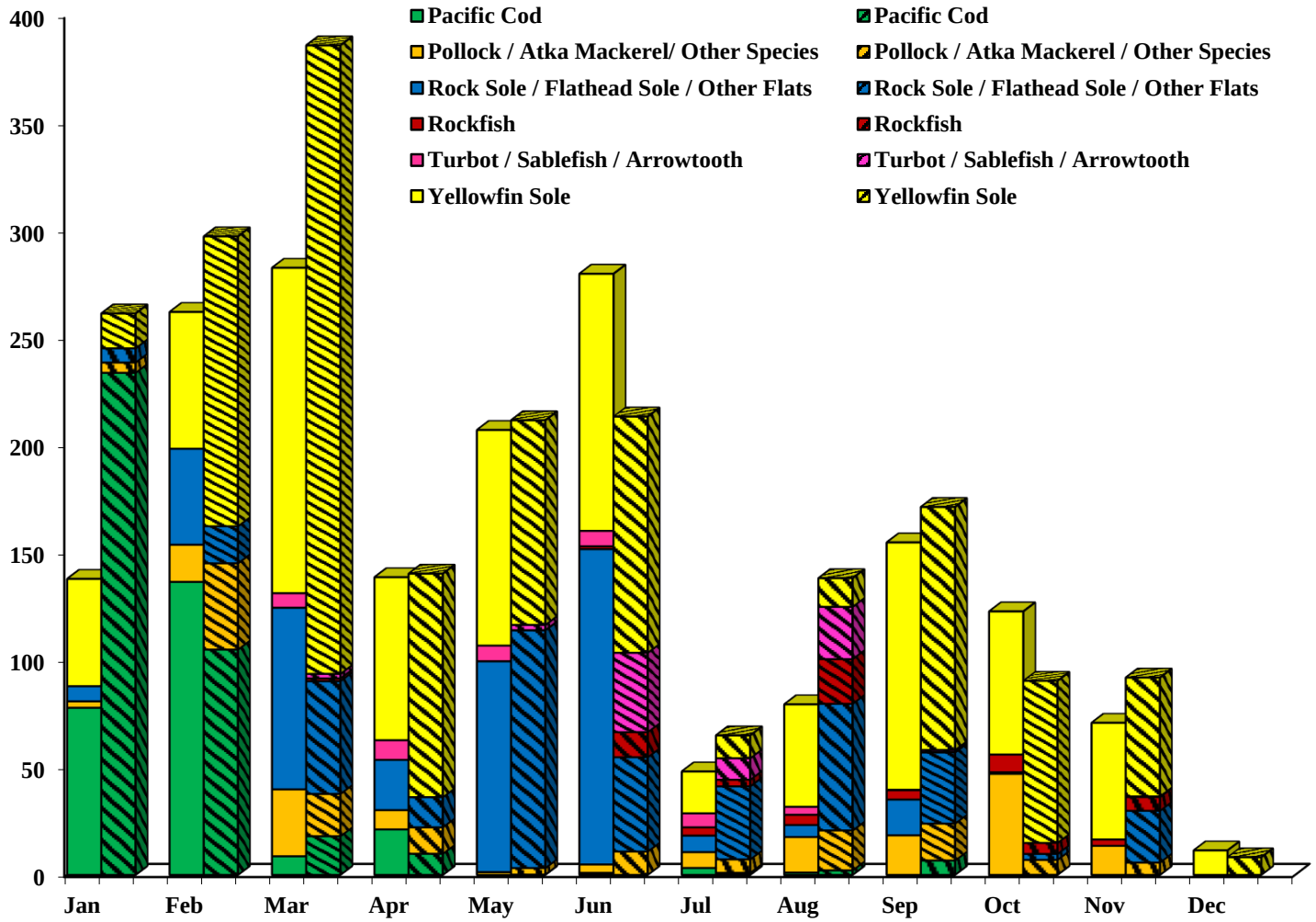


Table 3. 2019 GOA Sablefish IFQ Fishery by Gear Type

2019 Sablefish	Hook-and-Line			Pot		
	Unique Vessels	Sablefish (mt)	% of IFQ Sablefish	Unique Vessels	Sablefish (mt)	% of IFQ Sablefish
Southeast	143	2,648	91%	13	252	9%
West Yakutat	71	1,372	89%	13	164	11%
Central GOA	98	2,380	58%	24	1,691	42%
Western GOA	36	678	60%	13	453	40%
GOA Wide	**221**	**7,078**	**73%**	**30**	**2,560**	**27%**

Figure 2. 2019 Sablefish and Other Species Incidental Catch in GOA Fixed Gear Sablefish Target=

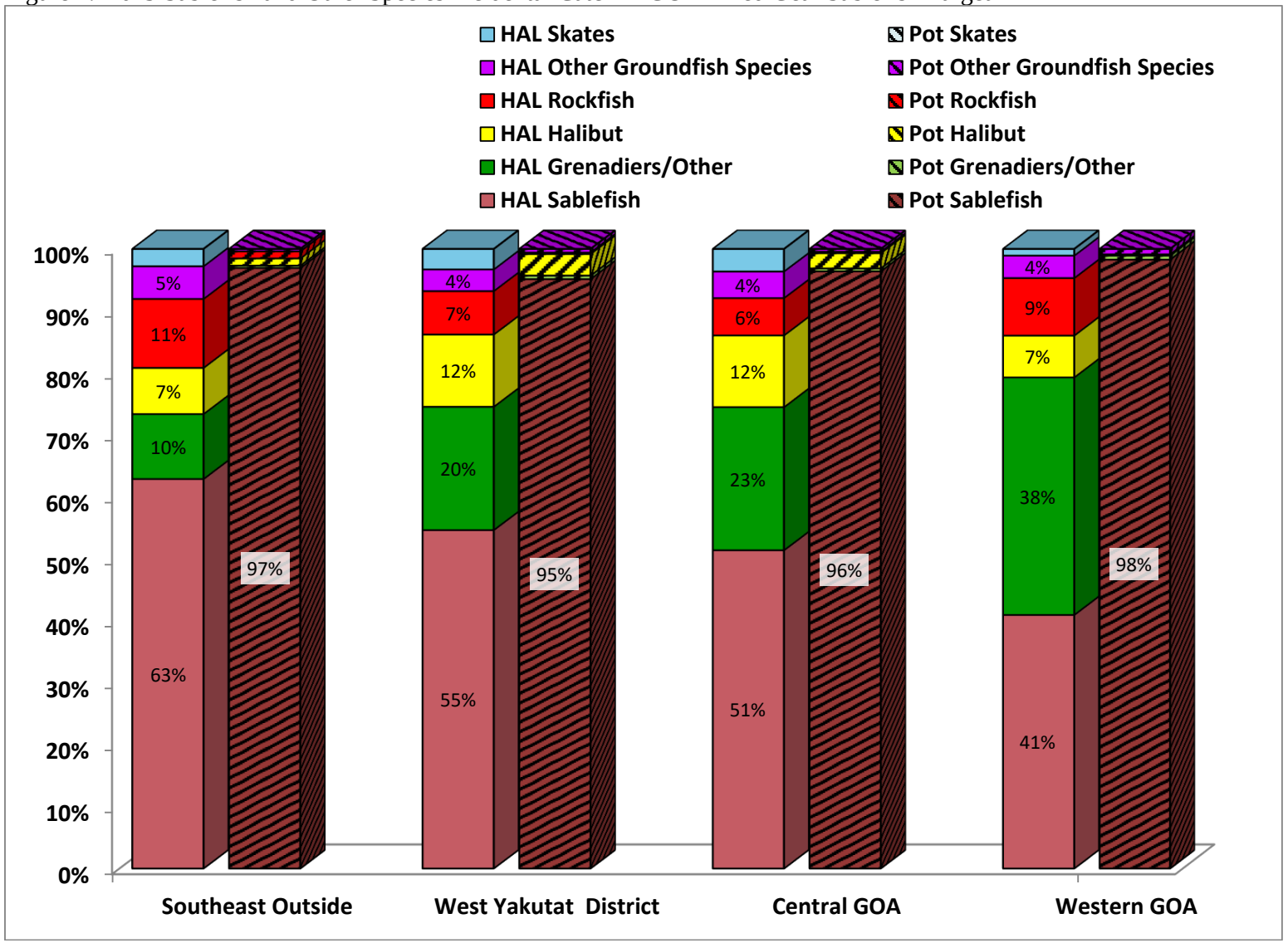
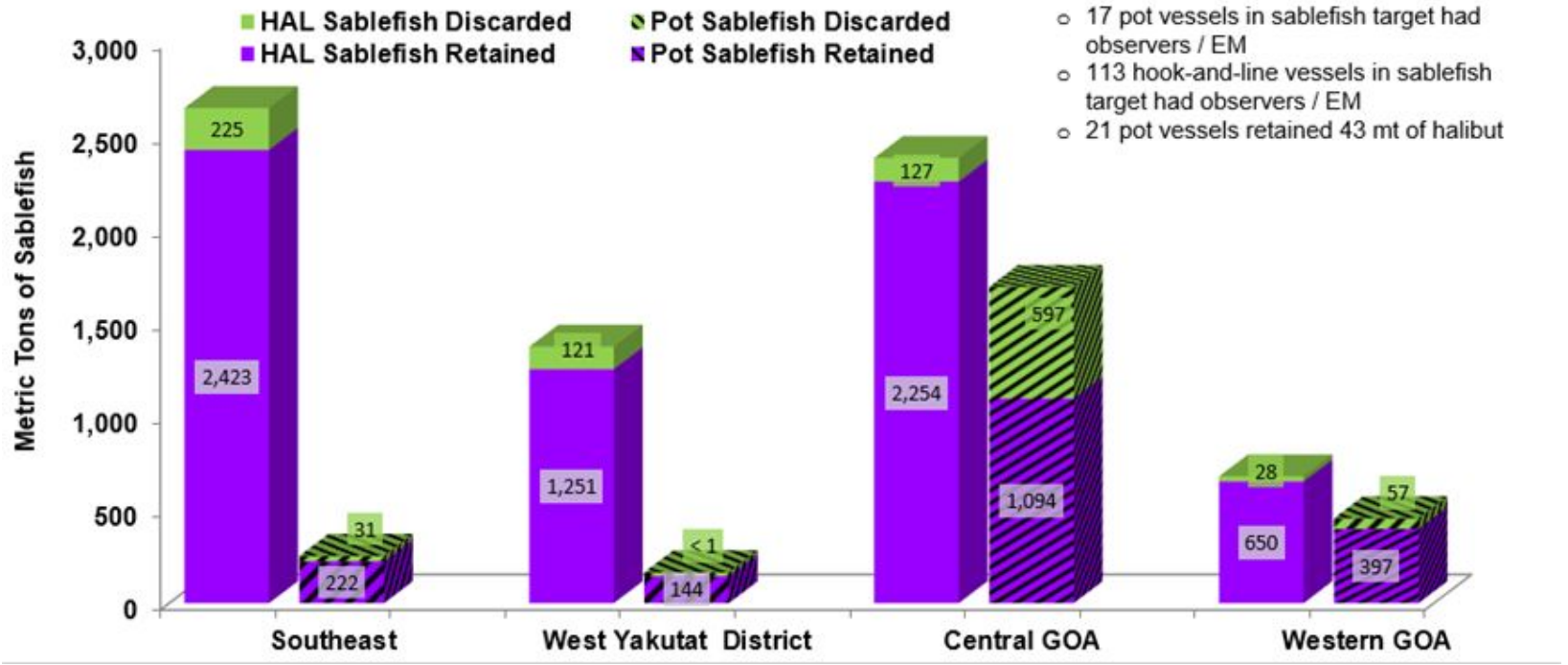


Figure 3. 2019 Sablefish Retained and Discarded by GOA Fixed Gear.



APPENDIX 2. NOAA Fisheries Office of Law Enforcement 2019 Annual Report

NOAA Fisheries Office of Law Enforcement
Alaska Enforcement Division
Report to the
International Pacific Halibut Commission

January 1, 2019 to December 15, 2019

NOAA Fisheries Office of Law Enforcement
Alaska Enforcement Division
P.O. Box 21767
Juneau, AK 99802
907-586-7225

TO REPORT VIOLATIONS:
Call 1-800-853-1964

The Alaska Enforcement Division (AKD) utilizes Enforcement Officers, Special Agents and partnerships with the Alaska Wildlife Troopers and the U.S. Coast Guard to enforce federal fishing regulations over 842,000 square miles of ocean, 6,600 miles of coastline and 2,690 islands off of Alaska. Compliance is achieved by providing outreach and education, conducting patrols, monitoring offloads, and by investigating violations of civil and criminal marine resource laws.

In 2019 there were 3,398 Individual Fishing quota (IFQ) halibut permits issued in Alaska and 30 IFQ landing ports. The Alaska IFQ halibut fishery had 703 IFQ overages reported in 2019, 21 of these exceeded 10%. There were 955 charter halibut permits (578 for 2C and 488 for 3A) and 6,775 subsistence halibut permits.

Patrol and Boardings

In 2019, AKD personnel spent over 5216 hours conducting patrols to provide a visible deterrence to potential violators, to monitor fishing and other marine activities, to detect violations, to provide compliance assistance, and to provide outreach and education. OLE boarded 1129 vessels with 793 being halibut related boardings.

Vessel Boardings' Results

	2017	2018	2019
	Vessel Boardings	Vessel Boardings	Vessel Boardings
Subsistence Halibut	34	33	14
Commercial Halibut	231	473	216
Charter Halibut	185	190	302
Sport Halibut	248	168	261
Total	**698**	**864**	**793**

Compliance Assistance

In 2019, AKD personnel spent over 1321 hours providing outreach and education with marine resource users. Outreach efforts occurred at a number of organized events as well as contacts in communities, ports, and at-sea. The goal of OLE outreach efforts is to ensure that the most current and accurate regulatory information is widely distributed and understood.

Incidents

In 2019, AKD opened 1294 halibut related incidents including outreach, vessel boardings, dockside monitoring, and compliance assistance. Of the 1294 incidents, officers identified 555 halibut related violations which were handled by Compliance Assistance, Summary Settlement or a Written Warning.

Alaska Halibut Violations

	2017	2018	2019
Subsistence Halibut	26	58	29
Commercial Halibut	121	136	250 (***111**)
Charter Halibut	203	150	159
Sport Halibut	15	64	57
Commercial Groundfish involving Halibut	19	43	60 (***11**)
Total	**384**	**451**	**555**

***Not all violations resulted in an enforcement penalty**

2019 Halibut Related Violations documented by NOAA in Alaska:

29 Subsistence halibut fishing violations; most common violations included:

- Unqualified person applied for SHARC
- Subsistence halibut with sport caught halibut.
- Improperly or unmarked subsistence halibut fishing gear
- Subsistence halibut fishing without SHARC
- Exceeding vessel hook limit
- Fillet, mutilate, or otherwise disfigure subsistence halibut in any manner that prevents the determination of the number of fish caught, possessed, or landed
- Non-resident pulling subsistence halibut gear
- Subsistence halibut offered for sale.

250 Commercial IFQ/CDQ halibut violations; most common violations included:

- 21 IFQ halibut overages greater than 10% in 2019
  - 48 IFQ halibut overages greater than 10% in 2018
  - 34 IFQ halibut overages greater than 10% in 2017
- Record keeping or reporting violations (PNOL, Landing Report, Logbook, PTR, Production Reports)
- Gear marking violations
- Failure to release undersized halibut with a minimum of injury by allowing fish to hit the crucifier.
- Retain undersized halibut, or discarding legal sized halibut
- Hired Skipper and Permit Holder violations
- Vessel Cap Overages

- Misreporting IFQ area fished or fishing in an area with no IFQ available
- Fishing without an FFP

159 Charter halibut fishing violations; most common violations included:

- Logbook violations-
    - Fail to ensure charter halibut anglers sign the logbook
    - Fail to record CHP in the ADFG logbook/invalid CHP
    - Report inaccurate information
- Failure to report GAF in the required time, submitting inaccurate information
- Illegal guiding - No CHP
- Halibut other than 2 ventral pieces, 2 dorsal pieces, and 2 cheek pieces, with a patch of skin on each piece, naturally attached (Filleting, mutilating or skinning halibut onboard a vessel).
- Exceeding bag limit; possession limit; size limits or annual limits
- Fishing on closed days
- Charter fish without a CHP

57 Sport halibut fishing violations; most common violations included:

- Sale or attempted sale of sport caught halibut
- Exceeding bag and/or possession limits
- Halibut other than 2 ventral pieces, 2 dorsal pieces, and 2 cheek pieces, with a patch of skin on each piece, naturally attached (Filleting, mutilating or skinning halibut onboard a vessel).
- Fishing without a license/permit
- Using illegal gear
- Sport caught halibut onboard with commercial caught salmon

60 Commercial groundfish violations involving halibut; most common violations included:

- Fail to carefully release halibut or allow halibut to contact a crucifier or hook stripper.
- Release halibut caught with longline gear by any method other than— positioning the gaff on the hook and twisting the hook from the halibut straightening the hook by using the gaff to catch the bend of the hook and bracing the gaff against the vessel or any gear attached to the vessel.
- Puncture the halibut with a gaff or other device
- Failure to have an IFQ hired master permit, as appropriate, in the name of the individual making the landing.

Partnerships

NOAA OLE works closely with the U.S. Coast Guard, the Alaska Wildlife Troopers (AWT), Canada Department of Fisheries and Oceans (DFO) and Royal Canadian Mounted Police (RCMP) to accomplish common goals and priorities by working together on a daily basis to maximize compliance with marine resource laws and regulations.

A NOAA OLE enforcement officer embarked on a patrol with the Alaska Wildlife Troopers onboard P/V Stimson from March 6 -27. The patrol focused on observer reported complaints, groundfish, the IFQ Sablefish/Halibut fisheries, and outreach with stops in Sand Point, King Cove, Akutan, Atka, and Adak. The officers boarded 28 vessels, inspected four processing facilities, and inspected pot gear. The team provided compliance assistance to the manager of a processing plant and to the operators of three vessels. Officers also initiated record keeping & reporting, state license, pot gear, and VMS related investigations.

The NOAA-OLE Sitka Field Office coordinated with USCG Air Station Sitka to conduct an air patrol on the morning of March 15, 2019 for the opening of the IFQ season for halibut and sablefish. The operation consisted of an Enforcement Officer flying with a four person crew aboard a USCG Helicopter. The initial tasking was to support the USCGC John McCormick by sighting and locating fishing vessels for at-sea boardings. Due to severe weather the MCCORMICK remained inside Sitka Sound for the remainder of the patrol. This allowed for a change in patrol tasking and the patrol effort was redirected south of Sitka Sound to inspect remote inlets and bays for fishing vessels or fishing gear deployed prior to the season opening. The patrol continued to Cape Decision and Fredrick Sound and then northward following Chatham Strait. Numerous vessels were sighted in route to participate in the Sitka Herring Sac Roe fishery. Seven vessels participating in IFQ fisheries were queried with location, gear status and IFQ permits being documented. The patrol continued northward to Peril Strait before terminating back at Sitka.

Two NOAA-OLE Enforcement Officers conducted a 689 nautical mile vessel patrol on the P/V Cape Elizabeth from Homer to Valdez, resulting in 77 underway hours with 128 contacts being made. This patrol prematurely terminated in Seward due to mechanical issues.

In July, three Enforcement Officers and a USCG boarding officer conducted a 5-day patrol of Kodiak waters on the PV Kingfisher targeting charter and recreational fishing and marine mammal viewing vessels. One unsafe voyage was terminated, one Compliance Assistance provided, and one Summary Settlement issued for failure to record Pacific halibut retention (PV Kingfisher pictured left).

An Enforcement Officer and Special Agent participated in a two-day coordinated international patrol in Dixon Entrance along the maritime boundary line involving a Canadian patrol vessel and the PV Natoma Bay. The first day of the patrol, officers identified illegal gear operated by a Canadian citizen in US waters and boarded a Canadian vessel sport fishing for halibut in US waters without sportfish licenses. The second day was spent working the disputed zone south of Prince of Wales Island. No Canadian vessels were observed in US waters. Five US vessels were boarded and one vessel could not provide a current US Vessel Document.

Two Enforcement Officers conducted a 6-day patrol of northern southeast Alaska, covering 846 miles. The officers patrolled to the communities of Juneau, Haines, Gustavus, and Kake and conducted inspections and outreach at two charter lodges and one processor. While underway, they boarded nine charter vessels, six sport fishing vessels and one commercial Halibut vessel. This patrol documented high compliance rates; a single logbook violation was addressed.

In August, an Enforcement Officer conducted a 10-day patrol with AWT aboard the PV Enforcer from Juneau to Yakutat. AWT issued 25 citations and seven warnings. NOAA OLE issued one Written Warning for a sport-caught halibut on a commercial salmon vessel and one Summary Settlement for failure to have clients sign the Charter Logbook. Officers boarded 59 vessels and made 327 contacts.

An Enforcement Officer conducted a 4-day offshore patrol aboard USCGC John McCormick focused on at-sea boardings in waters farther than 3NM offshore. The patrol began in Juneau and ended in Ketchikan. Ten vessels were contacted, five vessels boarded at sea, and one violation documented.

Adjudicated Significant Halibut Investigations

NOAA issued a Notice of Violation and Assessment to the operator/permit holder, and Sylver Fishing Company of Wrangell, Alaska in the amount of $17,600. It was issued for the failure to offload and report all Pacific Halibut caught on an Individual Fishing Quota (IFQ) fishing trip.

Enforcement Officers in Petersburg conducted an investigation. It revealed that the permit holder and crew retained 600 pounds of Pacific halibut that was not deducted from their IFQ permit or documented on the landing receipt. When authorities discovered the unreported fish, the permit holder reported that the intent was to retain it for personal use and not for commercial purposes. It is a federal violation to fail to offload and report all fish taken while commercial fishing, and submit inaccurate information on a required report.

The permit holder took responsibility for the violation in a timely manner and a settlement agreement of $15,840 was accepted for two counts of violating the Northern Pacific Halibut Act.

APPENDIX 3. United States Coast Guard District 17 2019 Annual Report

U. S. COAST GUARD ENFORCEMENT REPORT
(IPHC Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D and 4E)

TO THE

INTERNATIONAL PACIFIC HALIBUT COMMISSION

January 2020

Prepared By:
Seventeenth U.S. Coast Guard District
Enforcement Branch

I. Coast Guard Resources in Alaska

The U.S. Coast Guard (USCG) 17th District (D17) covers the U.S. waters of Alaska. The area of responsibility includes all waters off Alaska out to 200 nautical miles, and encompasses the IPHC Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E. Resources used for fisheries enforcement include cutters, aircraft, and boats from coastal stations.

Cutters:

- The 378-foot High Endurance Cutter USCGC DOUGLAS MUNRO and 282-foot Medium Endurance Cutter USCGC ALEX HALEY home-ported in Kodiak, AK regularly patrol the Bering Sea in addition to periodic patrols of North Pacific waters.
- 418-foot National Security Cutters from California and Hawaii and 378-foot High Endurance Cutters from Washington are periodically assigned to patrol D17 waters or to monitor fisheries activity during transits to other operating areas.
- Four 225-foot buoy tenders conduct periodic law enforcement and are home-ported in Sitka, Cordova, Kodiak, and Homer.
- Two 154-foot Fast Response Cutters (FRC's), home-ported in Ketchikan, AK and conduct routine law enforcement throughout Southeast and occasionally South Central Alaska.
- Five 110-foot patrol boats conduct routine law enforcement and are home-ported in Petersburg, Juneau, Valdez, Seward, and Homer.
- Two 87-foot Coastal Patrol Boats located in Puget Sound and Strait of Juan de Fuca ports make occasional patrols to SE Alaska.

Aircraft:

- Fixed wing and rotary wing aircraft are based out of Air Stations in Kodiak and Sitka.
    - Aircraft in Alaska: C-130, HH-60, HH-65

Stations:

- The three coastal small boat stations, operating 29' and 45' boats, are located in Ketchikan, Juneau, and Valdez.

The primary at-sea fisheries enforcement assets are our cutters, ranging in size from the 87-foot patrol boats up to 418-foot cutters. Patrol boats are limited in sea keeping abilities, and conduct the majority of enforcement inside of 50 nautical miles from shore. This role is fulfilled by 154-foot FRC's and 110-foot patrol boats in Alaskan waters with occasional deployments from 87-foot cutters from Washington state, which provide regular law enforcement presence in the commercial, charter, subsistence, and recreational fishing fleets. Since the commissioning of the two new FRC's in 2017, boardings have increased by 40% from the years prior. This is due in large part to the FRC's increased capabilities for operating further offshore and in greater sea state conditions, allowing for more contact with the IFQ fleet. By 2023, D17 anticipates the addition of four more FRC's and two 87-foot patrol boats throughout Alaska that will eventually completely replace the 110ft patrol boat fleet and greatly enhance boarding capabilities.

Beyond 50 nautical miles, we rely upon our larger cutters to enforce all federal fisheries regulations, with National Security Cutters and High Endurance Cutters from throughout the west coast assigned to patrol Alaskan waters.

Small boat stations primarily focus on recreational, subsistence, and charter halibut activity in their regions, although this does not preclude them from boarding commercial vessels sighted in the course of normal duties.

Fisheries law enforcement flights are frequently conducted from Air Stations in Kodiak and Sitka, using a variety of assets from fixed wing HC-130 to MH60 and MH65 helicopters.

All units involved in fisheries enforcement receive training from the Coast Guard's North Pacific Regional Fisheries Training Center in Kodiak, Alaska prior to patrolling the region. NOAA Office of Law Enforcement (OLE) agents and state fisheries enforcement officers routinely participate in the training, as well as accompany cutters and aircraft during some fisheries enforcement patrols. The success of USCG fisheries enforcement operations is enhanced by collaboration with our enforcement partners from NOAA OLE and the state of Alaska, ensuring consistent presence on the fishing grounds and at offload sites.

II. Commercial Halibut Enforcement

In 2019, the USCG distributed its enforcement assets throughout the IPHC Areas, with boarding numbers listed in Table 1. The USCG enforcement focus is to protect the resource in accordance with the fishery management plan, to ensure equal economic opportunity for all participants, and to enhance safety of life at sea.

Table 1. 2018 & 2019 Geographic Distribution of Boardings on Vessels Targeting Halibut

IPHC Area	2018 Boardings	2019 Boardings
2C	395	426
3A	327	225
3B	15	5
4A	11	17
4B	1	3
4C	0	0
4D	6	0
4E	0	0
Total	755	676

There was a 10% decrease in halibut boardings this year, largely due to an aging cutter fleet in South Central Alaska as well as competing mission priorities in this region.

In Areas 2C through 4E, the commercial fishery is rationalized with the 2019 season lasting from March 15th to November 14th. D17 law enforcement assets routinely patrolled the fishing grounds, often conducting joint boardings with or in collaboration with NOAA OLE.

Joint operations with NOAA OLE were conducted throughout the season from the Bering Sea to Southeast Alaska. These operations included at-sea boardings, aircraft patrols, and dockside inspections. The joint agency efforts are a regular and important aspect of law enforcement coordination as they enable the broadest contact rate with the fishing fleets in order to compel compliance with federal regulations while also providing the most accurate and complete picture of fishing activity on the fishing grounds and at catch offload sites.

Routine patrols are essential to maintain awareness of halibut fishing activity. The long duration of the commercial season relieves the pressure to fish during inclement weather. This also gives participants the opportunity to spread their effort throughout the season as well as their permitted area.

The lack of a universal requirement for fishing vessels targeting halibut to be equipped with VMS on board means there is not a centralized means to assess and monitor fishing activity in Areas 2C through 4E. Time intensive patrols by surface and aviation assets are the primary means to identify where vessels are fishing for halibut. The need for patrols is amplified when market forces and/or fair weather conditions cause an increase in fishing activity.

Participants in the commercial halibut fishery only make up a portion of the hook and line vessels on the fishing grounds. During boardings of the hook and line vessels, USCG enforcement efforts focus on (1) adherence to permit requirements for area and individual quota, (2) safe release of halibut bycatch by other commercial vessels, (3) consistent use of seabird avoidance gear, (4) indicators of high-grading catch, (5) retention of rockfish and Pacific cod, (6) complete offload of catch, and (7) timely compliance with all recordkeeping requirements.

III. Recreational Halibut Enforcement

Recreational activity occurs in Areas 2C, 3A, and 3B in the form of individual and charter fishing. The season lasts from 01 February to 31 December but is most prevalent from May through September. USCG assets increase fisheries patrols during this time to focus on popular fishing grounds in Southeast Alaska, Prince William Sound, Cook Inlet, and the Gulf of Alaska. 75% of the halibut boardings accomplished by D17 assets in 2019 were conducted on the recreational and charter vessels.

During boardings, emphasis is placed on compliance with licensing and charter operation requirements as well as requirements which determine the size and number of halibut allowed to be caught.

IV. Violations and Enforcement Summary

Overall, USCG assets boarded a total of 679 vessels and detected 11 IPHC violations. Violations are documented and referred to NOAA OLE or Alaska Wildlife Troopers (for violation detected on recreational vessels) for final action. Table 3 compares at-sea boardings and violations between 2018 and 2019.

Table 3. 2018 & 2019 Boarding and Violation Summaries by Industry Sector

2018 Boardings/Violations		2019 Boardings/Violations	
Total Fleet	5,025	Total Fleet	5,025
Commercial	825	Commercial	825
Charter	950	Charter	950
Recreational/Subsistence	3,250	Recreational/Subsistence	3,250
Total At-Sea Boardings	754	Total At-Sea Boardings	679
Commercial	167	Commercial	167
Charter	104	Charter	177
Recreational/Subsistence	483	Recreational/Subsistence	332
Fisheries Violations	12	Fisheries Violations	11
Commercial	5	Commercial	7
Charter	3	Charter	1
Recreational/Subsistence	4	Recreational/Subsistence	3
Fisheries Compliance Rates	98.4%	Fisheries Compliance Rates	98.3%
Commercial	97.1%	Commercial	95.8%
Charter	97.1%	Charter	99.4%
Recreational/Subsistence	99.2%	Recreational/Subsistence	99.1%

In Area 2C:

- One commercial vessel was cited for failing to have permits on board.

In Area 3A:

- A commercial vessel was cited for not having fishing permit or IFQ permits on board.
- A joint boarding with NOAA OLE led to recreational mutilated halibut being seized.
- A joint boarding with NOAA OLE led to a citation for a recreational fisherman fishing without a license and another retaining halibut over the legal limit.
- A charter operation was cited for not filling out harvest tickets.

In Area 3B:

- A vessel was cited for an expired permit hired master permit and no IFQ permit on board.

In Area 4A:

- A commercial vessel was sighted for not having an IFQ permit on board.
- A commercial vessel was sighted for not having a boarding ladder.

Detected violations are transferred to NOAA OLE for disposition and outcomes ranged from compliance assistance, summary settlements, or catch seizures. The violations described above by their

IPHC Area are listed below in Table 4 by violation type. This summary of IPHC and federal violations compares 2018 violations to 2019 violations detected by USCG units.

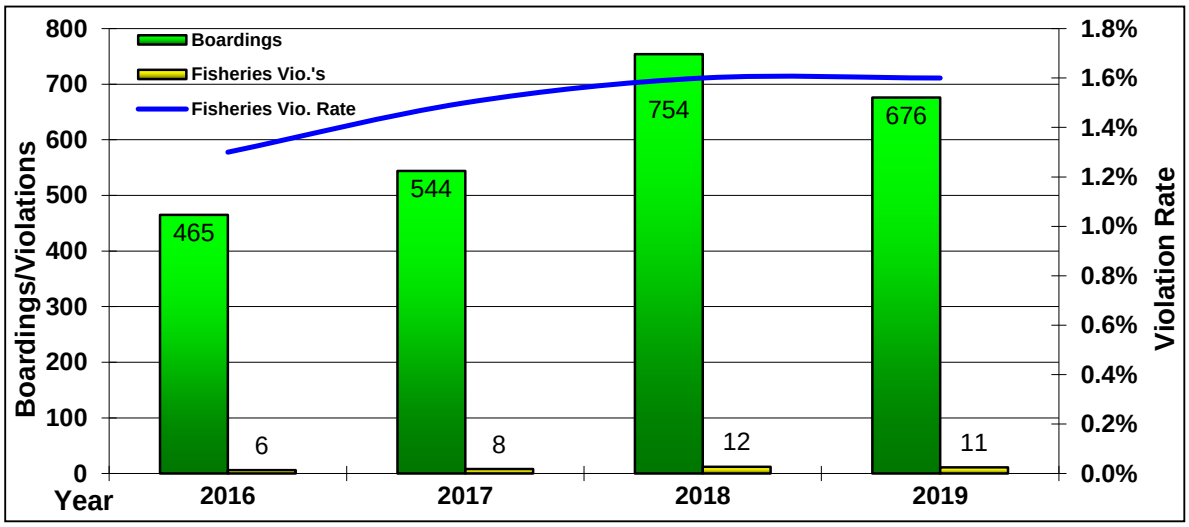
Table 4. 2019 Description of Fisheries Violations in All Sectors

2018	2019
Failure to have a boarding ladder……2	Mutilation of catch……...1
Mutilation of catch……...1	Not filling out harvest ticket...…… 1
Shooting at Stellar Sea Lions……...1	Permit not available for inspection..…...……..6
Failure to produce CHP/ logbook……3	No pilot ladder ……..……1
Copy of IFQ permit not ready for inspection…...2	Fishing without license…….……1
Sport fishing without a permit……..2	Retaining over legal limit....……1
Fishing in Restricted area……1	
Total……...12	Total……...11

In addition to the IPHC violations summarized in Tables 3 and 4, vessel safety issues encountered by our law enforcement assets across all halibut sectors included insufficient lifesaving equipment, improper navigation equipment, and missing documentation totaling 89 safety violations across all sectors. The USCG continues to pursue increased at-sea boarding opportunities to promote compliance with both safety and fisheries regulations.

The USCG continues to maximize joint enforcement efforts and information sharing with federal and state fisheries enforcement partners to optimize operations. Similar to recent seasons, USCG field commands held pre-season meetings with federal and state partners to coordinate efforts.

Figure 1. 2016-2019 Boardings and Fisheries Violations



The halibut fisheries violation rate averaged 1.5% over the last four years. The USCG continues to pursue a steady focus on compliance across IFQ, charter, subsistence, and recreational fisheries by maximizing boarding opportunities and detecting violations where they occur.

V. Enforcement Plans for 2020

The USCG will continue joint pulse operations with NOAA and state enforcement partners to focus enforcement efforts across the commercial, charter, subsistence, and sport sectors of the halibut fishery.

The USCG will continue to enforce regulatory requirements which became effective in 2015 and 2016; mandatory dockside Commercial Fishing Vessel Safety Examinations (CFVSE) for all vessels which operate beyond three nautical miles from shore, and the carriage of AIS units for vessels over 65 feet in length. Commercial Fishing Vessel Safety inspectors continued to educate the industry about both requirements and have facilitated dockside exams to bring vessels into compliance. Vessels which operate beyond three nautical miles without a CFVSE or which fail to meet applicable AIS carriage requirements may receive a notice of violation if the deficiency is observed during an at-sea boarding.

The commercial and recreational halibut fisheries in Alaskan waters continue to draw high national and international interest. D17 will continue to actively patrol throughout the season and emphasize joint operations with our federal and state partners, NOAA OLE and the Alaska Wildlife Troopers.

By sustaining effort to patrol all areas where halibut fisheries occur, the USCG will strive to continually promote a level playing field for all participants and enhance safety at sea. Our goal is consistent and targeted enforcement presence applied fairly across all commercial, charter, subsistence, and recreational fleets.

With the continued replacement of the 110ft cutters with Fast Response Cutters, there will be higher contact rates with the fishing fleets. The longer range and better sea keeping abilities will allow the FRC's to stay on scene longer and more effectively monitor the fisheries.

APPENDIX 4. Alaska Department of Fish and Game Halibut Subsistence and Charter Halibut Management Measures Reports

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

333 Raspberry Road
Anchorage, Alaska 99518-1565
Division of Subsistence: 907.267.2353
Division of Sport Fish: 907.267.2294

DATE: 01/04/2020

CONTRACTING PARTY: UNITED STATES OF AMERICA

AGENCY: Alaska Department of Fish and Game

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FISHERY SECTORS

Subsistence and Recreational

IPHC REGULATORY AREAS

IPHC Regulatory Areas 2C, 3, and 4 (USA: Alaska)

DISCUSSION

Subsistence:

Subsistence Harvests of Pacific Halibut in Alaska, 2018

Through a grant from the National Marine Fisheries Service (NMFS) (NA18NMF4370086), the Alaska Department of Fish and Game (ADF&G) Division of Subsistence conducted a study to estimate the subsistence harvests of Pacific halibut in Alaska in 2018. The full results appear in Technical Paper No. 456, "Subsistence Harvests of Pacific Halibut in Alaska, 2018" (Fall and Koster 2020).

In May 2003, the NMFS published final federal regulations for a subsistence halibut fishery in Alaska. Residents of 118 rural communities and designated rural areas, and members of 123 tribes are eligible to participate. Fishers must obtain a subsistence halibut registration certificate (SHARC) from NMFS before fishing.

To estimate the 2018 harvests, a one-page survey form was mailed to SHARC holders in early 2019 or administered in person in four communities. After three mailings and community visits, 5,852 of 8,576 potential subsistence halibut fishers (68%) responded. Participation in the survey was voluntary.

An estimated 4,094 individuals subsistence fished for halibut in Alaska in 2018, about 21% below the long-term average since 2003. The estimated subsistence harvest was 29,963 halibut for 615,789 pounds net weight. This is the lowest harvest estimate for the fishery since the current regulations came into effect and is about 33% below the annual average since 2003.

Of the 2018 total subsistence halibut harvest, 78% was harvested with setline (stationary) gear (longline or skate) and 22% was harvested with hand-operated gear (handline or rod and reel). This pattern was similar to other study years.

Also similar to other years, in 2018, the largest subsistence harvests of halibut occurred in Southeast Alaska (Halibut Regulatory Area 2C), at 59% of the total, followed by Southcentral Alaska (Area 3A) at 30%, and East Bering Sea Coast (Area 4E) at 4%. Remaining areas accounted for about 7% of the state total.

Based on data from the International Pacific Halibut Commission and this study, the estimated halibut removal in Alaska in 2018 was 30.151 million pounds, net weight. Subsistence harvests accounted for 2.1% of this total.

In response to a new question, 53% of survey respondents said they had met their needs for halibut in 2018, and 47% said they had not. Lack of effort, inoperative equipment, and time constraints were the most-cited reasons for not meeting needs.

The report concludes that the project was a success, with good response rates and a reliable estimate of subsistence halibut harvests in Alaska for 2018. Outreach is necessary to maximize enrollment of fishers in the SHARC program, as is additional research to understand trends in the fishery. Due to budget constraints, a survey to estimate subsistence halibut harvests in Alaska in 2019 will not take place. The report recommends that monitoring of the Alaska subsistence halibut harvest resume in the future.

Recreational:

In October 2019, the department provided final estimates of the 2018 sport harvest and preliminary estimates of the 2019 sport harvest for Areas 2C, 3A, 3B, and 4. The full report is in Appendix 2.

2018 Final Harvest Estimates

The Area 2C charter fishery allocation for 2018 was 0.81 Mlb (harvest and O26 release mortality). Regulations included a one-fish bag limit and reverse slot (or "protected slot") limit that allowed harvest of halibut less than or equal to 38 inches and halibut greater than or equal to 80 inches. The Area 3A charter allocation was 1.79 Mlb (harvest and O26 release mortality). Regulations included a two-fish bag limit with a maximum size on one of the fish of 28 inches, a limit of one trip per charter vessel per day (on which halibut are harvested), a limit of one trip per Charter Halibut Permit (CHP) per day, a closure of halibut retention on Wednesdays all year, six Tuesday closures (7/10 thru 8/14), and a 4-fish annual limit with a harvest recording requirement. Charter captains and crew were not allowed to retain halibut while guiding clients in Area 2C or Area 3A under regulations of the North Pacific Fishery Management Council's Catch Sharing Plan (CSP) for these areas. Charter fishery regulations in the remainder of the state included a daily bag limit of two fish of any size, and there was no prohibition on retention of halibut by captains or crew. Unguided fisheries statewide were managed under a two-fish bag limit with no size limit.

The 2018 Area 2C estimated sport harvest (excluding release mortality) was 127,680 fish, for a yield of 1.873 million pounds. 2C charter removals (including all sizes of release mortality) were estimated to be 0.718 Mlb. Unguided removals were estimated to be 1.231 Mlb. The Area 3A estimated sport harvest was 242,192 fish, for a yield of 3.429 Mlb. 3A charter removals (including release mortality) were estimated to be 1.893 Mlb. Unguided removals were estimated to be 1.575 Mlb. Areas 3B and 4 do not have separate charter allocations. The final harvest estimates were 269 halibut in Area 3B and 900 halibut in Area 4. Applying the unguided average weight from Kodiak of 14.08 lb resulted in yield estimates of 0.004 Mlb in Area 3B and 0.013 Mlb in Area 4. Additional detail on numbers of fish harvested and released, releases by size category, average weights, and confidence intervals can be found in tables 1, 3, and 4 of Appendix 2. Information on harvest by port and historical harvest can be found in Area 2C and 3A Final 2018 Charter Harvest Estimates (North Pacific Fisheries Management Council 2019).

2019 Preliminary Harvest Estimates

The Area 2C charter fishery allocation for 2019 was 0.82 Mlb (harvest and O26 release mortality). Regulations included a one-fish bag limit and reverse slot of less than or equal to 38 inches and greater than or equal to 80 inches. The Area 3A charter allocation was 1.89 Mlb (harvest and O26 release mortality). Regulations included a two-fish bag limit with a maximum size on one of the fish of 28 inches, a limit of one trip per charter vessel per day and per CHP per day, a closure of halibut retention on Wednesdays all year, five Tuesday closures (7/16 thru 8/13), and a 4-fish annual limit with a recording requirement. Charter captains and crew were not allowed to retain halibut while guiding clients in Area 2C or Area 3A. Charter fishery regulations in the remainder of the state included a bag limit of two fish of any size. Unguided fisheries statewide were managed under a two-fish bag limit with no size limit.

The preliminary estimates of 2019 sport halibut harvest and yield in Area 2C were 128,608 halibut and 1.770 Mlb, respectively. 2C charter removals (including all sizes of release mortality) were estimated to be 0.667 Mlb. Unguided removals were estimated to be 1.151 Mlb. The preliminary estimate for Area 3A was 251,658 halibut, for a total sport fishery yield of 3.636 Mlb. 3A charter removals were estimated to be 2.019 Mlb. Unguided removals were estimated to be 1.664 Mlb. The preliminary harvests for 2019 were 243 halibut in Area 3B and 810 halibut in Area 4. Applying the unguided average weight from Kodiak of 16.92 lb resulted in removal projections of 0.004 Mlb in Area 3B and 0.014 Mlb in Area 4. Additional detail on numbers of fish harvested and released, releases by size category, average weights, and confidence intervals can be found in tables 2, 4, and 5 of Appendix 2.

2C and 3A Charter Halibut Management Measure Analyses

In addition to estimating all recreational halibut harvest in Alaska, the Alaska Department of Fish and Game is responsible for analyzing alternative management measures for the charter halibut fisheries in Areas 2C and 3A. Analyses were requested by the Charter Halibut Management Committee on 29 October 2019 and results were presented at the North Pacific Fisheries Management Council meeting in December, 2019. Additional Analyses for Regulatory Area 3A will be presented at the upcoming Council meeting in January, just prior to AM096. Projected removals in 2020 under status quo regulations are 0.73 Mlb in 2C and 1.94 Mlb in 3A. A full report of the analyses and results can be found in Analysis of Charter Mgmt Options 2C 3A for 2020 (Webster and Powers 2019).

REFERENCES

Fall, J.A. and D. Koster. 2020. Subsistence Harvests of Pacific Halibut in Alaska, 2018. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 456. Anchorage.

North Pacific Fisheries Management Council. 2019. Area 2C and 3A final 2018 charter halibut harvest estimates. Retrieved 20 December 2019, from https://www.npfmc.org/halibut-charter-management/charter-management-committee/

Webster, S. and R. Powers 2019. Analysis of management options for the Area 2C and 3A charter halibut fisheries for 2020: A report to the North Pacific Fishery Management Council, December 2019. Alaska Department of Fish and Game. Agenda item C3. Unpublished. Retrieved 20 December 2019, from https://meetings.npfmc.org/Meeting/Details/1063

ATTACHMENTS

Attachment 1 – Summary of Subsistence Harvests of Pacific Halibut in Alaska, 2018

Attachment 2 – Letter to Lara Erikson (IPHC) from Sarah Webster, Mike Jaenicke, Diana Tersteeg, Martin Schuster, and Marian Ford (ADFG – DSF) reporting on the Alaska recreational halibut fishery.

Attachment 1 – Summary of Subsistence Harvests of Pacific Halibut in Alaska, 2018

SUBSISTENCE HARVESTS OF PACIFIC HALIBUT IN ALASKA, 2018

Division of Subsistence, Alaska Department of Fish and Game
333 Raspberry Road, Anchorage, AK 99518
January 2020

Through a grant from the National Marine Fisheries Service (NMFS) (NA18NMF4370086), the Alaska Department of Fish and Game (ADF&G) Division of Subsistence conducted a study to estimate the subsistence harvests of Pacific halibut in Alaska in 2018. The full results of the study appear in the division's Technical Paper No. 456, "Subsistence Harvests of Pacific Halibut in Alaska, 2018" (January 2020). Key points in the report include the following:

- In May 2003, the NMFS published final federal regulations for a subsistence halibut fishery in Alaska. Residents of 118 rural communities and designated rural areas, and members of 123 tribes are eligible to participate. Fishers must obtain a subsistence halibut registration certificate (SHARC) from NMFS before fishing (www.fakr.noaa.gov/ram/subsistence/halibut.htm; 800-304-4846).
- 2018 was the 16th year in which subsistence halibut fishing took place under these regulations, with harvest estimates available for every year but 2013, 2015, and 2017. Information about subsistence halibut harvests in prior study years is reported in Division of Subsistence Technical Papers 288, 304, 320, 333, 342, 348, 357, 367, 378, 388, 414, and 436.
- To estimate the 2018 harvests, a one-page survey form was mailed to SHARC holders in early 2019 or administered in person in four communities. After three mailings and community visits, 5,852 of 8,576 potential subsistence halibut fishers (68%) responded. Participation in the survey was voluntary.
- An estimated 4,094 individuals subsistence fished for halibut in 2018 (Table 5; Figure 8).
- The estimated subsistence harvest was 29,963 halibut for 615,789 pounds net weight (Table 5).
- Of this total, 78% was harvested with setline (stationary) gear (longline or skate) and 22% was harvested with hand-operated gear (handline or rod and reel) (Table 5).
- The largest subsistence harvests occurred in Southeast Alaska (Halibut Regulatory Area 2C), at 59% of the total, followed by Southcentral Alaska (Area 3A) at 30%, and East Bering Sea Coast (Area 4E) at 4%. Table 5 and Figure 16 from the final report give more details on harvests by gear type and area.
- Based on place of residence of SHARC holders, communities with the largest subsistence halibut harvests in 2018 were Kodiak and Sitka (the largest eligible communities) (Figure 21).
- Based on data from the International Pacific Halibut Commission and this study, the estimated halibut removal in Alaska in 2018 was 30.151 million pounds, net weight. Subsistence harvests accounted for 2.1% of this total (Figure 29).
- In response to a new question, 53% of survey respondents said they had met their needs for halibut in 2018, and 47% said they had not. Lack of effort, inoperative equipment, and time constraints were the most-cited reasons for not meeting needs.
- The report concludes that the project was a success, with good response rates and a reliable estimate of subsistence halibut harvests. Outreach is necessary to maximize enrollment of fishers in the SHARC program, as is additional research to understand trends in the fishery.
- Due to budget constraints, a survey to estimate subsistence halibut harvests in Alaska in 2019 will not take place. The report recommends that monitoring of the Alaska subsistence halibut harvest resume in the future to evaluate trends in the fishery.

For a copy of the full report, go to http://www.adfg.alaska.gov/sf/publications/, or call the Division of Subsistence of ADF&G at 907-267-2353 (Anchorage) or 907-465-3617 (Douglas).

Table 5.–Estimated subsistence harvests of halibut in Alaska in number of fish and pounds net (dressed, head off) weight, by regulatory area and subarea, 2018.

			Estimated subsistence harvest by gear type									Estimated sport harvest		
			Setline gear[a]			Hand-operated gear[a]			All gear					
Subarea	Regulatory area	Number of SHARCs subsistence fished[c]	Estimated number respondents fished[c]	Estimated number halibut harvested	Estimated pounds halibut harvested[b]	Estimated number respondents fished[c]	Estimated number halibut harvested	Estimated pounds halibut harvested[b]	Estimated number respondents fished[c]	Estimated number halibut harvested	Estimated pounds halibut harvested[b]	Estimated number respondents fished[c]	Estimated number halibut harvested	Estimated pounds halibut harvested[b]
Southern Southeast Alaska	2C	1,303	1,130	6,770	167,704	493	1,989	39,805	1,303	8,758	207,509	725	2,553	48,426
Sitka LAMP Area	2C	640	590	2,843	71,498	184	380	8,258	640	3,223	79,757	262	706	13,432
Northern Southeast Alaska	2C	558	507	2,904	66,991	181	667	11,958	558	3,570	78,948	248	707	14,918
	2C Total	**2,430**	**2,167**	**12,516**	**306,193**	**824**	**3,035**	**60,021**	**2,430**	**15,551**	**366,214**	**1,189**	**3,966**	**76,776**
Yakutat Area	3A	80	66	674	13,319	20	184	3,009	80	858	16,327	47	158	3,270
Prince William Sound	3A	248	215	1,211	25,029	82	314	6,115	248	1,525	31,143	108	280	6,395
Cook Inlet	3A	209	136	1,089	20,135	140	1,180	14,503	209	2,269	34,638	133	583	7,908
Kodiak Island road system	3A	457	416	2,880	55,201	156	413	7,214	457	3,293	62,415	279	760	14,639
Kodiak Island other	3A	400	344	1,880	32,853	176	552	10,321	400	2,432	43,174	226	590	11,376
	3A Total	**1,262**	**1,064**	**7,735**	**146,536**	**510**	**2,643**	**41,162**	**1,262**	**10,378**	**187,698**	**697**	**2,371**	**43,588**
Chignik Area	3B	18	18	68	1,083	4	7	100	18	75	1,183	0	0	0
Lower Alaska Peninsula	3B	136	75	350	6,055	105	441	9,406	136	791	15,461	18	67	1,472
	3B Total	**154**	**93**	**417**	**7,138**	**109**	**448**	**9,506**	**154**	**865**	**16,644**	**18**	**67**	**1,472**
Eastern Aleutians–east	4A	78	58	273	7,981	55	155	4,457	78	428	12,438	50	162	3,084
Eastern Aleutians–west	4A	8	8	33	705	3	13	94	8	45	799	0	0	0
	4A Total	**81**	**61**	**306**	**8,687**	**55**	**168**	**4,551**	**81**	**474**	**13,237**	**50**	**162**	**3,084**
Western Aleutians–east	4B	8	5	51	1505	5	6	178	8	56	1684	5	8	261
	4B Total	**8**	**5**	**51**	**1,505**	**5**	**6**	**178**	**8**	**56**	**1,684**	**5**	**8**	**261**
St George Island	4C	7	4	9	131	3	8	270	7	16	401	0	0	0
St Paul Island	4C	26	14	321	3,896	12	36	855	26	357	4,751	0	0	0
	4C Total	**33**	**18**	**329**	**4,027**	**15**	**44**	**1,125**	**33**	**373**	**5,152**	**0**	**0**	**0**
	4D Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Bristol Bay	4E	23	22	85	1,844	17	28	778	23	113	2,622	6	0	0
Yukon-Kuskokwim Delta	4E	139	19	294	4,351	127	1,839	17,737	139	2,133	22,088	4	196	324
Norton Sound	4E	6	6	19	450	0	0	0	6	19	450	0	0	0
	4E Total	**168**	**46**	**398**	**6,645**	**144**	**1,867**	**18,515**	**168**	**2,266**	**25,160**	**10**	**196**	**324**
Grand Total		**4,094**	**3,417**	**21,752**	**480,731**	**1,645**	**8,210**	**135,058**	**4,094**	**29,963**	**615,789**	**1,942**	**6,770**	**125,505**

Source Alaska Department of Fish and Game, Division of Subsistence, SHARC Survey, 2019

a. "Setline gear" = longline or skate; "hand-operated" gear = rod and reel or handline.

b. Weights given are "net weight" (dressed, head off) = .75 of round (whole) weight.

c. Because they may fish in more than one area, subtotals for estimated number of respondents who fished for regulatory areas and the state total might exceed the sum of the subarea values.

Figure 8.–Estimated number of Alaska subsistence halibut fishers, by regulatory area fished, 2003–2012, 2014, 2016, & 2018.

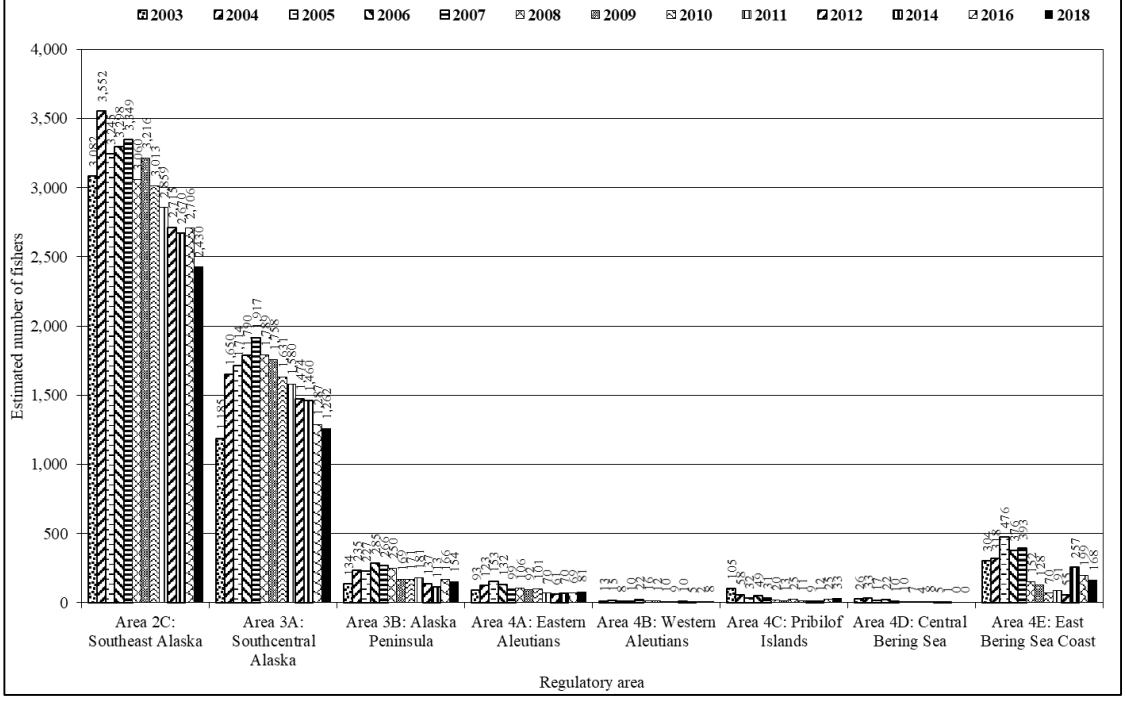
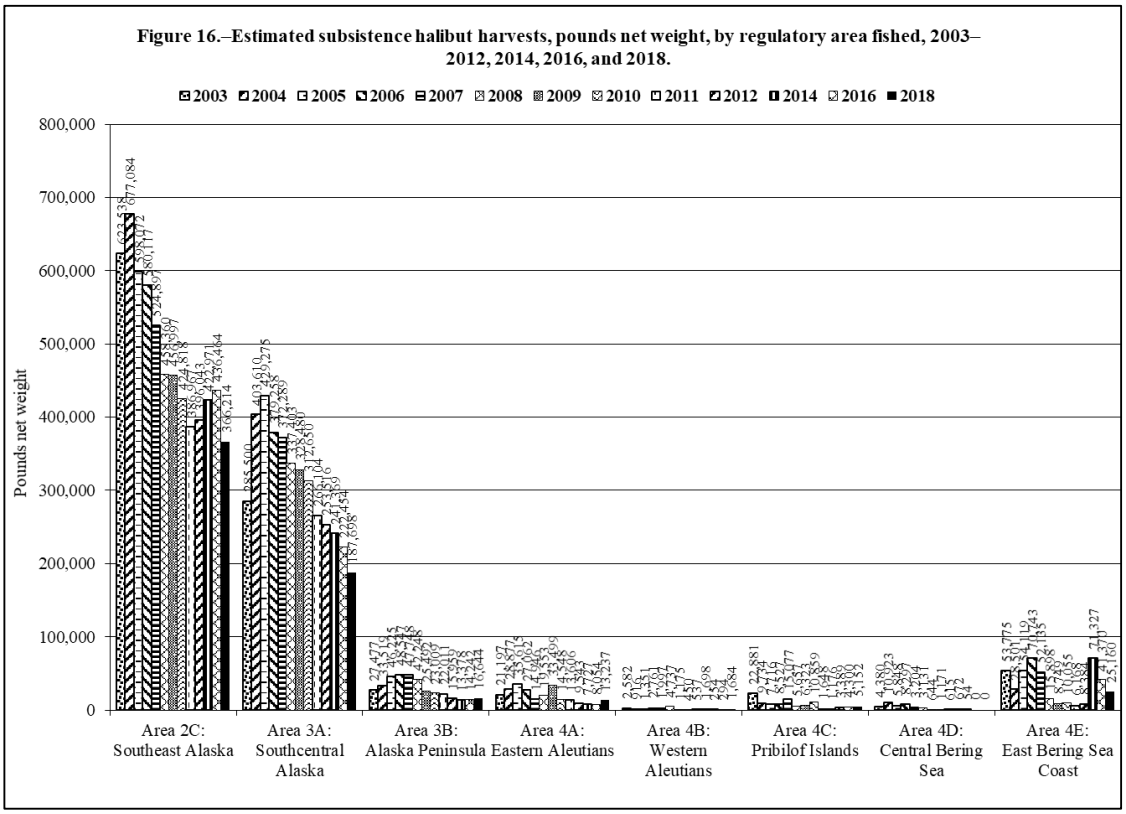


Figure 16.–Estimated subsistence halibut harvests, pounds net weight, by regulatory area fished, 2003–2012, 2014, 2016, and 2018.



C

Figure 21.–Alaska subsistence halibut harvests by place of residence, 2018.

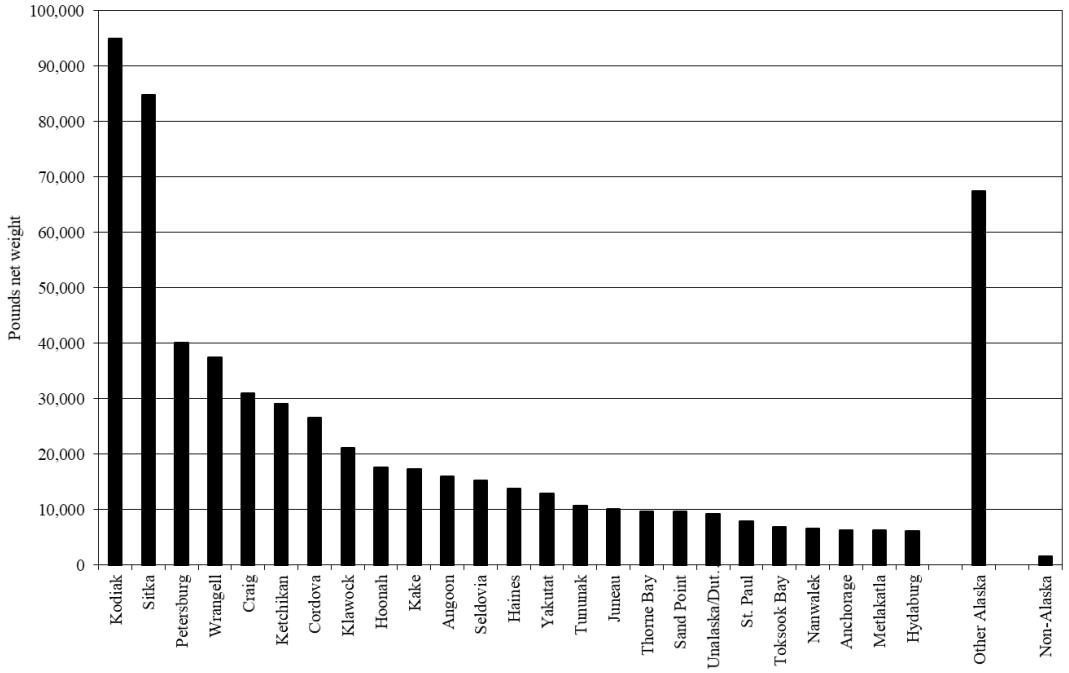
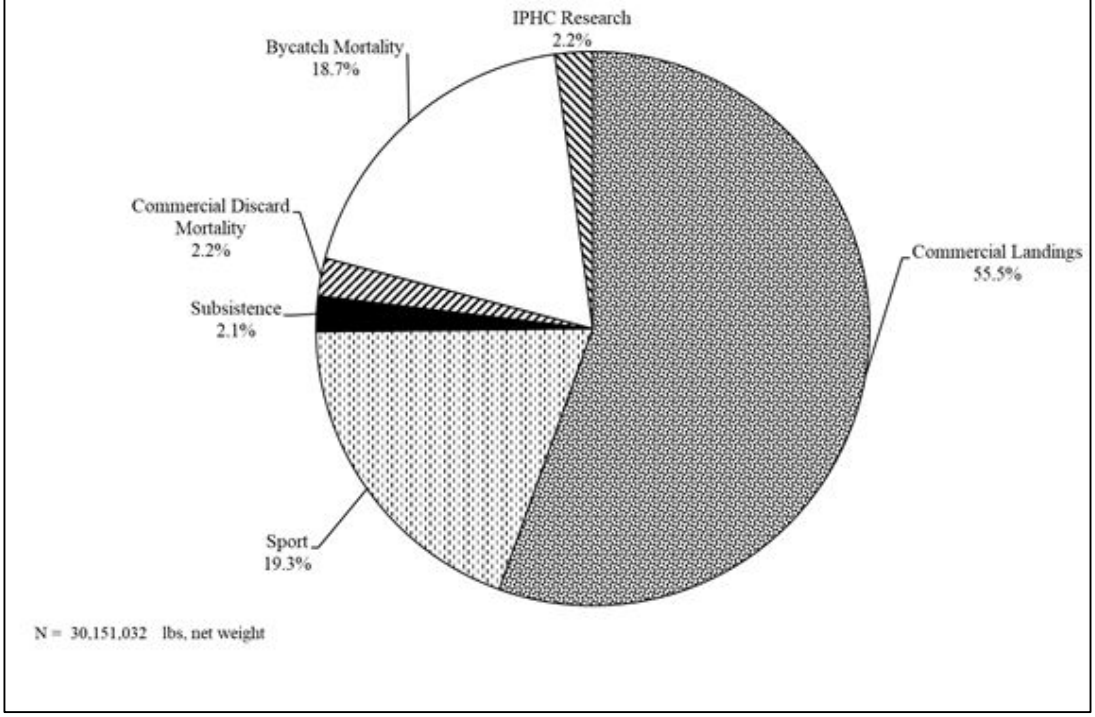


Figure 29.–Halibut removals, Alaska, 2018.



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Attachment 2 – Letter to Lara Erikson (IPHC) from Sarah Webster, Mike Jaenicke, Diana Tersteeg, Martin Schuster, and Marian Ford (ADFG – DSF) reporting on the Alaska recreational halibut fishery.

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

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October 28, 2019

(sent via email)

Lara Erikson
International Pacific Halibut Commission
2320 West Commodore Way
Salmon Bay, Suite 300
Seattle, WA 98199-1287

Dear Ms. Erikson:

This letter represents our report on the Alaska recreational halibut fishery in support of the annual IPHC stock assessment. This year's letter provides:

1. Final 2018 estimates of sport fishery harvest and yield by IPHC regulatory area,
2. Preliminary 2019 estimates of harvest and yield by IPHC area,
3. Final 2018 and preliminary 2019 estimates of sport fishery release mortality by IPHC area, and
4. Final 2018 estimates of sport fishery yield prior to the mean IPHC longline survey date in Areas 2C and 3A.

Each section includes a summary of the methods used and basic results. More detailed information on methods can be found in the following project operational plans:

Southeast Region creel sampling: *http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.1J.2019.01.pdf*

Southcentral Region creel sampling: *http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.2A.2016.20.pdf*

Statewide halibut estimation: *http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.4A.2014.08.pdf*

We hope this information satisfies the IPHC's needs. Please feel free to contact us if you require clarification or additional information.

Sincerely;

Sarah Webster, Mike Jaenicke, Diana Tersteeg, Martin Schuster, and Marian Ford
Fishery Biologists

Final Estimates of 2018 Sport Harvest and Yield

In October 2018 we provided preliminary estimates of the 2018 sport harvest for Areas 2C, 3A, 3B, and 4. This letter provides final estimates of the 2018 sport harvest based on Alaska Department of Fish and Game (ADF&G) saltwater logbook data as of October 12, 2019, and final estimates from the ADF&G Statewide Harvest Survey (SWHS). The final estimates for Area 2C and 3A will also be posted on the North Pacific Fishery Management Council web site.

The Area 2C charter fishery regulations for 2018 included a one-fish daily bag limit and reverse slot (or "protected slot") limit that allowed harvest of halibut less than or equal to 38 inches and halibut greater than or equal to 80 inches. The Area 3A charter regulations included a two-fish bag limit with a maximum size on one of the fish of 28 inches, a limit of one trip per charter vessel per day (on which halibut are harvested), a limit of one trip per Charter Halibut Permit (CHP) per day, a closure of halibut retention on Wednesdays all year, six Tuesday closures (7/10 thru 8/14), and a 4-fish annual limit with a harvest recording requirement. Charter captains and crew were not allowed to retain halibut while guiding clients in Area 2C or Area 3A under regulations of the North Pacific Fishery Management Council's Catch Sharing Plan (CSP) for these areas. Charter fishery regulations in the remainder of the state included a daily bag limit of two fish of any size, and there was no prohibition on retention of halibut by captains or crew. Unguided fisheries statewide were managed under a two-fish bag limit with no size limit.

Methods:

For Areas 2C and 3A, sport fishery yield was calculated separately for the charter and unguided sectors as the product of the number of fish harvested and average weight of harvested halibut. Yield estimates do not include release mortality (provided later in this document). Estimates were done for six subareas in Area 2C and eight subareas in Area 3A and summed. Charter harvest was based entirely on logbook data, per the provisions of the CSP. Unguided harvest was estimated through the SWHS. Standard errors of the SWHS estimates for the unguided sector were obtained by bootstrapping. Average net weight was estimated by applying the IPHC length-weight relationship to length measurements of harvested halibut sampled at major ports in Areas 2C and 3A. All fish from each vessel-trip selected for sampling were measured. Bootstrapping was used to estimate the standard errors of average weight. The estimate of charter average weight for Homer was stratified to account for differences in sizes of halibut cleaned at sea and cleaned onshore. Length measurements from sites in the Glacier Bay subarea included fish caught in Areas 3A and 2C; average weights were calculated separately for each area and sector. All unguided harvest in the Glacier Bay subarea was assumed to have occurred in Area 2C. Charter-caught halibut taken under a Guided Angler Fish (GAF) permit from the National Marine Fisheries Service were not included in charter harvest calculations because the CSP specifies that this harvest accrues toward the commercial catch limit.

Final estimates of sport fishery yield for Areas 3B and 4 are for the charter and unguided sectors combined and are based entirely on the SWHS. Because ADF&G does not sample the sport harvest in these areas, we followed past practices of the IPHC and used the average weight of Kodiak sport harvest as a proxy for average weight in Areas 3B and 4. Specifically, we used the average weight from the unguided sector because it was unaffected by size limits. Even so, use of the Kodiak average weight may bias the yield estimates for these areas.

As has been done historically, harvest from SWHS Area R (Alaska Peninsula and Aleutian Islands south of Cape Douglas) was apportioned to IPHC Areas 3B and 4 using specific locations reported in the survey. In some years, Area R harvest estimates have included harvests for sites that are actually in Area 3A. Since 1991, the estimated harvest of Area 3A halibut included in Area 3B estimates has ranged from 0 to 728 fish per year (average = 122). In 2018, no halibut were estimated from Area 3A locations in Area R.

Results:

The 2018 Area 2C estimated sport harvest (excluding release mortality) was 127,680 fish, for a yield of 1.873 million pounds (Table 1). Charter yield represented 35% of the total. Average net weight was estimated at 14.67 lb overall and was lower for the charter sector due to size limit restrictions. Average weight was estimated from samples of 4,426 charter halibut and 4,156 unguided halibut.

The Area 3A estimated sport harvest was 242,192 fish, for a yield of 3.429 Mlb (Table 1). The charter sector accounted for 55% of the total yield. Average net weight was estimated at 14.16 lb overall and was slightly lower for the charter sector. Average weight was estimated from samples of 4,647 charter halibut and 2,924 unguided halibut.

The final estimates of charter halibut yield were about 1.7% lower than last year's preliminary estimate in Area 2C and 1.3% higher than the preliminary estimate in Area 3A. These differences were largely due to errors in estimating the proportions of harvest taken through July 31, the cutoff date for using logbook data. The final estimates of unguided yield were 10.7% lower than the preliminary estimate in Area 2C and 10.8% lower in Area 3A. The preliminary estimates were derived from simple exponential time series forecasts (SAS ESM procedure) and large forecasting errors are expected due to high annual variability in the harvest time series.

The final harvest estimates for western areas were 269 halibut in Area 3B and 900 halibut in Area 4 (Table 1). Applying the Kodiak unguided average weight of 14.08 lb resulted in yield estimates of 0.004 Mlb in Area 3B and 0.013 Mlb in Area 4. These final estimates were up from last year's preliminary estimates of 0.002 in Area 3B and 0.011 in Area 4.

Preliminary 2019 Estimates of Harvest and Yield

Methods:

Sport charter fishery mortality for Areas 2C and 3A is based on numbers of halibut reported harvested and released in ADF&G mandatory charter logbooks. Harvest and release estimates from the SWHS are still used for all unguided fishery estimates as well as total sport fishery estimates for Areas 3B and 4. Neither complete logbook data nor SWHS estimates are available yet for the current year, and creel sampling is not designed to produce estimates of harvest. A variety of methods were used to provide preliminary estimates of the numbers of fish harvested by each sector or regulatory area.

Charter harvest for Areas 2C and 3A was projected from partial-year logbook data. Logbook data were entered and available in mid-October for most trips taken through July 31. Areas 2C and 3A are divided into several subareas closely corresponding to state management areas. Harvest data were corrected to account for late logbook submissions and other reporting errors based on past data. This adjusted the harvest in each area by less than 2%. The harvest data were then expanded by forecasting the proportion of harvest taken through July in each subarea. Forecasts and their standard errors were obtained from a simple exponential smoother using 2006-2018 logbook data as of October 12, 2019.

Unguided harvest in Areas 2C and 3A, and overall sport harvests for Areas 3B and 4 were projected from the existing time series of SWHS estimates using simple exponential smoother forecasts. Charter and unguided yield were estimated by multiplying the subarea harvest forecasts by the corresponding estimates of average weight. Average weights were estimated by applying the IPHC length-weight relationship to length measurements of harvested halibut obtained through sampling of the recreational harvest. No sampling was conducted in Areas 3B or 4 in 2019, so the Kodiak area average weight from the unguided fishery was again substituted for these areas.

Results:

The preliminary estimate of 2019 sport halibut harvest in Area 2C (excluding release mortality) was 128,608 halibut, or 1.770 Mlb (Table 2). Charter harvest was estimated using a projection that 66% of the harvest was taken through the end of July. Average weight was estimated at 13.76 lb. The charter average weight was more than 9 lbs lower than the unguided average weight due to the charter fishery size limit. Average weights for Area 2C were based on length measurements of 4,158 charter halibut and 3,771 unguided halibut.

The preliminary estimate for Area 3A was 251,658 halibut, for a total sport fishery yield of 3.636 Mlb (Table 2). Charter harvest was estimated using a projection that 69% of the harvest was taken through the end of July. The estimated average weights in Area 3A was 14.45 lb overall. Average weights were estimated from samples of 4,756 charter and 2,449 unguided halibut.

The preliminary harvest estimates for 2019 were 243 halibut in Area 3B and 810 halibut in Area 4. Applying the unguided average weight of 16.92 lb from Kodiak resulted in yield projections of 0.004 Mlb in Area 3B and 0.014 Mlb in Area 4 (Table 2). Although the levels of sport harvest are low, there is large uncertainty in the time series forecasts as well as use of the Kodiak unguided average weight as a proxy for average weight in these areas.

Final 2018 and Preliminary 2019 Estimates of Release Mortality

Methods:

Release mortality (R) was calculated in pounds net weight for each subarea of Areas 2C and 3A as:

$$R = \hat{N} \cdot DMR \cdot \hat{\bar{w}}$$

where

$\hat{N}$ = the number of fish released,

DMR = the assumed short-term discard mortality rate due to capture, handling, and release, and

$\hat{\bar{w}}$ = the estimated average net weight (in pounds) of released fish.

The numbers of halibut released ($\hat{N}$) in the charter sector in 2018 were based on final logbook data. The numbers of halibut released in 2019 were projected using logbook data through July 31. The projections used simple exponential forecasts of the proportion of releases through July 31 from 2006-2018 data. For the unguided fishery, and the overall sport fisheries in Areas 3B and 4, the estimated number of fish released in each subarea in 2018 was obtained from the SWHS. The projections for 2019 were simple exponential time series forecasts using previous release numbers from the SWHS.

Assumed mortality rates (*DMRs*) were 5% for Area 3A charter-caught halibut, 6% for Area 2C charter and Area 3A unguided, and 7% for Area 2C unguided halibut. These rates were developed by assuming a 3.5% mortality rate for halibut released on circle hooks and a 10% mortality rate for halibut released on all other hook types. The hook type data were collected in 2007 and 2008 in Area 2C, and every year since 2007 in Area 3A. These rates were applied to the reported number of fish released on each hook type to calculate a weighted mean mortality rate for each user group in each subarea. These weighted mean rates were then rounded up to the next whole percentage point to address uncertainty and account for possible cumulative effects of multiple recaptures. A discard mortality rate of 6% was assumed for Areas 3B and 4, as no data on hook use were collected.

For most IPHC regulatory areas, the average weights of released fish in each subarea were estimated using a logistic model of the proportion of catch retained at length, as described in the operational plan for statewide halibut estimation (see cover page for link). The model uses the length composition of the retained fish to infer the length distribution of released fish. The resulting length distributions are partitioned into U26 (<26 inch) and O26 (≥ 26 inch) components, and average weight was calculated using the IPHC length-weight relationship. The U26 and O26 separation was done for consistency with how these two size classes of waste have been handled by the IPHC and because O26 discard mortality is included in the charter allocation for areas 2C and 3A.

For the Area 2C charter fishery, additional steps were needed to estimate release mortality due to the reverse slot limits in place in 2018 and 2019. In both years, charter anglers were prohibited from harvesting fish between 38 and 80 inches in length. This required partitioning the released fish into size categories as follows: the 2018 size classes were U38 (≤ 38 inches) and O38 (> 38 inches). The 2019 size classes were U38 (≤ 38 inches), 38-80, and O80 (≥ 80 inches). The proportions of fish in each size class were obtained from creel survey interviews where anglers were asked to report the numbers of released fish by size class. The average weight of released fish in the U38 size class was estimated using the model described above. The average weights of released fish in the protected slot and above the upper limit were estimated as the average weight of fish in these size ranges in 2010, the most recent year without a charter size limit.

The North Pacific Fishery Management Council's Scientific and Statistical Committee reviewed the logistic modeling approach in 2007 and concluded that it provided "reasonable" estimates of average weight given the lack of data. One problem inherent in this method is that the size distribution of released fish is truncated at the size of the smallest fish measured in the harvest sample. It is likely that some halibut are released that are smaller than the smallest halibut retained and measured. Therefore, the method may in effect underestimate the numbers of U26 fish released but overestimate their average weight. Because the model assumes that the percent of fish kept at length never exceeds 95%, it may also overestimate the numbers of O26 fish released, but probably has little effect on their average weight.

Results:

For 2018, estimated U26 release mortality was 0.005 Mlb in Area 2C, 0.012 Mlb in Area 3A, and virtually zero in Areas 3B and 4 (Table 3). Estimated O26 release mortality was 0.072 Mlb in Area 2C, with 0.060 Mlb from the charter fishery. The size class breakdown of the Area 2C charter O26 release mortality indicated that while the majority of fish released were in the length range 26-38 inches, the poundage of release mortality was greatest in the O38 range because of the higher average weight (Table 4). Estimated O26 release mortality in Area 3A was 0.027 Mlb, with 0.013 Mlb from the charter fishery (Table 3). Areas 3B and 4 each had negligible amounts of release mortality from the sport fishery.

For 2019, estimated release mortality of U26 halibut was 0.006 Mlb in Area 2C, 0.013 Mlb in Area 3A, and virtually zero in Areas 3B and 4 (Table 5). Mortality of O26 releases in Area 2C was estimated at 0.042 Mlb, with 0.031 Mlb from the charter fishery. The size class breakdown of the Area 2C charter O26 release mortality indicated that while the majority of fish released were in the length range 26-38 inches, the poundage of release mortality was greatest in the 38-80 inch range because of the higher average weight (Table 4). Mortality of O26 releases in Area 3A was 0.033 Mlb, with most (0.020 Mlb) coming from the unguided fishery (Table 5). The O26 release mortality was negligible in Area 3B and Area 4.

The 2018 total sport fishery removals, including harvest and all sizes of release mortality, added up to 1.950 Mlb in Area 2C and 3.468 Mlb in Area 3A. Release mortality made up 3.9% of all Area 2C removals and 1.1% of Area 3A removals. For 2019, the preliminary estimates of total sport removals are 1.818 Mlb in Area 2C and 3.682 Mlb in Area 3A. Release mortality accounted for 2.6% of Area 2C removals and 1.2% of Area 3A removals in 2018.

Sport Fishery Yield Prior to the Mean IPHC Survey Dates in 2018 (Areas 2C and 3A only)

This information is provided to aid the IPHC's adjustment to survey CPUE that is used to apportion estimated exploitable biomass among regulatory areas. The mean survey dates for 2018 were July 20 in Area 2C and June 29 in Area 3A.

Methods:

The proportions of harvest prior to the mean survey date were calculated separately for the charter and unguided sectors. For the charter sector, the proportion of harvest taken prior to the mean survey date in 2018 was obtained from logbook harvest data. For the unguided sector, the proportions were calculated based on harvest reported in dockside interviews. These proportions were calculated separately for each subarea of Area 2C and 3A and weighted by the 2018 final estimated harvests in each subarea to derive the overall proportions. The total sport yield taken prior to the mean survey date was calculated by multiplying the charter and unguided proportions by their respective final or projected yields and summing.

Results:

In 2018, an estimated 0.930 Mlb of halibut were taken by the sport fishery in Area 2C prior to July 20, and an estimated 0.880 Mlb were taken in Area 3A prior to June 29 (Table 6).

Table 1. Final estimates of the 2018 sport halibut harvest (numbers of fish), average net weight (pounds), and yield (millions of pounds net weight) in Areas 2C, 3A, 3B, and 4. "NA" indicates no estimate is available.

IPHC Area	Sector	Harvest (no. fish)	Average Net Wt. (lb)	Yield (Mlb)	95% CI for Yield (Mlb)
Area 2C	Charter	69,992	9.37	0.656	0.618 – 0.694
	Unguided	57,688	21.09	1.216	1.079 – 1.354
	Total	127,680	14.67	1.873	1.730 – 2.015
Area 3A	Charter	136,312	13.75	1.874	1.761 – 1.986
	Unguided	105,880	14.69	1.555	1.369 – 1.742
	Total	242,192	14.16	3.429	3.211 – 3.647
Area 3B	Total	269	14.08[a]	0.004	NA
Area 4	Total	900	14.08[a]	0.013	NA

[a] – No size data were available from Areas 3B and 4, so the unguided average weight from Kodiak was substituted.

Table 2. Preliminary estimates of the 2019 sport halibut harvest (numbers of fish), average net weight (pounds), and yield (millions of pounds net weight) in Areas 2C, 3A, 3B, and 4. "NA" indicates no estimate is available.

IPHC Area	Sector	Harvest (no. fish)	Average Net Wt. (lb)	Yield (Mlb)	95% CI for Yield (Mlb)
Area 2C	Charter	67,529	9.39	0.634	0.606 – 0.662
	Unguided	61,079	18.59	1.136	0.903 – 1.368
	Total	128,608	13.76	1.770	1.535 – 2.004
Area 3A	Charter	137,731	14.52	2.000	1.846 – 2.153
	Unguided	113,927	14.36	1.636	1.343 – 1.930
	Total	251,658	14.45	3.636	3.305 – 3.968
Area 3B	Total	243	16.92[a]	0.004	NA
Area 4	Total	810	16.92[a]	0.014	NA

[a] – No size data were available from Areas 3B and 4, so the unguided average weight from Kodiak was substituted.

Table 3. Final estimates of release mortality for sport fisheries in Areas 2C, 3A, 3B, and 4 in 2018. Some columns may not appear to add correctly due to rounding.

IPHC Area	Size Class	Sector	Estimated No. Halibut Released	Assumed Mortality Rate	Number Released that Died	Estimated Average Net Weight (lb)	Release Mortality (Mlb)
Area 2C	U26	Charter	8,118	6.0%	487	3.69	0.002
		Unguided	12,838	7.0%	899	3.57	0.003
		Total	20,957		1,386	3.61	0.005
	O26	Charter	29,664	6.0%	1,780	33.56	0.060
		Unguided	15,660	7.0%	1,096	10.74	0.012
		Total	45,324		2,876	24.86	0.072
Area 3A	U26	Charter	33,991	5.0%	1,700	3.54	0.006
		Unguided	29,582	6.0%	1,775	3.22	0.006
		Total	63,573		3,474	3.38	0.012
	O26	Charter	24,281	5.0%	1,214	10.28	0.013
		Unguided	26,261	6.0%	1,576	9.11	0.014
		Total	50,542		2,790	9.62	0.027
Area 3B	U26	Total	150	6.0%	9	3.75	0.000
	O26	Total	363	6.0%	22	8.84	0.000
Area 4	U26	Total	107	6.0%	6	3.56	0.000
	O26	Total	181	6.0%	11	9.48	0.000

Table 4. Breakdown of Area 2C estimates of O26 charter release mortality by size class for 2018 (final) and 2019 (preliminary). Some columns may not appear to add correctly due to rounding.

Year	Size Class (inches)	Estimated No. Halibut Released	Assumed Mortality Rate	Number Released that Died	Estimated Average Net Weight (lb)	Release Mortality (Mlb)
2018	O26U38	13,176	6.0%	791	8.98	0.007
	O38	16,487	6.0%	989	53.21	0.053
	Total O26	29,664	6.0%	1,780	33.56	0.060
2019	O26U38	15,987	6.0%	959	8.41	0.008
	O38U80	6,934	6.0%	416	47.84	0.020
	O80	227	6.0%	14	244.70	0.003
	Total O26	23,147	6.0%	1,389	22.53	0.031

Table 5. Preliminary estimates of release mortality for sport fisheries in Areas 2C, 3A, 3B, and 4 in 2019. Some columns may not appear to add correctly due to rounding.

IPHC Area	Size Class	Sector	Estimated No. Halibut Released	Assumed Mortality Rate	Number Released that Died	Estimated Average Net Weight (lb)	Release Mortality (Mlb)
Area 2C	U26	Charter	9,015	6.0%	541	3.71	0.002
		Unguided	14,307	7.0%	1,002	3.69	0.004
		Total	23,323		1,542	3.69	0.006
	O26	Charter	23,147	6.0%	1,389	22.53	0.031
		Unguided	15,768	7.0%	1,104	9.78	0.011
		Total	38,915		2,493	16.88	0.042
Area 3A	U26	Charter	31,513	5.0%	1,576	3.59	0.006
		Unguided	37,043	6.0%	2,223	3.46	0.008
		Total	68,018		3,798	3.51	0.013
	O26	Charter	23,471	5.0%	1,174	10.75	0.013
		Unguided	37,546	6.0%	2,253	8.88	0.020
		Total	61,018		3,426	9.52	0.033
Area 3B	U26	Total	62	6.0%	4	4.47	0.000
	O26	Total	285	6.0%	17	9.88	0.000
Area 4	U26	Total	184	6.0%	11	4.28	0.000
	O26	Total	356	6.0%	21	8.78	0.000

Table 6. Final estimated sport harvest prior to the mean IPHC survey dates in 2018 in Areas 2C and 3A.

		Charter		Unguided		Total	
Area	Mean Survey Date	Percent	Harvest (Mlb)	Percent	Harvest (Mlb)	Percent	Harvest (Mlb)
2C	July 20	51.3%	0.337	48.8%	0.593	49.7%	0.930
3A	June 29	28.8%	0.539	21.9%	0.340	25.7%	0.880

IPHC Pacific Halibut Fishery Regulations:

Fishery Limits (Sect. 4)

PREPARED BY: IPHC SECRETARIAT (30 DECEMBER 2019)

PURPOSE

To improve clarity and transparency of fishery limits within the IPHC Pacific Halibut Fishery Regulations: Fishery Limits (Sect. 4).

BACKGROUND

The Commission considers new and revised IPHC Fishery Regulations, including proposed changes to fishery limits, and makes changes as deemed necessary at each Annual Meeting. In the absence of changes being deemed necessary, the existing IPHC Fishery Regulations remain in effect.

In accordance with the IPHC Convention[1], the Contracting Parties may also implement fishery regulations that are more restrictive than those adopted by the IPHC.

This proposal suggests improvements to IPHC Pacific Halibut Fishery Regulations Section 4, '*Limits,'* to reflect TCEY values adopted by the IPHC and the applicable fishery sector limits resulting from those TCEY values according to existing Contracting Party catch sharing arrangements.

DISCUSSION

IPHC Pacific Halibut Fishery Regulations Section 4, '*Limits,'* was adopted in 2018 in order to provide clear documentation of the limits for fishery sectors within defined Contracting Party catch sharing arrangements, which are themselves tied to the mortality distribution (TCEY) decisions of the Commission. This proposal retitles the section as *'Mortality and Fishery Limits'* and adds a table of the TCEY values adopted by the Commission, for clarity and to emphasize the role of the TCEY values as the basis for the subsequent setting of sector allocations through the operation of the Contracting Parties' existing catch sharing arrangements. Both the TCEY and the fishery sector allocation table will be populated as TCEY decisions are made for each IPHC Regulatory Area by the Commission during the 96th Session of the IPHC Annual Meeting (AM096) in February 2020.

Benefits/Drawbacks: The benefit is clear identification of fishery limits resulting from Commission decisions on distributed mortality (TCEY) values for each IPHC Regulatory Area. The potential drawback is a misconception that the resulting catch sharing arrangements and associated fishery limits are within the Commission's mandate, when in fact they are the

[1] The Convention between Canada and the United States of America for the Preservation of the [Pacific] Halibut Fishery of the Northern Pacific Ocean and Bering Sea

responsibility of the Contracting Parties. This change is intended to reinforce that distinction by clarifying which decisions are made by the Commission.

Sectors Affected: This proposal affects all sectors of the Pacific halibut fishery.

ADDITIONAL DOCUMENTATION / REFERENCES

None

RECOMMENDATIONS

That the Commission:

1) **NOTE** regulatory proposal IPHC-2020-AM096-PropA1, which provides the Commission with an opportunity to consider revisions to improve the clarity and transparency of fishery limits within the IPHC Pacific Halibut Fishery Regulations: Fishery Limits (Sect. 4).
2) **ADOPT** the suggested regulatory language regarding mortality and fishery limits provided in Appendix A.

APPENDICES

Appendix A: Suggested Regulatory Language

APPENDIX A

SUGGESTED REGULATORY LANGUAGE

4. Mortality and Fishery Limits

(1) The Commission has adopted the following distributed mortality (TCEY) values:

IPHC Regulatory Area	***Distributed mortality limits (TCEY) (net weight)***	
	Metric tons (t)	**Pounds (lb)**
Area 2A (California, Oregon, and Washington)		
Area 2B (British Columbia)		
Area 2C (southeastern Alaska)		
Area 3A (central Gulf of Alaska)		
Area 3B (western Gulf of Alaska)		
Area 4A (eastern Aleutians)		
Area 4B (central/western Aleutians)		
Areas 4CDE (Bering Sea)		

(2) The fishery limits resulting from the IPHC-adopted distributed mortality (TCEY) values and the existing Contracting Party catch sharing arrangements are as follows, recognizing that each Contracting Party may implement more restrictive limits:

IPHC Regulatory Area	***Fishery limits (net weight)***	
	Metric tons (t)	**Pounds (lb)**
Area 2A (California, Oregon, and Washington)		
Non-tribal directed commercial (south of Pt. Chehalis)		
Non-tribal incidental catch in salmon troll fishery		
Non-tribal incidental catch in sablefish fishery (north of Pt. Chehalis)		
Treaty Indian commercial		
Treaty Indian ceremonial and subsistence (year-round)		
Recreational – Washington		
Recreational – Oregon		
Recreational – California		
Area 2B (British Columbia) (combined commercial/recreational)		
Commercial fishery		
Recreational fishery		
Area 2C (southeastern Alaska) (combined commercial/guided recreational)		
Commercial fishery (catch)		

Commercial fishery (incidental mortality)		
Guided recreational fishery (includes catch and incidental mortality)		
Area 3A (central Gulf of Alaska) (combined commercial/guided recreational)		
Commercial fishery catch)		
Commercial fishery (incidental mortality)		
Guided recreational fishery (includes catch and incidental mortality)		
Area 3B (western Gulf of Alaska)		
Area 4A (eastern Aleutians)		
Area 4B (central/western Aleutians)		
Areas 4CDE (Bering Sea)		
Area 4C (Pribilof Islands)		
Area 4D (northwestern Bering Sea)		
Area 4E (Bering Sea flats)		
Total		

IPHC Pacific Halibut Fishery Regulations:

Commercial Fishing Periods (Sect. 9)

PREPARED BY: IPHC SECRETARIAT (30 DECEMBER 2019)

PURPOSE

To specify fishing periods for the commercial Pacific halibut fisheries within the IPHC Pacific Halibut Fishery Regulations: Commercial Fishing Periods (Sect. 9).

BACKGROUND

Each year the International Pacific Halibut Commission (IPHC) selects fishing period dates for the commercial Pacific halibut fisheries in each of the IPHC Regulatory Areas. Historically, the first management measures implemented by the IPHC were to limit periods when fishing was allowed. Biological factors considered in the past when setting fishing period dates included migration and spawning considerations, neither of which is now used as a basis for determining fishing periods. Weather patterns, predicted tides in some fishing areas, whale activity, and business considerations for both fishers and processors have also been factors in the discussions surrounding the setting of fishing period dates.

Overall commercial fishing period

The IPHC's practice is to use the same overall commercial fishing period dates for all IPHC Regulatory Areas. These dates have varied from year to year, and in recent years have allowed commercial fishing to begin sometime in March and end sometime in November for all IPHC Regulatory Areas.

IPHC Regulatory Area 2A: Non-tribal directed commercial fishery (Derby fishery)

Additionally, more restrictive fishing periods are established by the IPHC for the IPHC Regulatory Area 2A non-tribal directed commercial fishery, currently managed as a 10-hr derby fishery.

DISCUSSION

Overall commercial fishing period:

The IPHC Secretariat proposes that the overall commercial fishing period for all IPHC Regulatory Areas be fixed. Fixing the season will allow stakeholders to more efficiently develop business plans and will allow the IPHC Secretariat to more effectively monitor and manage the fishery.

IPHC Regulatory Area 2A: Non-tribal directed commercial fishery (Derby fishery)

For IPHC Regulatory Area 2A, the IPHC Secretariat proposes fishing periods for the non-tribal directed commercial fishery longer than the current 10-hour derby fishing periods. Specifically, the IPHC Secretariat proposes a fishing period of either:

1) **2 days** or

2) **3 days.**

We suggest that any version of a longer fishing period, from two to three days, would be preferable to the 10-hour derby fishing period currently in use. This change should be made for the 2020 fishing period in the interest of safety and is within the current management structure of this fishery. This decision should be made ahead of and apart from any consideration of more extensive modifications to the management of this fishery as it transitions from the IPHC to Contracting Party (USA) domestic management.

Reasons for longer fishing periods

The IPHC Secretariat sees no compelling reason to retain the current "derby-style" form of the directed commercial Pacific halibut fishery, with its 10-hour fishing periods, but a number of advantages in reducing the concentration of fishing effort and eliminating or reducing the "race to fish" under potentially dangerous conditions. Potential advantages include:

1. Safety. This is the primary reason. The current system offers no flexibility as to when fishing takes place, creating pressure to attempt fishing even in poor weather and dangerous conditions. The U.S. Coast Guard has frequently commented at IPHC meetings in support of moving away from the derby-style fishery for this reason. Based on the experience of other fisheries in both Canada and the USA, we believe that a system offering more flexible fishing opportunities is inherently safer for everyone on the water. **This justification alone should be enough for the Commission to extend the fishing period for 2020.**
2. Reduced discards. The current derby system is essentially a "race to fish," where fishers have an incentive to set as much gear as possible during the short time available for fishing. This leads to more discards as fishing period limits are reached than would be the case under a system where the fishers had time to more carefully calibrate their effort to applicable limits.

Other than maintaining access to the resource by the commercial Pacific halibut fishery, the IPHC Secretariat does not recommend a particular management system to replace the current form of the IPHC Regulatory Area 2A non-tribal directed commercial Pacific halibut fishery as it transitions to domestic management. The IPHC Secretariat supports a reduction in the concentration of fishing effort, eliminating the race to fish, and improving safety as guiding principles for any initial changes.

Implications of longer fishing periods

Longer fishing periods are expected to allow greater participation of license holders and greater attainment of individual fishing period limits by participating vessels. The primary implication of longer fishing periods is that fewer fishing periods and/or lower fishing period limits may be required in order to maintain the fishery within its allocation under the Pacific Fishery Management Council's (PFMC) catch sharing plan (CSP).

Along with announcing open dates for the directed commercial fishery, the IPHC announces what the per-vessel fishing period limits will be, by vessel class, in accordance with the Pacific Halibut Fishery Regulations Section 13 (Fishing Period Limits). The IPHC determines the fishing period limits before each fishing period opens, based on the number of vessels in each length class, the average performance of vessels in that length class, and the amount of catch allocated

to (or remaining for) the directed commercial fishery for that year. The IPHC vessel length classes range from A to H, with A being the smallest vessels (25 ft and under) and H being the largest (56 ft and over). The method of scaling fishing period limits among the vessel size classes can be adjusted to include a minimum, or floor, value for the smallest vessels in order to maintain an economically viable fishing opportunity.

In recent years the IPHC set fishing period limits for the first 10-hour fishing period of the year that ranged from 4.64 t (10,225 lb) landed weight[1] for the largest, H-class vessels to less than 0.45 t (1000 lb) for the smallest, A-class vessels. Dependent upon the sector allocation for 2020, the IPHC Secretariat expects that fishing period limits for a first fishing period of either two or three days for 2020 would be similar to those used in 2019, which ranged from 4.64 t (10,225 lb) for larger vessels to 2.05 t (4,525 lb) for smaller vessels. For 2020, the IPHC will be implementing a cost-recovery nominal fee for this license.

Discussion and feedback on this issue to date

1. The IPHC initiated the current sequence of discussions regarding fishing periods in IPHC Regulatory Area 2A with a letter to the PMFC in May 2017. The PFMC and its advisory bodies engaged in discussion of the issue at their June, September, and November 2017 meetings, including a request for more information from IPHC and the inter-agency production of a matrix of management options for the fishery.
    a. This discussion and its attendant information and analyses were considered by the Commission at the 94th Annual Meeting (AM094) in January 2018 (IPHC-2018-AM094-INF02).
    b. No recommendations were made by the Commission for the 2018 fishery other than status quo. The PFMC and other parties indicated a willingness to continue discussing potential changes to the management of the fishery.

2. The focus of attention during 2018 was on the possibility of changing the length of the fishing period, and on the IPHC Secretariat's specific proposal for either a 5-day or a 10-day fishing period (IPHC-2019-AM095-PropA2). Such a change is within the IPHC's mandate and addresses the IPHC's primary concern with the current 10-hour fishing period, the safety of participants in the fishery. It could be undertaken by the IPHC on its own, without requiring changes in the aspects of the fishery managed by the PFMC and the state and federal agencies.
    a. The IPHC identified its proposal to change the fishing period in letters to the PFMC, which the PFMC discussed extensively at its September and November 2018 meetings. The PFMC then provided its feedback in a letter to the IPHC in November 2018, identifying concerns with the proposal and requesting engagement with the IPHC to work through the concerns or otherwise delay action to modify the management parameters of the fishery until its concerns were addressed.
    b. In response, the IPHC Secretariat noted that the concerns raised by the PFMC were worthy of continued discussion and coordination, but that they did not preclude the implementation of longer fishing periods. In particular, input from stakeholders and agencies regarding economic viability, enforcement concerns,

[1] "Landed weight" is defined as the weight without gills and entrails, head-on, with ice and slime.

and the timing of the fishery would continue to be useful considerations for future modifications to the fishery. The IPHC welcomed the proposal by the PFMC for a workshop to consider additional changes to the IPHC Regulatory Area 2A fishery management structure.

c. In response to suggestions by the IPHC Commissioners, and the PFMC and its Groundfish Advisory Panel, the IPHC Secretariat sought input from its Regulatory Area 2A license holders on the possibility of a longer fishing period. All 171 license holders from 2016 to 2018 were surveyed, the results of which are provided in the following table:

	All license holders 2016-2018	**%**
Total license holders (2016-18)	**171**	
Total respondents	137	80.12
Longer Season?		
Yes	118	86.13
No	19	13.87
Season length?		
Shorter than five days	26	18.98
Five days	35	25.55
10 days	48	35.04
Longer than ten days	28	20.44

Of survey respondents, totaling 80.12% of all license holders over the period 2016-18, there was a clear preference for a longer fishing period (86.13%).

3. Discussion continued during 2019, beginning with an extensive review of IPHC-2019-AM095-PropA2 at the 95th Annual Meeting (AM095).

a. At the 95th Annual Meeting (AM095), the Commission made no changes to the 10-hour fishing period for 2019, but indicated its desire to move to longer fishing periods. The Commission also responded to the PFMC's input and expressed its desire for changes in the management of the fishery, as detailed in the following paragraphs from the AM095 Report:

IPHC-2019-AM095-R, paragraphs 75-80:

*75. "The Commission **AGREED** that for IPHC Regulatory Area 2A, fishing periods for the non-tribal directed commercial fishery should be longer than the current 10-hour derby fishing periods, primarily for safety reasons.*

*76. "The Commission **NOTED** that of the 171 license holders in this fishery from 2016 to 2018, a clear majority (86% of the 80% who responded to the IPHC Secretariat's survey) favoured a longer fishing period with lower individual vessel quotas for each opening. Of those surveyed respondents who participated in the fishery (delivered fish) during those years, 76% favoured one of the longer fishing periods proposed.*

77. *"The Commission **NOTED** the suggestion from the PFMC and the NOAA Fisheries West Coast Region office for a workshop to consider future changes to the IPHC Regulatory Area 2A Pacific halibut fishery management structure in a more holistic way, to include all management partners and to take place as early as spring 2019.*

78. *"**NOTING** the indication made to the PFMC in a letter dated 25 January 2019, that the IPHC Secretariat would welcome the opportunity to further address the safety concerns in the fishery, and to examine other potential management options for the fishery such as an IFQ or limited entry, as well as its management responsibilities, the Commission **RECOMMENDED** that this workshop take place, given the desire for the IPHC to move full management of the fishery from the IPHC (an international fisheries management body) to the relevant domestic agencies.*

79. *"**NOTING** the concerns expressed by Canada about the safety issues related to the current management of this derby fishery, the Commission **EXPRESSED** its hope that there will be a proposal for an alternative management approach that addresses safety concerns by the time the Commission reconvenes at next year's annual meeting. If no resolution is in hand by then, the IPHC expects to re-examine what steps it can take to address the issue, including moving to longer fishing periods.*

80. *"The Commission **ADOPTED** fishing periods for 2019 as provided below, thereby superseding Section 9 of the IPHC Pacific halibut fishery regulations:*

    a. *"All commercial fishing for Pacific halibut in all IPHC Regulatory Areas may begin no earlier than 15 March and must cease on 14 November.*

    b. *"IPHC Regulatory Area 2A (Non-Treaty Directed Commercial): Retain the 10-hour derby fishery for 2019, 26 June, 10 July, 24 July, 7 August, 21 August, 4 September, 18 September, with additional openings and fishing period limits (vessel quota) to be determined and communicated by the IPHC Secretariat."*

b. In response to the Commission's direction (paragraph 80b above), an additional possible opening date of 27 June 2019, immediately following the first fishing period on 26 June, was included in the Pacific Halibut Fishery Regulations (2019). The possibility of sequential 10-hour fishing periods engendered significant discussion, and, in order to gather the direct feedback of fishery participants, the IPHC Secretariat conducted a survey of license holders during April 2019. The response was 73% in favor of scheduling the first two fishing periods for 26 June and 10 July 2019 (two weeks apart), instead of 26 and 27 June 2019. Informed by the survey response, the IPHC did not establish fishing period limits for the 27 June

2019 fishing period and the fishery was not open that day (see IPHC News Release 2019-009).

c. The PFMC continued its discussion of the management of the fishery at its April and June 2019 meetings, noting in particular in its June 2019 Decision Summary Document:

> *"The Council committed to working closely with the International Pacific Halibut Commission (IPHC) and stakeholders on transitioning the management of the non-Indian commercial directed halibut fishery from the IPHC to the Council and outlined intentions for the management and structure of the fishery in the near future…"*

d. Further progress on the transition of the IPHC Regulatory Area 2A fisheries to domestic management is expected to be made at the September and November 2019 PFMC meetings, but the process is not expected to reach implementation before the coming fishing year. Therefore, the IPHC will continue to manage the fishery for 2020.

4. Noting the Commission's expressed desire to move to a longer fishing period (paragraphs 75 and 79 above), the IPHC Secretariat proposes 2-day fishing periods for 2020. This action can be taken now in the interest of safety, while the fishery management transition process proceeds during 2020.

Expected outcomes

Should the Commission approve a longer fishing period for 2020, the IPHC Secretariat expects that its implementation will immediately enhance safety for fishery participants, as well as provide valuable feedback and potentially lead to further refinements for subsequent years. For instance, we may find that the dates or the duration of the fishing periods require adjustment in order to stay within allocation or to better meet stakeholder needs.

Sectors Affected: Commercial Pacific halibut fisheries in each IPHC Regulatory Area.

RECOMMENDATIONS:

That the Commission:

1) **NOTE** regulatory proposal IPHC-2020-AM096-PropA2, which proposed the adoption of fishing periods for the commercial Pacific halibut fisheries within the IPHC Pacific Halibut Fishery Regulations: Commercial Fishing Periods (Sect. 9);
2) **ADOPT** fishing periods for 2020 as provided in Appendix A, thereby superseding Section 9 of the IPHC Pacific Halibut Fishery Regulations and specifying that:
   a) All commercial fishing for Pacific halibut in all IPHC Regulatory Areas may begin no earlier than DD MMMM and must cease on DD MMMM; and

b) The IPHC Regulatory Area 2A non-tribal directed commercial fishery may take place during specific fishing periods of *either 2 or 3 days' duration*, with additional openings and fishing period limits (vessel quota) to be determined and communicated by the IPHC Secretariat.

ADDITIONAL DOCUMENTATION / REFERENCES

IPHC-2019-AM095-PropA2

APPENDICES

Appendix A: Suggested regulatory language

APPENDIX A
SUGGESTED REGULATORY LANGUAGE

9. Commercial Fishing Periods

(1) The fishing periods for each IPHC Regulatory Area apply where the catch limits specified in Section 12 have not been taken.

(2) Unless the Commission specifies otherwise, commercial fishing for Pacific halibut in all IPHC Regulatory Areas may begin no earlier in the year than 12:00 local time on DD MMMM.

(3) All commercial fishing for Pacific halibut in all IPHC Regulatory Areas shall cease for the year at 12:00 local time on DD MMMM.

[2-day option]

(4) The first fishing period in the IPHC Regulatory Area 2A non-tribal directed commercial fishery shall begin at 08:00 on 24 June 2020 and terminate at 18:00 local time 25 June 2020, unless the Commission specifies otherwise. If the Commission determines that the catch limit specified for IPHC Regulatory Area 2A in Section 12 has not been exceeded, it may announce a second fishing period of up to two fishing days to begin on 8 July 2020, and, if necessary, a third fishing period of up to two fishing days to begin on 22 July 2020.

or

[3-day option]

(4) The first fishing period in the IPHC Regulatory Area 2A non-tribal directed commercial fishery shall begin at 08:00 on the 24 June 2020 and terminate at 18:00 local time on the 26 June 2020, unless the Commission specifies otherwise. If the Commission determines that the catch limit specified for IPHC Regulatory Area 2A in Section 12 has not been exceeded, it may announce a second fishing period of up to three fishing days to begin on 8 July 2020, and, if necessary, a third fishing period of up to three fishing days to begin on 22 July 2020.

(5) Notwithstanding paragraph (7) of section 12, an incidental catch fishery is authorized during the sablefish seasons in IPHC Regulatory Area 2A in accordance with regulations promulgated by NOAA Fisheries. This fishery will occur between the dates and times listed in paragraphs 2 and 3 of this section.

(6) Notwithstanding paragraph (2), and paragraph (7) of section 12, an incidental catch fishery is authorized during salmon troll seasons in IPHC Regulatory Area 2A in accordance with regulations promulgated by NOAA Fisheries. This fishery will occur between the dates and times listed in paragraphs 2 and 3 of this section.

12. Commercial Catch Limits

(1) …

(6) If the Commission determines that the catch limit specified for IPHC Regulatory Area 2A in paragraph (1) would be exceeded in an additional directed commercial fishing period as specified in paragraph (4) of section 9…

IPHC Fishery Regulations: minor amendments

PREPARED BY: IPHC SECRETARIAT (30 DECEMBER 2019)

PURPOSE

To improve clarity and consistency in the IPHC Fishery Regulations.

BACKGROUND

This proposal would make minor amendments to the IPHC Regulations. These revisions to the regulations include:

- Updating and clarifying existing fishery regulations;
- Reordering regulations for clarity and emphasis.

DISCUSSION

Periodically, regulations should be reviewed to ensure they are clear, concise, consistent, and current. These proposed revisions to the IPHC Fishery Regulations are a result of a holistic review. The primary revisions resulting from this review are described below, and will be provided for the 96th Session of the IPHC Annual Meeting (AM096) in detail:

- Updating and clarifying fishery regulations
    1. Section 1, Short Title, would be removed as it is no longer necessary.
    2. The current Section 4, Limits, would be re-titled Mortality and Fishery Limits. [This section would also be amended in accordance with IPHC-2020-AM096-PropA1, as approved.]
    3. Section 5, Licensing Vessels for IPHC Regulatory Area 2A, would be amended to make it clear that vessels in IPHC Regulatory Area 2A may hold both a license for directed commercial fishing *and* a license for the incidental catch during the sablefish fishery.
    4. Section 7, Regulatory Areas, would be amended to specify that the definition of IPHC Regulatory Areas applies within the IPHC Convention Area.
    5. The table of commercial catch limits would be removed from the current Section 12, Commercial Catch Limits, as this information is available in Section 4, [*Mortality and Fishery*] Limits and is therefore redundant. Section 12 would be retitled Application of Commercial Fishery Limits.
    6. Section 15, Careful Release, would be amended to include the application of both minimum and maximum size limits, in order to make the section applicable to all fisheries.
    7. Section 18, Receipt and Possession of Pacific Halibut, would be revised to make it clear that IPHC Regulatory Area 2A is included in Paragraph 6 as intended.
    8. Section 20, Fishing Gear, would be amended to allow pots capable of catching Pacific halibut.

9. Section 22, Retention of Tagged Pacific Halibut, would be revised to make it clear that tagged fish do not count against regulatory limits.
10. Section 23, Fishing by United States Treaty Indian Tribes, would be amended to remove references to specific fishery sector allocations, as this information is available in Section 4, [*Mortality and Fishery*] Limits and is therefore redundant, and to include the Metkalatka fishery in Alaska.
11. References to specific fishery sector allocations would be removed from Section 27, Sport Fishing for Pacific Halibut—IPHC Regulatory Area 2A, as this information is available in Section 4, [*Mortality and Fishery*] Limits and is therefore redundant.
12. Minor edits would be made throughout for stylistic consistency among Sections.

- Reordering fishery regulations for clarity and emphasis
    1. The sequence of sections would be revised as indicated in the following table, and all sections would be edited as necessary to reflect the new sequence:

Previous Section No.	***New Section No.***	***New Section title***
		Applicable to all fisheries
2.	*1*	Application
3.	*2*	Definitions
7.	*3*	IPHC Regulatory Areas
4.	*4*	Mortality and Fishery Limits
6.	*5*	In-Season Actions
15.	*6*	Careful Release of Pacific Halibut
22.	*7*	Retention of Tagged Pacific Halibut
		Applicable to commercial fisheries
9.	*8*	Fishing Periods
11.	*9*	Closed Area
10.	*10*	Closed Periods
12.	*11*	Application of Commercial Fishery Limits
8.	*12*	Fishing in IPHC Regulatory Areas 4D and 4E
13.	*13*	Fishing Period Limits
5.	*14*	Licensing Vessels for IPHC Regulatory Area 2A
16.	*15*	Vessel Clearance in IPHC Regulatory Area 4
19.	*16*	Fishing Multiple IPHC Regulatory Areas
20.	*17*	Fishing Gear
14.	*18*	Size Limits
17.	*19*	Logs
18.	*20*	Receipt and Possession of Pacific Halibut
21.	*21*	Supervision of Unloading and Weighing
23.	*22*	Fishing by United States Treaty Indian Tribes
		Applicable to Indigenous fisheries
25.	*23*	Aboriginal Groups Fishing for Food, Social and Ceremonial Purposes in British Columbia
24.	*24*	Customary and Traditional Fishing in Alaska
		Applicable to recreational fisheries

26.	*25*	Sport Fishing for Pacific Halibut—General
27.	*26*	Sport Fishing for Pacific Halibut—IPHC Regulatory Area 2A
28.	*27*	Sport Fishing for Pacific Halibut—IPHC Regulatory Area 2B
29.	*28*	Sport Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E
		General provisions
30.	*29*	General provisions – Superseding Fishery Regulations

Benefits/Drawbacks: The benefit is clearer and more consistent regulations that are easier to use. No known drawback.

Sectors Affected: This proposal affects all sectors of the Pacific halibut fishery.

RECOMMENDATIONS:

That the Commission:

1) **NOTE** regulatory proposal IPHC-2020-AM096-PropA3, which recommends changes to improve the clarity and transparency of the IPHC Fishery Regulations.
2) **ADOPT** the recommended changes to the IPHC Fishery Regulations as provided in Appendix A.

ADDITIONAL DOCUMENTATION / REFERENCES

None

APPENDICES:

APPENDIX A: Suggest regulatory language

APPENDIX A
SUGGESTED REGULATORY LANGUAGE

1. Section 1, Short Title, deleted and other sections re-numbered accordingly.
2. Section 4 re-titled Mortality and Fishery Limits (to be combined with other changes from IPHC-2020-AM096-PropA1, as approved):

4. Mortality and Fishery Limits

3. Section 5 re-numbered (as Section 14) and revised to read:

14. Licensing Vessels for IPHC Regulatory Area 2A

(1) No person shall fish for Pacific halibut from a vessel, nor possess Pacific halibut on board a vessel, used either for commercial fishing or as a charter vessel in IPHC Regulatory Area 2A, unless the Commission has issued a license valid for fishing in IPHC Regulatory Area 2A in respect of that vessel.

(2) A license issued for a vessel operating in IPHC Regulatory Area 2A shall be valid only for operating either as a charter vessel or a commercial vessel, but not both.

(3) A vessel with a valid IPHC Regulatory Area 2A commercial license cannot be used to recreationally fish for Pacific halibut in IPHC Regulatory Area 2A.

(4) A license issued for a vessel operating in the commercial fishery in Area 2A shall be valid for one of the following:

(a) the directed commercial fishery during the fishing periods specified in paragraph (2) of section 9;

(b) the incidental catch fishery during the sablefish fishery specified in paragraph (3) of section 9; or

(c) the incidental catch fishery during the salmon troll fishery specified in paragraph (4) of section 9.

(5) A vessel with a valid license for the IPHC Regulatory Area 2A incidental catch fishery during the sablefish fishery described in paragraph (4)(b) may also apply for or be issued a license for the directed commercial fishery described in paragraph (4)(a)..

(6) …

4. Section 7, Regulatory Areas, re-numbered (as Section 3), re-titled, and amended to specify that the definition of IPHC Regulatory Areas applies within the IPHC Convention Area:

3. IPHC Regulatory Areas

The following areas within the IPHC Convention Area shall be defined as IPHC Regulatory Areas for the purposes of the Convention (see Figure 1):

(1) …

5. The table of commercial catch limits removed from Section 12 (along with sub-paragraph [1]), and Section 12 re-numbered (Section 11), re-titled, and revised:

11. Application of Commercial Fishery Limits

(1) Notwithstanding the fishery limits described in Section 4, regulations pertaining…

(2) …

(3) Notwithstanding the fishery limits described in Section 4, the commercial fishing in IPHC Regulatory Area 2B…

(4) Notwithstanding the fishery limits described in Section 4, the commercial fishing in IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E…

(5) If the Commission determines that the catch limit specified for IPHC Regulatory Area 2A in Section 4 would be exceeded…

(6) When under paragraphs (1), (2), and (5) the Commission has announced a date…

(7) Notwithstanding the fishery limits described in Section 4, the total allowable catch of Pacific halibut that may be taken in the IPHC Regulatory Area 4E directed commercial fishery…

(8) Notwithstanding the fishery limits described in Section 4, the total allowable catch of Pacific halibut that may be taken in the IPHC Regulatory Area 4D directed commercial fishery…

6. Section 15 renumbered (as Section 6) and revised to read:

6. Careful Release of Pacific Halibut

(1) …

(2) Except that paragraph (1) shall not prohibit the possession of Pacific halibut on board a vessel that has been brought aboard to be measured to determine if the applicable size limit of the Pacific halibut is met and, if not legal-sized, is promptly returned to the sea with a minimum of injury.

7. Section 18 re-numbered (as Section 20) and revised to make it clear that IPHC Regulatory Area 2A is included in Paragraph 6 as intended:

20. Receipt and Possession of Pacific Halibut

(1) …

(6) The first recipient, commercial fish processor, or buyer in the United States of America who purchases or receives Pacific halibut directly from the vessel operator that harvested such Pacific halibut must weigh and record all Pacific halibut received and record the following information on State fish tickets: the date of offload; vessel number (State or Federal, not IPHC vessel number) or Tribal ID number; total weight obtained at the time of offload including the weight (in pounds) of Pacific halibut purchased; the weight (in pounds) of Pacific halibut offloaded in excess of the IFQ, CDQ, or fishing period limits; the weight of Pacific halibut (in pounds) retained for personal use or for future sale; and the weight (in pounds) of Pacific halibut discarded as unfit for human consumption. All Pacific halibut harvested in fisheries in IPHC Regulatory Areas 2A, 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E, must be weighed with the head on and the head-on weight must be recorded on State fish tickets as specified in this paragraph, unless the Pacific halibut is frozen at sea and exempt from the head-on landing requirement at Section 14(2).

(7) …

8. Section 20, Fishing Gear, re-numbered (as Section 17) and amended to allow pots capable of catching Pacific halibut where applicable:

17. Fishing Gear

(1) …,

(a) …

(b) …

(2) …

(a) …

(b) …

(3) No person shall possess Pacific halibut while on board a vessel carrying any trawl nets capable of catching Pacific halibut.

(4) …

(a) …

(b) …

(5) …

(6) …

(a) …

(b) …

(7) …

(a) …

(b) …

(8) …

(a) …

(b) …

(9) No person on board a vessel used to fish for any species of fish…

(a) …

(b) …

(10) No vessel used to fish for any species of fish…

(11) …

9. Section 22 renumbered (as Section 7) and revised to read:

7. Retention of Tagged Pacific Halibut

(1) …

(2) …

(3) Any Pacific halibut that bears a Commission external tag will not count against commercial fishing period limits, Individual Vessel Quotas (IVQ), Community Development Quotas (CDQ), or Individual Fishing Quotas (IFQ), and are not subject to size limits in these regulations.

(4) Any Pacific halibut that bears a Commission external tag will not count against recreational (sport) daily bag limits or possession limits, may be retained outside of recreational (sport) fishing seasons, and are not subject to size limits in these regulations.

10. Section 23, Fishing by United States Treaty Indian Tribes, re-numbered (as Section 22) and amended to remove references to specific fishery sector allocations and to include the Metkalatka fishery in Alaska:

22. Fishing by United States Treaty Indian Tribes

(1) Pacific halibut fishing in IPHC Regulatory Area Subarea 2A-1 by members of 'United States treaty Indian' tribes located in the State of Washington shall be regulated under regulations promulgated by NOAA Fisheries and published in the Federal Register.

(a) Subarea 2A-1 includes…

(b) Section 14 (size limits)…

(c) Regulations in sub paragraph (b) of this section that apply to State fish tickets…

(d) Section 4 (Licensing Vessels for IPHC Regulatory Area 2A)…

(e) Commercial fishing for Pacific halibut in Subarea 2A-1 is permitted with hook and line gear from *[date to be determined separately]* through *[date to be determined separately]*, or until the limit specified in Section 4 is taken, whichever occurs first.

(f) Ceremonial and subsistence fishing for Pacific halibut in Subarea 2A-1 is permitted with hook and line gear from January 1 through December 31.

(2) In IPHC Regulatory Area 2C, the Metlakatla Indian Community has been authorized by the United States Government to conduct a commercial Pacific halibut fishery within the Annette Islands Reserve. Fishing periods for this fishery are announced by the Metlakatla Indian Community and the Bureau of Indian Affairs. Landings in this fishery are accounted with the commercial landings for IPHC Regulatory Area 2C.

11. Section 27, Sport Fishing for Pacific Halibut—IPHC Regulatory Area 2A, re-numbered (as Section 26) and amended to remove references to specific fishery sector allocations:

26. Sport Fishing for Pacific Halibut—IPHC Regulatory Area 2A

(1) The Commission shall determine and announce closing dates to the public for any area in which the catch limits promulgated by NOAA Fisheries are estimated to have been taken.

(2) When the Commission has determined that a…

12. Minor edits throughout for stylistic consistency among Sections.

IPHC Pacific Halibut Fishery Regulations:

Vessel Clearance in IPHC Regulatory Area 4 (Sect. 16)

PREPARED BY: IPHC SECRETARIAT (03 JANUARY 2020)

PURPOSE

To address the need for clearances when a National Oceanic and Atmospheric Administration (NOAA) Fisheries observer or electronic monitoring device is present.

BACKGROUND

The International Pacific Halibut Commission (IPHC) requires vessels to obtain clearances to fish in IPHC Regulatory Area 4 and to offload fish from IPHC Regulatory Area 4 when the vessel is used to fish in another IPHC Regulatory Area during the same fishing season.

DISCUSSION

In 2003, IPHC regulations were modified to allow for a clearance exemption when a vessel has a NOAA Fisheries approved Vessel Monitoring System (VMS) on board and follows prescribed protocols.

The IPHC Secretariat proposes that the Commission expand this clearance exemption to include when a NOAA Fisheries observer or electronic monitoring (EM) device is in use.

Benefits/Drawbacks: The benefit is that the exemption will allow for greater flexibility in meeting the clearance requirement for vessels fishing in IPHC Regulatory Area 4 and other IPHC Regulatory Areas, while encouraging additional observer coverage. There are no apparent drawbacks.

Sectors Affected: This proposal affects the directed commercial sectors of the Pacific halibut fishery fishing in IPHC Regulatory Area 4 and other IPHC Regulatory Areas during the same season.

RECOMMENDATIONS:

That the Commission:

1) **NOTE** regulatory proposal IPHC-2020-AM096-PropA4, which addresses the need for clearances when a National Oceanic and Atmospheric Administration (NOAA) Fisheries observer or electronic monitoring device is present, and recommends changes to the IPHC Fishery Regulations.

2) **ADOPT** the recommended changes to the IPHC Fishery Regulations as provided in Appendix A.

ADDITIONAL DOCUMENTATION / REFERENCES

None

APPENDICES:

APPENDIX A: Suggested regulatory language

APPENDIX A

SUGGESTED REGULATORY LANGUAGE

16. Vessel Clearance in IPHC Regulatory Area 4

(1) ….

(16) Any vessel that carries a NOAA Fisheries observer, a NOAA Fisheries electronic monitoring system, or a transmitting VMS transmitter while fishing for Pacific halibut in IPHC Regulatory Areas 4A, 4B, 4C, or 4D and until all Pacific halibut caught in any of these IPHC Regulatory Areas is landed, is exempt from the clearance requirements of paragraph (1) of this section, provided that:

(a) the operator of the vessel carries a NOAA Fisheries' observer or functioning electronic monitoring system in compliance with regulations published at 50 CFR Subpart E, or vessel monitoring system regulations published at 50 CFR 679.28(f)(3), (4) and (5); and

(b) the operator of the vessel notifies NOAA Fisheries Office for Law Enforcement at 800-304-4846 (select option 1 to speak to an Enforcement Data Clerk) between the hours of 06:00 and 00:00 (midnight) local time within 72 hours before fishing for Pacific halibut in IPHC Regulatory Areas 4A, 4B, 4C, or 4D and receives a VMS confirmation number.

IPHC Closed Area (Section 11)

PREPARED BY: IPHC SECRETARIAT (30 DECEMBER 2019)

PURPOSE

To consider the intent and purpose of the IPHC Closed Area, as defined in the Pacific Halibut Fishery Regulations (2019) Section 11, which currently excludes directed Pacific halibut fishing, but allows other forms of mortality such as trawling, and propose the removal of the IPHC Closed Area from the IPHC Pacific Halibut Fishery Regulations.

BACKGROUND

In 1967, the IPHC designated part of IPHC Regulatory Area 4E in Bristol Bay as a separate area – the IPHC Closed Area – closed to Pacific halibut fishing year-round. The justification for the closure was that it was considered to be a nursery area for juvenile Pacific halibut.

In 1990, the IPHC Closed Area was reduced to its current boundaries, as described in Section 11 of the Pacific Halibut Fishery Regulations (2019).

At the time of the closure's implementation in the 1960s, limited trawling occurred in Bristol Bay. Since then, trawling has expanded substantially in the Bering Sea region and now includes Bristol Bay, thereby negating any likely benefits to Pacific halibut of closing the area to the directed fishery only.

At the 94th Session of the IPHC Annual Meeting (AM094, January 2018), the Commission considered an updated draft regulatory proposal on the Closed Area from the IPHC Secretariat (IPHC-2018-AM094-PropA1), including additional information in response to its request from the previous Annual Meeting (AM093), and made the following comments and requests:

> *IPHC-2018-AM094-R, paragraphs 45-47:*
>
> 45. *The Commission **NOTED** paper IPHC-2018-AM094-PropA1, which considered the intent, purpose, and effectiveness of the IPHC Closed Area, as defined in IPHC Fishery Regulations (2017) Section 10, which currently excludes directed Pacific "halibut fishing" (i.e. the longline fleet), with the intent of protecting juveniles from extraction.*
> 46. *The Commission **NOTED** the IPHC Secretariat's and Conference Board's indication that the Closed Area is not currently meeting its intended objective of protecting juvenile Pacific halibut while it is open to non-directed fisheries.*
> 47. *The Commission **DEFERRED** regulatory proposal IPHC-2018-AM094-PropA1, which considered the intent, purpose and effectiveness of the IPHC Closed Area, as defined in IPHC Fishery Regulations (2017) Section 10, **NOTING** that the NPFMC is currently undertaking an Abundance-Based Management process aimed at limiting bycatch. The ABM process should be closely monitored and if considered necessary, the IPHC closed area proposal should be reconsidered at subsequent meetings of the Commission, but no later than in 2020.*

At both the 19th and 20th Sessions of the Research Advisory Board (RAB) (2018 and 2019), the Board recommended that the Commission consider alternative management regimes for the IPHC Closed Area:

IPHC-2019-RAB020-R:

10. *The RAB **AGREED** that the IPHC Closed Area (Pacific Halibut Fishery Regulations 2019, Sect. 11) is not currently meeting its intended objective of protecting juvenile Pacific halibut when it is open to non-directed fisheries, and **RECOMMENDED**, in coordination with the NPMFC, that the IPHC Secretariat examine alternative management regimes for the Closed Area, and for these to be presented at the 96th Session of the IPHC Annual Meeting (AM096) in 2020.*

This updated regulatory proposal has been prepared in response to the Commission's direction at AM094.

DISCUSSION

1. That the IPHC Closed Area no longer fulfills its stated purpose has long been recognized by the IPHC, and has been the subject of study and discussion over the years. As noted in Trumble (1998)[1]:

   The existing IPHC closed area in the Bering Sea provides little biological benefit to the halibut resource or fishery.

   During development of the groundfish fisheries of the Bering Sea by foreign and U.S. vessels, bycatch of halibut occurred throughout the Bering Sea, including the Bering Sea closed area.

   Other areas of the Bering Sea-Aleutian Islands and Gulf of Alaska with high halibut bycatch had closed to groundfish fisheries, at least seasonally, to foreign groundfish fisheries. All of the Bering Sea and Gulf of Alaska halibut bycatch closed areas subsequently reopened as the groundfish fisheries converted to American fleets.

   The intent of the IPHC for the Bering Sea closed area, to protect small, immature halibut, was violated when the area opened to U.S. groundfish fisheries, which catch large numbers of these small halibut as bycatch. A large component of the halibut bycatch mortality in the Bering Sea-Aleutian Islands region comes from the IPHC closed area.

2. The IPHC stock assessment and management analyses include the IPHC Closed Area together with IPHC Regulatory Areas 4C, 4D, and 4E as a single assessment unit. Removing the IPHC Closed Area would not create any new harvest or adjust the harvest recommendations in Regulatory Area 4CDE.

[1] Trumble, 1998. Evaluation of Maintaining the IPHC Closed Area in the Bering Sea. Int. Pac. Halibut. Comm. Report of Assessment and Research Activities 1998: 243-248

3. In order to be compatible with current domestic management of commercial Pacific halibut fisheries in the other IPHC Regulatory Areas in Alaska, a move by the Commission to open the IPHC Closed Area to directed Pacific halibut fishing should include coordination with the North Pacific Fishery Management Council (NPFMC) and NOAA Fisheries regarding domestic management of access to the fishery. For this reason, the Commission may wish to consider a phased approach to making this change during its discussion at AM096.

CONCLUSION

1. Retaining the IPHC Closed Area (Section 11 of Pacific Halibut Fishery Regulations [2019]) in its current form, whereby the directed Pacific halibut fishery is prohibited from fishing within the area, will continue to be ineffectual if other fisheries that are known to produce a high proportion of the mortality of Pacific halibut in the Bering Sea continue to be permitted access.

2. This change would be expected to have no meaningful impact on stock, as the stock in that area is already included in the IPHC stock assessment and TCEYs.

3. As there is no benefit to the stock in maintaining the area closed to the directed Pacific halibut fishery, the IPHC Secretariat recommends that the Commission remove the IPHC Closed Area from the Pacific Halibut Fishery Regulations.

Sectors Affected: Directed commercial Pacific halibut fishery in Alaska.

APPENDICES

Appendix A: Suggested regulatory language.

Appendix B: Supporting Documentation regarding the IPHC Closed Area

RECOMMENDATIONS:

That the Commission:

1) **NOTE** regulatory proposal IPHC-2020-AM096-PropA5, which reviewed the intent and purpose of the IPHC Closed Area as defined in the Pacific Halibut Fishery Regulations (2019) Section 11, which currently excludes directed Pacific halibut fishing, but allows other forms of mortality such as trawling, and proposed the removal of the IPHC Closed Area from the IPHC Pacific Halibut Fishery Regulations: Closed Area (Sect. 11);
2) **ADOPT** the recommended changes to the IPHC Fishery Regulations as provided in Appendix A;
3) **DIRECT** the IPHC Secretariat in regards to further coordination with the North Pacific Fishery Management Council (NPFMC) regarding domestic management of access to the area within the previous IPHC Closed Area boundaries.

APPENDIX A
SUGGESTED REGULATORY LANGUAGE

If the decision is made to remove the IPHC Closed Area, the following changes to the Pacific Halibut Fishery Regulations text would be required:

Section 11: Remove Section 11, Closed Area, in its entirety, either for 2020, or at some time in the future.

Subsequent Sections would then need to be re-numbered accordingly. Reference to the IPHC Closed Area would also need to be removed from IPHC **Section 7**, paragraphs 6, 8 and 10. IPHC **Section 7** would require additional changes in the descriptions of boundaries depending on whether and how the former IPHC Closed Area is included among IPHC Regulatory Areas.

APPENDIX B

SUPPORTING DOCUMENTATION REGARDING THE IPHC CLOSED AREA

This appendix is an updated version of information provided originally at AM094 in document IPHC-2018-AM094-PropA1. Contents:

1) Recent considerations by the IPHC and the NPFMC
2) Additional references

1) RECENT CONSIDERATIONS BY IPHC AND THE NPFMC

Between 2011 and 2013, the Commission reviewed the purpose of the IPHC Closed Area and considered removing it or, conversely, allowing directed commercial longline Pacific halibut fishing in the area. The series of events from this consideration were as follows:

a) The status and effect of the IPHC Closed Area was discussed at the IPHC's 2011 Interim Meeting (IM087) and the 2012 Annual Meeting (AM088). During the 2012 Annual Meeting, the Commission

> "*briefly discussed the current use of the closed area. Dr. Leaman iterated that the staff position is that there is no compelling reason to exclude only halibut fishers when other harvesters are allowed to exploit the area. It was noted that the process of opening the area and allocating catch would require actions by the NPFMC. The Commission decided to write a letter to the NPFMC stating that the IPHC is considering opening the area as soon as 2013, and requires guidance on how to approach it*."

b) IPHC sent a letter to the NPFMC on 9 August 2012 noting that the IPHC was reviewing the purpose of the IPHC Closed Area and was contemplating potential action to no longer prohibit directed commercial halibut longline fishing in the area. (Annex I)

c) NPFMC responded in a letter, dated 19 October 2012, stating the NPFMC

> "*did not identify any allocative impacts of such an action on its Area 4CDE Catch Sharing Plan and supports incorporating the closed area into Area 4E, should the IPHC choose to do so, with the understanding that such an action would not result in an increase in the commercial catch limit for that expanded area.*" (Annex II)

d) At the IPHC's 2012 Interim Meeting (IM088), the Commissioners discussed the IPHC Secretariat proposal to remove the IPHC Closed Area.

e) The IPHC Secretariat presented the proposal at the December 2012 NPFMC meeting.

f) At the IPHC's 2013 Annual Meeting (AM089), the Commissioners did not approve the proposal to remove the IPHC Closed Area, noting

> "*The letter to the Commission from the NPFMC that described impacts to current programs in the event that the IPHC Closed Area was opened, was reviewed. Following some discussion, the Commission decided that although this may be considered in the future, opening this area is not a high priority issue at this time*."

At the 92nd Session of the IPHC Interim Meeting (IM092, November 2016), the Commission reviewed a draft regulatory proposal from the IPHC Secretariat to remove the IPHC Closed Area, and made the following comments and requests:

IPHC-2016-IM092-R, paragraphs 66-68:

66. *The Commission **REQUESTED** that additional supporting information be provided for consideration at the 93rd Session of the IPHC Annual Meeting, including any supporting evidence for the area as a nursery ground and the likely impacts of the directed fishery being allowed access*.
67. *The Commission **AGREED** that as appropriate, information on other gears which are currently permitted to fish in the IPHC Closed Area (i.e. trawl), and their impact (i.e. bycatch of juveniles), along with information on the history of the lines marking Areas 4CDE, and past considerations by IPHC and the NPFMC*.
68. *The Commission **NOTED** that the IPHC Secretariat considers Regulatory Areas 4CDE and the IPHC Closed Area to be a single unit for assessment purposes*.

At the 93rd Session of the IPHC Annual Meeting (AM093, January 2017), the Commission considered the draft regulatory proposal from the IPHC Secretariat (IPHC-2017-AM093-PropB), as well as the accompanying information paper (IPHC-2017-AM093-INF03), and made the following comments and requests:

IPHC-2017-AM093-R, paragraphs 50-53:

50. *The Commission **CONSIDERED** a proposal aimed at removing the IPHC Closed Area, as defined in IPHC Regulation 10[2], which applies to "halibut fishing" only (IPHC-2017-AM093-PropB), but agreement could not be reached and the proposal was **DEFERRED** until the 94th Annual Meeting of the Commission*.
51. ***NOTING** the detailed information gathered and presented to the Commission in support of the removal of the IPHC Closed Area (PropB), as detailed in paper IPHC-2017-AM093-INF03 on the following topics:*
    - *Past considerations*
    - *History of boundaries*

[2] Note that the IPHC Closed Area was then described in Section 10 of the Pacific Halibut Fishery Regulations. Following AM094 in 2018, this section was re-numbered as Section 11, which continues to be its designation in the current Pacific Halibut Fishery Regulations (2019).

- *Bycatch*
- *Nursery grounds*
- *Other nearby closed areas*
- *Impacts of allowing directed Pacific halibut fishing*

*the Commission **REQUESTED** further information be provided on whether the area is a nursery ground for Pacific halibut, by examining juvenile abundance from data sources including but not limited to observer programs and the NMFS trawl surveys, and comparing this information with the impact of the directed fishery operating in nearby areas, as well as the non-directed fisheries currently operating within the Closed Area.*

52. ***NOTING** that while the Processor Advisory Group (PAG) provided unanimous support for the proposal, the Conference Board did not, making the following statement on Regulatory Proposal B:*

> "The Conference Board discussed the idea of the Closed Area as a nursery and felt it should be closed to all other fisheries rather than allowing the longline halibut fleet to fish in the area."

53. ***NOTING** the Conference Board's comment detailed in para 52, the Commission **AGREED** that closing the area to fisheries not managed by the IPHC is not permissible under the IPHC mandate and thus, it would not be proposing such a measure at this time, or at any time in the future. Should members of the Conference Board wish to further their proposed course of action, they should take up the matter with the relevant management body, in this case the NPFMC*.

As noted by the Commission during its discussion of the IPHC Closed Area at AM094, the development of Abundance-Based Management (ABM) of Prohibited Species Catch (PSC) by the NPFMC is ongoing. At its October 2019 meeting, the NPFMC reviewed the analysis to date and the preliminary draft environmental impact statement (EIS). The NPFMC requested particular revisions to the operating model and the preliminary draft EIS suggested by its Scientific and Statistical Committee, and that the preliminary draft EIS should come back to the NPFMC for another initial review before publishing.

2) ADDITIONAL DOCUMENTATION / REFERENCES

IPHC Technical Report 27, 1993. "Regulations of the Pacific Halibut Fishery, 1977-1992." Stephen H. Hoag, Gordon J. Peltonen, and Lauri L. Sadorus. 50 p.

IPHC Technical Report 15, 1977. "Regulations of the Pacific Halibut Fishery, 1924-1976." Bernard E. Skud. 47 p.

Trumble, 1998. Evaluation of Maintaining the IPHC Closed Area in the Bering Sea. Int. Pac. Halibut. Comm. Report of Assessment and Research Activities 1998: 243-248.

IPHC Secretariat Regulatory Proposal: IPHC Closed Area (Section 11), 2018. IPHC-2018-AM094-PropA1

ANNEXES

Annex I: IPHC letter to NPFMC dated 9 August 2012.

Annex II: NPFMC letter responding to IPHC dated 19 October 2012.

ANNEX I

COMMISSIONERS:

JAMES BALSIGER
JUNEAU, AK

DAVID BOYES
COURTENAY, B.C.

RALPH G. HOARD
SEATTLE, WA

PHILLIP LESTENKOF
ST. PAUL, AK

MICHAEL PEARSON
OTTAWA, ON

INTERNATIONAL PACIFIC HALIBUT COMMISSION

ESTABLISHED BY A CONVENTION BETWEEN CANADA

AND THE UNITED STATES OF AMERICA

DIRECTOR
BRUCE M. LEAMAN

2320 W. COMMODORE WY, STE 300
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August 9, 2012

Mr. Eric Olson, Chair
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252

Dear Eric,

The Commission has been contemplating potential actions on the Closed Area (CA) on the Bering Sea shelf. The CA was created by the Commission in 1967 to protect a nursery area for juvenile halibut from mortality arising through bottom trawling by foreign fishing vessels. Bilateral agreements between the U.S. and foreign governments led to fishery closures which included the IPHC CA. Throughout the late 1960s until the early 1970s, the CA provided significant protection for juvenile halibut, with bycatch mortality dropping to an estimated low of approximately 4.2 Mlb in 1985. However, with the Americanization of the fishery after extension of fisheries jurisdiction in 1977, the bilaterally-based closed areas were reopened and the IPHC's intent of protection for juvenile halibut afforded by the IPHC CA was lost. Mortality on halibut again increased substantially in the 1985-1991 period, reaching a peak of approximately 10.7 Mlb in 1992. Bottom trawling within the CA accounts for a significant proportion of the halibut mortality in the Bering Sea. The CA currently remains open to all fishing except directed commercial halibut longline fishing.

Halibut bycatch mortality is currently managed through Prohibited Species Caps for various directed fisheries, often with time and area specificity, and the IPHC CA plays no meaningful role in the management of bycatch mortality. Therefore, from a halibut assessment and management perspective, the Commission is reviewing the continued purpose in maintaining the current CA in the eastern Bering Sea. As part of this discussion, the Commission is considering how directed commercial halibut fishing within the area of the current CA would be managed under the Council's IQ framework.

Although the Commission has treated Area 4CDE as a single management unit since 1998, the Council uses a Catch Sharing Plan to divide the IPHC catch limit for Area 4CDE into individual catch limits for Areas 4C, 4D, and 4E, for domestic allocation purposes. Should the Commission choose to open the CA, the IPHC staff has recommended it be incorporated as part of Area 4E and, since the data from the CA are already included in the stock assessment and catch limit determination, that there be no changes to the catch limit assigned to Area 4CDE. However, the Commission seeks the Council's comments on whether it perceives a requirement for any action to the Council's Catch Sharing Plan for Area 4CDE, should the CA be opened. The Commission would be grateful to receive your commentary on this issue prior to its Interim Meeting, scheduled for November 28-29, 2012.

Sincerely,

Bruce

Bruce M. Leaman, Ph.D.
Executive Director

cc: IPHC Commissioners

ANNEX II

North Pacific Fishery Management Council

Eric A. Olson, Chairman
Chris Oliver, Executive Director

Telephone (907) 271-2809

605 W. 4th Avenue, Suite 306
Anchorage, AK 99501-2252

Fax (907) 271-2817

Visit our website: http://www.fakr.noaa.gov/npfmc

October 19, 2012

Dr. Bruce Leaman, Executive Director
International Pacific Halibut Commission
2320 West Commodore Way, Suite 300
Seattle, Washington 98199-1287

Dear Bruce:

At its October 2012 meeting the North Pacific Council reviewed your letter of August 9, 2012, in which you requested comments on potential IPHC action to open the closed area on the Bering Sea shelf to halibut fishing. The Council acknowledged several points in your letter, specifically that the closed area no longer provides the intended benefits to the halibut stock because of other management measures in place to limit halibut prohibited species catch (or bycatch) in the area and only prohibits the directed commercial halibut longline fishery from fishing in the area. The Council did not identify any allocative impacts of such an action on its Area 4CDE Catch Sharing Plan and supports incorporating the closed area into Area 4E, should the IPHC choose to do so, with the understanding that such an action would not result in an increase in the commercial catch limit for that expanded area. The Council noted that if the IPHC identifies allocative impacts when it reviews the proposal during its Interim Meeting, then the Council would consider those identified by the IPHC during its December 2012 Council meeting. This timeline would allow for additional Council comments prior to any action by the IPHC at is January 2013 Annual Meeting.

Jane DiCosimo will represent the Council at the 2012 IPHC Interim Meeting to provide additional details as requested on the status of this and other Council actions.

Sincerely,

Chris Oliver
Executive Director

INTERNATIONAL PACIFIC HALIBUT COMMISSION

IPHC-2020-AM096-PropB1 Rev_1

Received: 4 January 2020, revised 31 January 2020

REGULATORY PROPOSAL 2020
TITLE: CHARTER MANAGEMENT MEASURES IN IPHC REGULATORY AREAS 2C AND 3A

SUBMITTED BY:
UNITED STATES OF AMERICA
NOAA-FISHERIES
AFFILIATION: NMFS, ALASKA REGION
USA

Explanatory Memorandum

All Regulatory Areas ☐ All Alaska Regulatory Areas ☐ All U.S. Regulatory Areas ☐

2A ☐ 2B ☐ 2C ☒ 3A ☒ 3B ☐ 4A ☐ 4B ☐ 4C ☐ 4D ☐ 4E ☐

The North Pacific Fishery Management Council (NPFMC) recommended the following management measures for charter Pacific halibut fisheries in IPHC Regulatory Areas 2C and 3A for application in 2020, in order to achieve the charter Pacific halibut allocation under the NPFMC Halibut Catch Sharing Plan:

Area 2C

A progression of management measures in the following order:

1. If the Area 2C catch limit is from 0.772 to 1.001 million pounds, it is the intention of the NPFMC to maintain an upper size limit of halibut at O80 and a lower size limit of halibut at or above U40. If possible under the catch limit, the U40 size limit will be adjusted upward until the catch limit is achieved (Table 6 of the analysis).

2. If the catch limit in Area 2C is from 0.658 to 0.771 million pounds, the NPFMC recommends maintaining the U40/O80 size limit, then progressively reducing the number of days when halibut may be retained by establishing closures on Wednesdays, beginning on 9 September and working consecutively toward the beginning of the season with a maximum of all Wednesdays closed (Table 10-A1 of the analysis).

3. If the catch limit in Area 2C is from 0.646 to 0.656 million pounds, the NPFMC recommends a U40/O80 size limit, an annual limit of 4 halibut for all charter anglers, and a closure of between fourteen and all Wednesdays, beginning on 9 September and working consecutively toward the beginning of the season (Table 14-A1 of the analysis).

4. If the catch limit in Area 2C is from 0.636 to 0.645 million pounds, the NPFMC recommends a U41/O80 size limit, an annual limit of 3 halibut for all charter anglers, and a closure of between fourteen and all Wednesdays, beginning on 9 September and working consecutively toward the beginning of the season (Table 16-A1 of the analysis). If the catch

limit in Area 2C is from 0.615 to 0.636 million pounds, the NPFMC recommends a U40/O80 size limit, an annual limit of 3 halibut for all charter anglers, and a closure of between thirteen and all Wednesdays, beginning on 9 September and working consecutively toward the beginning of the season (Table 16-A1 of the analysis).

5. If the catch limit in Area 2C is less than 0.615 million pounds, the NPFMC recommends a closure of all Wednesdays for the entire season, an annual limit of 3 halibut for all charter anglers, and an adjustment of the lower size limit until the catch limit is achieved. The expected harvest under these measures with a lower size limit of U39 is 0.599 million pounds (Table 16-A1 of the analysis).

If an annual limit is adopted in Area 2C, implement a requirement for charter anglers to record, immediately upon retaining a halibut, the date, location (IPHC area), and species (halibut) on their harvest record, consistent with the current reporting requirement in Area 3A.

Area 3A

All allocations shown below include, unless otherwise specified: a daily bag limit of 2 halibut; an annual limit of 4 halibut per charter angler; Wednesdays closed to halibut retention all year; 1 trip per halibut charter vessel per day; and 1 trip per charter halibut permit per day.

- If the allocation is less than 2.014 Mlb but greater than or equal to 1.695 Mlb:

  a daily bag limit of 2 halibut, with one fish of any size, and one fish less than or equal to 26 inches;

  adjust the number of Tuesdays closed to halibut retention, such that the projected removals achieve the allocation (Table 1, page 15 of the Supplemental Analysis). The Tuesdays closed to halibut retention are specified in Table 22, pg. 38 of the December 3 analysis.

- If the allocation is less than 1.695 Mlb, but greater than or equal to 1.588 Mlb (proposed to achieve allocation for status quo TCEY = 1.66 Mlb):

  a daily bag limit of 2 halibut with one fish of any size and one fish less than or equal to 26 inches;

  all Tuesdays closed to halibut retention;

  adjust the number of Thursdays closed to halibut retention, to a maximum of four Thursday closures, such that the projected removals achieve the allocation (Table 5, page 19 of the January 23 Supplemental Analysis; Thursdays closed to halibut retention are specified in Table 4; page 18 of the Supplemental Analysis.

- If the allocation is less than 1.588 Mlb (proposed to achieve allocation between 1.588 Mlb and reference TCEY = 1.24 Mlb):

All Tuesdays are closed to halibut retention;

a daily bag limit of 1 halibut, with a reverse (protected) slot limit. The upper limit of the reverse slot limit is fixed at 80 inches, and the lower end of the reverse slot limit is adjusted such that the projected removals achieve the allocation – beginning at 58 inches (Appendix Table A5-o, page 75, last column, of the Supplemental Analysis).

The NPFMC selected these management measures at its January 2020 meeting, following review of analyses prepared by the Alaska Department of Fish and Game (ADFG) for proposed management measures for 2020 and after receiving input from the Charter Halibut Management Committee, which includes stakeholder representatives from both Areas 2C and 3A.

ADFG developed two sets of analyses to evaluate the potential effects of the management measures. They are available on the NPFMC website at the following addresses:

December 3 analysis:

https://meetings.npfmc.org/CommentReview/DownloadFile?p=73dcb335-e660-4bd0-9903-b9c126884484.pdf&fileName=C3%20Charter%20Halibut%20Managment%20Measures%20Analysis.pdf

The January 23 Supplemental Analysis:

https://meetings.npfmc.org/CommentReview/DownloadFile?p=24da17e2-6181-415e-85c2-674888755867.pdf&fileName=C1%20Supplemental%20Analyses%20of%20Charter%20Mgmt%20Options%20for%203A%202020.pdf

The minutes from the December and January meetings of the Charter Halibut Management Committee are attached for reference.

Suggested Regulatory Language

(Note that in the suggested regulatory text below, the allocation to each charter sector has been deleted, as that information is found elsewhere in the IPHC regulations.)

29. Sport Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E

(1) …

(2) For guided sport fishing (as referred to in 50 CFR 300.65) in IPHC Regulatory Area 2C:

(a) No person on board a charter vessel (as referred to in 50 CFR 300.65) shall catch and retain more than one Pacific halibut per calendar day.

(b) No person on board a charter vessel (as referred to in 50 CFR 300.65) shall catch and retain any Pacific halibut that with head on is greater than 38 inches (96.5 cm) [may be adjusted according to Table 15 in the ADF&G analysis of

proposed harvest regulations for 2020 to bring the projected harvest within the Area 3A allocation] and less than 80 inches (203.2 cm) as measured in a straight line, passing over the pectoral fin from the tip of the lower jaw with mouth closed, to the extreme end of the middle of the tail.

(c) [may be added according to the progressive management measures described in the NPFMC recommendation] No person on board a charter vessel may catch and retain Pacific halibut on the following [any] Wednesdays: [day of the week closures will be adjusted accordingly].

(d) [may be added according to the progressive management measures described in the NPFMC recommendation] Charter vessel anglers may catch and retain no more than four (4) [or potentially adjusted to three (3)] Pacific halibut per calendar year on board charter vessels in IPHC Regulatory Area 2C. Pacific halibut that are retained as GAF, retained while on a charter vessel fishing trip in other Commission regulatory areas, or retained while fishing without the services of a guide do not accrue toward the 4-fish [or potentially 3-fish] annual limit for Regulatory Area 2C. For purposes of enforcing the annual limit, each angler must:

(1) maintain a nontransferable harvest record in the angler's possession if retaining a Pacific halibut for which an annual limit has been established. Such harvest record must be maintained either on the back of the angler's State of Alaska sport fishing license or on a Sport Fishing Harvest Record Card obtained, without charge, from ADFG offices, the ADFG website, or fishing license vendors; and

(2) immediately upon retaining a Pacific halibut for which an annual limit has been established, record the date, location (IPHC Regulatory Area 2C), and species of the catch (Pacific halibut), in ink, on the harvest record; and

(3) record the information required by paragraph 2(d)(2) on any duplicate or additional sport fishing license issued to the angler or any duplicate or additional Sport Fishing Harvest Record Card obtained by the angler for all Pacific halibut previously retained during that year that were subject to the harvest record reporting requirements of this section; and

(4) carry the harvest record on his or her person while fishing for Pacific halibut.

(3) For guided sport fishing (as referred to in 50 CFR 300.65) in IPHC Regulatory Area 3A:

(a) No person on board a charter vessel (as referred to in 50 CFR 300.65) shall catch and retain more than two [to be adjusted if the allocation is less than 1.588 million pounds] Pacific halibut per calendar day.

(b) ~~At least one of the retained Pacific halibut must have a head-on length of no more than 28 inches (71.1 cm) as measured in a straight line, passing over the pectoral fin from the tip of the lower jaw with mouth closed, to the extreme end of the middle of the tail. If a person sport fishing on a charter vessel in IPHC Regulatory Area 3A retains only one Pacific halibut in a calendar day, that Pacific halibut may be of any length.~~ [to be adjusted to specify at least one of two Pacific halibut must be no more than 26 inches (66 cm), or to specify a bag limit of one Pacific halibut with a slot limit indicated in Appendix Table A5-o of the Supplemental Analysis, such that the projected Area 3A harvest is within the allocation]

(c) A charter halibut permit (as referred to in 50 CFR 300.67) may only be used for one charter vessel fishing trip in which Pacific halibut are caught and retained per calendar day. A charter vessel fishing trip is defined at 50 CFR 300.61 as the time period between the first deployment of fishing gear into the water by a charter vessel angler (as defined at 50 CFR 300.61) and the offloading of one or more charter vessel anglers or any Pacific halibut from that vessel. For purposes of this trip limit, a charter vessel fishing trip ends at 2359 (Alaska local time) on the same calendar day that the fishing trip began, or when any anglers or Pacific halibut are offloaded, whichever comes first.

(d) A charter vessel on which one or more anglers catch and retain Pacific halibut may only make one charter vessel fishing trip per calendar day. A charter vessel fishing trip is defined at 50 CFR 300.61 as the time period between the first deployment of fishing gear into the water by a charter vessel angler (as defined at 50 CFR 300.61) and the offloading of one or more charter vessel anglers or any Pacific halibut from that vessel. For purposes of this trip limit, a charter vessel fishing trip ends at 2359 (Alaska local time) on the same calendar day that the fishing trip began, or when any anglers or Pacific halibut are offloaded, whichever comes first.

(e) No person on board a charter vessel may catch and retain Pacific halibut on any Wednesday, or on the following Tuesdays: [to be adjusted for Tuesday and potentially Wednesday closures, according to Tables 1 and 5 of the ADF&G Supplemental analysis, to bring the projected harvest within the Area 3A allocation].

(f) Charter vessel anglers may catch and retain no more than four (4) Pacific halibut per calendar year on board charter vessels in IPHC Regulatory Area 3A. Pacific halibut that are retained as GAF, retained while on a charter vessel fishing trip in other Commission regulatory areas, or retained while fishing without the services of a guide do not accrue toward the 4-fish annual limit. For purposes of enforcing the annual limit, each angler must:

(1) maintain a nontransferable harvest record in the angler's possession if retaining a Pacific halibut for which an annual limit has been established. Such harvest record must be maintained either on the back of the angler's State of Alaska sport fishing license or on a Sport Fishing Harvest Record Card obtained, without charge, from ADFG offices, the ADFG website, or fishing license vendors; and

(2) immediately upon retaining a Pacific halibut for which an annual limit has been established, record the date, location (IPHC Regulatory Area 3A), and species of the catch (Pacific halibut), in ink, on the harvest record; and

(3) record the information required by paragraph 3(g)(2) on any duplicate or additional sport fishing license issued to the angler or any duplicate or additional Sport Fishing Harvest Record Card obtained by the angler for all Pacific halibut previously retained during that year that were subject to the harvest record reporting requirements of this section; and

(4) carry the harvest record on his or her person while fishing for Pacific halibut.

Attachments

Attachment 1 Charter Halibut Management Committee Report of 3 December 2019

Attachment 2 Charter Halibut Management Committee Report of 23 January 2020

North Pacific Fishery Management Council

Simon Kinneen, Chair | David Witherell, Executive Director
605 W. 4th Avenue, Suite 306, Anchorage, AK 99501
Phone 907-271-2809 | www.npfmc.org

Charter Halibut Management Committee

REPORT

10:30 AM to 3:30 PM | December 3, 2019 | Anchorage, AK

The Charter Halibut Management Committee met in Anchorage, AK on December 3, 2019 from 10:30 AM to 3:30 PM to review analysis of potential charter halibut management measures and recommend 2020 measures for implementation in IPHC Areas 2C and 3A. The Committee also received a presentation on the initial review draft of an analysis on unguided halibut rental boat registration (Council Agenda Item C-8) and subsequently provided comments and recommendations for the Council to consider.

Committee Members in attendance:

Andy Mezirow, Chairman	Stan Malcolm	Mike Flores
Steve Zernia	Kent Huff	Richard Yamada
Matt Kopec	Seth Bone	Forrest Braden
Daniel Donich	Denise May	Sam Cunningham (staff)

Others in attendance (public affiliation):

Rachel Baker (ADF&G)	Bill Tweit (NPFMC)	Lynn Keogh
Sarah Webster (ADF&G)	Tom Gemmell	Leslie Pemberton
Rick Green (ADF&G)	Mel Erickson	McKinley Kellogg
Jim Hasbrouck (ADF&G)	Kenji Yamada	Nadra Angerman
Bob Powers (ADF&G)	Tim Comer	Jeff Wedekind
Baine Etherton (ADF&G)	Murtie Comer	Mark Warner
Stephen Keith (IPHC)	Ernie Kirby	Ken Federico
Kate Haapala (NPFMC)	Clay Duda	Aaron Mahoney
Doug Duncan (NMFS)	Billy Hayden	Wally Martin
Alicia Miller (NMFS)	Daniel Hayden	Theresa Peterson
Kurt Iverson (NMFS)	Ben Martin	Duncan Fields

2020 Charter Halibut Management Measures

Sarah Webster (ADF&G) presented results from the analysis of the charter halibut management measure options for 2020 in Areas 2C and 3A that were defined at the Committee's October 2019 meeting.

Area 2C representatives support a reverse slot limit with day closures and annual bag limits added as measures *as needed* to maintain at least a 40" maximum size on the low end of the slot. The Committee felt that 40" represents fairness to the needs of all business models in view of historical participation in the halibut fishery. Based on the analysis, the Committee **recommends** the following management measures:

In Area 2C – A progression of management measures in the following order:

1. **A reverse slot with an upper limit fixed at O80, and a lower limit raised until the allocation is reached, but no lower than U40;**

2. **If the allocation is insufficient to maintain at least a U40 on the lower limit, add Wednesday closures beginning on September 9th and work consecutively toward the beginning of the season until a lower limit of U40 is reached;**

3. **If a lower limit of U40 can't be reached after closing all Wednesdays, add a 4-fish annual limit in addition to closing all Wednesdays, and use any unused allocation to increase the lower limit above U40 until the allocation is reached;**

4. **If a lower limit of U40 can't be reached by closing all Wednesdays and adding a 4-fish annual limit, reduce the annual limit to 3 fish in addition to closing all Wednesdays, and use any unused allocation to increase the lower limit above U40 until the allocation is reached.**

Committee members felt that progressing in an additive manner from the U40"/O80" reverse slot to day closures to annual limits – in that order – is the most equitable way to distribute reductions across business models. The Committee notes that Area 2C has been under its allocation in four of six years since the implementation of the Catch Sharing Plan (CSP) while using a reverse slot limit. The total net underage during that 2014-2019 period is 574,000 lbs. (cumulative 30%)[1]. The Committee points out that modeled catch may be biased high when projecting harvest on reverse slots with a lower maximum size limit less than U44". Because the reverse slot remains the underlying basis of the harvest measures being considered, the Committee believes it could be appropriate to consider a less restrictive size limit even if it falls slightly above the charter allocation.

For **Area 3A**, the analysis revealed that none of the options defined in October would result in meeting the reference level of halibut removals that was specified at the IPHC interim meeting in November. All analyzed options for management measures are projected to result in more removals than the range of TCEY levels that are probable to be selected for the area at the IPHC annual meeting in February 2020. As a result of this unprecedented situation, the Committee has made both a recommendation and a request. The **recommendation** is:

In Area 3A – Limit charter harvest to the status quo TCEY (within 2%). Maintain status quo management measures, except:

1. **Closure of Tuesdays throughout the year;**

2. **Include second fish of 26" or less.**

Committee members representing Area 3A stated that reductions beyond the management measures recommended above would have severe adverse impacts on the charter sector as well as local tourism and associated economies in the area. Given the gravity of the decision on the form that further reductions might take, the Committee feels it necessary to see an analysis of the options that could actually meet the reference TCEY. In other words, the Committee desires to have a voice in whether further reductions are achieved by day closures, length restrictions, or a combination – and what that combination might be. The Committee **requests** that ADF&G staff analyze a wider range of management measure options and that they be allowed to make a recommendation based on that analysis in the form of a publicly noticed teleconference taking place prior to the Council's February 2020 meeting and the IPHC's Annual Meeting. If the Committee is not able to review options that could achieve the reference TCEY, the members are concerned that they would be ceding the decision on the *mechanism* to reduce removals to the IPHC.

[1] Area 2C overage/underage by year: 2014 +9%; 2015 -4%; 2016 -7%; 2017 +3%; 2018 -12%; 2019 -19%.

Other points of discussion:

The Committee noted the different types of impacts that result from more restrictive size limits, bag limits, and day closures. The key distinction that was highlighted was between size/bag limits and day closures. Day closures – especially as the number of closed days per week increases – directly affect operators' ability to hire and retain captains and crew. Changes to size and bag limits affect operators' ability to market trips to clients (recognizing that reduced demand could indirectly affect hiring and retention).

The Committee is concerned about the magnitude of year-on-year fluctuation in TCEY and is interested in dialogue with IPHC about options to limit annual variation. Uncertainty about the following year's management measures are of particular concern to the charter sector because the nature of its business is to book clients far in advance, often for the following year. The inability to confidently assure clients of bag limits or open days in the course of a multi-day booking is an impediment to marketing and client retention. Possible methods to limit variation might include phasing in restrictions over several years or relying on rolling averages of multiple years to determine allowable removals.

The Area 3A representatives requested that the Council consider including all user groups (charter, unguided, commercial, and trawl bycatch) in the CSP when it conducts the upcoming CSP review. They also request a review of allocations apportioned to each sector. This request reflect the notion that the charter and commercial sectors have experienced catch reductions as a result of lower TCEY while unguided and trawl users have not. These minutes do not imply that the Area 2C representatives agree or disagree with this request, as they did not comment and there was not an attempt to make a consensus recommendation.

Public Comment on 2020 Management Measures:

The Committee received public comment from Mel Erickson, Ben Martin, Jeff Wedekind, Clay Duda, and Ernie Kirby.

Review of C-8 Unguided Halibut Rental Boat Registration

The Committee received an overview of the initial review analysis from Kurt Iverson (NMFS). Questions asked by the Committee addressed the lack of information available on the demographic makeup of the rental boat customer base and the inability to draw conclusions about whether and to what extent the expansion of unguided rental boat catch could impact other sectors.

The Committee supported moving forward with Alternative 2 (require registration) without objection. Members noted that a registration requirement will enable the gathering of information that is necessary to manage unguided rental boat use from an informed perspective. However, it was acknowledged that implementing a registration rule and then collecting the data is a process that will not bear fruit for several years, and will not collect information on unguided catch and effort. The Committee anticipates that a registration action will signal Council consideration of limiting rental boats in the future, and thus there may be a rush for current charter operators and other vessel owners to register their vessels as rental boats. The Committee discussed the two Elements under Alternative 2 (Elem. 1: 2C only or 2C & 3A; Elem. 2: register annually, every 3 years, or every 5 years) but did not vote or express preferences at this time. The Committee noted that it is difficult to know whether to include Area 3A without knowing the extent of unguided rental activity on an area basis. It was noted that requiring registration less frequently could reduce administrative costs.

The Committee did not support moving forward with Alternative 3 (align unguided size/bag limits with charter limits) at the present time. The primary reason given was that it is premature to complicate management of recreational halibut when the extent of the impact that unguided rental boat catch is having and where it is occurring is not yet known. The Committee did share the perception that the types of vessels being offered as rentals are becoming larger and better able to access deep-water species like halibut. Moreover, the Committee felt that a period of uncertainty about the direction of the halibut stock and the size of the charter allocation under the CSP is not a good time to change bag limits. The Committee felt that subjecting a new user group (unguided rental boat anglers) to a new set of regulations would further fracture the recreational angling sector to address an activity that may or may not be a problem, or might only be a problem in certain areas. Moreover, regulating the rental boat sector may incentivize persons or businesses to develop new strategies to avoid charter angling restrictions, such as group ownership of vessels. Finally, the Committee discussed the rental boat issue as a byproduct of the different angling restrictions between the charter sector and unguided sector. Some committee members indicated that particularly during periods of stock decline, the entire unguided sector should bear some of the responsibility for halibut conservation.

North Pacific Fishery Management Council

Simon Kinneen, Chair | David Witherell, Executive Director
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Charter Halibut Management Committee

REPORT

January 23, 2020 Teleconference

The committee met via teleconference to review the supplemental analysis of charter halibut management measures for Area 3A and to select management measures for potential application in 2020.

Committee Members in attendance:

Andy Mezirow (Chairman)	Denise May	Steve Zernia
Daniel Donich	Richard Yamada	Forrest Braden
Matt Kopec	Mike Flores	

Members absent: Kent Huff, Stan Malcolm

Others in attendance:

Steve Keith	Gabe Linneker	Ton Gemmell
Paddy O'Donnell	Tom Taube	Baine Atherton
Heather Mann	Jim Martin	Alicia Miller
Bob Candopoulos	Kurt Iverson	

Supplemental analysis of management measures for Area 3A

Sarah Webster (ADF&G) summarized the supplemental analysis of management options for the Area 3A charter halibut fisheries for 2020. In December 2019, the committee requested, and the Council authorized, analysis of additional measures for Area 3A that could achieve the reference (1.24 million pounds) or status quo (1.66 million pounds) TCEY identified by the IPHC at the interim annual meeting in November 2019. The ADF&G analyzed the following additional measures for potential implementation in Area 3A in 2020:

1. Maximum size limit of one fish combined with Tuesday closures
2. Status quo with all Tuesdays closed and additional days closed combined with maximum size limits
3. Maximum size limit on one fish combined with annual limits of 2 – 4 fish
4. Maximum size limit on one fish combined with annual limits of 2 – 3 fish and Tuesday closures
5. Reverse slot limit combined with a maximum size limit and Tuesday closures
6. Reverse slot limit combined with a maximum size limit of 26 inches and additional closure dates
7. One-fish bag limit, no size limit
8. One-fish bag limit with reverse slot limit combined with Tuesday closures
9. Status quo with all days of the week open and a season closure prior to Nay 16 or June 1 and after July 31

After the presentation, committee members asked clarifying questions and discussed options for recommending management measures. Mr. Steve Keith (IPHC) suggested, as normal, that the committee should recommend a range of alternatives to address the potential range of FCEY allocations that the commission might make. Committee members discussed the options for regulations, including the range

of size limits, closures on additional days of the week, adjusting the length of the charter halibut fishing season, and potentially restricting participation in charter fisheries during times of low halibut abundance to limit latent capacity in the fishery.

After discussion the following motion was made:

The 3A Charter Halibut Committee issues the following recommendation to the North Pacific Fisheries Management Council:

At the Status Quo TCEY level with a charter allocation of 1.66 m/lb.
Maintain Status quo management measures except the following:

- **Closure of Tuesdays all year.**
- **Include second fish of 26" or less.**
- **Closure of 1 Thursday for a total harvest of 1.666 m/lb**

If the Charter allocation is less than 1.66 m/lb:

- **Close additional Thursdays up to a maximum of 4 closed Thursdays on July 16, July 23, July 30, and August 6 for a total Harvest of 1.588 m/lb**

If the Charter allocation is less than 1.588 m/lb:

- **Include closure of all Tuesdays**
- **Institute a one fish bag limit with a reverse slot limit:**
- **U58 O80 = 1.573 m/lb**
- **Reduce the lower limit as necessary to achieve the harvest goal down to a max.**
- **U38 080 = 1.239 m/lb**

If the Charter allocation is above the Status Quo TCEY, reduce the number of closed Tuesdays to reach the corresponding allocation level. Second Halibut of 26".

After discussion the committee also approved the following statement to accompany the recommendation to the Council:

Committee Statement:
In the eyes of the Charter Halibut Committee and a majority of the charter industry we view the one halibut reverse slot limit as the "nuclear option" that would have disastrous consequences to the 3A charter industry and coastal communities in Southcentral Alaska. Therefore, though we have made recommendations below this level to fulfill our obligation as a committee, we cannot willingly accept a harvest below 1.588 m/lb. We have heard from many local businesses that closing the halibut fishery beyond 2 days per week or instituting an entirely new management scenario (e.g., reverse slot limit) will force closures of some charter businesses as well as starving many support related businesses such as launch services, restaurants, processors, boat repair facilities, and others.

Clarification of IPHC Regulatory Proposal for Area 2C

The committee reviewed NOAA's regulatory proposal for charter management measures in Area 2C to consider language suggested for Area 2C to clarify the committee's and the Council's intention for Area 2C management measures. After review, the committee concurred with NOAA's suggested regulatory language, although representatives of the Area 2C committee members expressed that they believe that the measures suggested for Area 2C are the maximum restrictions that the industry can accept.

Statement from 2C representatives

NPFMC Charter Halibut Management Committee 2C Hardship Note

Area 2C representatives of the committee note that, especially under low abundance, CSP sport allocations do not adequately fund the 2C charter industry.

Halibut are essential to the fishing opportunity Southeast businesses offer to attract and keep customers. As a direct result of restrictive guided halibut limits, 2C operators are now losing repeat business and struggling to interest new business. Effects are magnified in front season bookings, where halibut are one of few target fish available.

Southeast guided anglers are now reduced to one halibut per day under 38", and face season-long Wednesday closures combined with annual limits to maintain a similar size fish for 2020. The 2C reverse slot has led to an average charter halibut of 31" (9.6 net pounds)- an inch below the legal-sized retainable fish in the commercial fleet. It has also triggered a spike in releases, resulting in deductions in allocation up to 8% or 60,000 pounds. (3A release mortality runs 1%)

Council review of the CSP is scheduled for 2021. We ask Council members to reexamine allocative relationships between sectors, especially with respect to viability thresholds of the charter fleet at low abundance.

The RQE offers no immediate allocation relief, and at best, slow recovery over an extended period when finally implemented.

Respectfully,

2C CHMC members:

Richard Yamada, Seth Bone, Stan Malcom, Kent Huff, Forrest Braden

INTERNATIONAL PACIFIC HALIBUT COMMISSION

IPHC-2020-AM096-PropB2

Received: 31 December 2019

REGULATORY PROPOSAL 2020
TITLE: REVISING DEFINITION OF IPHC REGULATORY AREA 2A-1

SUBMITTED BY:
UNITED STATES OF AMERICA
NOAA-FISHERIES
AFFILIATION: NMFS, WEST COAST REGION
USA

Explanatory Memorandum

All Regulatory Areas ☐ All Alaska Regulatory Areas ☐ All U.S. Regulatory Areas ☐

2A ☒ 2B ☐ 2C ☐ 3A ☐ 3B ☐ 4A ☐ 4B ☐ 4C ☐ 4D ☐ 4E ☐

Purpose

To update IPHC regulatory language regarding the usual and accustomed fishing areas of Indian tribes with treaty fishing rights to Pacific halibut.

Background

This proposal would revise the current definition of Subarea 2A-1, which currently includes specific coordinates to a definition with a more general description.

Discussion

The regulatory text describes the usual and accustomed (U&A) fishing area for Treaty tribes and lists coordinates for the western boundary. On 5 March 2018, the United States District Court for the Western District of Washington revised the western boundaries of the U&A fishing areas for the Quileute Indian Tribe and the Quinault Indian Nation. *United States* v. *Washington*, 2:09-sp-00001-RSM, (W.D. Wash. March 5, 2018) (Order Regarding Boundaries of Quinault and Quileute U&As). This regulatory proposal suggests revising the subarea definition to be more general.

Benefits/Drawbacks

The benefit is a broader description of the usual and accustomed fishing areas for treaty tribes with fishing rights to Pacific halibut, and makes the definition consistent with the recent court decision. No known drawback.

Suggested Regulatory Language

23. Fishing by United States Treaty Indian Tribes

(1) …

~~(2) Subarea 2A-1 includes all waters off the coast of Washington that are north of the Quinault River, WA (47°21.00' N. lat.), and east of 125°44.00' W. long; all waters off the coast of Washington that are between the Quinault River, WA (47°21.00' N. lat.), and Point Chehalis, WA (46°53.30′ N. lat.), and east of 125°08.50′ W. long.; and all inland marine waters of Washington.~~

(2) Subarea 2A-1 includes the usual and accustomed fishing areas for Pacific Coast treaty tribes off the coast of Washington and all inland marine waters of Washington north of Point Chehalis, including Puget Sound. Boundaries of a tribe's fishing area may be revised as ordered by a United States Federal court.

Attachments

None

REGULATORY PROPOSAL 2020
Alaska Recreational Fisheries

SUBMITTED BY:
JAMES KEARNS
RECREATIONAL FISHERMAN AND CHARTER GUIDE
UNITED STATES OF AMERICA
31 OCTOBER 2019

IPHC Regulatory Areas that may be affected: 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E
Fishery Sector: Recreational

EXPLANATORY MEMORANDUM

Dear IPHC commissioners,

Hello, my name is James S Kearns and I live in Gustavus, Alaska. I have been a recreational fisherman my whole life and a charter boat guide since I was 18. I have fished and guided in the Glacier Bay, Icy Straits, Cross Sound, and GOA areas over the course of those 50+ years. I have made numerous requests and recommendations to the IPHC, the NPFMC, and the NMFS since the inception of Recreational Halibut fishery and Charter Halibut Operator/Business regulations in the early 2000's. Additionally I have written to Alaskan governors, Alaskan congressional and legislative representatives, The US Secretary of State, and the US Secretary of Commerce with a common plea to consider removing recreational halibut regulation differences from guided and unguided recreational halibut fishermen. Why? Because I have always considered recreational fishermen, who have the same license requirements and the same equipment requirements, to be the same, whether they are guided or unguided. I have also never been able to buy into the idea that a recreational fisherman should be regulated in a catch sharing program along with commercial fishermen. Why? Because I have always considered a Coast Guard licensed boat operator to be a commercial boat driver rather than a commercial fisherman if he/she takes customers sport fishing, or a commercial hunter if he/she takes customers sport hunting, or a commercial diver if he/she takes customers sport diving. And anyone who fishes, or hunts, or dives for sport, rather than to sell what they catch, kill, or collect, is certainly not a commercial harvester, whether they pay someone to take them to do the harvesting or not.

Therefore I ask you all to consider the following proposal in order to responsibly manage the recreational halibut fishery in Alaska:

First; create a recreational halibut allocation that includes all recreational fishermen, guided or unguided. This allocation needs to be no less than 40-50% of the annual TAC so that recreational fishermen have an equitable percentage of the halibut resource harvest.

Second; establish a 1 (one) halibut of any size daily bag limit for all recreational fishermen.

Third; establish an annual limit that is based on the recreational halibut allocation for each area, ie. 2C and 3A.

Fourth; stop encouraging recreational take of the Big Fat Fecund Female Fish (BFFFF) to enhance the best reproductive success for the resource by setting a penalty for keeping a fish over 65 inches in length. The penalty would be to reduce the annual limit for a fisherman by 1 (one) for every halibut kept that is over 65 inches. And if a fisherman's final fish of his/her annual limit is a fish over 65 inches, the penalty would be applied to the following year.

Fifth; implement a halibut tag or punch card that requires all recreational fishermen to record the location and size (length in inches) of each halibut caught and kept. That punch card or tag would have to be sent in to ADFG as soon as it was filled or by Jan 15 of the following year. This would give a remarkable accountability of all halibut kept by the recreational sector. The card/tag would be purchased from the state of Alaska online like all licenses and stamps will be in 2020. If the size penalty (fourth item) was in force for an angler, it would show up and be applied when that person wanted to purchase the next year's card/tag.

This proposal would require a change in the regulations that currently exist in Alaska to a one halibut a day bag limit for all recreational fishermen in all areas. It would get rid of the size limits (except for the over 65 inch part of the proposal), it does not address charter boat weekday closures currently in effect in area 3A or the one trip a day limit also in 3A although those may not be necessary if all recreational halibut fishermen have the same bag limits, and it puts an annual limit (currently in effect for guided anglers in 3A) into effect for all recreational fishermen. It does not change the CHP requirement, the guide/guide business registration requirement, or the charter vessel logbook requirement for charter guides and businesses since these are part of managing that limited entry type of business. But it does not allow any harvest of the commercial allocation through the GAF program, which, by the way, is not allowed in Glacier Bay National Park because commercial fishing is not allowed in the Park. It does, however, make the recreational fishery equitable for all recreational fishermen, recognizes the financial impact of recreational fishermen to the economy, and requires all recreational fishermen to participate in responsible abundance based management of the halibut resource.

Thank you for your consideration. This letter was also sent to the NPFMC for their consideration in their Dec 2019 meetings and to their Charter Halibut Committee

meeting in late October. I hope we can all make this a more equitable way to address recreational halibut fishing in Alaska and provide for all halibut stakeholders an opportunity to participate in the management of this amazing resource.

Sincerely, James S Kearns PO Box 148 Gustavus, Alaska 99826

SUGGESTED REGULATORY LANGUAGE

Nil.

REGULATORY PROPOSAL 2020
Alaska Recreational Fisheries

SUBMITTED BY:
LARRY JARRETT
RECREATIONAL FISHERMAN AND CHARTER OPERATOR
UNITED STATES OF AMERICA
26 SEPTEMBER 2019

IPHC Regulatory Areas that may be affected: 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E
Fishery Sector: Recreational

EXPLANATORY MEMORANDUM

2020 marks 50 years as an Idaho Lic Outfitter and Guide and 34 years as an Alaska fish and charter operator--I have watched over all the years the changes affecting many different species and am saddened by how things have went down and down and more and more rules - the following are a number of things that are at hand as this is written- We as Americans are guaranteed the right to enter into a legal business- in no way am I against people doing business-

1-Rental boat businesses have that right and now I hear new rules are being drafted to address the rental guest from taking 2 Halibut per day any size every day

2- 2-C has 1 halibut reverse slot limit- a charter boat is anchored and has to release halibut over 38 inches and so the charter catches a 60 inch and by law has to release it== anchored beside the charter is a rental and they catch an over size and kill it, the charter guest now asked why- not against the law simply unfair-

3- zone 3-A has 2 Halibut per day one has to be under 28 inches? this is baby and I understand new rules for that practice may be in the works-

4- Now a going problem is the FRIEND thing where a scab charter person books and takes out friends and is simply paid under the table -again they take 2 Halibut per day any size- some actually own places and some simply rent and if flags come up they simply move on- these phony operators need no lic- or any other regulatory things that the legal operator has to have-has to have-

5- NOAA I understand is now faced with how do we deal with the above with new rules and I might add that the mortality from trying to measure Halibut goes way up, I ask NOAA have any of you actually had to measure a Halibut, try it as the only way is to board the fish and on the floor hold it down and if to long throw over board. I have

personally watched while at anchor Boats with up to 3 Halibut hanging by a rope waiting to catch a bigger one-

My strong suggestion for dealing with most of the above is very simple and every charter person I have visited think it is the best way, less mortality and far less time spent on new rules that really only add to the Halibut problems- Do all a favor with across the board fair bag limit on Halibut and they win big time- What is the answer to addressing the above.

SUGGESTED REGULATORY LANGUAGE

My suggested regulatory Rule is very simple and puts all users on the same play field. One Halibut per day any size. A state wide rule in Alaska for Non-Resident fishers. Now as Charter Guides we can start with educating not only the Charter Guides but the Guests. Having a picture of a big Halibut on the wall or I pad is simply an ego trip. With this rule ten NOAA can spend more time on other Halibut issues.

Thank You Larry Jarrett

Stakeholder statements on regulatory proposals

PREPARED BY: IPHC SECRETARIAT (3, 24, & 31 JANUARY, 2 FEBRUARY 2020)

PURPOSE

To provide the Commission with a consolidated document containing 'Statements' from stakeholders submitted to the Commission for its consideration at the 96th Session of the IPHC Annual Meeting (AM096).

BACKGROUND

During 2018 and 2019, the IPHC Secretariat made improvements to the Fishery Regulations portal on the IPHC website, which includes instructions for stakeholders to submit statements to the Commission for its consideration. Specifically:

> *"Informal Statements by stakeholders should be submitted as an email to the following address, secretariat@iphc.int, which will then be provided to the Commissioners as Stakeholder Statements at each Session.*

DISCUSSION

Table 1 provides a list of the Stakeholder Statements received by 1200 on 2 February 2020, which are provided in full in the Appendices. The IPHC Secretariat does not provide commentary on the Statements, but simply collates them in this document for the Commission's consideration.

Table 1. Statements received from stakeholders by received by 1200 on 2 February 2020.

Appendix No.	Title and author	Date received
Appendix I	Statement by Rob Greenfield	11 April 2019
Appendix II	Statement by Garrett Elwood	25 October 2019
Appendix III	Statement by Alaska Longline Fishermen's Association (ALFA)	19 December 2019
Appendix IV	Statements by Mary and Mike Huff	28 December 2019 & 14 January 2020
Appendix V	Statement by Frank Casey	01 January 2020
Appendix VI	Statement by Joel Steenstra	09 January 2020
Appendix VII	Statement by Michael Pettis	11 January 2020
Appendix VIII	Statement by Jake Fletcher	12 January 2020
Appendix IX	Statement by Central Bering Sea Fishermen's Association (CBSFA)	13 January 2020
Appendix X	Statement by David Croonquist	14 January 2020
Appendix XI	Statement by Oregon Coast Anglers	16 January 2020
Appendix XII	Statement by Prince William Sound Charter Boat Association	25 January 2020
Appendix XIII	Statement by Larry Cobb	26 January 2020
Appendix XIV	Statement by Larry Carroll	26 January 2020
Appendix XV	Statement by Steve Ranney	26 January 2020
Appendix XVI	Statement by Luther Andersen	29 January 2020

Appendix XVII	Statement by Southeast Alaska Guides Organization	31 January 2020
Appendix XVIII	Statement by Don Lane	31 January 2020
Appendix XIX	Statements by Diane and William Gentry	31 January 2020
Appendix XX	Statement by Timothy Cashman	31 January 2020
Appendix XXI	Statement by Clive Stevens	01 February 2020
Appendix XXII	Statement by Seth Mosley	01 February 2020
Appendix XXIII	Statement by Brenda Swann	01 February 2020
Appendix XXIV	Statement by David Ardinger	01 February 2020
Appendix XXV	Statement by Kamell Alloway	01 February 2020
Appendix XXVI	Statement by Aaron Mahoney	01 February 2020
Appendix XXVII	Statement by Kristyn Allaway	01 February 2020
Appendix XXVIII	Statement by Griffin Woodall	01 February 2020
Appendix XXIX	Statement by Dan Spies	01 February 2020
Appendix XXX	Statement by DeAnn Luloff	01 February 2020
Appendix XXXI	Statement by Sean Prendergast	01 February 2020
Appendix XXXII	Statement by Raymond Nix	01 February 2020
Appendix XXXIII	Statement by Gerri Martin	01 February 2020
Appendix XXXIV	Statement by Mel Erickson	01 February 2020
Appendix XXXV	Statements by Thad and Heidi Stokes	01 February 2020
Appendix XXXVI	Statement by Bill Eckhardt	01 February 2020
Appendix XXXVII	Statement by Kevin Cawley	01 February 2020
Appendix XXXVIII	Statement by Bob Savino	02 February 2020
Appendix XXXIX	Statement by Diana Allaway	02 February 2020
Appendix XL	Statement by John Baker	02 February 2020
Appendix XLI	Statement by Trey Graham	02 February 2020
Appendix XLII	Statement by Bryson Gilbert	02 February 2020
Appendix XLIII	Statement by John Moline	02 February 2020
Appendix XLIV	Statement by Kyle Stene	02 February 2020
Appendix XLV	Statement by Homer Charter Association	02 February 2020
Appendix XLVI	Statement by Jason Ogilvie	02 February 2020
Appendix XLVII	Statement by Brian Baker	02 February 2020

APPENDICES

As listed in Table 1.

APPENDIX I

Statement by Rob Greenfield

(Note that this statement was submitted in response to an IPHC survey of license holders in IPHC Regulatory Area 2A in April 2019, which is quoted in italics below.)

From: Rob Greenfield <rtg327@hotmail.com>
Sent: Thursday, April 11, 2019 6:37 AM
To: IPHC Secretariat <secretariat@iphc.int>
Subject: Re: Survey of IPHC Regulatory Area 2A Commercial License Holders

Dear IPHC secretariat, why not solve the derby dilemma by making the 2A directed commercial fishery an IFQ fishery based on the vessels past catch history. Exceeding the TAC would be impossible if implemented. Vessels would be required to have a VMS and declare that they will be fishing halibut before they leave the dock so inforcement can do their job. This would be a win win solution to this issue. Fishermen would get top dollar for their fish because the TAC won't harvested in 10 hours. The fishery will become much safer because fishermen won't be forced to go in inclement weather in order to get their fair shot at the fish. Halibut mortality will drop drastically. Gear tangles between boats will not happen anymore. Lost gear= lost fish. Please consider this option. It seems the most sensible to me.

Best regards, Robert Greenfield (f/v Remembrance)

On Apr 10, 2019, at 10:12 AM, IPHC Secretariat <secretariat@iphc.int> wrote:

Dear IPHC Regulatory Area 2A commercial license holder,

As you may recall, in 2018 the IPHC Secretariat undertook a survey of Regulatory Area 2A commercial license holders with the intention of changing from the current 10-hour derby fishery, to a longer period of either 5 or 10 days in duration. The survey resulted in an overwhelming response that you wanted to move away from the current 10-hr derby fishery. Your opinions and voting were provided to the IPHC at its 95th Annual Meeting in January 2019 for potential decision (paper IPHC-2019-AM095-PropA2).

At the 95th Annual Meeting of the IPHC, the Pacific Fisheries Management Council and the Washington Department of Fish and Wildlife lobbied heavily for the Commission not to proceed with a move to a longer fishing period. As a result, the IPHC Commissioners did not agree to move ahead with a 5- or 10-day fishing period for 2019, but rather to retain the current 10-hour fishing derby, with additional opening dates to be determined.

As part of the Fishery Regulation development and finalization process, the IPHC Secretariat established an additional fishing opportunity on 27 June 2019, the day following the first fishing period on 26 June 2019, with the intention of allowing license holders to fish a multi-day 10-hr derby early in the season.

However, the IPHC has received anecdotal feedback that license holders may prefer that the 27 June derby day not be held, and as a result, we would again like to seek

your input regarding fishery schedule preferences. Thus, we would appreciate your response to the following question:

Question: Which option do you prefer for the scheduling of the 10-hour fishing periods for 2019? Please select one of the following:

- *Wednesday 26 June and Thursday 27 June (consecutive days). The third fishing period would then be Wednesday 10 July, quota permitting.*
- *Wednesday 26 June and Wednesday 10 July (two weeks apart). The third fishing period would then be Wednesday 24 July, quota permitting.*

Please submit your preference at: http://bit.ly/2ACommSurvey. This survey will remain open until 1630 hours, Seattle time, on Wednesday 24 April 2019.

Sincerely,

IPHC Secretariat

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APPENDIX II

Statement by Garrett Elwood

(Note that this statement was originally submitted as a Regulatory Proposal, but with the concurrence of the author was reclassified as a stakeholder statement on IPHC Secretariat Regulatory Proposal IPHC-2020-AM096-PropA4.)

Requested By:	Garrett Elwood
Requester E-mail	FVWESTERNFREEDOM@GMAIL.COM
Date Requested	10/25/2019
IPHC Regulatory Areas that may be affected	All
Fishery Sectors	• Commercial
Explanatory Memorandum	Adjust Section 16 of the Halibut Regulations Vessel Clearance in IPHC Regulatory Area 4 to allow vessels using Electronic Monitoring to fish without obtaining clearance and eliminate VMS requirement. This regulation is outdated and puts an unfair burden on harvesters in Area 4 resulting in higher harvesting costs. The need to check in and out of Area 4 by defacto suggests that area 4 harvesters are somehow more likely to cheat by trying to land fish from other areas. A vessel using EM in the fixed gear hook and line Halibut fishery should not be required to either pay for VMS service, and or check in and out of a port. For example a vessel with a monitored EM trip logged, fishing in Area 3B around Sanak should be allowed to cross the line at Davidson Bank and make some 4A sets, just as they are currently allowed to do so a couple hundred miles away at the 3A/3B line. Low Quotas, poor prices, and a substantial distance to trave! l to Akutan from the 4A line are all reasons to support a change to this outdated and costly regulation. Simple language could be added to the end of Section 16 after VMS check in exemption.
Suggested Regulatory Language	Vessels with quotas in Area 4 are exempted from the requirement to obtain clearance to fish if: They have a current VMP and have either been selected for an observed EM trip or have requested EM coverage.

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APPENDIX III

Statement by Alaska Longline Fishermen's Association (ALFA)

Alaska Longline
FISHERMEN'S ASSOCIATION

Post Office Box 1229 / Sitka, Alaska 99835 907.747.3400 / FAX 907.747.3462

December 16, 2019

IPHC Commissioners
2320 West Commodore Way Ste 300
Seattle, WA 98119-1287

Subj: Annual Meeting Comments

Dear Commissioners and Halibut Stakeholders,

I am submitting these comments on behalf of the Alaska Longline Fishermen's Association (ALFA). ALFA members fish for halibut across all Gulf of Alaska management areas and some range into the Bering Sea/Aleutian Island. Our members have significant investment in halibut quota share and depend on the halibut resource for their livelihood.

ALFA members recognize that the halibut stock has experienced a period of below average recruitment and that declines in the spawning biomass are projected until stronger year classes enter the fishery. We also understand that the preliminary 2020 TCEY recommendation presented at the recent Interim Meeting reflect a correction in the sex ratio of the commercial catch, which has had a downward effect on TCEYs.

Far more difficult to accept is the dramatic redistribution of catch away from Alaska's commercial and charter halibut fishermen to Area 2B and, to a lesser extent 2A. From our review of the data, 12.5% of the surveyed abundance of halibut is in Area 2B, yet Area 2B ends up with 19.5% of the TCEY based on the preliminary TCEY recommendations; likewise, 2% of the surveyed abundance is in Area 2A, but 5.2% of the TCEY is distributed to 2A. In effect, the Interim Meetings preliminary TCEY's, if adopted would re-distribute approximately 10% of the coastwide TCEY or more than 3 million pounds from Alaska to Areas 2A and 2B given the current F46 reference harvest rate (HR). This reallocation will cost Alaska fishermen and communities in excess of $20 million dollars in lost first wholesale value and more than $30 million dollars in lost economic activity[1]. The preliminary TCEY's as presented at the recent Interim Meeting fund the stability negotiated by US IPHC Commissioners last year for Areas 2A and 2B, at the expense of Alaskan fishermen, processors and coastal communities, creating turmoil and setting into motion intense conflict. **ALFA members urge the IPHC Conference Board (CB), Processor Advisory Board (PAB), and IPHC Commissioners to work towards an alternative approach.**

Our first and strongest recommendation is for CB, PAB, and IPHC Commissioners to identify a 2020 fishing harvest rate and initial distribution procedure that asigns a consistent base apportionment across all areas prior to assigning Areas 2A and 2B their negotiated bonus allocations. As the Commissioners may recall, last year all U.S. stakeholders engaged in the IPHC process—fishermen and processors—arrived at unanimous support for a distribution approach that was consistent across all areas. While acknowledging the Commissioners' ability to make tactical changes to that distribution procedure, stakeholders were also unanimous that these tactical changes should not come at the expense of other areas. Instead of following this recommendations, IPHC Commissioners focused on stabilizing Areas 2A and 2B, rather than identifying an interim base approach that is consistent across all areas, thus creating the gross inequity for Alaska. ALFA strongly supported the unanimous agreement identified last year, and while it will be nearly impossible to achieve that level of agreement again (given the action taken by IPHC Commissioners last year and the current stock

[1] Based on 2019 NMFS cost recovery ex-vessel values, and 2016-2018 average first wholesale multiplier from Alaska CORE reports, and estimated 1.5 multiplier for economic activity.

dynamics), we recommend, in the strongest possible terms, that the IPHC Commissioners work toward a fair and consistent base distribution approach for Canada and all U.S. areas. After establishing the base apportionments, if Canada continues to demand the disproportional allocations to which the US Commissioners agreed, the extra allocations should be taken out of the resource instead of out of the Alaska catch limits. While we recognize this will increase the overall harvest rate, that is more equitable then placing the reapportionment burden entirely on Alaska stakeholders.

With respect to a recommendation on a specific harvest rate (HR) and distribution procedure, ALFA members recall that last year, after thoughtful review of the long-term performance of HRs from F30 to F55, the IPHC's MSAB unanimously recommended a target HR of F42-F43 while noting that HRs more aggressive than F40 increased volatility and risk of low stock sizes, and HRs more conservative than F46 provided minimal additional long-term conservation benefits. The MSAB also identified that a smoothing procedure, such as slow-up/fast-down (SUFD) or a maximum change of 15% coast-wide was needed to limit volatility to acceptable ranges. At the recent Fall 2019 MSAB meeting, the group further refined their HR recommendation by unanimous agreement to an F43 target HR in order to maintain a target stock size related to MSY, and agreed to further investigate the long-term impacts of tactical HR exceedances by Commissioners into a "buffer zone" of up to F40 or greater. The MSAB also recommended further work on smoothing procedures (i.e., SUFD with a cap of max 15%). In consideration of the MSAB work, **ALFA members recommend a base harvest rate of F43 to F46 and request IPHC Commissioners apply a consistent base harvest distribution policy across all areas then apply short-term tactical changes that do not result in a zero-sum conflict to meet short-term needs until the MSAB reports the results of their work in January 2021.**

With respect to a distribution procedure, ALFA believe the components of the distribution process should include:

- A reference harvest rate between F43 and F46;
- A base distribution based on surveyed distribution of catch or a three-to-five- year rolling average of surveyed stock distribution;
- A smoothing procedure such as SUFD or 15% max as recommended by MSAB;
- The opportunity for tactical adjustments, up or down, of area catch limits based on area metrics/indices and tactical considerations.
- A final coastwide TCEY that does not exceed F40 until the MSE process is complete and the MSAB has reported their results next year.

The tables below provide a number of scenarios that illustrate possible approaches consistent with these principles. We hope that stakeholders and the Commissioners will review and consider these scenarios. While the outcomes differ, what is most important to our membership is that the process be transparent, equitable, and consistent across the fishery; and that the negotiated Areas 2A and 2B bonus allocations be taken out of the resource based on IPHC Commissioner judgement of associated impacts instead of out of the Alaska catch limits until a long-term distribution policy is established.

Reference tables: (Note: Tables below may contain rounding errors and differ slightly from IPHC staff-derived final numbers. ALSO- the following reference tables DO NOT include U26 compensation)

- Interim Meeting 2020 reference Harvest Rates (HRs).

		2020 Coastwide TCEY Options								
	2019 Adopted	F47	F46	F45	F44	F43	F42	F41	F40	15% max change
2020 Coastwide TCEY (mlbs)	38.6	30.7	31.9	33	34.1	35.2	36.2	37.3	38.6	32.8
% Difference from 2019 adopted	0.0%	-20.5%	-17.4%	-14.5%	-11.7%	-8.8%	-6.2%	-3.4%	0.0%	-15.0%

2020 Distribution Options:

- **Option 1:** F 46 Modeled survey O32% adjusted by relative HRs of 1 (2A, B, C, 3A) & 0.75 (3B, 4A, 4B, 4CDE)

		2A	2B	2C	3A	3B	4A	4B	4cde	Total
Option 1	Current Survey + Current HR: No 2A/2B bonus	0.70	4.43	5.42	10.72	3.22	2.46	1.37	3.51	31.8
	% Change from 2019 adopted	-57.5%	-35.1%	-14.5%	-20.6%	11.1%	26.6%	-5.4%	-12.3%	-21.9%

- **Option 2:** F 46 base TCEY distribution from 2019 Interim meeting with 2A/2B bonus deducted from Alaska (IPHC Staff Presentation at Interim Meeting)—**ALFA Opposes!**

		2A	2B	2C	3A	3B	4A	4B	4cde	Total
Option 2	2A & 2B Bonus deducted from Alaska TCEYs	1.65	5.8	4.97	9.83	2.96	2.25	1.26	3.22	31.9
	% Change from 2019 adopted	0.0%	-15.7%	-21.5%	-27.2%	1.9%	16.1%	-13.2%	-19.5%	-17.4%

- **Option 3:** F 46 base distribution with 2A/2B bonus deducted as "additional mortality"—no zero-sum game)

		2A	2B	2C	3A	3B	4A	4B	4cde	Total
Option 3	2A & 2B Bonus as additional mortality	1.65	5.81	5.42	10.72	3.22	2.46	1.37	3.51	34.16
	% Change from 2019 adopted	0.0	-15.0%	-14.5%	-20.6%	11.1%	26.6%	-5.4%	-12.3%	-11.5%

- **Option 4:** F 46 base with SUFD applied to Alaskan Area's for base TCEY, 2A/2B bonus deducted as "additional mortality" (note: SUFD was unanimously supported by the US sectors of CB and PAG in 2019)

		2A	2B	2C	3A	3B	4A	4B	4cde	Total
Option 4	2A,2B Bonus as additional mortality + SUFD for Alaska	1.65	5.81	5.9	12.1	3.33	2.63	1.41	3.75	36.6
	% Change from 2019 adopted	0.0%	-15.0%	-7.2%	-10.3%	14.8%	35.5%	-2.7%	-6.1%	-5.3%

Relative Harvest Rates--<u>ALFA does not support changing the relative HRs between management areas at this time.</u> Rather, we support the MSAB recommendation to fully evaluate relative HRs as part of the MSE process and present findings to IPHC Commissioners at the January 2021 Annual Meeting. Recent "Yield Per Recruit" (YPR) information was presented to the MSAB in document SRB015.[2] While this report does indicate a change in YPR values for Region 4 between 1999 and 2018, it also notes that many factors need to be considered in evaluating relative HRs, including migration, fishery selectivity, and sex ratios in addition to YPR metrics. The interplay of these factors and relative HRs will affect coast-wide yield through changing fishery selectivity and sex ratios, as well as have down-stream effect on other management areas associated with migration. <u>**ALFA members recognize the challenges Region 4 faces based on increasing bycatch in non-directed fisheries and preliminary 2020 TCEYs. We strongly recommend IPHC Commissioners address these challenges through a short-term tactical adjustment to TCEY rather than HR adjustments until the MSE process has fully evaluated the long-term effect of differential HRs and reported on the full impacts in January 2021.**</u>

[2] https://www.iphc.int/uploads/pdf/srb/srb015/iphc-2019-srb015-09.pdf

U26 Compensation--For the past six years, Area 2B fishermen have advocated for, and Canadian Commissioners have claimed, an extra million to two million pounds for Area 2B to compensate Canada for halibut bycatch in Alaska waters. This compensation led to consistently high catch limits for Area 2B relative to surveyed distribution and relative to catch limits in adjacent areas. When U.S. Commissioners last year agreed to an interim distribution strategy that based 70% of Canada's distribution on these historic high catch limits, that bycatch compensation was memorialized—at least for the interim. When Canada then demanded to be (again) compensated for bycatch—a specific U26 component—Canada in effect double-dipped: compensated once for bycatch in the historic share component and again for an additional bycatch compensation through the U26 adjustment. ALFA members object to Canada receiving a set distribution when other areas have not been awarded comparable stability, and even more strenuously object to Canada being not once but twice compensated for the same bycatch prior to IPHC Commissioners review of the MSE report in January 2021 and identification of a long-term distribution policy.

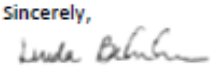
ALFA would point out that Area 2C, which successfully banned trawling in 1998, has the lowest U26 bycatch of any areas, Areas 2A and 2B included. It is unconscionable to our members that a scenario was presented at the Interim Meeting where the 2C TCEY, an area with virtually zero U26 bycatch, would be *reduced* by a further 380,000 pounds when Area 2B, the adjacent area with more U26 bycatch, would be *increased* by 400,000+ pounds using the same management procedure. If Area 2B deserves bycatch compensation, then Area 2C deserves the same in equal or greater measure.

To be clear, ALFA continues to work hard to secure reductions in halibut bycatch, and we welcome the engagement of IPHC Commissioners as halibut resource advocates. However, it is pre-mature to award U26 compensation prior to the conclusion of the MSE process and MASB report in January 2021, and it is inequitable to double-compensate Area 2B while penalizing Area 2C. Prior to IPHC Commissioners deciding on a final U26 compensation policy, scenarios other than the one presented at the Interim Meeting should be considered. Further work on this concept is needed and should be part of the 2021 distribution agreement.

In closing, ALFA urges the Commissioners to establish a reference harvest rate range of F43 to F46 and to identify a consistent base harvest distribution policy that treats all areas equitably. If the Commissioners feel obligated to then award additional quota to specific areas to mitigate impacts or meet political obligations, those bonus allocations should be taken out of the resource rather than deducted from Alaska's TCEYs. Finally, ALFA STRONGLY objects to assigning Area 2B a "historic" share based on years of disproportionate harvest justified by bycatch accusations against Alaska PLUS a U26 bycatch adjustment. The double-dip against Alaska halibut stakeholders is unacceptable.

Thank you for the opportunity to comment.

Sincerely,



Linda Behnken
Executive Director

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APPENDIX IV

Statements by Mary and Mike Huff

E-mail	flatfish@gci.net
Subject	Proposed Halibut Regulations 3A
Message	My husband and I own Captain Mike's Charters. We are horrified with thee new regulation proposals for area 3A for the Charter Industry. We have successfully run our business for 35 years with the regulations becoming tighter every year despite the charter industries attempts to fight it. These new cuts, based on the longliners take of too many females, which is crazy in of itself, are destined to put us out of business. Our Grandson had proudly taken over the helm two years ago. He now does not intend to fish because the regulations will limit him so much that he would not be able to make a decent living. The limiting of the halibut charter segment based on the data from the longliners is like comparing apples to oranges and the negative effects are devastating. First of all, folks who fish on charters book well in advance and get hotels and lodging etc. I have folks on my books from before these drastic proposals reared their ugly heads. It has all but ruined my business and I have to completely stop booking now until we know what the regulations are going to be. I also cannot book charters when I don't know if my Captain (our grandson) will want to fish. The changes to regulations should be at least a year out so we have time to effectively run our businesses. The economic impact of the Charter Industry on our town and the peninsula is huge. Losing another day of fishing would most likely ruin our industry and impact the economy of our town and the peninsula. I talked to the manager of our local Safeway and he most definitely sees the lower profits on Wednesdays in the summer. I don't think anyone not in the industry realizes how difficult this makes it to run a charter company. Prebookings are a must. Walk ins (folks who just show up at our offices) do not fill the boat. Also they will become extremely frustrated when they come to the Halibut Fishing Capital of the World and can't go halibut fishing that day and possibly not even the next. Word of mouth at the restaurants, campgrounds and hotels go a long way, usually in a positive way but not now. Word will get out that you can't go halibut fishing in our area and it will just roll from there. A seasonal restriction would be much wiser, say from mid may through mid August or something like that. Something we can book around with confidence and not disappointing folks who actually booked well in advance and now are screwed. So all because of some data about longliners we are looking at losing our Captain, probably trying to sell our boat and closing our business we have been in for 35 years. The regulations are just becoming to restrictive and to difficult to book charters around to make it worthwhile. Very unhappy. Sincerely, Mary Huff

Captain Mike's Charters
PO Box 269
Homer, Alaska 99603
(907) 235-8348
"Fishing at it's best."

Here is what I have to say about the proposed upcoming changes to the Halibut Industry in area 3A. This last year there were plenty of halibut for everyone in the charter industry, also the commercial fishermen had a wonderful year. The private boats also had plenty of halibut. So I see no reason to change the amount of fish for the charter industry. So right now we have a lot of people call or write about trips for this coming summer. We are unable to book them not knowing what day or days we will or won't be able to fish. This is not good for our company or anyone's company and makes us look fairly ridiculous. If there is a large change to the regulations a lot of companies will have to go out of business. It will affect the whole town as less people will come to Homer. We need this to not change, there is no reason for it to change. So please leave it the same. We would like to be able to stay in business and would like for the other companies to stay in business as well.

Thank you.

Sincerely,

Mike Huff

Captain Mike's Charters

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APPENDIX V

Statement by Frank Casey

E-mail profishguide@hotmail.com

Subject Halibut regulations for area 3A

Message Dear sirs, Any major reductions in any one year can put charter operators into bankruptcy. Reducing a single day of the week reduces revenue by $20,000 (which by the way was more than my profits for the entire year), not to mention forcing me to refund monies to clients while ruining their planned vacations. A one fish limit is a better suited choice as keeping under 26" fish is bad for the resources. Thanks, Frank Casey Alaska Wildrose Charters Clam Gulch AK. 907-252-4525

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APPENDIX VI

Statement by Joel Steenstra

E-mail alaskawideopen@gmail.com

Subject 2C Halibut Limits 2020

Message IPHC, My name is Joel Steenstra. I am the owner/operator of Alaska Wide Open Charters in Craig, Alaska. I am an owner of a charter halibut permit. I am disturbed by what I am seeing with the 2020 halibut limits that you will be considering. Suddenly we are looking at a minimum halibut length of 40", with the possibility of a day of the week closure to ensure that minimum halibut length. This is a huge departure to what we have had going on. This is a big deal for 2c as it completely changes the way our halibut limits are structured and I am certain that this is a road we do not want to go down. Once we start appeasing certain geographic regions and business models in 2c, where will it end? I was never asked my opinion on the issue, and neither was any other charter operators in my area that I have spoken to. I do not want to speculate on the motives of those who pushed for this, but this gives a distinct advantage of those who knew this was coming so they could structure their schedules to not fish on Wednesdays. The rest of us are already fully booked and have no options with this. Here in southern 2c we have traditionally run 3 day trips, with a turnover day in between throughout the season. We based our business model off the status quo. Our schedules are set well over a year in advance and we are often fully booked for the majority of the next season before our previous season ends. By tossing a poss! ible Wednesday closure in the mix, it puts big uncertainty into our industry, and our industry hates uncertainty. How are people going to book a year in advance if they are wondering IF they will lose 1/3 of their halibut fishing opportunity the following year? What will it mean to our existing business model that we have had for decades? We were fine with an equal playing field for all operators, and did just fine with a 38" limit as far as our limits went. For changes this big, you need to involve the entire fleet, not just a select few. I urge you to slow this down and not go through with it until all permit holders are allowed to weigh in how it will effect them and this issue is thoroughly analyzed. Joel Steenstra Alaska Wide Open Charters Craig, AK

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APPENDIX VII

Statement by Michael Pettis

From: mkpettis@charter.net

Subject: RE: REMINDER: 2020 IPHC Regulatory Area 2A Non-Treaty Directed Commercial Fishing Periods

To the IPHC Secretariat staff,

I have been involved with the Area 2-A Non treaty directed halibut fishery for forty years.

In the past the commissioners listened to the "conference board " meeting decisions and results along with stock assessments to formulate specific area management decisions.

Now it seems that the "Secretariat" staff comes up with ideas about how things should happen, often without consulting fishery participants for advice. An example of this was the totally unworkable suggestion to have two ten hour openings, fourteen hours apart last season in Area 2-A.

Now it would appear that they are at it again! The staff is proposing either a 34 or a 58 hour season in the name of SAFETY.

Has anyone on the staff ever been at work for 34hours straight? How about 58 hours ? I have, and I can tell you that neither situation is safe.

On a previous 48 hour opening, counting driving out and back I was up for 56 hours straight.

Don't think that a fisherman after a $6.00/lb bounty isn't willing to push himself and crew to the point of exhaustion.

Let's talk about other considerations like by-catch. Each fisherman participating in a halibut derby in area 2-A has an allocation of sablefish available. normally in a ten hour opening the amount of sablefish caught fits into the fisherman's weekly allocation. If the season lasted 34 or 58 hours, the fisherman would likely catch more sablefish that the weekly quota allows, resulting in discarded dead sablefish.

It has been over twenty years since anyone has made a "night set" for halibut in area 2-A.

There will be areas where significant damage will be done to the fish on the gear left over nite, resulting in wasted halibut. In some cases, more wasted than kept for sale.

So now you send out a survey to get fleet opinion! The problem is that there are only options on your survey that are the changes you want. Where is STATUS QUO???

One would think last years total rebuke of your suggestion would produce a better vetted suggestion.

If you want safety, then give the fleet in area 2-A what everyone else has in the halibut fishing world. INDIVIDUAL QUOTAS!!!

If you have questions or a response, my phone number is 541-961-5162

Michael Pettis

F/V challenge, F/V Jaka-B

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APPENDIX VIII

Statement by Jake Fletcher

From: Jake Fletcher <fletch_192@hotmail.com>

Subject: Area 2A season changes

Hi my name is Jake Fletcher

I own the fv alligator II a 42' vessel and have participated in the 2A fishery since I was a kid on my dad's vessel. I am sending this email to express my concerns with the proposed season adjustment to 2 or 3 days. With the 10hr opener we have now I am able to fish between 10000 and 12000 hooks which is probably pretty close to what most larger vessels are able to run as well. If this season is lengthened to 2 or 3 days those larger vessels are going to fish every hour of that opener until they catch their limit. I'm smaller than them but I will have to hire more crew and I also will be fishing every hour until my limit is caught. Instead of running 12000 hooks some will be able to run more like 30000 plus hooks while others don't have the same resources to do that. The proposal just turns the fishery into a 3 day derby where people won't be sleeping until the fish is caught and thus will make the fishery more dangerous than it already is. Also we will probably only get one opener due to so many people catching their limits ultimately hurting the small boats that participate in the fishery if the weather is bad for the opener. I already disagree how the quota is split up just by boat length but a change like that would make it even more unfair how the quota is dispersed. If I was unclear or if you have any questions either email me back or call me at 5412973636.

Thanks, Jake

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APPENDIX IX

Statement by Central Bering Sea Fishermen's Association (CBSFA)

Central Bering Sea Fishermen's Association

P.O. Box 288 | Saint Paul Island, Alaska 99660 | Phone: 907.546.2597 | Fax: 907.546.2450 | cbsfa.com

January 13, 2020

International Pacific Halibut Commission
2320 West Commodore Way, Ste 300
Seattle, WA 98119

Submitted electronically to secretariat@iphc.int

Dear Commissioners:

At the International Pacific Halibut Commission's (IPHC) Interim Meeting in November 2019, the staff presented a probable FCEY, or fishery quota, of 670,000 pounds (recently upped to 730,000 pounds) for Area 4CDE. This proposed FCEY essentially shuts down the directed halibut fishery in the Bering Sea. The staff made this preliminary calculation based on a continuing decline of the halibut resource, and an increase in halibut bycatch in the Bering Sea.

Given the gravity of this situation, and to avoid a fishery emergency, the Central Bering Sea Fishermen's Association (CBSFA) respectfully submits these comments to the IPHC, proposing policy decisions that would more equitably provide halibut to the directed halibut users in Alaska, and in particular to the halibut-dependent fishermen and communities in Area 4CDE.

We request the Commissioners consider the following policy choices; our letter provides rationale for these requests beginning on Page 3:

1. Increase the harvest rate from .75 to 1 for the Bering Sea.
2. Support the MSAB suggestion to establish a base allocation to all areas, and provide additional fish granted to Area 2A and Area 2B by increasing the harvest rate in those areas.
3. Delay or cancel implementation of the January 2019 agreement to consider exempting 2B from deduction of U26 bycatch.
4. Use bycatch numbers that reflect a three-year rolling average.
5. Assume that the 2020 bycatch may not be equal to the 2019 bycatch, and use a lower number.

CBSFA Background

CBSFA is the management organization for Saint Paul Island under the Western Alaska Community Development Quota Program (CDQ). Since the program was created in 1992, the federal government has been awarding various species of fish (CDQ allocations) from the Bering Sea and Aleutian Islands (BSAI) commercial fisheries to CBSFA. In turn, CBSFA manages these allocations to promote social and economic development at Saint Paul Island.

CBSFA holds CDQ halibut quota in IPHC Area 4C, and coordinates the local fishermen's

participation in the commercial halibut fishery in 4C and 4D. CBSFA operates a halibut cooperative in conjunction with the fishermen, and our two 58-foot fishing vessels - the F/V Saint Paul and the F/V Saint Peter. CBSFA purchases the halibut from the local fleet and partners with Trident Seafoods to custom process and market the halibut. In these low halibut years, the overall operation of the commercial halibut fishery is subsidized by CBSFA. Without the subsidy, it is unlikely that processing operations, or a market for the local fleet, would exist.

For the past ten years the average total annual income to the Saint Paul Island halibut fishermen has been about $2.7 million per year. Approximately 75 to 100 members of the community participate in the halibut fishery including the skippers, crewmembers and onshore hook baiters. For many of these people, the fishing income accounts for 100% of their annual income. The commercial halibut fishery is the main source of private employment and revenue for the residents of Saint Paul.

Halibut is the lifeblood of Saint Paul Island and a major contributor to the local economy; it is also a historic and customary source of seafood for our community and many other communities of the Bering Sea. Halibut has been a major source of livelihood for the Unangan (Aleut) people of the Bering Sea/Aleutian Islands region since time immemorial.

Halibut Bycatch Reduction

In recognition of the economic and cultural importance of halibut fishing to the people of Saint Paul, CBSFA has focused efforts at the North Pacific Fishery Management Council (NPFMC) over the last 15 years on conservation of halibut, and on improvements to the management of halibut bycatch in the groundfish fisheries in the Bering Sea.

After a five-year process, in 2015 the NPFMC voted to cut the halibut bycatch limits in the Bering Sea groundfish fisheries by 21%. We had asked for a 50% cut. The Council indicated that the reduction was just a first step, and that Abundance-Based Management (ABM) of halibut bycatch was the correct vehicle to further limit bycatch. Another five years of strong efforts have finally led to a set of ABM alternatives for Council consideration and action in the next year or two.

The need for halibut bycatch reduction has been brought powerfully to the forefront by the status of Bering Sea bycatch in 2019 – O26 bycatch was up 31% according to preliminary figures provided by IPHC staff at the Interim Meeting in November.

This jump in bycatch directly affecting the FCEY, in combination with outdated harvest policy, and policy decisions made at the January 2019 IPHC meeting that affect the TCEY, have had a disastrous and disproportionate effect on the halibut available for directed use in Area 4CDE. It is the perfect storm. According to preliminary staff figures at the Interim Meeting (IM) in November, the projected FCEY in Area 4CDE in 2020 could be reduced by 64%, to 730,000 pounds from the 2019 level of 2.04 million pounds.

The local share of the projected 4CDE FCEY of 730,000 pounds would likely not warrant opening the processing plant on Saint Paul, which would effectively result in NO commercial fishery in 4CDE. As we fight the battle at the Council to reduce halibut bycatch, we ask the Commissioners to consider the following policy changes to help maintain our fishery.

Requested Policy Changes

In arriving at the TCEY:

1. Increase the harvest rate from .75 to 1 for the Bering Sea. This would increase the 4CDE FCEY to 1.53 million pounds[1].

According to staff presentations in November, the harvest rates for each region/area were developed 20 years ago, in 1999, and are reflective of the relative productivity of the area at that time. Region 3 was the center of productivity then, and was assigned a harvest rate of 1, while Region 4 was less productive and was assigned a harvest rate of .75. That productivity has changed; Region 3 is declining, while Region 4 is increasing[2]. The policy is outdated. Recent yield-per-recruit analysis[3] that examined productivity between the four Biological Regions supported "the application of a lower relative harvest rate in western areas in the historical harvest strategy, but also shows changes in productivity over time that may affect the appropriate current application of relative harvest rates." The staff clearly indicated in November that Area 4CDE should be receiving a 100% harvest rate instead of 75%.

2. Moderate the effect on Alaska Areas of the Commissioner's agreements to stabilize Areas 2A and 2B by supporting the MSAB method of protecting Alaska while apportioning additional fish to non-Alaskan Areas. This would increase the 4CDE FCEY to 860,000 pounds[4].

Data indicates that 12.5% of the surveyed abundance of halibut is in Area 2B, yet Area 2B ends up with 19.5% of the TCEY based on the preliminary TCEY recommendations; likewise, 2% of the surveyed abundance is in Area 2A, but 5.2% of the TCEY is distributed to 2A. In effect, the Interim Meeting's preliminary TCEY's, if adopted, would re-distribute approximately 10% of the coastwide TCEY or more than 3 million pounds from Alaska to Areas 2A and 2B given the current F46 reference harvest rate (HR). This reallocation will cost Alaska fishermen and communities millions of dollars in lost first wholesale value and lost economic activity[5].

Rather than taking fish away from all Alaska Areas in a reallocation to other Areas, we support the MSAB suggestion that the Commissioners establish a fair and consistent base distribution approach for Canada and all U.S. Areas. After establishing the base apportionments, the extra allocation ceded to some areas should be taken out of the resource instead of out of the Alaska catch limits, by increasing the harvest rate in two areas. While we recognize this will increase the overall harvest rate, it will still be below F40, and we believe that it is more equitable than placing the reapportionment burden entirely on Alaska stakeholders.

[1] IPHC-2020-AM096-09 Rev_1, TABLE A4, p. 24. https://www.iphc.int/uploads/pdf/am/2020am/iphc-2020-am096-09.pdf
[2] IPHC-2019-IM095-09 Rev_1, FIGURE 6, p. 7. https://www.iphc.int/uploads/pdf/im/im095/iphc-2019-im095-09.pdf
[3] IPHC-2020-AM096-12, p. 12.
[4] IPHC-2020-AM096-09 Rev_1, TABLE A5, p. 26. https://www.iphc.int/uploads/pdf/am/2020am/iphc-2020-am096-09.pdf
[5] Based on 2019 NMFS cost recovery ex-vessel values, 2016-2018 average first wholesale multiplier from Alaska CORE reports, and estimated 1.5 multiplier for economic activity.

3. Delay or cancel implementation of the January 2019 agreement to consider exempting 2B from deduction of U26 bycatch.

The Commissioners agreed in January 2019 to "consider" exempting 2B from the deduction of U26 halibut bycatch in the groundfish fisheries in the calculation of the TCEY for each area. The Canadian rationale was that they do not contribute to the bycatch so should not "pay" for it. If 2B is exempted from the deduction of U26 bycatch, more of a burden is placed directly on the Alaska Areas, as 2A receives a set amount also agreed upon by the Commissioners.

Given that the U26 component of the stock migrates between regulatory areas, Canada cannot claim the benefit of those fish migrating into 2B without also absorbing the impact of the mortality on those same fish.

By Commissioners' agreement, 2B is already receiving an amount of halibut that is 70% based on a five-year rolling average of the recent historic amounts they received that were NOT based on science or IPHC policy. An additional "bump" through exemption from subtraction of U26 bycatch is neither warranted nor equitable.

In arriving at the FCEY:

4. Use bycatch numbers that reflect a three-year rolling average. This would increase the 4CDE FCEY to 1.02 million pounds[6].

Currently, the policy is to subtract from the TCEY in each area the amount of O26 bycatch caught in that area in the previous year. In Area 4 in 2019, the large increase in bycatch may reflect conditions specific to 2019 rather than expectations for 2020. As a smoothing device to moderate the effect of one year's bycatch on the following year, we propose that the IPHC instead use a three-year rolling average of historic O26 bycatch.

Since the IPHC manages the quotas based on the TCEY instead of the FCEY, any smoothing done at the TCEY level (slow up/fast down, etc.) might not ever be enough to moderate a high bycatch year. Additionally, 2017 represents the lowest O26 bycatch level in the last 20 years, and 2017 and 2018 are the first and second lowest values in the last ten years. Once ABM is in place, and if the projected/averaged value seems unreasonable, the Commissioners could "reset the clock" on the averaging values to avoid a projection that's too high.

5. Assume that the 2020 bycatch may not be equal to the 2019 bycatch, and use a lower number.

In the past, the A80 bottom trawl fleet responsible for much of the Bering Sea bycatch has voluntarily offered their best efforts to avoid bycatch in the coming year, and the Commissioners in response have used a lesser bycatch number to calculate FCEY in 4CDE. It is unknown at this writing whether the A80 sector will be able to make a similar commitment for 2020, but it remains a potential part of the solution for Area 4.

[6] IPHC-2020-AM096-09 Rev_1, TABLE A2, p. 22.
https://www.iphc.int/uploads/pdf/am/2020am/iphc-2020-am096-09.pdf

Table of effects

The following table depicts the effect of each quantifiable choice on the Area 4CDE FCEY for 2020. Clearly, the biggest effect would come from changing the harvest rate to 100% (#1), while the second biggest effect would come from using the three-year rolling average of bycatch (#4).

The table also provides the potential cumulative impacts of the proposed changes. **The combination of #1 and #4, the full harvest rate and the three-year rolling average bycatch number, would increase the Area 4CDE FCEY to 1.87 million pounds.**

			1	2	4		
Area 4CDE (M lbs.)	2019	2020 IM	Full Harvest Rate (1.0)	2A 2B Additive	3-yr Average Bycatch	1+4	2+4
TCEY	4.00	3.22	**4.04**	**3.34**	3.16	**4.04**	**3.34**
O26 Bycatch	1.87	2.40	2.40	2.40	**2.06**	**2.06**	**2.06**
U26 Bycatch	1.12	1.09	1.09	1.09	1.02	1.02	1.02
Total Bycatch	2.99	3.49	3.49	3.49	3.08	3.08	3.08
FCEY	2.04	0.73	1.53	0.86	1.02	1.87	1.17
Change to FCEY	**1.31**	**0.00**	**0.80**	**0.13**	**0.29**	**1.14**	**0.44**

We ask the Commissioners to consider the policy choices we request. The choices follow the science-based principles of the IPHC, and are not arbitrary increases.

The fishermen and halibut-dependent communities in the Bering Sea need your help to survive the devastating effects of both the reduced halibut resource and increased 2019 halibut bycatch. We have spent 10 hard years fighting the battle for reduced halibut bycatch on behalf of the resource and the directed users; please allow us to maintain our fishery and our livelihoods until we can achieve success.

Sincerely,

Phillip Lestenkof, President
Central Bering Sea Fishermen's Association

Cc: Alaska Congressional Delegation
Alaska Governor Mike Dunleavy
Alaska Department of Fish and Game Commissioner Doug Vincent-Lang
NMFS Regional Administrator Dr. James Balsiger
North Pacific Fishery Management Council Chairman Simon Kinneen

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APPENDIX X

Statement by David Croonquist

January 14, 2020

International Pacific Halibut Commission
2320 W Commodore Way,
Salmon Bay, Suite 300
Seattle, WA 98199-1287

Dear Commissioners:

The Pacific Halibut Convention between the United States and Canada was signed in 1923 to administer the commercial fisheries for halibut between both countries. It wasn't until 1973 that the first regulations governing the sport fishery were drafted. It is time to recognize that commercial fishing and recreational fishing need different management protocols. We believe the sport fleet halibut fishery should be managed separately from the commercial, Alaska subsistence, and tribal/First Nation fisheries.

The International Pacific Halibut Commission (IPHC) currently sets harvest poundage quotas for the various halibut fisheries in the waters off the US and Canadian coasts. Areas 2A (Southern US) and 2B (Canada) have assigned quotas that are divided between sport, commercial, and tribal fisheries. In 2019, the 2A sport quota was 605.675 lbs and the 2B sport fishery had 892,500 lbs. In Alaska, the charter fleet had a 2.71M lb quota and the private boat fleet had *no quota* and took an estimated 2.696M lbs. We believe it is time to re-structure the sport halibut fishery to be managed on an equitable basis for both countries. We feel that it can be done on numbers of fish landed, not pounds landed. This can be done with a standardized season of February 1 to December 31; a daily bag limit of one fish; a field possession limit of two fish; and an annual limit of up to six fish.

Recreational halibut anglers are a critical component in the coastal economies of the US and British Columbia. They spend tens of millions of dollars which support many businesses from motels and gas stations to restaurants, grocery stores, bait dealers, fishing lodges, and tackle shops. Loss of halibut fishing opportunities can and is causing severe economic impacts to coastal communities in both countries.

A consistent season structure with a daily limit, a field possession limit, and an annual limit would have far reaching impacts not only for the coastal economies of our two countries but would also allow for a safer fishery. Assigned fishing dates have created a derby mentality, forcing anglers to go fishing when they shouldn't be on the water. Lives and property have been lost. First responders including the US and Canadian Coast Guard are put at risk when called out for search and rescue activities. Having an extended season would allow the sport angler to pick the days and sea/weather conditions for a safer fishery.

We would like to work with the IPHC, and the NPFMC, PFMC, and the Canadian DFO to establish regulations that would be consistent for the sport fishing communities of both countries starting with the 2019 season.

Sincerely,

David A. Croonquist

Sequim, WA

For the Olympic Peninsula Salmon and Halibut Coalition, Port Angeles Salmon Club, Puget Sound Anglers, Coastal Conservation Association, City of Port Angeles, Port of Port Angeles, Clallam County Commissioners, Port of Port Townsend, halibut anglers from Oregon and California, and coastal businesses with direct and indirect links to the sport fishing community

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APPENDIX XI

Statement by Oregon Coast Anglers

PO Box 584
Reedsport, OR 97467
January 16, 2020

International Pacific Halibut Commission
2320 W Commodore Way, Salmon Bay, Suite 300
Seattle, WA 98199-1287

Dear Commissioners

I am an avid angler who fishes salt and freshwater in Oregon. Since I moved to Oregon in 2007, I have pursued Halibut off the Oregon Coast. There is lots of room for improvement in Oregon's fishing regulations for Halibut. I am going on record as agreeing with and supporting David Croonquist's letter to you dated January 14, 2020.

Last year Oregon Department of Fish and Wildlife subjected anglers to the usual every other week Halibut fishing regulations for All-Depth spring and summer seasons. I've never cared for this type of regulatory process for ocean fishing, because it totally discounts ocean conditions. More than once, I have gone out fishing in inclement weather, because it was an "open" day, and more than once I've turned back. Halibut fishing is a major undertaking for those of us who fish out or Winchester Bay, as the Heceda Banks is a thirty five mile run into the Northwest swell and usual North wind chop. Ocean fishing has enough hazards without incenting anglers to take chances.

The on and off Halibut ODFW fishing regulations in 2019 resulted in season extensions and quota left on the table. Had ODFW allowed anglers to fish during calmer ocean conditions, I'm confident that the allowed Halibut quota would have been caught.

A major improvement in Oregon Halibut fishing regulations would be a defined season or seasons with quotas. Another improvement would be to allow bottom fish retention with Halibut. It's hard to justify a long run, lots of fuel expended, and expense to catch one Halibut.

Sincerely yours,

Steve Godin

Oregon Coast Anglers, President

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APPENDIX XII

Statement by Prince William Sound Charter Boat Association

PRINCE WILLIAM SOUND
CHARTER BOAT ASSOCIATION

2281 East Sun Mountain Ave, Ste B. Wasilla, Alaska 99686

January 24, 2020

IPHC
2320 West Commodore Way, Suite 300
Seattle, WA 98199-1287

To Whom It May Concern:

The PWSCBA, representing the Valdez and Whittier charter fleet, our customers, and local businesses request the IPHC take immediate action to recover the harvestable surplus of halibut in 3A. Survey data of sport caught halibut by both guided and unguided fisherman throughout the summer of 2018 indicates a serious problem in the spawning biomass of halibut in the Northern Gulf and Prince William Sound.

Total Halibut Surveyed: 689

Females 569

Males: 120

Females U29": 56 O29": 513 Largest 74"

Males U29": 93 O29": 27 Largest: 43"

The above survey data indicates serious problem with how we are currently managing the biomass for maximum sustained yield. We believe the survey data to be representation of the entire harvestable biomass and it indicates only a 17.4% male and 82.6% female ratio. 77.5% of the males harvested were under 29" and 8% of the females were U29. Current regulation to restrict retention of fish over 29" is leading to a depletion of male halibut. Until the IPHC can determine what is considered to be an adequate male to female ratio, we recommend measures be taken to restrict retention of any halibut under 29".

Additionally, The current discrimination in regulations between guided and unguided sport fishing sectors promotes legal and illegal resource squandering rather then conservation. Current management measures have created countless problems for enforcement and managers wasting

countless money and hours dealing with problems resulting from one large mistake and fixed with one simple solution. Politically, the pill will be hard to swallow, but it's the solution that fixes all of our problems. It's time to restrict all sport fisherman to a bag limit of one halibut per day with two in possession. This simple change, until there is a rebound in harvestable surplus is the best course of action to sustain the resource and continue to have an economically viable fishery.

The PWSCBA propose a motion to restrict the bag limit to one halibut per day /two in possession for all sport caught halibut within the state of Alaska when the TCEY falls below 2019 levels. During times of low abundance, we believe everyone should share the burden of conservation.

Finally, we also strongly support the Alaska Longline Fisherman's Association comments regarding the distribution of quota and urge the commission to not burden the 3A charter sector for political reasons.

Melvin B. Grove Jr.

President PWSCBA

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APPENDIX XIII

Statement by Larry Cobb

From: Larry Cobb <captaincobb52@gmail.com>

Subject: Halibut Regulation Question

Please explain what a reverse slot limit is? My idea of a slot limit is for example fish under 32 which is commercial legal we turn loose, Any fish that are between 32in and 60in we keep, anything over 60 in we turn loose, this way we keep only mature, prime healthy halibut. I know this will be hard to do but it's better than killing our babies and the big momma spawners. I think we should eliminate all derbies that target the largest halibut as the money winner. I really don't care to catch or even fish for a 26in halibut. I also think we need to give our Alaskan residents their fish back. Taking fish away from our residents and let any non-resident keep anything they catch just because they have their own boat is Ridiculous. Thank you for your time and consideration...Captain Larry Cobb Kings Run Charters

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APPENDIX XIV

Statement by Larry Carroll

From: Kodiak Adventures Lodge <kodiakadventureslodge@gmail.com>
Subject: 2020 Halibut charter regs

Hello,
This email is in regards to NMFS inability to make fair and accurate allocation decisions.
After so many years of misinformation gathering regarding commercial catch sex ratio and NMFS claiming they have had accurate data throughout the years to make informed decisions as to allocation and total allowable catch. Now with the new study that shows the ratio of Female/ male commercial catch is way off of the previously used data.
Everything NMFS does in regards to allocation is now suspect !!!
The Charter fishing industry has taken the brunt of the reductions based on money and value to the state of Alaska.

What makes no sense to me is when there is a need to reduce the total allowable catch you would look to the charter industry for a large reduction. If the charter industry is only taking about 17% of the total and you reduce it by 10% that is really only a 1.7 % reduction in the total allowable catch. Whereas if you reduce the commercial catch which is 83% by 10% it is a 8.3% reduction (all these are approximation % numbers) So it seems that if it is so important to make a reduction that it be made be the largest taker of the resource.
Also I would say that maybe the focus should really be on the bycatch and why that has never been SERIOUSLY addressed?
This should be the very first place a reduction or complete elimination should take place before any other reductions are implemented.
If more reductions are made to area 3C then this will have permanent and disastrous results to the charter business and the Alaskan economy. Many small towns and villages rely on the charter industry for a large portion of their economy. If more reductions are put in place the families that own charter boat and lodge will be forced to close. We already struggle with finding enough people to fish with the current restrictions. Most of us have had to spend more money on advertising / attending sport shows. We hear from many potential clients that there is already very little opportunity to catch fish/ halibut for the money spent.
Please take more time to reassess the total allowable take and who really should be cut if there needs to be further reductions.

Larry Carroll
Kodiak Adventures Lodge
www.kodiakadventureslodge.com
info@kodiakadventureslodge.com

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APPENDIX XV

Statement by Steve Ranney

From: Steve Ranney <windnrain@yahoo.com>
Subject: 3A limitations 2020

Greetings;

As a long time member of BOTH the commercial fishing sector and the Charter industry I have been following with interest the management options for the upcoming season.

I hold commercial Quota in area 3A and have since the quota system started.

I hold CHP permits for area 3A and own 3 charter vessels.

First, the health of the halibut stocks for their long term viability has to be the most important management factor. Overfishing has been a significant factor in the decline of halibut abundance.

Second, as I hope you are aware, studies show a rapid decline in the halibut age/size ratio. Our halibut are significantly smaller. Whether this is due to fisheries or environmental factors it is a fact.

With the harvested halibut male/female sex ratio alarmingly high at approximately 90% for the commercial fisheries, I urge you to look at the minimum size limit for commercial fisherman of 32". The smaller halibut are males and if you are trying to increase the male percentage in the commercial catch, this needs to be adjusted. It is an arbitrary number put in place long, long ago and needs to be revisited.

I appreciate your consideration.

Sincerely,

Steve Ranney

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APPENDIX XVI

Statement by Luther Andersen

From: kings@ptialaska.net <kings@ptialaska.net>

Subject: 3A halibut restrictions

Hello,

My name is Luther Andersen, and my family owns and operates King of Kings guide service and lodge. We have fished the 3A waters of Cook Inlet since 1992. Each season I communicate with more and more people who do not want to travel to Alaska due to increasing restrictions. I could not agree more with the charter halibut committee's recent findings that our area could not survive a restriction below 1.588 m/lbs. The ripple effect throughout our community would be devastating.

Thank you for your time,

Luther Andersen

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APPENDIX XVII

Statement by Southeast Alaska Guides Organization

Southeast Alaska Guides Organization

January 31, 2020

International Pacific Halibut Commission
2320 West Commodore Way Ste 300
Seattle, WA 98119-1287

Re: 2020 IPHC Annual Meeting comments.

Dear Commissioners:

Southeast Alaska Guides Organization (SEAGO) represents the Area 2C recreational fishing industry which is highly dependent on guided angler opportunity to harvest Pacific halibut. That opportunity is disappearing.

2C guided angler limits have dropped from two halibut of any size per day, to one halibut per day 38" (96 cm) or smaller*. Given likely mortality choices for 2020, anglers may also face closures of all Wednesdays combined with a 3 or 4-fish annual limit to maintain a similar size fish. The average 2C charter halibut is now 9.6 pounds or 31" (79 cm)- an inch shorter than the legal retainable halibut in the directed commercial fishery.

Given our situation, we strongly urge the Commission to incorporate the following elements into the 2020 interim management procedure using a reference F46:

Add 2A and 2B mitigation above distributed mortality (coastwide TCEY).

We understand that the Commission is committed to a floor TCEY for area 2A, and a 70/30 distribution formula for 2B for the next 3 years. But we request that those additional amounts not be deducted from Alaska, but rest on top of Commissioner's final choice of coastwide TCEY. This conforms to discussion in the Management Strategy Advisory Board (MSAB) of allowing area specific policy bonuses to fall into a buffer zone between the reference fishing intensity, and an absolute maximum intensity (FMax).

Apply Slow Up/Fast Down to area TCEYs.

SUFD has been used in past Commission decisions to compensate for assessment inconsistencies, and to mitigate economic burden. F46 marks the conservative end of the range of fishing intensities considered useful, and leaves margin for applying the SUFD smoother.

Do not add a U26 adjustment for 2B.

Southeast Alaska Guides Organization 1600 Tongass Avenue, Ketchikan, AK 99901

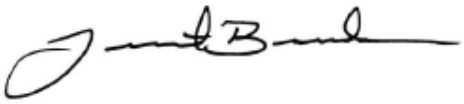
Canada has been given compensation for U.S. bycatch in the 70/30 distribution formula that lasts for 3 more years. Shifting additional fish away from Alaska toward 2B would continue to increase Canadian commercial and recreational limits at Alaska's expense with no rational basis.

Incorporating the above elements to the interim management procedure should result in an actual fishing intensity of F42. The MSAB considered both an F42 and F43 as a target reference during their October meeting, and adopted F43. According to the 2020 decision table, the probability that the spawning biomass is below B30 for 2021 is the same for fishing intensities from F42 through F46.

SEAGO feels these measures are a reasonable approach to fulfilling U.S. obligations to Canada and the West Coast, and supply bare minimum allocation to prevent further loss to already weak 2C guided angler limits.

(*the reverse slot also allows keeping fish 80" or greater, which are seldom encountered)

Respectfully,



Forrest Braden
Executive Director, SEAGO
forrest@seagoalaska.org

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APPENDIX XVIII

Statement by Don Lane

From: Donald Lane <donlane71@gmail.com>
Subject: Informal Statement RE: FISS

I am concerned that IPHC will be getting to far from the "normal" FISS halibut survey parameters in one step. To me, the normal survey is a 10 mile grid from 20 fathoms out to 200 fathoms coast wide, generally. I began surveying in 2006 and until the beginning of the expansion surveys, IPHC pretty much stayed to those guidelines. One year we surveyed with 8 skate sets, did a lot of tagging, and a following year we were down to 5 skate sets. But still same general station guidelines. Then began the expansion program with 2019 a big year with over 1500 stations, caught a lot of fish, cost a lot of money, but was planned and well executed program. In 2017, which I would call the old pre-expansion normal, there were around 1364 stations.

Now I want to look at effort. If the stations were 5 skate sets, which I was told by survey staff was really the minimum to be effective for data, the 1364 stations would be 6815 skates set for the survey. I appreciate the desire to get down to 1000 stations but that is 7000 skates this coming year. The bid specs for 2020 call for 7 skate sets, which is 7000 skates set. Not a reduction of effort, an increase, with further inefficiencies per station fished, added to survey fleet by additional run times. Unless there is something else in play as a desired goal for the survey, the current 2020 bid specs could reduce data accuracy, increase costs per station, and catch more fish. Consider carefully any proposed changes to the FISS. As many know from past experience, the slightest changes to the FISS have created much dialogue and confusion.

In addition, I am uncomfortable with the Fed 15 bid closing as it seems little time for IPHC staff to make any changes to survey specs should the IPHC commissioners wish to make adjustments following Annual Meeting discussions in Anchorage.

From my view, traditional survey of around 1360s stations, 5 skates a station will be more efficient per station and accomplish better outcomes then the proposed 2020 specs. Look forward to discussions in Anchorage. Best Regards. Don Lane

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APPENDIX XIX

Statements by Diane and William Gentry

From: J-Dock Sportfishing <jdocksportfishing@gmail.com>
Subject: Help needed for the 3A Fishing Charter

To whom it may concern,

I am emailing you in regards to the paramount decisions being made that will have incredibly detrimental affects to the 3A sport fishing Charter fleet and in hopes that our words will have meaning to you.

My husband and I help manage and run a fishing company in Seward Alaska. The company was started by a man who gave his heart and soul to providing some of the best fishing experiences Alaska has to offer to customers from all over the world. Fishing and Hunting was his life. Unfortunately in October of 2016 he passed away. The family decided to keep the business going trusting my husband and I for sound advice, help in decision making, and education regarding the sport fishing in Seward. The reason I mention the above history is because not only did the owner eat, breathe, and live fishing in Alaska, but he also had a vision: a vision to give local teens and young adults an amazing summer income opportunity, a vision to expand business in Alaska, and a vision to improve the Seward economy by giving back and investing into its future. My husband and I hold those very same values.

Unfortunately for much of that vision to continue, we rely heavily on our bread and butter which is the halibut fishing. Our season is incredibly short from May until September (in a good weather summer.) And while I say that our season for fishing is only during that time, it doesn't hold a candle to how much work is put in during the off season: bookings, selling, sales shows, emails, phone calls, boat work, boat parts, boat upkeep, boat improvements, office improvements, boat prep, hiring, planning, etc. etc. etc. meaning that it is EXTREMELY difficult for charter business owners to have side jobs or other sources of income. We rely solely on our summer bookings and the income they bring in.

Summer fishing income has become rocky during the past 5 years since the elimination of all Wednesdays and the enactment of 5, then 4 max halibut a season. It also faltered when we were changed from 2 fish of any size to 1 fish of any size and 1 under 28". But the charter industry rolled with the punches and said "this too shall pass." Every year it seems like right when we are adapting and getting used to the changes, something else comes out that we are going to have to have our wrists slapped again... Now there are rumors that we are to have Tuesday's, Wednesday's and Thursday's eliminated for halibut fishing, a slot limit, or the possibility of eliminating or reducing the size of the second fish. I cannot begin to tell you how much this will affect our business and how many small operators will probably end up going out of business.

Our company owns 4 boats and leases a 5th. Taking away all Tuesday's will cost us around $180,000 (revenue - NOT income) and that's just if one of those days is taken away. You are probably saying to yourself that $180,000 isn't that much money in the grand scheme of things however to a small business, where one of our boats back up engines cost $40,000 it is a tremendous amount of money to us.

Not only do I believe it will affect the sport fishing industry but you must also think about the town itself and the small businesses. Yes the cruise ships full of 75 year olds will continue to come and infiltrate the town every Sunday, Tuesday, and Thursday but are those tourists staying the night? Are they eating in the restaurants? Are they staying and playing in the town and supporting the local activities? Not likely.

My husband and I, our owners (a mother and her son and daughter who help run the business now and absolutely LOVE it), my other 4 captains, my 10 deckhands, my 3 office employees, and our 20 employees at the Seafood market are begging that you put the time, energy, thoughtfulness, and depth into this decision as if it were your business, if it were your family, and if it were your community whose livelihood depended on it.

With much respect,

Diane Gentry

From: William Gentry <nobleeagleinc@gmail.com>
Subject: Concerned charter captain

To whom it may concern,

My name is William Gentry and I am a 34 year old charter captain from Seward. My life's purpose is the dedication to halibut fishing and preservation in Seward Alaska. During the last 20 years of my life I've been sharing this passion with thousands of anglers from all over the world. My career started at age 16 when I became a deckhand and then a captain at 19. When I was 21 I formed and operated my first charter company, Glacier Fishing Charter. I was an owner operator of that company for 8 years. Then, due to concerns about the future of the industry, I decided to sell my boat in 2014. The summer of 2015 I went to work for my late mentor Kamell Allaway, owner of Jdock Sportfishing. His dream was to share the beauty of the North Gulf with people from all walks of life.

After his passing in 2016, my wife and I took over some portions of management of the company and invested our life savings to see his dream continued. Not only have we invested ourselves 100% into the business, we have also decided to invest permanently in Seward and Alaska. We are currently building a home here and moving up full time in April. I live here full time now while she finishes nursing school and can join me in the spring. We plan to raise a family here as long as charter fishing provides a viable income for our family.

The reason for this email is that I have deepening concerns about the proposed regulations for the 3A Charter fleet. These regulations will further limit charter operators to fulfill life long dreams that many Americans have of fishing for halibut in the beautiful Alaskan ports scattered throughout the north gulf coast. Not only will these decisions crush thousands of American's dreams, but the research shows that the economic impact will be catastrophic to our small coastal towns. The sport fishing industry is a major part of the economic drivers in our communities boosting business for all small businesses including lodging, entertainment, food/drink, and travel/tourism. Regulations reducing the number of days that retention of halibut is allowed would cause the greatest economic damage. This proposed change to the industry will severely impact the sport fishing companies revenue, drastically depleting the income and making it more and more difficult to be able to stay in business.

Secondly, restricting anglers to one fish or a reverse slot limit would further decrease the possibility for anglers to fulfill their Alaskan fishing dreams. I'm hopeful that you listen to our pleas and consider the facts. Further restrictions on halibut sport fishing would cause enormous economic impact to the Alaskan towns and evaporate the dreams of people all over the world.

Lastly, it is too late in the year for drastic changes to be made without causing enormous damage to the businesses. Most anglers that consider Alaska for their fishing vacation have already booked their fishing trip a

year out as well as their airline tickets, lodging accommodations, rental cars, fishing licenses, and more. To make these decisions in February while drastically changing the fishing days/halibut sizes, is completely unethical towards our operations. These changes will cost large amounts of money state wide, not to mention cancellations, booking changes, upset customers, ruined vacation plans, and credit card fees associated with refunds that we will have to incur.

Please help us keep this sport fishing industry one for the books and the attraction to those anglers and tourists who live and dream of coming to Alaska one day to catch a halibut.

Sincerely,

Captain William D. Gentry

Jdock Sportfishing

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APPENDIX XX

Statement by Timothy Cashman

Name	Timothy Cashman
E-mail	akcoastalmarine@gmail.com
Subject	Charter Halibut Allocation
Message	I own Alaska Coastal Marine and Rainbow Tours in Homer Alaska. We have been in the Halibut charter business since 1988 and we directly employ over 25 local Alaskans. The allocation cuts we have faced since the implementation of the CSP have been very difficult on our business and our employees. If we have to make dramatically deeper cuts in 2020 it would certainly be devastating to our business and employees. We all understand the situation with the biomass, bycatch, and the need for conservation among all user groups to protect this valuable resource into the future. We are are asking for and would support the following for the 2020 season: Begin at F46SPR then make concessions to get to F43SPR. We realize this would still be a 10.3% reduction and put the 3A charter fleet down to 1.7 million pounds. This is a good compromise and would allow us and most other charter operators to survive another year while protecting this resource. The charter sector would still face significant and difficult cuts but it would not be the death blow that is currently an option on the table. Respectfully Submitted. Timothy J. Cashman Soldotna/Homer

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APPENDIX XXI

Statement by Clive Stevens

From: Clive Stevens <cr01stevens@gmail.com>
Subject: Halibut Regulations

As an individual that deeply cares about having the ability to enjoy the amazing fishing experiences in Alaska, I am writing to inform you why it is imperative to support fair halibut limits for the 3A area.

My wife and I and often an friend have visited Alaska 5 times now. Just to experience the great fishing opportunities that Alaska has to offer. We travel a long way and invest thousands of dollars each for the privilege of doing that, and I do mean privilege. We get to experience your great state, meet some of it's people, fish with family charter operators who have contributed to making Alaska and have the opportunity to fish and harvest some fish to take home.

We respect and follow the rules and regulations that govern how we fish and how much we are allowed to keep. We choose Lodges and charter operators who are honest, law abiding and are the true protectors of the natural resources we travel to experience. We have seen limits change over the years, but the drastic changes in regulations that are being discussed could very well impact how or IF we visit. Many of us have seen the reality of these restrictions - drive through any of the south peninsula communities and see how charters have closed, local tourist infused businesses have shut their doors, and villages and towns are not thriving, but floundering. Please take into account that further harsh restrictions could impact us as consumers in a way that negatively effects Alaskan tourism. Any further drastic cuts to limits would be devastating to all of the charters, lodges, and processors on the Kenai Peninsula and Kodiak Island- as well as those other businesses that depend on the people and capital these fishing experiences draw into the great state of Alaska. .

Clive Stevens

125 Elderbrook Lane, Sacramento, Ca, 95828

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APPENDIX XXII

Statement by Seth Mosley

From: Seth Mosley <seth.mosley@mosleymaritime.com>
Subject: Alaska Halibut Regulations

To whom it may concern:

As an individual that deeply cares about having the ability to enjoy the amazing fishing experiences in Alaska, I am writing to inform you why it is imperative to support fair halibut limits for the 3A area. Many of us have visited Alaska or paid for charters to enjoy fishing that is a True Alaskan experience. We have seen limits change over the years, but the drastic changes in regulations that are being discussed could very well impact how or if we visit. Many of us have seen the reality of these restrictions - drive through any of the south peninsula communities and see how charters have closed, local tourist infused businesses have shut their doors, and villages and towns are not thriving, but floundering. Please take into account that further harsh restrictions could impact us as consumers in a way that negatively effects Alaskan tourism. Any further drastic cuts to limits would be devastating to all of the charters, lodges, and processors on the Kenai Peninsula and Kodiak Island- as well as those other businesses that depend on the people and capital these fishing experiences draw into the great state of Alaska.

In addition, I am from the gulf coast where our town of Orange Beach, AL has seen fishing regulations cripple the charter and recreational fishing community. Red snapper fishing is essential to our fishing community here and over the years, restrictions and more federal regulation have caused charter businesses to shut down or raise their prices for other types of trips to a point they aren't getting customers. The recreational/private fishermen are selling their boats and gear, thus impacting marinas, bait shops and more. I personally believe this has even lead to an increase in illegal fishing with catches not being reported, multiple trips per day harvesting excessive quota, and size limits being ignored. Please don't do to your people and economy what they've done to us. Things have finally seemed to turn around down here and are moving in the right direction again thanks to emails like these, public advisory boards, and action groups in the charter and private sectors. Conduct additional and unbiased studies and gather more information, don't cripple local businesses and watch charter captains close their doors because they can't sell trips, I have personally witnessed it happen in my own backyard, it is depressing and it takes years to rebound. Listen to the ones on the front lines, they care about conservation just as much or more as the ones behind a desk or computer because that is their livelihood and the livelihood of their children. My dad and I came to Alaska in 2019 for a week long trip, it was by far the most enjoyable fishing trip I've been on. I would really love to come back to your beautiful state with him and my son again one day on another fishing trip; so please ensure our fishing guides can make our trip worth it by giving us the opportunity to catch the fish that make it such a great experience.

Thank you for your time,

Seth A. Mosley

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APPENDIX XXIII

Statement by Brenda Swann

From: Brenda Swann <brenda@usamednet.com>
Subject: Fishery

To whom it may concern:

As an individual that deeply cares about having the ability to enjoy the amazing fishing experiences in Alaska, I am writing to inform you why it is imperative to support fair halibut limits for the 3A area. Many of us have visited Alaska or paid for charters to enjoy fishing that is a True Alaskan experience. We have seen limits change over the years, but the drastic changes in regulations that are being discussed could very well impact how or if we visit. Many of us have seen the reality of these restrictions - drive through any of the south peninsula communities and see how charters have closed, local tourist infused businesses have shut their doors, and villages and towns are not thriving, but floundering. Please take into account that further harsh restrictions could impact us as consumers in a way that negatively effects Alaskan tourism. Any further drastic cuts to limits would be devastating to all of the charters, lodges, and processors on the Kenai Peninsula and Kodiak Island- as well as those other businesses that depend on the people and capital these fishing experiences draw into the great state of Alaska.

Brenda Swann

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APPENDIX XXIV

Statement by David Ardinger

From: David Ardinger <gofishingkodiak@gmail.com>
Subject: Halibut 2020

Hello,

I've been in the charter boat business since 1991 in Kodiak Ak. As it stands today any person with a sports fishing license can catch two halibut any size every day no annual limit regardless of their residency. As it stands today on a charter boat in Alaska, there is a four fish annual limit, two halibut per day, one under 28 inches and one any size. To make things fair across the board for everyone all the same rules should apply to ALL sports fisherman including those on charter boats!!!! Problem solved! We are essentially "bus drivers" for sports fisherman. Doing so would take out the guys doing it illegally and make enforcement easier . Raising the bycatch is gross negligence!! How you people sleep at night is beyond me.

Captain Dave

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APPENDIX XXV

Statement by Kamell Allaway

1 February 2020

To Whom It May Concern,

My name is Kamell Allaway III and I'm writing in regards to the proposed changes for the Area 3A Charter Halibut Fisheries.

I'm the co-owner of a fishing charter and seafood company in Seward, Alaska, operating a business alongside my mom, Diana Allaway, my sister, Kristyn Allaway, our partners Will & Diane Gentry, and a long list of passionate employees.

Our family has invested all of our money, time, and energy into running our company ever since my father, Kamell Allaway II, passed away in 2016. Prior to us taking over, my father also invested all of his money, time, and energy into building a business that made thousands of dreams come true. Providing this experience was a dream of his own.

Three years after his passing, the entire family of our company continues to devote everything we have in order to carry on his vision

Unfortunately, our company relies on the halibut fishery in order to provide this experience of a lifetime. It's the primary draw for our clientele. Not only do our clients rely on the halibut fishery, but so do our employees. We have over 40 employees whose livelihood depends on the success of our business, especially our captains and crew. Our partners, Will and Diane Gentry, have intentions of raising a family in Seward, while currently building their second home alongside Resurrection Bay. Many of our employees have similar intentions of growing their families and careers in Seward, but none of this will be possible if the halibut regulations expand.

If all Tuesdays, Wednesdays, and Thursdays are taken away, we'll inevitably see a decline in our fishing clientele as well as a decline in interest towards the Seward fishing industry. Revenue will drop tremendously. Employees will lose income. And most charter companies will go out of business. Guaranteed. Our company will become unsustainable, forcing us to let go of many employees, or worse, close our doors. We're talking a loss of hundreds of thousands of dollars, which is just not possible for our company to endure.

Even more so, to make such drastic changes only months before our season would radically impact our operation. Almost 80% of our clientele has already booked their fishing trips, flights, lodging, licenses, etc. Not only would we lose a significant amount of revenue as a company, but many tourists and anglers will incur astronomical losses to such sudden changes. To be frank, pulling the rug out from under so many people may not be possible to recover from.

Our fishing company is a family. To lose something that we love so much would be detrimental to say the least. I just ask for you to consider the lives invested in this industry and the inevitable effects your decisions will make on a community.

Thank you so much for your time, attention, and consideration to my plea.

With much respect,

Kamell Allaway III

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APPENDIX XXVI

Statement by Aaron Mahoney

From: Aaron Mahoney <fishaaronak@gmail.com>

Subject: For your review

We are asking for an F46 SPR it would equate to a 10.3% reduction in area 3A's allocation, a 10.3% reduction would give us an allocation of 1.7 million pounds. This is a good compromise. This is only eqitable until the CSP review in 2021. There is little future left for our businesses and children in the halibut industry. The science is garbage. I could have told the commission 20 years ago we were harvesting mostly females.

· F46 starting point provides a consistent methodology for base apportionment to all areas until final apportionment negotiated in 2021

· Honors 2019 2A/2B agreement but accounts for 2A/2B bonus TCEY as additional mortality until final apportionment negotiated in 2021

· Final coastwide TCEY equates to a F43 SPR which is consistent with MSAB recommendations

· No U26 adjustment in 2020 consistent with NPFMC, ADF&G, & stakeholder comments, and provides opportunity for negotiations in final apportionment discussions in 2021

· SUFD follows precedent for smoothing year to year TCEY change to mitigate survey error

· 2B agreement to use 70% historic share provides survey smoothing so SUFD not needed in 2B

· Resulting FCEY's likely sufficient for 2C & 3A charter minimum needs

· If 3 year average bycatch is used, 4CDE FCEY is 1.6 mlbs which may also be sufficient for minimum needs

It is time the prejudiced regulating ends. If not the status Quo for 3A, please consider F46 until the CSP review in 2021.

Alaska Gulf Coast Expeditions

PO box 39416

Ninilchik, AK 99639

(907) 398-0259

www.alaskagulfcoastexpeditions.com

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APPENDIX XXVII

Statement by Kristyn Allaway

From: Kristyn Allaway <kristynallaway@yahoo.com>
Subject: Halibut regulations

To whom it may concern

I am writing this letter because I fear the outcome of potential regulations for area 3A charter halibut fisheries.

My father, a man who lived for this industry, raised me on the docks of Seward, Alaska. Unfortunately when I was just 19 years old he passed away. Amidst the shock and grieving, one thing was simple, we would carry on the business in his honor. For him and for all of us involved because it's not just a job, it's our livelihood.

My mom, my brother, and I have so much financial and emotional investment in this industry. We value sustainability and the folks like yourself involved in the longevity of our fisheries. We ask you to think broadly, last season the commercial halibut catch consumed about 75% of Alaska's over all quota. There is enough to go around. Commercial and charter can coexist in harmony as long as the regulations don't expand.

If the potential regulations put forth for season 2020 fall into place there is no adjusting. Companies will go out of business, small fishing towns will lose their tourist appeal, companies outside of the fishing industry will be effected, and most of all families will be left devastated. Majority of our boats for 2020 are already booked. Clients have arranged airfare and stay. If these regulation proceed it will take a dramatic adjustment to attempt a partial recovery.

The Halibut fishery is the backbone to our company. I plead with you to consider the community and the industry at risk here. We simply ask that 2019 regulations see through to 2020. That we open the discussion for 2021 regulations now. Companies will have the appropriate time to adjust and the people effected are given the opportunity to be heard.

Thank you for your time and consideration

Sincerely
Kristyn Allaway

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APPENDIX XXVIII

Statement by Griffin Woodall

From: Griffin Woodall <griff_n87@yahoo.com>
Subject: Halibut regulations and livelihood

Hello,

My name is Robert Woodall. I am the captain of the fishing vessel Tail Watcher based out of Seward, AK. During the last several years of my career sportfishing out of Seward, stricter regulations of the fishery have always been a fear and an ever looming presence within the sport fishing community. When the regulations took away the ability for captain and crew to retain halibut, it was understood. It was sensible. At one point we had the ability to take people fishing for two halibut of any size till it was switched to one of any size and one under 28 inches. that hurt, but it was understood. People could still come fishing on a 12 passenger vessel and have true hope and aspirations to catch the fish of a lifetime, and that could mean any fish from 10 pounds to as big as someones imagination allowed. The next year several Thursdays were set aside to relieve the halibut from over pressure, running fewer trips wasn't ideal, but in this industry days off can be a luxury that we so rarely get to enjoy, it was understood. In the last couple years we have gone from Thursdays to Wednesdays, to Wednesdays and some Tuesdays, and we have grown accustomed to and adapted to not halibut fishing two days a week. Not everyday do we have the time to fish for all species, and non halibut days gives our clients the chance to catch salmon, ling cod, and rockfish and it can be a good day of fishing for the crew to have a little less pressure and have a little fun targeting some different species. All these regulations have changed the sportfishing industry entirely, but it has been the understanding that it would be a sacrifice for the better, and it was the right thing to do for the fishery. However, we are staring straight down the throat of the beast that is over regulation, and we are potentially about to be asked to sacrifice much more, and in my opinion, far too much. Giving up days, and an extra fish of any size has been endurable, because our clients have still been able to have the pre trip excitement knowing that they have the chance to catch a fish of ANY size. There are few things more heart warming than seeing a grown man act like he is a 7 year old kid about to go to disney world for the first time. When he catches that fish, that brings the rumors, legends, and dreams to fruition, there are few places in the world where true happiness like that can be found.

Best case scenario, we stick to the status quo, and we as sportfishermen can continue to bring tourists to the state to chase dreams and make memories. Worst case scenario we lose more days to fish for halibut, we lose the ability to make a dream of ANY size come true. I fear that the potential regulations will lead not only to the loss of dreams made true, but to the loss of paying fishermen and tourists alike. These people that I take fishing bring their families, their friends, their coworkers, etc. Not all these people that travel together all come fishing with me, often group members stay in Seward, they shop, they eat, they spend their money on different tours and the Alaskan experience. Losing paying charter customers to over regulation not only will be detrimental to my own livelihood, but also to many other industries in the state. I love my job, few people are blessed enough to say that. I hope to whoever is reading this can say the same thing. I hope you don't have to know the feeling of potentially losing what gets you out of bed in the morning, what makes you feel like a difference maker in peoples lives, what puts food on the table for you and your family. I hope your dreams of ANY size continue to come true, because growing up as a kid in Montana wanting to get paid to fish, mine have. I don't know what would happen if that was to be taken away from me.

Sincerely,

Captain Robert Woodall

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APPENDIX XXIX

Statement by Dan Spies

From: bigdansfishing@gmail.com <bigdansfishing@gmail.com>
Subject: Concerned citizen
To: IPHC

I am writing you today as a concerned Charter Captain as well as a business owner. I currently own 2 fishing vessels which I charter out of Homer, Alaska in the 3A area. My wife and I also run a lodge in Soldotna, Alaska as well as own a general construction company building residential homes.

Last season the 3A area had a 4 fish annual limit, 2 per day, one any size and one under 28" with 6 Tuesdays and all Wednesdays closed. This seasons proposal will allow the 3A Charter operators a continued 4 fish annual limit, one any size and one under 26" with ALL Tuesdays and ALL Wednesdays closed.

These recommendations follow the Alaska Longline Fisherman's Associations recommendations very closely. Asking for an F46 SPR, but willing to concede down to an F43 SPR of 1.7 million pounds. This equates to a 10.3% reduction in area 3A's allocation.

In recent documentation from NOAA Fisheries economists, in the 2019 NOAA "Alaska's Valuable Recreational Fishing Industry/NOAA Fisheries" article, the 1.9 million pounds cut in 2016 has had a negative effect on local economies. There was an $85 million dollar decline which is huge for the rural Alaskan communities in this 3A area. We are seeing a rapid increase in charter operators closing their doors as well as other local businesses. Those businesses, who make their operating capital based on the amount of funds generated by a robust charter fishing industry, closed their doors. The usually popular launch sites at Deep Creek and Anchor Point, with charter boats, barely remain profitable. To lose even more quota from the charter industry will affect more businesses then just those that are listed above. Convenient stores, retail stores, restaurants, hotels/motels/lodges/bed-and-breakfasts, fuel stations, and tour guiding industries will all be affected. Many have lost income and are barely able to stay open due to the last cuts on the charter industry.

These changes have affected me in more ways than one. Last year alone I took a loss of $40,000. This year with the proposed changes, and also being notified this late in the prime booking season, I could take a loss of $80,000 if not more. The inconsistency has made managing businesses difficult since we don't know what is going to happen until the booking season has started. As a citizen and a business owner on the Kenai Peninsula, I provide employment, housing, as well as sales tax income for the borough. All of these are important assets to help contribute to this amazing state. Losing businesses that help contribute to taxes and bring people to the area are affected, but so is the desire to move into this area. The Kenai Peninsula in particular, is a tourist driven community. The Kenai Peninsula may no longer be a desired vacation destination if there aren't businesses for them to have access to. Our community is already suffering from the current changes that have occurred.

I am asking you to do the right thing and implement the recommendations addressed in this letter or keep it as status quo.

Thank you, Dan Spies

Concerned business owner and private individual

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APPENDIX XXX

Statement by DeAnn Luloff

From: DeAnn Luloff <luloff2@icloud.com>
Subject: Halibut fishing

To whom it may concern:

As an individual that deeply cares about having the ability to enjoy the amazing fishing experiences in Alaska, I am writing to inform you why it is imperative to support fair halibut limits for the 3A area. Many of us have visited Alaska or paid for charters to enjoy fishing that is a True Alaskan experience. We have seen limits change over the years, but the drastic changes in regulations that are being discussed could very well impact how or if we visit. Many of us have seen the reality of these restrictions - drive through any of the south peninsula communities and see how charters have closed, local tourist infused businesses have shut their doors, and villages and towns are not thriving, but floundering. Please take into account that further harsh restrictions could impact us as consumers in a way that negatively effects Alaskan tourism. Any further drastic cuts to limits would be devastating to all of the charters, lodges, and processors on the Kenai Peninsula and Kodiak Island- as well as those other businesses that depend on the people and capital these fishing experiences draw into the great state of Alaska.

We had the awesome opportunity to visit and fish last year for the first time. We have already booked for 2021 but with all the pending changes it may not be a possibility. Please don't take that away. You have so much to offer it would be a shame for you to take that away from your visitors.

I support the Homer Charter Boat Association's Proposal for 2020!

Sincerely,
DeAnn Luloff

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APPENDIX XXXI

Statement by Sean Prendergast

From: Sean Prendergast <maritimeconsultantsintl@gmail.com>
Subject: Economic Impact of Sport Caught Halibut Restrictions

To Whom It May Concern:

I write pertaining to the proposed halibut regulations for the 2020 halibut fishing season. I own a marine systems engineering and service company based out of Seward, Alaska and wish to elucidate upon the impact the proposed sanctions will serve upon the marine trades.

As a business, over the past 5 years, our business averaged 38% of our gross income from the Seward, Alaska charter boat fleets. This includes rewiring and troubleshooting electrical systems, maintaining and repairing generators and main engines, and installing new electronics packages. The mean gross over the past 5 years was $86,622.80 per year. The boats run a hard 100 days per season and we take great pride in successfully supporting this diligent fleet.

The mean five year material cost was 41% of the gross revenue. Thus, the materials we purchased to service the Seward fleet each year averaged $35,515.39 per year. Those materials were purchased exclusively from local Seward businesses. Over the past five years, that amounts to $177,576.74 pumped into the local Seward retail economy, thanks solely to the Seward halibut charter fishing fleet. This does not include the fuel and insurance for our vehicles, and other peripheral economic contributions to the local economy. A reasonable estimate is that our small business alone has contributed a quarter million dollars to the Seward economy thanks ONLY to the Seward halibut charter fishing fleet. We are a very small fish.

If the proposed species sanctions are imposed, this will not only devastate the charter fishing fleet, disappoint the thousands of vital tourists from the lower 48 who have planned trips at least a year in advance to target sport caught halibut, but also negatively impact the trades and retail industry that support this unique fishery. Thanks to a healthy, busy charter fleet, a quarter million dollars came to the small town of Seward only through one very small business. This does not include the welders, mechanics, boat yards, and ship carpenters that service the fleet as well.

These sudden sanctions seem reckless on the part of the IPHC, like more of a reaction than a thoughtful response. And they also beg the question - is the IPHC against promoting Alaska small businesses and skilled trades?

As a representative of the skilled trades, I feel F46 SPR is a fecund interim solution to maintaining the integrity of sustainability in this gilded species.

With Proleptic Concern,

Sean Prendergast

Maritime Consultants International, Seward, Alaska

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APPENDIX XXXII

Statement by Raymond Nix

To the Commissioners,

My name is Raymond Nix and I am an owner operator of Crazy Rays Adventures, a saltwater fishing company based out of Whittier, Alaska in management area 3A. I am a life-long Alaskan and have been fishing the waters of Southcentral Alaska my entire life. It is my purpose in this letter to inform the commissioners of my position on the upcoming regulation changes to our area. As the commissioners well know, the area 3A sport charter fishery has taken a steady reduction in allocation since the removal of the accepted GHL and inception of the CSP in 2014. We have watched as our fishery has shrunk from 3.6 million pounds (2012) to a proposed target of around 1.2 million pounds (2020). This would put us at roughly a 75% reduction in allocation over an 8 year period. If we are forced into a reverse slot limit and further days of the week closures, I fear we will be at a point of no return so to speak. My company alone will see an $80,000.00 reduction in gross sales from the additional Tuesdays lost. This is only a fraction of what the economic impact to our community will be. Whittier is a small rural community and less days available for generating revenue during our busiest time of year is going to be detrimental to my personal company, and several other small businesses in our town. As some of you may already know several of us coastal community business's, already have 75% of our reservations for the core of our 2020 season. Drastic changes to regulations have been, and will be, extremely harmful to our industry and our communities.

When the commissioners move to finalize the management plan for 2020, I'd ask that they consider the following the ACA and ALFA are proposing, as it is the most reasonable step towards a solution for this year. Align with the F46.

For our area in 3A this would look like all Tuesdays and Wednesdays closed and a reduction in the size of the second fish to 26" or less. 2 fish per day and a 4 fish annual limit. We would be taking a 10.3% reduction in allocation for 3A as a whole.

I'd like to conclude with this. Please take into consideration, future regulation changes based on a multiple year average with smoothing as the aforementioned proposal lays out. It is extremely difficult having a large number of people change their hotel reservations, car rentals, air fare and other tourism based events, after they have already been booked. It is not only extremely costly to everyone involved, but quite possibly not necessary to meet conservation reasons as well.

Thank you for your time,

Captain: Raymond Nix

Owner/Operator Crazy Rays Adventures LLC

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APPENDIX XXXIII

Statement by Gerri Martin

To Whom it May Concern,

As owner of North Country Halibut Charters in Homer for 40 years now, I have very grave concerns about the potential reduction proposed for the 2020 Halibut Charter 3A quota. This huge reduction will have devastating effects on our industry.

Area 3A has been an easy target. We have no more to give before our industry starts failing. We were forced into a limited entry fishery. We can no longer take two trips a day. We have size limits on our fish, *one of which is hardly worth keeping*. Our crew cannot retain any halibut. We have lost one day a week all season and another 7 days during the peak of our season. We have a seasonal limit of four halibut. *You can keep more king salmon annually than you can halibut at this point* .

Trying to keep up with these cuts is hard on a business such as ours. Our season is short, our clients are uncertain what to expect and they continue to voice their disappointment, saying it's hardly worth coming to fish any longer. Those trying to make plans for this coming summer do not know what the restrictions will be. With the yearly restrictions, the clients know the season is shorter and they try to book earlier all the time to get the dates they want… but how do we sell them a trip when we do not even know what the regulations will be? We are currently in the busiest winter months of our booking season. I have tried to be very conservative in what I am making available to my clients, but even at that… I could have some very unhappy clients once the hammer comes down this month. The timing of the regulatory decisions and changes are untenable.

Resource management and the politics of management are very complicated. It is not easy for us to understand how the decisions are made and likewise I am sure the decisions being made are not easy. But what we absolutely need for our industry is stability and that has been hard to come by the last many years.

We need to get back some quota that was reallocated from 3A to other management sectors. Taking quota from one area of stakeholders and giving it to another area of stakeholders is unacceptable. Having this very valuable fishery reallocated back to 3A would save our industry from being gutted.

I urge you to consider F46 SPR or keep us at Status Quo TCEY. Thank you for you serious attention to this issue.

Sincerely,
Gerri Martin
North Country Charters

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APPENDIX XXXIV

Statement by Mel Erickson

From: Capt. Mel Erickson <gamefish@alaska.net>
Subject: 3A guided halibut regulatios

Dear Commissioners

I have been guiding anglers for halibut for 32 years, in Cook Inlet, off the beach in Ninilchik and Anchor Point, The Catch Share plan is ridiculous & the way the IPHIC has been managing the guided sport fishery since the implementation of the CSP is just plain crazy and does not work in a sport fishery. for one you issue our allocation in pounds then regulate us in numbers of fish, this has to change , give us our allocation in numbers of fish and then don't worry about size. A dead fish is a dead fish and what difference does it make if we kill a 8 pounder or a 50 pounder, killing a 8 pounder and saving 42 pounds does not make more fish in the sea to give to the long liners, there is no extra fish in the sea to give to the long liner.

over the last several years the charter fleet and reduced and saved hundreds of thousands of fish but we get no credit for those savings because our average poundage goes up, that brings up another point it is a well know fact that halibut size at age class is getting smaller so how do you explain that our average size is up, Let me explain to you why.it;s because your yearly changes in sport regs has changed angler behavior and also guide behavior.

I can tell you from my boat and catches when i go target bigger fish and only harvest 6 fish for 6 anglers, my total weight is about 200-300 pounds of live fish, when i have to stay in shallow due to weather or tides my boat harvests 12 fish for 6 people for a total weight of about 100-125 pounds, so what do you want saving weight? or saving fish?

How does killing 12 smaller fish instead of 6 larger fish save fish and and help the fish stocks?

another factor fish managers don't seem to understand is that Alaska is a destination fishery, & many people plan 1-2 years out with airline, hotel car rental and tour and fishing reservations, not to mention vacation time off work, many are on a one time dream vacation. & then the halibut commision comes in and closes days that people are already book on. February as way to late in the booking season to be closing days, and is very unfair to all these people, not to mention the guides, this upsets the apple cart for many businesses, than just the guides.

The guided angler and the guides need stability in regs and not changes year after year late in the game in february. i have been taking calls and emails for months plus deposits for trips and i can't even tell the people what days are open or closed to fishing. let alone what the daily limits will be. this madness has to stop, cant you see after several years into this CSP that it does not work with the guided sport fishery, You simply can't manage the sport fishery like the commercial fishery.

The consistent changes every year . erodes and reduces demand for our product, and its getting to the point we don't have a product to sell that people want to buy, and then another huge blow is we can't operate enough days of the week between closures and weather days to get enough trips in to be profitable.

you have not placed any regulations on the long line fleet to reduce demand for their product, that may have less product to sell but their demand remains high and thier prices go up softening the economic hit to them.

Many business rely on the guided fishery and we rely on them, many businesses are closing due to federal overreach and mismanagement, the ninilchik general store been around for 30 years just closed, Ninilchick used to be a nbooming town in the summer now it is a ghost town.

The anchor river inn is another one, and i know for a fact that the 2 tractor launches at deep creek and anchor point have seen a huge reduction in daily and yearly launches, and if any more restrictions or days taken away they will close down and a service that had been operating for 30 years for both guided and unguided boats will close and that will be devastating.

oh yeah and i forgot to mention that with the switch from the GHL to the CSP the guided anglers lost 1 million pounds of allocation, stolen from them.

so in closing i recommend a regulation freeze on the charter fleet and guided angler and keep the 2019 rules in place until the CSP can be renegotiated in 2021.

I also am opposed to any transfer of fish from the USA to Canada.

I also would suggest a new approach in the future for guided angler management.

what we need is a 7 day a week fishery, if we need to fish less days then give us starts lets say 6 starts per week. and make the daily bag limit 1 big fish or 2 smaller fish, such as 1 fish over 34 inches, or 2 fish 34 inches or less, this is a no brainer, it saves fish and it saves pounds, it gives charters the ability to sell a 2 fish limit, and it also gives the angler an opportunity to harvest a big fish. plus no seasonal limit.

Managed in pounds the Charter fleet needs a bare minimum of 2 million pounds, if you look at every year since the CSP implemented we have averaged about 2 million pounds each season regardless of the rules implemented each year.

Better yet just change the method to maange us in numbers of fish and dont worry about pounds, lets say currently a minimum of 150,000 fish in 3A

one last point i want to make is with all these restrictions on the guided fishery the recorded harvest has gone down, but in reality many of those fish have not been saved that just get recorded now in the unguided statistics as many anglers just go with friends or family with boats or buy their own boat, even the crew fish really hasn't been saved because instead of harvesting their person fish on charters like before they just go out on days off with friends and family and harvest fish as non -guided fish.

Oh yeah and the RQE in my opinion wont work and wont change the ridiculous management of not knowing the regs each year until february, the concept of the RQE looks good but reality its to little to late, it would take years to buy back enough fish to get us back to where we were before the CSP. not to mention their is no guarantee that the charter fleet the buyer could find a willing seller with the TAC so low.

Thanks Mel Erickson

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APPENDIX XXXV

Statements by Thad and Heidi Stokes

From: Thad Stokes <tntadventures@gmail.com>
Subject: Please Consider Proposal F46

I am writing as a concerned small business owner. My wife and I own a halibut charter in Ninilchik, AK. We have operated our business for the last 15 years and we live here full time with our children.

Over the past 15 years, there has been continuous changes in regulations that have been detrimental to our ability to earn a livelihood and support our family. These changes make our future in Alaska very uncertain as we can not support our family here if this governing body continues to limit the days that we can run. We are advocating that you please consider proposal F46, which basicially keeps the regulations for charters the same as last year.

It seems that each year regulations are altered and we are not made aware of these changes until well after our booking season has begun. This makes it very hard not only on us, but also on our clients, many of whom book months in advance. Ours state, and area especially, relies on tourism to support its sustainability. Changing regulations this close to the season limits our clients options and ultimately makes the Kenai Peninsula seem like a less desirable location to visit.

Thank you for your consideration and desire to maintain a strong economy on the Kenai Peninsula. Please consider Proposal F46.

-Thad Stokes

Owner, TNT Adventures

PO Box 39820 Ninilchik, AK 99639

From: Heidi Stokes <tntadventures@gmail.com>
Subject: Please Consider Proposal F46 to keep the Kenai Peninsula Alive

To Whom it May Concern,

I am writing as a concerned small business owner. I am an owner of a halibut charter in Ninilchik, AK. My husband and I have operated our business for the last 15 years and we live here full time with our children.

Over the past 15 years, there has been continuous changes in regulations that have been detrimental to our ability to earn a livelihood and support our family. These changes make our future in Alaska very uncertain as we can not support our family here if this governing body continues to limit the days that we can run. We are advocating that you please consider proposal F46, which basicially keeps the regulations for charters the same as last year.

It seems that each year regulations are altered and we are not made aware of these changes until well after our booking season has begun. This makes it very hard not only on us, but also on our clients, many of whom book

months in advance. Ours state, and area especially, relies on tourism to support its sustainability. Changing regulations this close to the season limits our clients options and ultimately makes the Kenai Peninsula seem like a less desirable location to visit.

Bottom line is, our small communities rely on charter business to attract tourists. The majority of our year round residents rely on the revenue that is generated by sports-fishermen lodging here, eating here, and shopping here, whether from out of state or from the Valley. 15 years ago, fisherman from Anchorage composed over 75% of our business, now due to regulations, Anchorage clientele is down to well below 10% of our business.

The halibut charter industry for the lower Peninsula is its life blood, your continued trend in policy to limit availability negatively impacts every small business on the Peninsula. We have already lost the ability to attract travelers from Alaska, and further regulations limit our ability to attract clientele from outside the state.

Thank you for your consideration and desire to maintain a strong economy on the Kenai Peninsula. Please consider Proposal F46.

-Heidi Stokes

Owner, TNT Adventures

PO Box 39820 Ninilchik, AK 99639

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APPENDIX XXXVI

Statement by Bill Eckhardt

From: Bill Eckhardt <Bill@Eckhardt.com>
Subject: Halibut Charter rules for Area 3A in 2020

To: IPHC
I am a 70 year old lifelong Alaskan and have fished for halibut in area 3A for 45 years as a long liner during the period 1980 - 1995, a charter operator from 1984 - 2007 and as a personal use fisherman since 1975. Now retired and having sold my boat, I rely on Charters when I go halibut fishing.
I recently heard that the Charter boat operators in Area 3A recommend to IPHC that a 4 fish annual limit, 2 per day, one any size and one under 26" with Tuesdays and Wednesdays closed be approved for the 2020 season. Those recommendations closely follow the Alaska Longline Fishermen's Association recommendations asking for an F46 SPR but willing to concede to an F43 SPR of 1.7 million pounds. This equates to 10.3% reduction in area 3A's allocation.
According to NOAA Fisheries economists, in the recent 2019 NOAA "Alaska's Valuable Recreational Fishing Industry/NOAA Fisheries" article, the 1.9 million pound cut in 2016 had a very negative effect on local economies. The article notes an $85 million decline in economic activity for the rural Alaskan communities in Area 3A. These communities are seeing charter operators go out of business and other local businesses, who rely on a robust charter fishing industry, are also closing. To take more quota from the charter industry will further impact these already struggling Charter operators, businesses and communities.
Additionally, any future reductions in quota, if deemed necessary, should be announced at least a year in advance so Charter operators and communities have a reasonable time to plan for the change. Announcing a change just a few months before the season begins is grossly unfair to the clients, the Charter operators, crew members, and the businesses and communities where they operate. It quite simply adds insult to injury.
I respectively ask that you approve the 3A Charter operators recommendations outlined in this letter regarding the rules for 2020.
Thank you,
Bill Eckhardt

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APPENDIX XXXVII

Statement by Kevin Cawley

From: Lucky Nine Charters <luckyninecharters@gmail.com>
Subject: IPHC 2020

I'm a charter boat operator in Kodiak,
the actions of the IPHC have already had a negative effect on my small business. The fact is our whole island economy suffers right along with the whole state. To change regulations abruptly in February is not fair to the hard working families in the state or the people who come visit and pump millions of dollars into our economy. The proposed changes are not only recklessly damaging but also illegal and immoral, they go against the councils own mission statement and several laws in place today meant to discourage this blatant corruption.
My ancestors have lived in Kodiak for thousands of years, if only our modern day government had half the integrity and wisdom concerning the natural resources God gave mankind we would all benefit.
Do the right thing! Listen to the many people just like me who are no doubt voicing the same FACTS about your reckless handling of our shared resources, I will continue praying for all of you to have the wisdom and courage to take a step back and do your jobs well just like the many real people you are definitely harming right along with the very halibut you claim to "manage"

Kevin Cawley
(360)807-3367
luckyninecharters@gmail.com
www.luckyninecharters.com

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APPENDIX XXXVIII

Statement by Bob Savino

From: Bobby s <captbobsavino@gmail.com>

Subject: 2020 IPHC Halibut

To whom this may concern,

My name is Bob Savino and I am a sportfishing charter guide in Seward. I started my charter fishing career 12 years ago when I was hired by Saltwater Safari Company. Fishing has always been a passion of mine and the thought of being able to provide for myself by doing it has always intrigued me since a young age. I continued working for Saltwater Safari for most of my young adult life until i decided to make the huge leap to fulfill the american dream and start my own business. In 2015 at the age of 26, I started my own sportfishing charter outfit in seward, " Anchor Down Sportfishing". Inorder to make that happen, I had to purchase a boat as well as a permit in order to halibut fish. I designed a brand new boat built in Washington State, which was purchased for $450,000 and i was able to find a 10 passenger permit for sale for $75,000. Obviously I needed some assistants to make these purchases so to the bank i went. I had never thought of having to borrow over a half a million dollars and as you'd expect, I was very nervous in doing so. But I knew this was something to me that was worth the risk and I was extremely excited to be able to fulfil my dreams of being a sportfishing guide with my own outfit!

My first couple years in business weren't exactly smooth…. I unfortunately encountered some mechanical failures that resulted in me having to purchase 2 brand new motors. This was extremely hard for me as that took from any profits i were to make for myself. Luckily my third and fourth seasons in business went a lot smoother and I wasn't questioning the decision to go into business as I was in my first couple years.

Now entering my fifth year in business, we are approaching a new obstacle, which is why I am sending you this letter. I'd like to note that in no way am I against any regulations. I started my dream because this is what I want to do for decades to come, not years. Whatever laws and regulations that have been put in place from fish limits, slots, and the days that we aren't allowed to operate halibut charters during the season, I have been all for because it is what's needed to be done in order for me to do this for decades to come. What scares me is if there is a bigger increase in these regulations, my dream might not last for decades to come. I'm afraid of it putting me out of business, being left with debt that I can't afford to pay, losing my boat and my halibut permit and have nothing to show for it. Every year at this time, I fear for what might happen. I started a business to live the American dream, and it has been thus far. But it's so scary not knowing what my future holds…. All of the fleet in seward and i'm sure all over alaska, spend more days tied to the dock with every year that passes.

This all being said, the loss of another day during our season could become depermental to the entire sportfishing fleet in alaska, and especially small business' like myself. I think the current plan of Tuesdays and Wednesday closures is a good restriction in place, there fore i am in favor of F46.

Thank you for taking the time to read my letter,
-Captain Bob Savino

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APPENDIX XXXIX

Statement by Diana Allaway

From: Diana Allaway <ladyd8897@yahoo.com>
Subject: Fw: Dianes letter

Praying all our Letters make it to you and are considered by you.

My Family and I are the owners and operators of J Dock Sport Fishing and J Dock Seafood Market for 20 Years now. Bringing guest from all over the world to share the beauty and excitement of Alaska to them while fulfilling the bucket list of many, some in the last days of their lives, to experience the joy of sport fishing. The harsh changes being considered will so greatly affect not only people from around the world coming for a once in a lifetime experience, but many families with small business and their employees whom have dedicated many years to this being their life's work. If anything I am hoping you will consider Resolution F46SPR.

THANK YOU SO MUCH FOR YOUR TIME!!

Diana Allaway

Small Business Owner in Seward Alaska ♥

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APPENDIX XL

Statement by John Baker

To: International Pacific Halibut Commission 31 Jan 20

From: John G Baker, charter operator Area 3A

Subject: Upcoming Decision on Area 3A Allotment

As a 28 year charter operator in area 3A, I and my business have experienced all the industry turmoil of the 1990's and the regulatory changes of the 2000's. During that time, I always felt the small charter companies could find a way to cope and survive. Now, as a result of the adoption of the Catch Sharing Plan and the proposed 25% cut for area 3A, I no longer believe that.

I have always disagreed with the premise that charters can be regulated the same way as commercial halibut operations. They can't- at least successfully. The economics of supply and demand for a purely retail system like commercial fishing are very different psychologically than the outdoor recreation industry. Cutting back commercial allotment merely results in higher margin due to lower supply, but that doesn't happen in the charter world. Our clients hate our not having a consistent product. Stability in the product offered is supremely more important to charter operators than commercial fishermen.

Obviously the implementation of anther 25% cutback in allotment will force instability in charter operations- to the point that, in my opinion, we will not survive. Already small towns like Ninilchik are dying due to the previous changes in regulations. We don't have the option of fishing for rockfish and lingcod etc., and charters are suffering tremendously. The major supporting tourism businesses, such as lodging and retail that rely on charter customers are gone. In fact, the General Store which has been the lifeblood of our community, closed last year due to lack of customers. That is just a harbinger of the real distress that is to come- the likely closure of our tractor launch system that we rely on to put our boats in the water.

The rationale for the 25% proposed cut for 3A is flawed. The latest study didn't include the recreational catch, bycatch, or charter fleet catch. If you are going to kill off the charters you better have all your ducks in a row before you make that decision.

I am asking for a repeat of last year's 3A charter allotment for 2020, or if you must implement reduction make it a phased-in process.

In addition, I think it is an absolute sin to force us to extinction while the bycatch kills (with no benefit whatsoever) over twice as much halibut as we do.

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APPENDIX XLI

Statement by Trey Graham

From: Trey Graham <t3graham1@gmail.com>
Subject: 3A Sport fishing charter fleet

To Whom it may concern,

I am writing this email in attempts to change your minds on the proposed changes in the 3A sport fishing charter fleet. My name is Trey Graham, I live in Texas where I attend Texas Tech University during the school year. In the summers I live in Seward, Alaska where I work as a deckhand for J-dock sport fishing. My summers in Alaska mean the world to me. Along with making life long friends and memories, I am able to make enough money in the summer to support myself in the offseason so I can focus on school. The changes in the sport fishing industry would be detrimental to the small business I work for and many others like it, and also the town of Seward. I hope this email changes your mind and allows insight into the many people that rely on sport fishing as their main source on income, and others that come up yearly in order to chase their dreams and catch Alaskan halibut.

Thank you for your time,

- Trey Graham
J-Dock Sport fishing

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APPENDIX XLII

Statement by Bryson Gilbert

From: Bryson Gilbert <gbbrysongilbert@outlook.com>
Subject: 3A Fishing Regulations

To whom it may concern,

The Alaska charter fishing industry is in scary place. Over the past several years the people whose lives revolve around charter fishing have noticed a dwindling of income. In a profession that is already plagued with great overhead and small profit margins, every day that the company can run trips becomes vital.

When I began my time as a charter fisherman, I was fresh out of high school and looking for a way to pay for my college. Over the past three years several things have become apparent.

1) The more regulation that is imposed the more upset the clients are
2) Charter fishing makes memories that last a lifetime
3) Charter fishing can support a community and
4) It's not a **Business** it's a **Family**

After the initial shock of hearing about the potential cut in quota I began thinking about what that would mean. Each summer I travel from Texas to Seward to work. I do this because I know that there will be thousands of people coming to Seward to visit, and that I will have the opportunity to make a difference in the lives of a few of these individuals.

A cut in quota would mean less tourists traveling to Alaska. This means less money spent in tourist shops and restaurants, less people riding the Alaska Railroad, less flights and passengers coming into Ted Stevens. The economic impact that the new regulations would take on these small fishing communities would be disastrous

Everyone is in agreement that the halibut need to be protected, but a cut in quota to the hardworking charter fisherman is not the appropriate answer. We urge you to reconsider the new regulations, and think about how these proposed changes will impact the lives of many hardworking individuals.

Sincerely,

Bryson Gilbert

J-Dock Sport Fishing Captain

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APPENDIX XLIII

Statement by John Moline

From: Current Affair Charters <info@currentaffaircharters.com>
Sent: Sunday, February 2, 2020 12:35 PM
To: IPHC Secretariat <secretariat@iphc.int>
Subject: 2020 3A allocations

Large changes in percentages of allowable catch, determined by a small sample, are not the typical avenues science and biology normally take to retain certain levels of abundance. It makes a lot of sense to take an average from a longer timeframe, and not to mix results from one specific area to another without comparison data. A lot of terms have been thrown around, like the F 46 for a starting point, but I prefer to use more common analogies and terms. Shifting the 3A underage from the 2018 season to a unit 900 miles plus away is not reasonable or responsible science. If that quota had been applied to 3A, as it should have been, we would not be over out limit, even with the new 90% female fish kill rates.

Charters already have bookings in the 2020 season, and I personally have 8 Thursdays already booked with halibut trips, and most cannot rebook to adjacent days on my vessel. The financial impact of $16,000 in losses I have collected deposits on, is a very large percentage of my profit for the year. By not smoothing out the incredible 25% adjustment area 3A is looking at, many newer businesses, and many of us who have purchased newer boats or motors will not survive the year. The economic impact of such a reduction to all of 3A small town economies will be devastating, it will affect everything from hotel stays and bed taxes, to restaurant sales and fuel tax collections, let alone parking fees and harbor slip sales and rentals.

Please consider all aspects of economies, the employees, the economic losses and livelihood of the small business owners involved in the Charter fishing industry, when we are typically allocated such a small overall catch each year (@10% or less of total catch), and remember, we have already taken huge hits thru fleet reduction for CHP issuance, and @ over 1 million lbs in reductions already, from 3 million, to 1.7 million, that is already some pretty large cuts financially to ALL of our local economies and tourism.

Thank you for your consideration, John Moline Current Affair Charters, Seward AK. 99664

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APPENDIX XLIV

Statement by Kyle Stene

From: Kyle Stene <kyle_stene@yahoo.com>
Sent: Sunday, February 2, 2020 12:35 PM
To: IPHC Secretariat <secretariat@iphc.int>
Subject: Halibut regulations

Hello,

My name is Kyle Stene, I have worked in Seward, AK for several years as a fisherman for J-Dock Sport fishing. I am contacting you regarding the sudden changes regarding the amount of days you can harvest halibut throughout the summer. Hundreds of people as well as dozens of local companies depend on the sport fishing in Seward, AK.
If the fisheries management takes away two or three halibut days a week, the economic impact on the city of Seward and the hardworking Americans who rely on tourism and sport fishing will suffer greatly. There is no question that sport fishing is great for all of Seward's small business owners and the entire economy. The fisherman who work in Seward depend on people coming to Seward to fish for halibut. It doesn't just affect the economy it affects the other species of fish as well. If we can't fish for halibut on those days, we have to go for rockfish, salmon, and ling cod and then those species of fish take a pounding. I agree that there should be some changes made to halibut regulations so that we can continue to fish them for generations, but it doesn't need to effect the national economy and the fishing industry as well.

Please consider the local economy as well as the economic impact of the people that rely on sport fishing halibut in Seward, AK.

Best regards,

Kyle Stene

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APPENDIX XLV

Statement by Homer Charter Association

Attention: IPHC

The Homer Charter Association (HCA) represents around eighty charter boat operators and business owners in Area 3A including Homer, Whittier, Seward, Ninilchik, Deep Creek, and Kodiak. It has been a frantic couple of months as we have spent endless hours trying to prepare ourselves for what could be the most devastating management measures our fishery has seen. Since the implementation of the Catch Share Plan we have had increasingly tighter restrictions on our resource. These restrictions have limited our access to a public resource. Size restrictions and annual limits have virtually extinguished our resident anglers and now we are limited in the number of days of the week that we can fish. The proposed TCEY for 2020 would further reduce the size of our fish and would close additional days of the week. Our fishery cannot support additional cuts. If our businesses lose Tuesdays and Thursdays in addition to our already closed Wednesdays, we will not remain viable and many businesses across the state will close.

The effects of these restrictions won't be shared by the charter industry alone. They will be felt in all of our local economies. Hotels, bed and breakfasts, restaurants, car rental companies, gift shops, fish processors, tackle shops, eco tours, etc… All of these business models rely on tourism to function. Further, this economy provides large amounts of sales tax to cities, boroughs, and the State of Alaska. The loss of funds to ADF&G in the form of fishing license sales will greatly affect their ability to manage our delicate state-run fisheries. There is no way around it; as the economic stability of the tourism industry loses stability, dependent local economies like those the Homer Charter Association represents will suffer all across Alaska.

It is apparent that the Catch Share Plan has not been an effective management tool for the Charter sectors in both Area 3A and 2C. It has led to frequent and fast paced changes in regulations for our sector which have made it extremely difficult to conduct viable businesses. In the current management paradigm charter businesses must wait until February to find out what management changes may occur. This is "late in the game", most charter operators book their clients throughout the year. Often clients book a trip based on current knowledge of the fishery, but late-in-the-year management measures give them wholly another trip by the time the season arrives. Consequently, we have had an increasingly skeptical client base, who expects to pay for access to this great state and its incredible fishing resources but is often denied. The HCA values informed and responsible stewardship of the halibut resource, however we feel that we need a different tool to manage our allocation. We need consistency in our management measures so that we can continue to offer consistent public access to the fishery. We hope both the NPFMC and the IPHC will seriously consider this when reviewing the CSP in both 2020, and in 2021.

The Homer Charter Association supports that the IPHC adopt a Harvest Rate of F42-F43, and that the IPHC adopt a target removal of 1.7 million pounds for the 3A charter sector as a lowest possible allocation. Additionally, the HCA requests that the IPHC follow MSA guidelines and authority, IPHC Harvest Strategy Policy, and IPHC Management Strategy Evaluation to redistribute TCEY back to IPHC Area 3A from Areas 2B and 2A. Under this target removal Area 3A management measures would close all Wednesdays, close all Tuesdays, change the size of

the second fish to U26, one trip per CHP per day, 4 fish annual limit. Any restrictions beyond these measures would be catastrophic to our industry.

Thank You for your careful consideration

Ben Martin, President HCA

Brian Ritchie, Board member HCA

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APPENDIX XLVI

Statement by Jason Ogilvie

February 1, 2020

International Pacific Halibut Commission
2320 West Commodore Way, Suite 300
Seattle, WA 98119

Submitted via: secretariat@iphc.int

GOLDEN HARVEST
ALASKA SEAFOOD, LLC

Dear Commissioners,

Area 4B is facing extraordinary circumstances in 2020 (which are expected to continue for several years), the effect of which we ask that you incorporate in your policy discussions.

Specifically, because of the declining Pacific cod biomass in the Bering Sea the catcher vessel trawl federal waters Pacific cod fisheries in the Aleutian Islands (Area 4B) are expected to be preempted. As a consequence, the Area 4B directed halibut fishery is essential to the continued operation of our local fleet, our plant and our community.

This is both an economic and social crisis for our region. The preemption of the federal waters Pacific cod fishery is already having significant negative impacts; the directed halibut fishery is one of the few opportunities for the local fleet until this situation resolves itself.

In response to this situation, and giving full consideration to recent survey and CPUE data, we request a minimum 1,060,000 pound 4B FCEY for 2020. Our rationale follows.

Discussion

1. In early 2019, the US District Court in Washington DC vacated Amendment 113, which set aside 5,000 metric tons of Bering Sea CV Trawl Pacific cod for harvest in the Aleutian Islands. This court decision, combined with the declining Bering Sea Pacific cod resource and the increased race for fish in the Bering Sea is expected to completely preempt the Aleutian Islands CV Trawl Pacific cod fishery in 2020. Obviously, halibut bycatch associated with the Aleutian Islands CV Trawl Pacific cod fishery should be dramatically adjusted downward, if not zeroed out.

2. For 2019, the IPHC projected a non-directed commercial discard mortality of 220,000 pounds. As shown in IPHC-2020-AM096-05 (below), the actual 2019 Area 4B non-directed commercial discard mortality was 162,000 pounds (see chart). This provides some additional rationale for decreasing the projected bycatch for 2020.

3. Genetic, oceanographic and tagging studies have shown that the Aleutian Islands are a discrete ecosystem and that the halibut stock in the Aleutian Islands shows little if any migratory contribution to other areas, (Hauser, et al., 2006) (Seitz, et al., 2008). Therefore, we don't see the rationale for setting 4B TCEY based on 75% of the rate used in other non-nursery areas.

4. We recognize the challenge that the IPHC faces relative to Area 4 CDE and other coastwide issues. Area 4B has 4.8% of the Pacific halibut biomass and should have 4.8% of the coastwide TCEY. While we don't see the rationale for setting Area 4B TCEY based on 75% of the rate used in other non-nursery areas; if Area 4B continues to take the 25% cut in the exploitation rate built into the "Tool" relative to the eastern areas, there are no grounds for reducing Area 4B's share of the coastwide distribution of TCEY below 3.9%. Reducing Area 4B doesn't benefit other areas biomass because, as we have noted, the Aleutian Islands is its' own marine ecosystem. Therefore, if the Conference Board or the Commission adopts the recommended 31.9 million pounds, Area 4B's TCEY should be no less than 1.24 million pounds for an FCEY of 1.06 million pounds.

IPHC-2020-AM096-05

Table 2 continued. 2019 estimates of total removals (net weight), including fishery limits and mortality of Pacific halibut by IPHC Regulatory Area (as of 15 December 2019).

IPHC Regulatory Area	Fishery projection (net weight)		Mortality (net weight)		Percent
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	%
USA – Area 4B (central/western Aleutians)	657.84	1,450,300	547.84	1,207,777	83
Directed commercial fishery landings	548.85	1,210,000	443.50	977,742	81
Directed commercial discard mortality[†]	9.07	20,000	17.24	38,000	190
Recreational fishery[1]	0.00	0	0.00	0	0
Recreational discard mortality	0.00	0	0.00	0	0
Subsistence[1]	0.14	300	0.76	1,684	561
Non-directed commercial discard mortality (U26)[†]	99.79	220,000	73.48	162,000	74
IPHC fishery-independent setline survey and research	none	none	12.86	28,351	n/a
Non-directed commercial discard mortality (U26)	none	none	3.18	7,000	n/a

Sincerely,

Jason Ogilvie, President
Golden Harvest Alaska Seafood
Adak, Alaska

(signed: Steve Minor for Jason Ogilvie)

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APPENDIX XLVII

Statement by Brian Baker

From: BRIAN BAKER <camp410bc@yahoo.com>
Sent: Sunday, February 2, 2020 1:28 PM
To: IPHC Secretariat <secretariat@iphc.int>
Subject: 3A Halibut Charter Restrictions

To whom it may concern,

My wife and I run a small charter business in Ninilchik Alaska. We are voicing our concerns about more cuts to the 3A fishery.

We run a one boat charter and have felt the pinch every year. In 2019 we were given back a few Tuesdays and then we are being told that we are going to lose all Tuesday's in 2020. This would essentially double our down days not to take into account any rough water days that we sit on the beach. This not only Effects the Charter Fleet but it also effects a spider web of local business's in the state. We need to be able to inform and book clients prior to February. February is far too late to make a decision in regards to our livelihood. There has to be a better and less painful way to make everyone happy and not put the little guys out so the big guy can have it all.

There is a far greater impact to our community if we reduce to 5 days a week fishing. The local restaurants will suffer the local accommodations will suffer, and not to mention the handful of business the are here to support the charter fleet in our community from gas, bait and launch ramp services. Everyone should be able to work hard and make a living and not suffer when new and different regs are adopted each year.

Thank you

Richard Baker

[back to Table 1]

Review of the use of pot gear in the Gulf of Alaska 2017-19

PREPARED BY: IPHC SECRETARIAT (30 DECEMBER 2019)

PURPOSE

To provide the Commission with data and observations from three years of experience with the retention of Pacific halibut caught in pot gear incidental to the sablefish fishery in the Gulf of Alaska.

BACKGROUND

In 2016, the IPHC approved the retention of Pacific halibut caught in pot gear incidental to the Individual Fishing Quota (IFQ) sablefish fishery in the Gulf of Alaska. From the minutes of the 2016 Annual Meeting (AM092):

> *8) The IPHC approved longline pot gear as a legal gear for the commercial halibut fishery in Alaska when NMFS* [NOAA Fisheries] *regulations permit the use of this gear in the IFQ sablefish fishery. The IPHC will review the measure in three years.*
>
> *Mr. Alverson noted that the IPHC would like an MRA* [Maximum Retention Allowance] *to ensure that halibut is not targeted in the pots, but instead remains an incidental catch inside this fishery. However, there is not yet any data on which to base a limit. The three year review will include that analysis.*

At the time of the adoption of this regulatory change, the Commission expected the necessary NOAA Fisheries rule to be in place for the 2016 fishing season. It was not implemented until March 2017, however, which was noted by the Commission at the 2017 Annual Meeting (AM093):

From IPHC-2017-AM093-03:

AM92.13	***Sablefish pots:*** Staff to schedule review of retention of halibut in sablefish pots prior to 2018 Interim Meeting.	Pending: Nil progress to date. Suggested action revision: As the new pots regulation go into effect in 2017, this review should be rescheduled for completion in 2020, thereby encompassing three years of data under the new regulation.

The 2019 fishery was the third year of implementation, thus occasioning this report to the Commission.

DISCUSSION

Table 1 lists the landings of Pacific halibut caught in pot gear incidental to the IFQ sablefish fishery in IPHC Regulatory Areas 2C, 3A, and 3B for the three years that this regulation has been in effect.

Table 1. Landings with pot gear in IPHC Regulatory Areas 2C, 3A, and 3B 2017-19

Year	Landings		
	tonnes (t)	*pounds (lb)*	*percentage of landings*
2017	12	27,025	0.18
2018	23	49,983	0.38
2019*	29	63,701	0.47

*Preliminary data (through 20 December 2019)

A small fraction of the overall commercial landings in these IPHC Regulatory Areas is taken with pot gear, indicating that fishers do not appear to have shifted to targeting Pacific halibut with pot gear, and that an MRA is not currently necessary to limit retention by this gear type.

Note that landings using pot gear are now being reported by the IPHC Secretariat as part of its regular fishery statistics reporting (see paper IPHC-2020-AM096-05), which will allow the Commission to continue monitoring the relative use of this fishing gear in the commercial fishery.

RECOMMENDATIONS

That the Commission:

1) **NOTE** paper IPHC-2020-AM096-INF02, which provides data and observations from three years of experience with the retention of Pacific halibut caught in pot gear incidental to the sablefish fishery in the Gulf of Alaska.
2) **NOTE** that the IPHC Secretariat now reports landings using pot gear as part of its regular fisheries statistics reporting, which will allow the Commission to continue monitoring the relative use of this fishing gear in the commercial fishery.

APPENDICES

None

DRAFT ANNOUNCEMENT FOR THE IPHC MSE PEER REVIEW – EXTERNAL EXPERT/CONSULTANT

PREPARED BY: IPHC SECRETARIAT (30 DECEMBER 2019)

PURPOSE

To provide the Commission with the draft announcement for the IPHC MSE peer review, as requested.

BACKGROUND

At the 95th Session of the IPHC Annual Meeting (AM095) in January 2019, the Commission recommended the following:

> (para. 130) *The Commission RECOMMENDED that the IPHC Secretariat finalise terms of reference for a expert/consultant to undertake a peer review of the IPHC Pacific halibut MSE, for implementation in early November 2019 and July 2020. The terms of reference and budget shall be endorsed by the Commission inter-sessionally.*

At the 95th Session of the IPHC Interim Meeting (IM095) in November 2019, the Commission noted the following:

> (para. 74) *The Commission NOTED that an independent peer review of the MSE will take place in April 2020 and August 2020 with a report supplied to the SRB017, MSAB016, and to the Commission before AM0*97.

DISCUSSION

The IPHC Secretariat developed the draft announcement and associated MSE peer review principal duties, scope and tasks, in conjunction with members of the SRB. The final draft is provided at Appendix A and will be published early in 2020.

RECOMMENDATION

That the Commission **NOTE** paper IPHC-2020-AM096-INF03, which provided the Commission with the requested draft announcement for the IPHC MSE peer review

APPENDICES

Appendix A: IPHC MSE PEER REVIEW – EXTERNAL EXPERT/CONSULTANT

Appendix A
IPHC MSE PEER REVIEW – EXTERNAL EXPERT/CONSULTANT

DRAFT ANNOUNCEMENT

IPHC Job Reference Number 2020-xx

Advertisement for the position of
Management Strategy Evaluation Peer Reviewer: Consultant

The International Pacific Halibut Commission (IPHC) is seeking a qualified expert in Management Strategy Evaluation (MSE) to review and advise the development of an ongoing MSE for the Pacific halibut fishery, and act in the role of external peer reviewer. This will be a temporary contract position of approximately 24 days in duration, with travel to and accommodation in Seattle provided. The 24 days will be split into two distinct periods of activity, one in early 2020, and again in mid-2020.

The International Pacific Halibut Commission (IPHC) is currently developing a Management Strategy Evaluation (MSE) to evaluate alternative harvest policies for Pacific halibut. A Management Strategy Advisory Board (MSAB) was formed in 2013 and has been meeting twice a year since then (May and October). It is comprised of stakeholders and managers from all sectors with an interest in the directed fishery for Pacific halibut. More information and meeting materials can be found at. https://www.iphc.int/library/documents/meeting-documents/iphc-meeting-index.

The IPHC manages the Pacific halibut resource for the governments of Canada and the United States of America, with offices in Seattle, Washington, U.S.A.

Principal duties, scope and tasks

The consultant will be expected to spend at least one week at the IPHC offices in Seattle sometime during March or April 2020 and August 2020. The consultant will provide advice on and contribute to a subset of the following topics, both in terms of peer review and technical contribution.

- Review the goals and objectives used to evaluate management procedures
- Review the IPHC MSE closed-loop simulation framework
- Review and advise on the operating model and how it is conditioned to mimic the Pacific halibut population
- Review tools and methods used to communicate simulation results for the evaluation of management procedures.

- Evaluate the process of soliciting objectives from stakeholders and managers, and creating performance metrics from those objectives.
- Assist with developing and defining reference points and management procedures
- Advise on methods to communicate results of the simulations, the trade-offs between various management procedures, and the ranking of management procedures.

Project Deliverables

Deliverables by early October 2020 include

- A succinct written review of the IPHC MSE process, evaluating results, and any other aspects identified;
- A report summarizing contributions made by the consultant to the simulation framework and other aspects of the MSE framework

Qualifications and Experience

Education: Ph.D. degree in a relevant scientific discipline related to quantitative sciences and natural resource management. M.S. degree may be considered with exceptional experience.

Professional experience: Five or more years of experience in fisheries management strategy evaluation. Specific qualifications considered are as follows.

- Knowledge and experience with the MSE process
- Experience developing and conditioning operating models
- Proficiency in R and ADMB, and possibly C++, or other similar programming languages and applications
- Skill in writing computer programs for simulating fish populations
- Experience interacting with and soliciting objectives from fishery stakeholders and managers
- Ability to collaborate with other scientists
- Proficiency in writing scientific reports and papers
- Ability to communicate complex concepts, models, and results, especially those related to simulation, through technical reports, discussion and oral presentation

TERMS OF REFERENCE FOR A LIFE HISTORY MODELER

PREPARED BY: IPHC SECRETARIAT (16 DECEMBER 2019)

PURPOSE

To provide the Commission with a proposal for a potential Life History Modeler position to join the IPHC Secretariat, as requested by the Commission.

BACKGROUND

As noted in the Report of the 11th Session of the Scientific Review Board (SRB11):

SRB11–Rec.04 (para. 36) The SRB **RECOMMENDED** that IPHC consider hiring a life-history modeler to provide more explicit linkage between the empirical biological program and the applied assessment and MSE modeling programs.

In response to the Scientific Review Board recommendation, as noted in the Report of the 95th Session of the IPHC Annual Meeting (AM095):

AM095–Req.05 (para. 117) The Commission **REQUESTED** that the IPHC Secretariat continue to develop a proposal for a potential Life History Modeler to join the IPHC Secretariat and for this to be provided to the Commission for consideration inter-sessionally.

DISCUSSION

The IPHC Secretariat developed a position description (Appendix I) that was provided to the Commissioners inter-sessionally via IPHC Circular 2019-022 and that will be discussed informally prior to the AM096 in February 2020 where the Commission may choose to appropriate funds for the position.

The Life History Modeler will work with the Biological and Ecosystem Sciences Branch and the Quantitative Sciences Branch of the IPHC to evaluate biological data on Pacific halibut in light of life history/evolutionary history and provide quantitative dynamic estimates of Pacific halibut life history traits relevant to the assessment and management strategy evaluation programs.

RECOMMENDATION

That the Commission:

1) **NOTE** paper IPHC-2020-AM096-INF04, which provided the Commission with a proposal for a Life History Modeler position.

Appendices

Appendix I: Proposal for an Evolutionary Ecologist/Life History Modeler position.

Appendix I

Proposal for an Evolutionary Ecologist/Life History Modeler

The International Pacific Halibut Commission (IPHC) is seeking a qualified researcher for a three-year appointment to assist the IPHC Secretariat in conducting life history modeling studies on Pacific halibut.

The IPHC manages the Pacific halibut resource for the governments of Canada and the United States of America, with offices in Seattle, WA, USA.

Principal Duties

The researcher will work with the Biological and Ecosystem Sciences Branch and the Quantitative Sciences Branch of the IPHC to evaluate biological data on Pacific halibut in light of life history/evolutionary history and provide quantitative dynamic estimates of Pacific halibut life history traits relevant to the assessment and management strategy evaluation programs. Research will be conducted within the IPHC Secretariat and focus on the following topics:

- Develop novel analytical techniques to perform synthesis of biological information for use in stock assessment and management strategy evaluation.
- Analyse and model data from a variety of biological research areas, including migration and distribution, growth, and age-specific reproduction and survival, size and age at sexual maturity on Pacific halibut.
- Evaluate effects of environmental and climate variability on large-scale patterns of distribution, productivity, and life-history traits on Pacific halibut.
- Participate in the design of research projects to collect data that will contribute to further understanding of Pacific halibut life history.
- Write scientific reports and assist with and/or author peer-reviewed papers
- Develop existing and create novel scientific collaborations with agencies and academic institutions, both nationally and internationally.
- Present scientific research at scientific conferences and meetings, as well as in stakeholder and board meetings.

<u>Deliverables</u> (in approximate months from commencement):

- Investigate the influence of reproductive traits (e.g. size/age-at-maturation; frequency of reproduction) for population dynamics (18).
- Synthesize results from past and ongoing studies on migration, growth and physiological condition of Pacific halibut to improve current understanding of the spatial and temporal changes in productivity of the stock (36).

- Develop grant proposals (12)
- Publish at least two manuscripts in leading peer-reviewed journals (36).

Qualifications and Experience

Education: Ph.D. degree in a scientific discipline related to evolutionary biology and population ecology.

Professional experience: Three or more years of experience in quantitative biological research with a focus on life history evolution.

Required qualifications/experience:

- Experience in life history modeling.
- Experience analyzing and fitting life history models to complex and/or unbalanced biological data sets.
- Experience programming in R;
- Potential to learn and use other coding and analysis tools such as C++, ADMB, and TMB
- Creative problem-solving ability;
- Demonstrated ability to develop new methods for life history modeling and to interpret results collaboratively with other scientists;
- Proficiency in writing scientific reports and papers as well as research proposals and grants;
- Demonstrated ability to create tables and graphics to communicate information to a wide range of stakeholders;
- Experience communicating complex concepts, models, and results through discussion and oral presentation.

Desired qualifications/experience:

- Expertise in aquatic sciences, fish ecology, fisheries, and applied fisheries management.

Salary and Benefits

The annual salary for this position is equivalent to a IPHC-GS-11/12 level which ranges from $67,816 to $114,464 (2019 rates), depending on experience and demonstrated skills. The IPHC offers a range of benefits including medical (100% employer-paid), life insurance, cancer care, and long-term disability insurance, vacation, sick leave, and 403(b) program (employer contribution and match).

Application

The IPHC is an International Governmental Organization and as such will consider applicants regardless of nationality. Due to the nature of the work and the organization, a background check is also a condition of employment.

Applications must be submitted by **XX XXXX YYYY**. Applications may submitted through the IPHC website at https://www.iphc.int/the-commission/opportunities. Candidates will be selected for an interview based on meeting basic qualifications and additional demonstrated experience.

For more information about this position, please email secretariat@iphc.int and cite **Job Reference Number 20XX-XXX**.

IPHC science posters for AM096

PREPARED BY: IPHC SECRETARIAT (31 JANUARY 2020)

PURPOSE

To provide the Commission and the public with copies of the IPHC Secretariat science posters displayed at the 96th Session of the IPHC Annual Meeting (AM096).

BACKGROUND

The IPHC Secretariat is engaged in multiple lines of research under the IPHC 5-year Biological and Ecosystem Science Research Plan (IPHC-2020-AM096-11), and results from several projects will be displayed in posters at AM096 for the benefit of the Commission and the public.

DISCUSSION

Table 1 lists the science posters on display at AM096.

Table 1. Science posters on display at AM096

Appendix No.	Poster Title
Appendix 1	Electronically monitoring release method as a proxy for Pacific halibut discard mortality rates in the directed Pacific halibut longline fishery
Appendix 2	Pacific halibut migration research at IPHC
Appendix 3	Can we reconstruct the growth history of the Pacific halibut *(Hippoglossus stenolepis)* population by otolith increment analysis?
Appendix 4	Re-ageing of archived otoliths from the 1920s to the 1990s
Appendix 5	Identification of molecular growth signatures in skeletal muscle of juvenile Pacific halibut *(Hippoglossus stenolepis)* for monitoring population growth patterns
Appendix 6	Genetic population structure of Pacific halibut *(Hippoglossus stenolepis)*: progress to date
Appendix 7	Genetic sex identification of Pacific halibut *(Hippoglossus stenolepis)* commercial landings
Appendix 8	A decade of coastwide environmental monitoring on the annual IPHC fishery independent setline survey and practical applications of the data in a spatio-temporal assessment model

Appendix 9	Identification and characterization of FSH β and LH β in female Pacific halibut *(Hippoglossus stenolepis)*
Appendix 10	Oocyte stages and development in female Pacific halibut *(Hippoglossus stenolepis)*

RECOMMENDATION

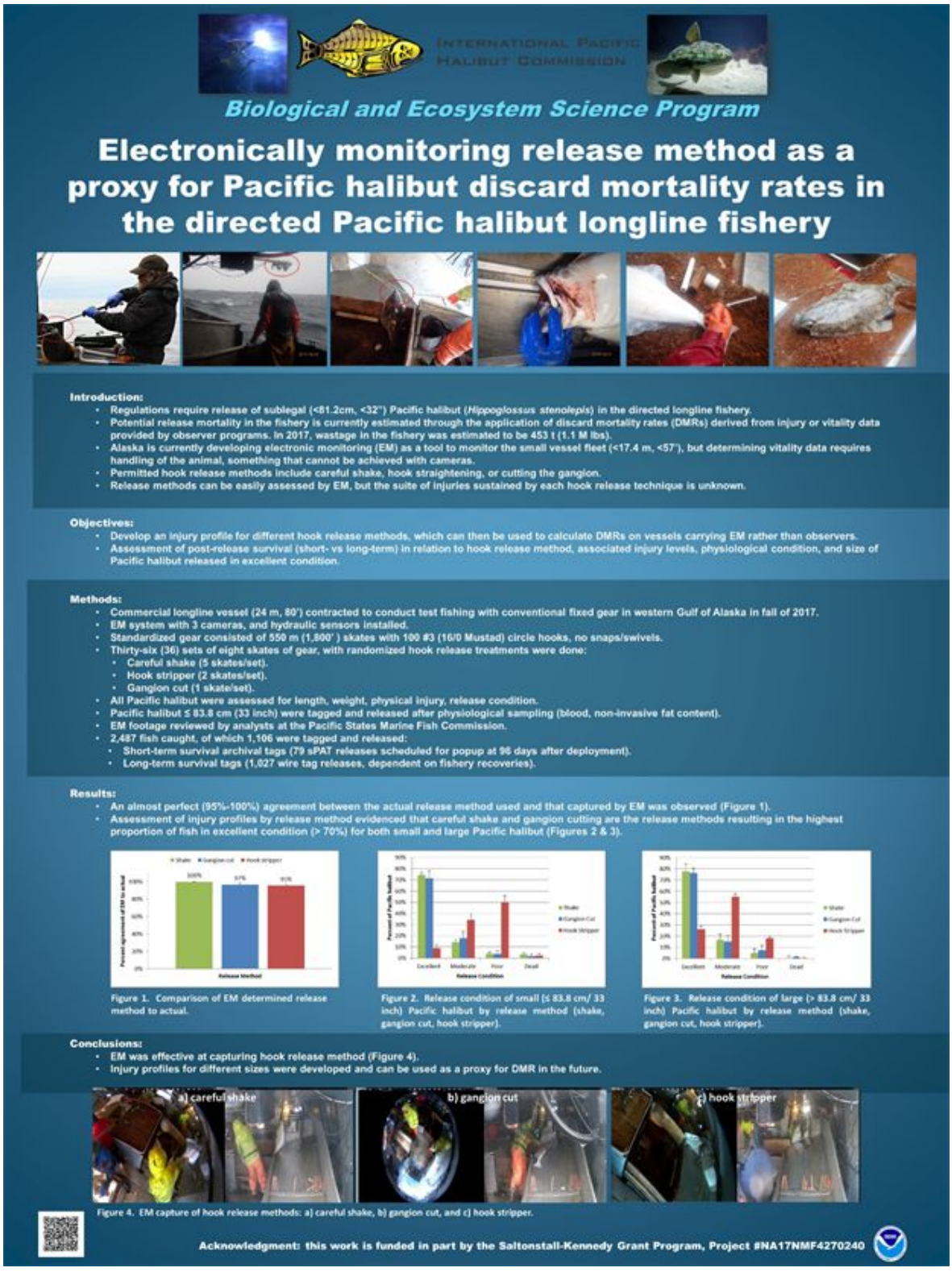
That the Commission:

1) **NOTE** paper IPHC-2020-AM096-INF05, which provides copies of the IPHC Secretariat science posters displayed at the 96th Session of the IPHC Annual Meeting (AM096).

APPENDICES

As listed in Table 1

Appendix 1



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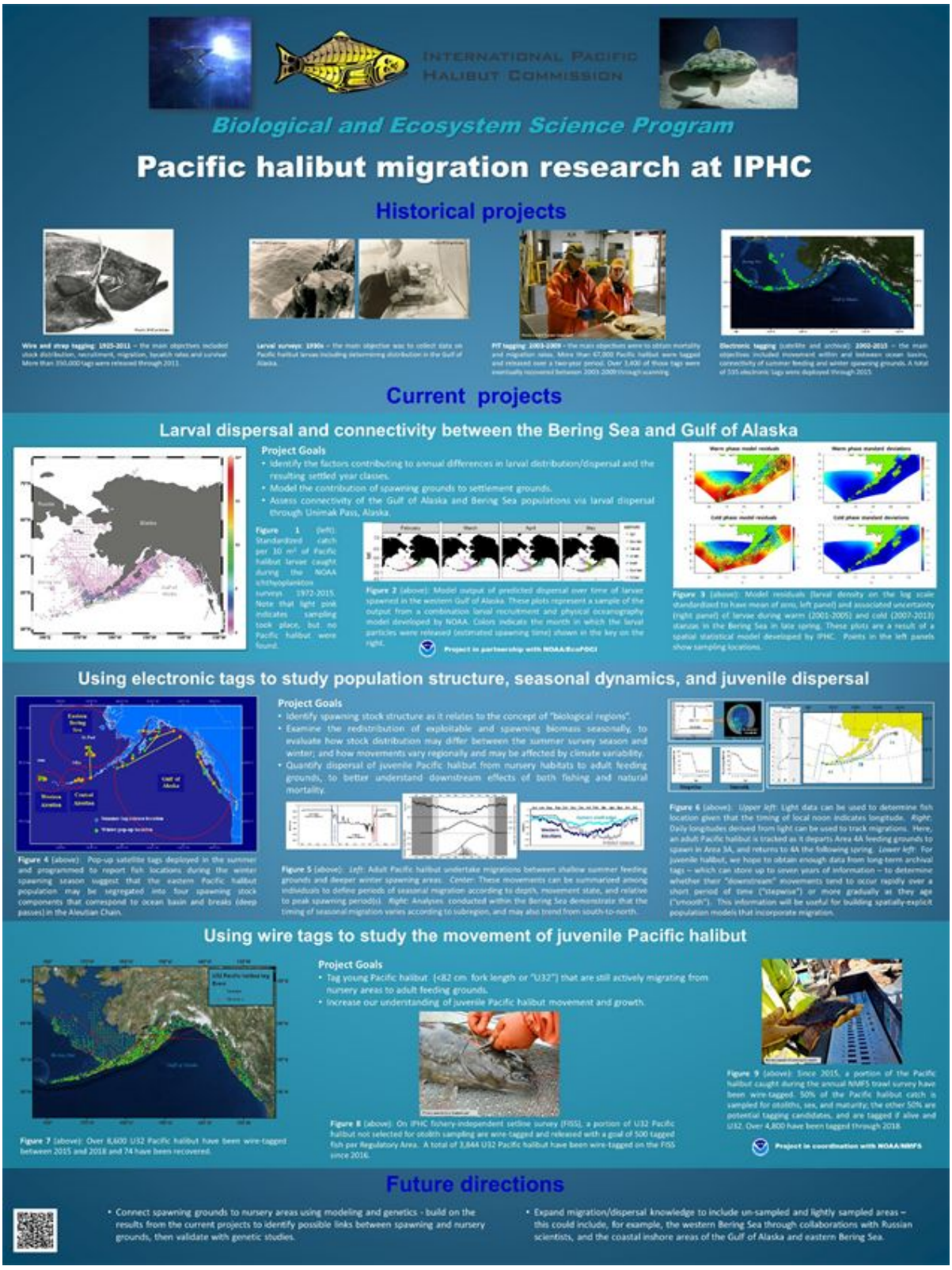
Appendix 2



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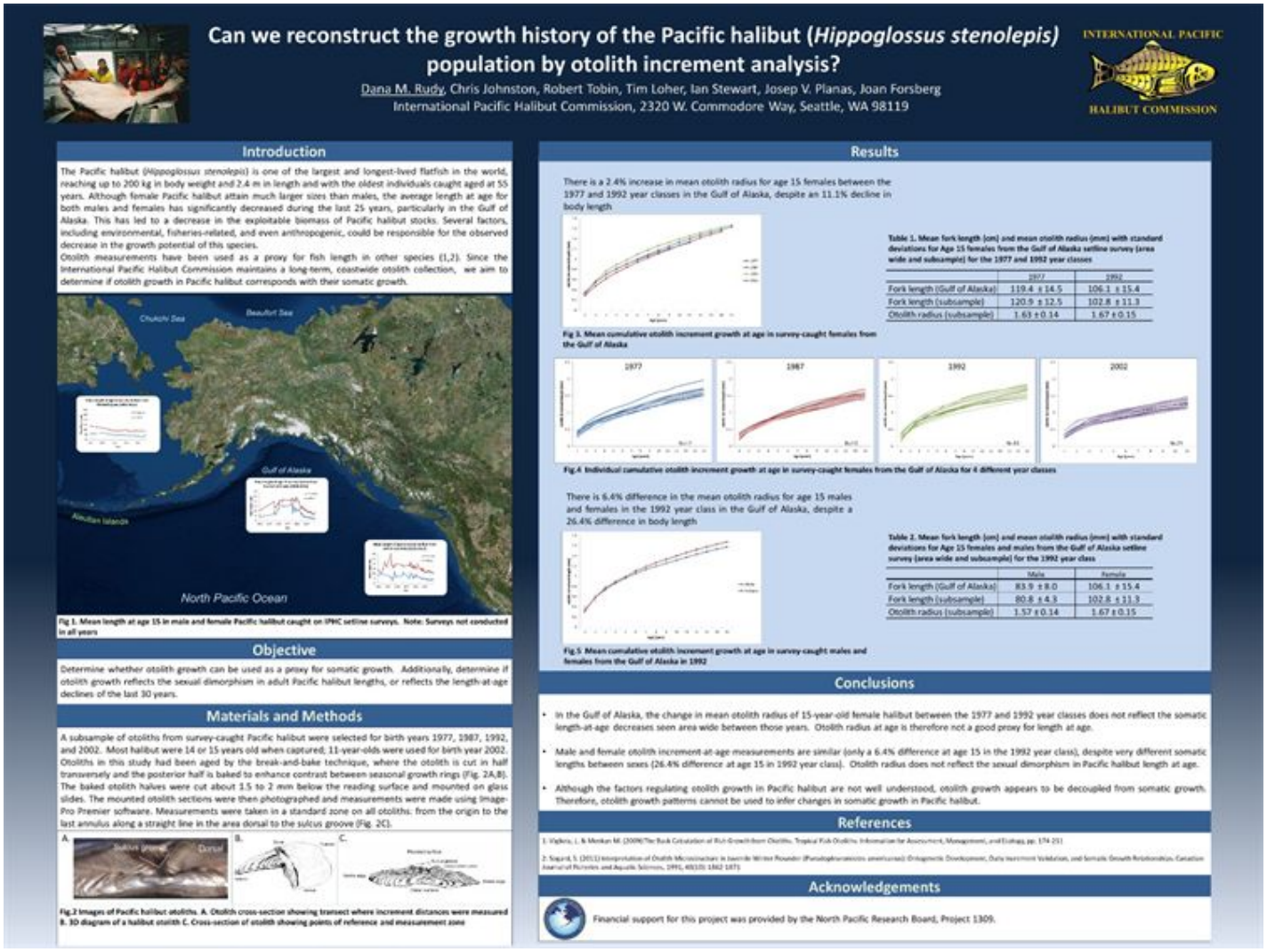
Appendix 3



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Appendix 4

Re-ageing of archived otoliths from the 1920s to the 1990s

Joan E. Forsberg, Dana Rudy, Chris Johnston, Robert Tobin and Ian J. Stewart
International Pacific Halibut Commission, Seattle, WA, USA

INTERNATIONAL PACIFIC HALIBUT COMMISSION

Background

The International Pacific Halibut Commission (IPHC) has collected otoliths for age determination since 1925. All otoliths that have been examined for age determination are kept and added to the IPHC's otolith collection, which contains samples from over 1.6 million Pacific halibut. Age determination techniques used for Pacific halibut have changed over time; prior to 1992, all otoliths were surface aged. Between 1992 and 2001, otoliths that met certain criteria were also aged by break-and-burn or break-and-bake method in addition to surface ageing. Beginning in 2002, all otoliths collected from the IPHC fishery-independent setline survey and the commercial catch have been aged by break-and-bake. Observed size-at-age (SAA) of Pacific halibut has changed over time and the reasons behind changes in Pacific halibut SAA are not well understood. Prior to this study, the potential contribution of changes in ageing methods to observed SAA was uncertain.

Microscope used by IPHC in the 1960s. New and historic surface ages were compared to see if there were differences that could be due to changes in equipment or ageing protocol.

Stored otoliths were transferred from vials to trays with individual cells.

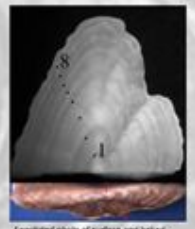
Study goals

To provide information on the bias and imprecision of historical surface ages relative to age data from the 1990s onward, subsets of otoliths from each decade from the 1920s to the 1980s were re-aged by both the surface and break-and-bake technique, and these new ages were compared to the original surface ages. Additionally, a subset of otoliths collected in the 1990s that were previously only surface-aged were re-aged by break-and-bake. Since the 1920s, IPHC age readers have cleared Pacific halibut otoliths in glycerin solution (50% glycerin/50% water) to increase readability of the growth patterns. Otoliths are also kept in glycerin solution for long term storage. This study also provided an opportunity to observe the condition of otoliths stored for almost 90 years in glycerin solution.

Methods

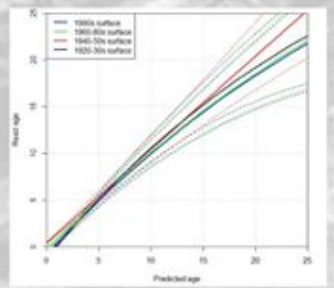
Years for which otoliths had been collected and aged were identified. One or two years per decade were selected based on number of geographical regions (IPHC regulatory areas) and otoliths available. For each selected year within a decade, otoliths were retrieved from storage. Otoliths collected prior to 2002 were stored in groups of ~25 per vial. Otoliths were separated within the vial by numbered paper labels. Almost 28,000 otoliths were transferred from vials to containers that have individual cells. The transferred otoliths were further subsampled to 500 from each regulatory area for ageing. A total of 17,414 otoliths were re-aged by three experienced readers.

Partially funded by North Pacific Research Board Project 1309.

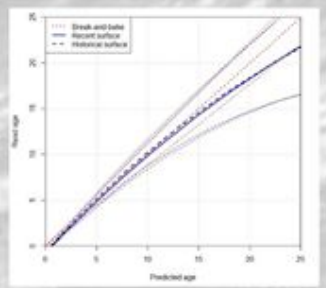


Annotated photo of surface and baked halves of an otolith collected in 1926.

Age frequency distributions were compared for new and original surface readings and for original surface and break-and-bake readings for each decadal group. Example above is for the 1960s group.



Comparison of bias (solid lines) and imprecision (dashed lines) estimates for surface ages read during the 1990s, 1980s-1980s, 1940s-1950s, and 1920s-1930s.



Comparison of bias and imprecision for break-and-bake, recent (1998+) and pooled historical (1926-1993) surface ages.

Results

Results indicated that historical samples contained very few fish aged older than 15 years by either method. Based on simultaneous estimation of bias and imprecision for up to four unique ages per otolith, the properties of historical surface ageing methods were found to be very similar to current methods, becoming increasingly biased and imprecise beyond 15 years. This study reconciles two important questions for assessment and related analyses attempting to reconstruct the historical abundance and biological trends for Pacific halibut. These results support the conclusion that increasing trends in size-at-age observed from the 1930s through the late 1970s were not an artifact of changes in ageing methods, but represent a real biological phenomenon, for which probable mechanisms are currently being investigated. Second, there does not appear to be a need for extensive further re-ageing of historical samples. The truncated age structure of most historical samples suggests that little information will be lost if ages are aggregated beyond age 20 (as has been done in most analyses) and both the bias and imprecision of the surface method are included in any analysis.

In addition to clarifying precision of ageing methods, the re-ageing of archived otoliths also provided an excellent opportunity to observe the condition of otoliths stored in glycerin solution for up to 88 years. Most of the otoliths examined were in good condition; some samples from the 1920s and 1930s had a chalky coating that obscured surface growth patterns, but were readable when broken and baked.

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Appendix 5

Identification of molecular growth signatures in skeletal muscle of juvenile Pacific halibut (*Hippoglossus stenolepis*) for monitoring population growth patterns

Josep V. Planas*,[1] , Dana Rudy[1], Anna Simeon[1], Thomas P. Hurst[2]

[1]International Pacific Halibut Commission, Seattle, WA, USA
[2]Alaska Fisheries Science Center, NOAA, Newport, OR, USA

INTRODUCTION

The International Pacific Halibut Commission has reported changes in the size-at-age (SAA) of Pacific halibut (*Hippoglossus stenolepis*) caught in the commercial fishery as well as in its own survey research for almost 100 years. Although an increase in SAA was observed between the 1930's until the 1980's, SAA has significantly declined since the 1990's until today, as evidenced by a 50% reduction in body weight for a typical 12-year old female during this period (**Figure 1**). However, our understanding of the potential causes for the long-term variability in SAA is still rather scarce. Although a number of factors could be contributing to this variability, recent analyses have suggested that temperature variation may have been a contributing factor to the observed changes in SAA in the Pacific halibut. Therefore, there is an urgent need to better understand the physiological effects of temperature on growth in this species.

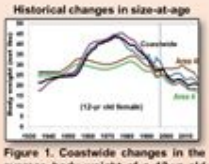
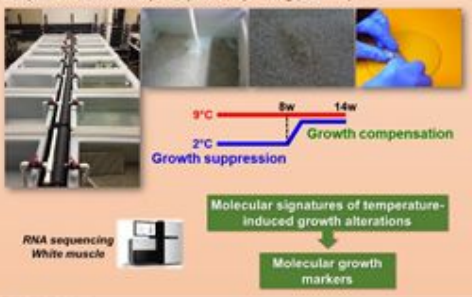


Figure 1. Coastwide changes in the average body weight of a 12-yr old female Pacific halibut (black line).

MATERIALS AND METHODS

Juvenile Pacific halibut of approximately 6 month of age were collected off the coast of Kodiak, Alaska, US and transferred to the aquatic facilities of the Hatfield Marine Science Center in Newport, Oregon, US. Individually pit-tagged fish were acclimated for 8 weeks to 2°C and 9°C in duplicate tanks (N = 5) prior to sampling. Subsequently, half of the fish previously acclimated at 2°C were gradually brought up to 9°C and held at 9°C for 6 additional weeks prior to sampling. The transcriptomic responses of white skeletal muscle from fish experiencing temperature-induced growth suppression and growth compensation were analyzed by RNA sequencing (Illumina).



RESULTS

- **Temperature modulates the specific growth rate (SGR)**

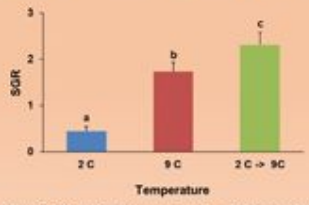


Figure 2. Effects of temperature on the specific growth rate in juvenile Pacific halibut. Different letters indicate statistically significant differences among the groups (N = 10).

- **Transcriptomic responses to temperature-induced growth suppression**

Figure 3. *Left*: Number of differentially expressed genes. *Right*: Functional categories of genes significantly down-regulated under growth suppression.

- **Transcriptomic responses to temperature-induced growth stimulation**

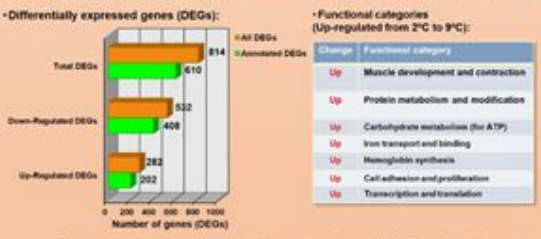


Figure 4. *Left*: Number of differentially expressed genes. *Right*: Functional categories of genes significantly up-regulated under growth stimulation.

CONCLUSIONS

- Acclimation at 2°C resulted in a significant reduction in the specific growth rate (SGR) whereas a significant increase in SGR was observed as a result of temperature-induced growth compensation.
- Growth suppression by low temperature acclimation is associated with a decrease in the expression of genes involved primarily in muscle function, protein synthesis, transcription and stress and immune response.
- Growth stimulation by temperature-induced compensation is associated with an increase in the expression of genes involved primarily in muscle structure and function and metabolic activation.
- The resulting molecular growth signatures will be useful to investigate potential changes in growth patterns in Pacific halibut.

* Further information: josep.planas@iphc.int

ACKNOWLEDGEMENTS. This study was conducted with funding from IPHC and the North Pacific Research Board (Project NPRB 1704).

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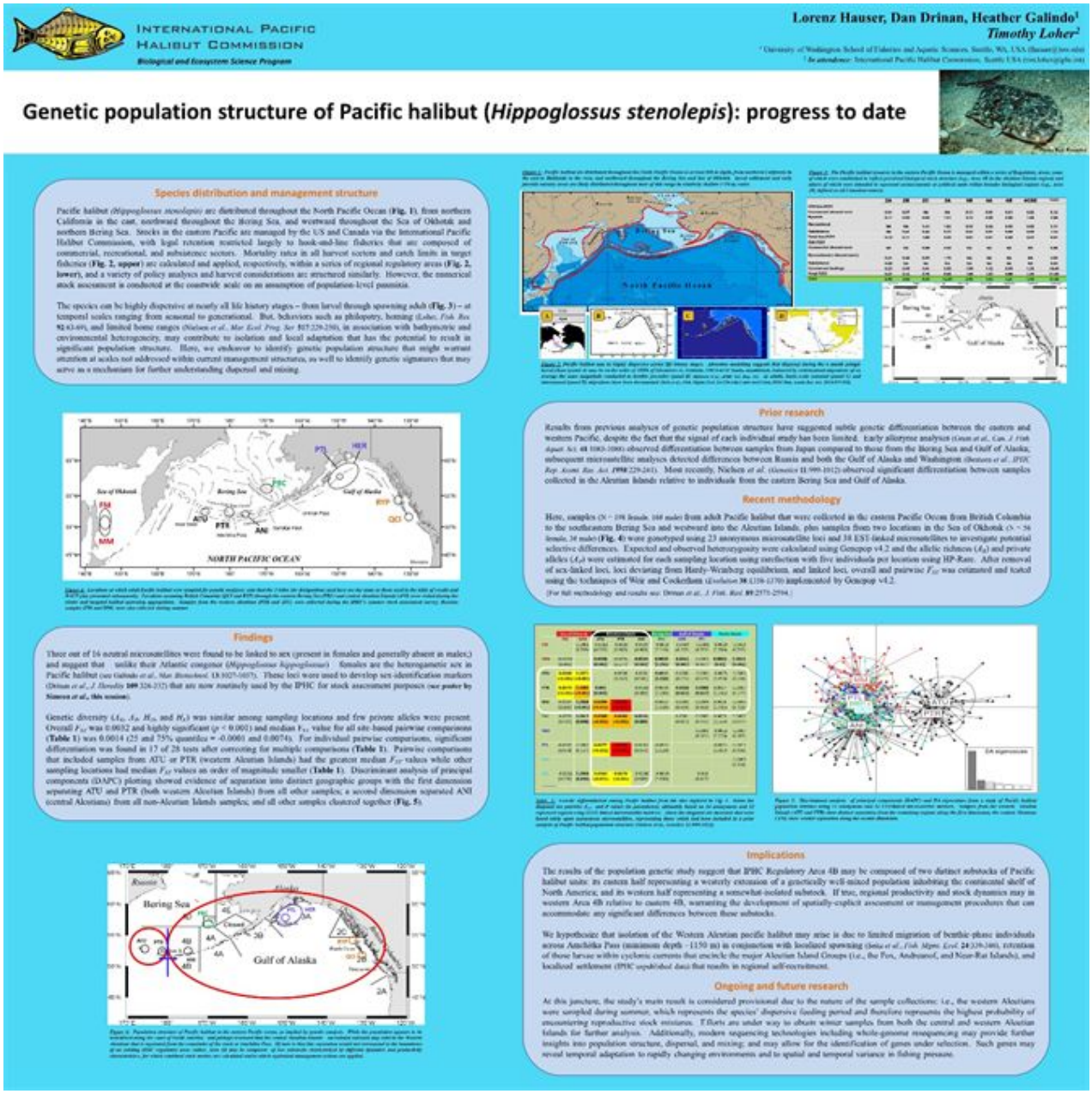
Appendix 6



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Appendix 7

Genetic Sex Identification of Pacific Halibut (*Hippoglossus stenolepis*) Commercial Landings

INTERNATIONAL PACIFIC HALIBUT COMMISSION

Anna Simeon[1], Dan Drinan[2], Lorenz Hauser[2], Timothy Loher[1], Lara Erikson[1], Ian J. Stewart[1] and Josep V. Planas[1]

[1]International Pacific Halibut Commission, Seattle, WA, USA. E-mail: anna.simeon@iphc.int

[2]University of Washington, School of Aquatic and Fishery Sciences, Seattle, WA, USA

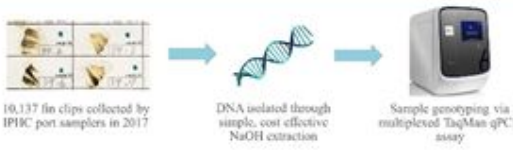
Background

- Throughout the fishery's history, the sex ratio of commercially-caught Pacific halibut has remained unknown as landed individuals are eviscerated at sea and the sexes are otherwise indistinguishable. The sex ratio from the IPHC's fishery independent setline survey (FISS) has thus far been the only direct source of sex-ratio information.
- Differences in size between individuals landed commercially and on the FISS suggested a greater proportion of females in the fishery.
- Drinan et al. 2017 identified two sex-linked single nucleotide polymorphisms (SNPs) able to distinguish between males and females and described molecular assays to identify an individual's sex by these genetic signatures.

Study Objectives

- Develop multiplex assay for both sex-determining SNPs (twice the data for half the price)
- Directly determine the 2017 commercial catch sex ratio through SNP genotyping

Methods

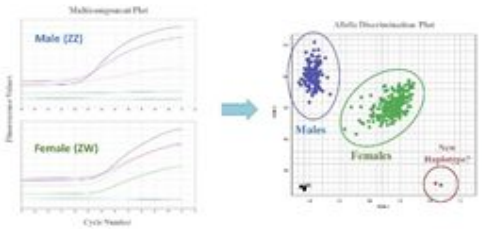


10,137 fin clips collected by IPHC port samplers in 2017

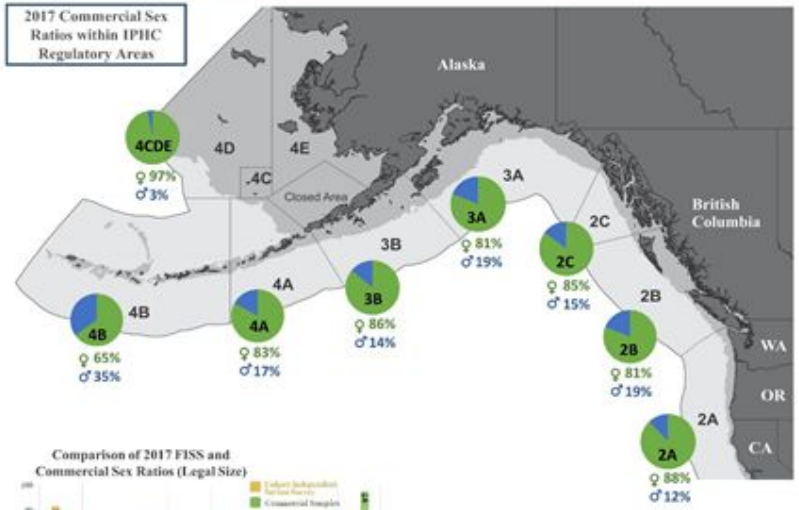
DNA isolated through simple, cost effective NaOH extraction

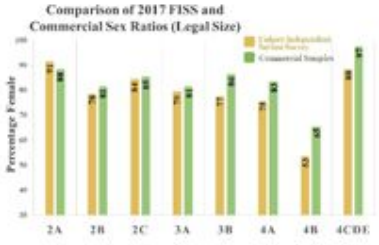
Sample genotyping via multiplexed TaqMan qPCR assay

- A multiplexed TaqMan assay was designed to genotype both SNPs (hs10183, hs23885) simultaneously using reporter dye pairs FAM/VIC and ABY/JUN and reference dye Mustang Purple. Target sequences were based on those described in Drinan et al. 2017.



Results





- 1.5% of genotyped samples display a unique haplotype or combination of haplotypes that do not strictly correspond to either sex.
- May be caused by an additional SNP in the probe binding regions, chromosomal inversion, or something else. Additional sequencing of these regions (to be completed in 2020) will help clarify.

- Female proportion of the commercial catch ranges from 81% in regions 2B and 3A to 97% in regions 4CDE.
- The higher proportion of females in commercial samples versus the FISS samples is likely due to their larger, targeted size.

With this technique, the sex ratio of the commercial catch will be monitored annually and used in future stock assessments.

References

- Drinan D.P., Loher T., & Hauser L. (2017) Identification of Genomic Regions Associated with Sex in Pacific Halibut. Journal of Heredity. 109(3): 326-332.
- View more information and data at www.iphc.int

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Appendix 8

A decade of coastwide environmental monitoring on the annual IPHC fishery-independent setline survey and practical applications of the data in a spatio-temporal assessment model

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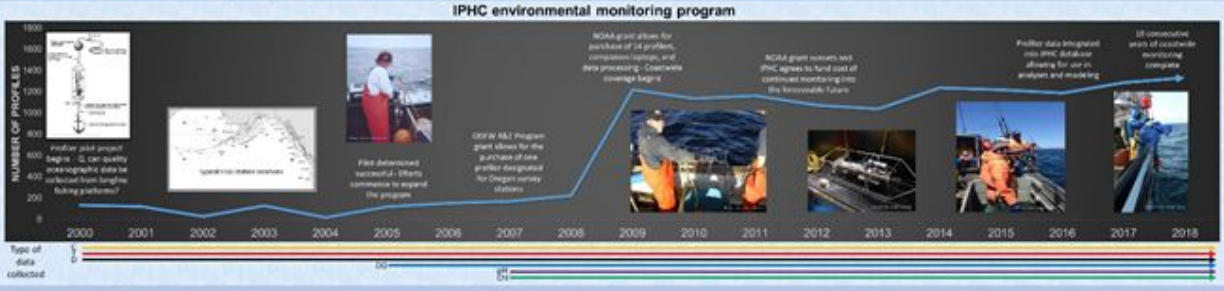
INTERNATIONAL PACIFIC HALIBUT COMMISSION

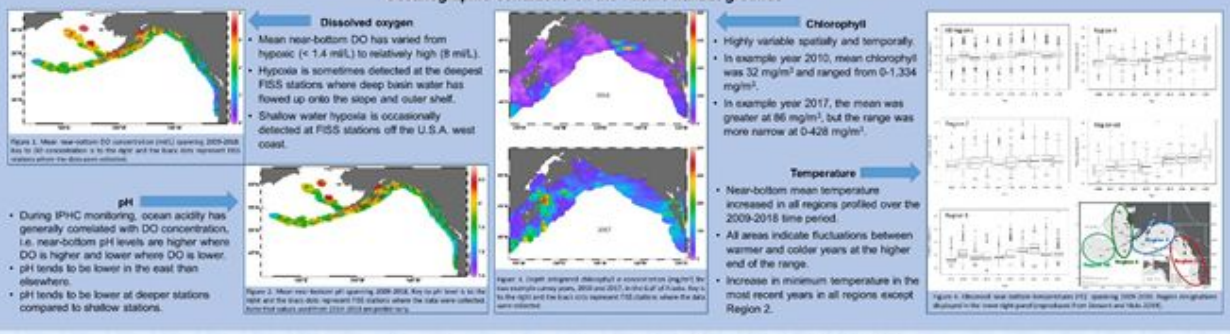
Abstract

In 2009, the International Pacific Halibut Commission (IPHC) commenced an annual coastwide environmental monitoring program. At each station surveyed during the IPHC's fishery-independent setline survey (FISS), water column profilers are deployed to collect conductivity (C), temperature (T), pressure (depth; D), dissolved oxygen (DO), pH, and fluorescence (Chl). These data are used to monitor the conditions of Pacific halibut habitat in North American waters of the Pacific Ocean and Bering Sea. The data have led to a better understanding of the environmental conditions throughout Pacific halibut habitat, including spatial variability in environmental variables. The monitoring has also enabled the ability to detect annual anomalies such as seasonal hypoxic zones that can greatly affect local Pacific halibut density. Incorporation of environmental covariates into the IPHC spatio-temporal modelling of density indices allows for the exploration of relationships between Pacific halibut density and environmental variables. As an example, we present results from modelling of data from surveys of the west coast of the United States of America.

IPHC environmental monitoring program



Oceanographic conditions on the Pacific halibut grounds



Dissolved oxygen

- Mean near-bottom DO has varied from hypoxic (< 1.4 ml/L) to relatively high (8 ml/L).
- Hypoxia is sometimes detected at the deepest FISS stations where deep basin water has flowed up onto the slope and outer shelf.
- Shallow water hypoxia is occasionally detected at FISS stations off the U.S.A. west coast.

pH

- During IPHC monitoring, ocean acidity has generally correlated with DO concentration, i.e. near-bottom pH levels are higher where DO is higher and lower where DO is lower.
- pH tends to be lower in the east than elsewhere.
- pH tends to be lower at deeper stations compared to shallow stations.

Chlorophyll

- Highly variable spatially and temporally.
- In example year 2010, mean chlorophyll was 32 mg/m³ and ranged from 0-1,334 mg/m³.
- In example year 2017, the mean was greater at 86 mg/m³, but the range was more narrow at 0-428 mg/m³.

Temperature

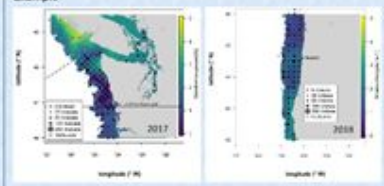
- Near-bottom mean temperature increased in all regions profiled over the 2009-2018 time period.
- All areas indicate fluctuations between warmer and colder years at the higher end of the range.
- Increase in minimum temperature in the most recent years in all regions except Region 2.

Spatio-temporal modeling to examine environmental effects on Pacific halibut distribution

Purpose

- The IPHC uses a spatio-temporal model (Webster et al. In review) to examine distribution and density changes of Pacific halibut throughout the monitored area.
- Modelling output is used in the IPHC stock assessment, and ensures standardized treatment of data inputs across areas and time, while accounting for process and sampling uncertainty.
- Recently, environmental covariates have been added to the analysis to examine distribution changes driven by oceanographic conditions.
- To date, spatio-temporal modeling has provided strong evidence of relationships between Pacific halibut catch rates and environmental covariates, such as dissolved oxygen and temperature.

Example



- In 2017, the FISS encountered a large number of tightly clustered stations off the northwest USA coast that caught zero Pacific halibut, where fish are normally encountered.
- A previous study (Sadorus et al. 2014) found that Pacific halibut have a minimum DO concentration threshold of about 0.9 ml/L, i.e. they avoid DO below this level.
- Model results confirmed that there was strong evidence that Pacific halibut density indices were dependent on the DO covariate.
- In 2018, low levels of DO were also observed over a wide area. However the affected zone typically has relatively low Pacific halibut catch rates, and the hypoxic stations were interspersed with stations above the minimum DO threshold. The result was that hypoxia did not have nearly the distributional impact in 2018 as it did in 2017.

References

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Appendix 9

Identification and characterization of FSHβ and LHβ in female Pacific halibut *(Hippoglossus stenolepis)*

Kennedy Bolstad[1], Anna Simeon[1] and Josep V. Planas[1]

[1]International Pacific Halibut Commission, Seattle, WA, USA

INTRODUCTION

Determining the maturity schedules of Pacific halibut (*Hippoglossus stenolepis*) is an important component of quantifying the spawning stock biomass used to establish management regulations by the International Pacific Halibut Commission (IPHC). Currently, this is assessed using macroscopic gonadal observations made during the Fishery Independent Setline Survey (FISS) that is conducted annually by the IPHC. However, this assessment method has not been verified histologically, so the codes assigned to females may not represent their actual maturity status. Gonadotropic hormones such as follicle stimulating hormone beta (FSHβ) and luteinizing hormone beta (LHβ) are key orchestrators of reproduction in teleosts and tetrapods. Therefore, they may serve as reproductive markers for gametogenesis and vitellogenesis (FSHβ) and final maturation and spawning phases (LHβ). Using reproductive markers may contribute to resolving uncertainties about the stock's spawning biomass through refining maturity estimates.

MATERIALS AND METHODS

Pituitary samples were collected from adult non-spawning (N = 7) and spawning (N = 5) Pacific halibut in the Portlock region of Alaska in 2018. From these samples, RNA was extracted and reverse transcribed into cDNA. Gene expression analysis was conducted using qPCR and FSHβ and LHβ primers designed against Pacific halibut full-length cDNA sequences obtained by RNA sequencing of male and female Pacific halibut pituitaries. Housekeeping genes, EEF1A1 and GAPDH were used as the controls.

Extract RNA from pituitaries

RT-PCR into cDNA

qPCR: FSHβ and LHβ primers

Compare non-spawning and spawning samples

RESULTS

- **Pacific halibut FSHβ and LHβ deduced protein sequences show a high degree of homology with corresponding flatfish sequences**

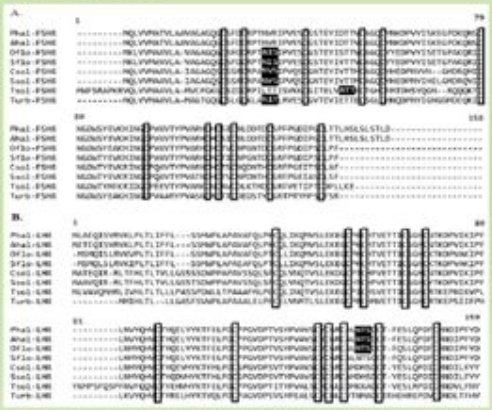

Figure 1. Protein sequence alignments of Pacific halibut FSHβ (A) and LHβ (B) with other flatfish species. The inserted dashes serve to align the cysteine residues which are outlined by rectangles. Potential N-glycosylation sites are marked by solid boxes. Species abbreviations are: Pacific halibut (Phal), Atlantic halibut (Ahal), olive flounder (Oflo), southern flounder (Sflo), common sole (Csol), Senegalese sole (Ssol), tongue sole (Tsol), and turbot (Turb).

- **Phylogenetic analysis of teleost FSHβ and LHβ deduced protein sequences nest Pacific halibut sequences in the flatfish clade**

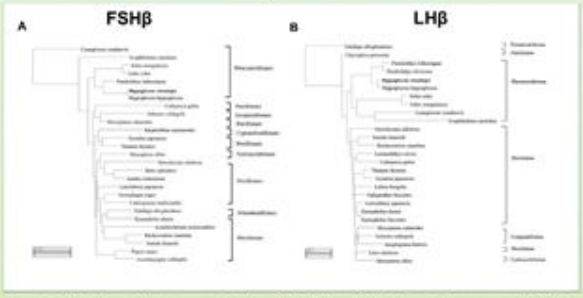

Figure 2. A phylogenetic tree comparing the FSHβ (A) and LHβ (B) protein sequence of Pacific halibut (*Hippoglossus stenolepis*) to other teleosts. This tree was constructed using the neighbor-joining method

- **FSHβ and LHβ mRNA sequences share the highest percent identify with Atlantic halibut *(Hippoglossus hippoglossus)***

- **The expression levels of FSHβ and LHβ are higher in spawning than in non-spawning female Pacific halibut**

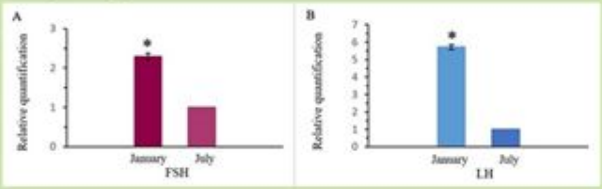

Figure 3. Relative expression levels for FSHβ (A) and LHβ (B) from spawning (January) and non-spawning (July) Pacific halibut. July samples are set as the reference (=1).

CONCLUSIONS

- The nucleotide and deduced protein sequences of FSHβ and LHβ are now available for the first time in Pacific halibut.
- The high homologies of the FSHβ and LHβ nucleotide and protein sequences from Pacific halibut with respect to other flatfish species, indicate a high degree of evolutionary conservation of gonadotropic hormones.
- The higher overall relative FSHβ and LHβ mRNA expression levels in the pituitary from spawning over non-spawning female Pacific halibut are indicative of the functional conservation of these reproductive markers among teleost species.
- Overall, this study highlights the potential of the identified and characterized reproductive markers to help refine Pacific halibut maturity estimates

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Appendix 10

INTERNATIONAL PACIFIC HALIBUT COMMISSION

Biological and Ecosystem Science Program

Oocyte stages and development in female Pacific Halibut (*Hippoglossus stenolepis*)

INTRODUCTION

Each year, the fishery-independent setline survey collects biological data on the maturity of female Pacific halibut that are used in the stock assessment. In particular, the female maturity schedule is used to estimate spawning stock biomass. Currently used estimates of maturity-at-age indicate that the age at which 50% of female Pacific halibut are sexually mature is 11.6 years on average. However, not only is maturity estimated with the use of macroscopic visual criteria, incurring a relative level of uncertainty that is associated with semi-quantitative criteria, but the estimates of maturity-at-age have not been revised in recent years and may be outdated. For this reason, efforts need to be put in place to further understand reproductive maturity in female Pacific halibut. Unfortunately, relatively little is known regarding the changes that take place in the ovary during reproductive development leading to spawning in this species. This study aims to describe oocyte (immature egg) development in female Pacific halibut by comparing oocyte stages and characteristics between the non-spawning season (summer) and the spawning season (winter).

MATERIALS AND METHODS

Ovaries were collected from Pacific halibut females captured in three geographical regions (Fig. 1), two in the central and south Gulf of Alaska (Portlock and Haida Gwaii, respectively) and one in the southeast Bering Sea (Misty Moon), during the winter (Jan-Feb, 2004) and summer (June-July, 2004) periods. Ovaries were fixed in buffered formalin, embedded in paraffin and sections were mounted on glass slides. Two slides for each ovary were stained with Hematoxylin and Eosin. From each slide, the diameters of 10 randomly selected oocytes were measured, yielding a total of 20 measured oocytes per ovary analyzed. Measures were conducted using the Image-Pro Premier 9.1 software.

Figure 1. Geographic location of sample collection sites. Summer collection sites (non-spawning season) are indicated by a red star and winter collection sites (spawning season) are indicated by a black box. The number of females collected at each site is indicated.

RESULTS

- **Oocyte classification**

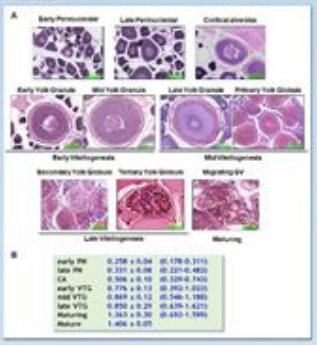

Figure 2. Pacific halibut oocyte stages and diameters. A) Pictures of representative oocytes at the various stages during oocyte development. B) Oocyte diameters (in millimeters) at different stages in oocyte development. Oocyte stage classification included oocytes at the early and late perinucleolar (PN), cortical alveoli (CA), mid and late vitellogenesis (VTG), maturing (migrating germinal vesicle [GV]) and mature stages. The range of oocyte diameters is indicated within parentheses.

- **Oocyte size distribution**

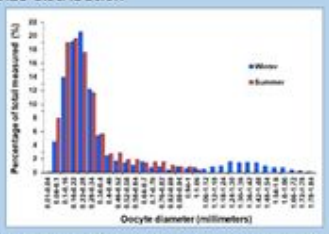

Figure 3. Pacific halibut oocyte distribution in females caught in summer and winter periods. Oocyte size categories are in millimeters and are shown as percentage of the total number of oocytes measured.

- **Oocyte stage classification: Summer *versus* Winter**

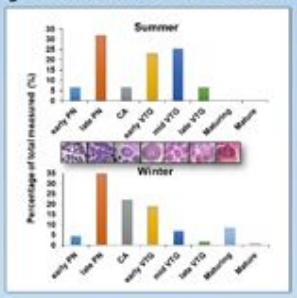

Figure 4. Pacific halibut oocyte stages in females caught in the Summer (A) and Winter (B). Oocyte stage classification included oocytes at the early and late perinucleolar (PN), cortical alveoli (CA), mid and late vitellogenesis (VTG), maturing and mature stages.

CONCLUSIONS

- This study represents the first attempt at describing ovarian development in Pacific halibut.
- Oocyte stages have been identified and can be used for accurate ovarian staging.
- The ovary of Pacific halibut contains a predominant population of early vitellogenic oocytes that is likely recruited during the Fall for Winter spawning.
- The observed differences in oocyte stages between Summer and Winter are indicative of the seasonal progression of ovarian development.
- Further studies are needed to complete the description of the annual reproductive cycle in this species.

ACKNOWLEDGEMENTS. Thanks to Collin Winkowsky for her help with oocyte measurements and Joan Forsberg, Chris Johnston and Robert Tobin for their help with data analysis.

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Analysis of the effects of historical discard mortality in non-directed fisheries ('bycatch')

PREPARED BY: IPHC SECRETARIAT (I. STEWART, A. HICKS , P. CARPI; 16 DECEMBER 2019)

PURPOSE

To provide the Commission with a response to the Commission's request:

> "*AM095–Rec.05 (para. 67) The Commission **RECOMMENDED** that the IPHC Secretariat expand upon the analysis completed in IPHC-2019-AM095-INF08 "Treatment and effects of Pacific halibut discard mortality (bycatch) in non-directed fisheries projected for 2019", to be reviewed by the SRB at its next meeting. The objective of this work is to estimate lost yield from bycatch of Pacific halibut in non-directed fisheries for the years of 1991-2018.*"

INTRODUCTION

There has been a long-standing interest in understanding the trade-off between yield in the directed Pacific halibut fisheries, stock or spawning biomass and mortality of Pacific halibut due to discards in non-directed fisheries ('bycatch'). Summary and analysis historically focused on accounting for 'lost' spawning output (Salveson et al. 1992) as well as direct estimates of 'yield loss' including both immediate and delayed effects throughout the potential life-span of a fish experiencing this mortality (Adlerstein 1993; Adlerstein 1994). Yield loss has been defined differently among studies, but all included at least the directed commercial fishery landings. Yield loss was generally found to be very sensitive to the specific non-directed fleet being investigated, as well as the year, location and season of the comparison. Specific gear by area and season components ranged from values less than 1.0 to as high as 3.3 pounds of yield gained in the directed commercial fishery per pound of discard mortality in non-directed fisheries (Adlerstein 1993; Adlerstein 1994). An early estimate of aggregate yield loss including all non-directed fisheries indicated a rate of 1.7 pounds per pound (Sullivan et al. 1994). Another analysis indicated lower values around 1.12 (for 1995 specifically; calculated from the results in Clark and Hare 1998). Clark and Hare (1998) also attempted to estimate the distribution of the yield loss under varying hypotheses regarding movement rates. They found that much of the lost yield was estimated to occur in the IPHC Regulatory Area in which the mortality from non-directed fisheries had been realized. Hare and Clark (2007) reported historical yield loss values of 1.40 and 1.58 from the early and late 1980s respectively. More recently, yield loss was estimated to be 1.14 (Hare and Williams 2013).

Many of the early analyses made simple assumptions regarding the selectivity of both the mortality in non-directed fisheries and in the directed commercial Pacific halibut fishery. Specifically these models often did not explicitly include dynamics for fish less than 6 or 8 years of age, and did not always account for sub-legal mortality (fish below the current 32 inch (82 cm) minimum size limit). The trade-off between yield and economic value in the directed fisheries and discard mortality in non-directed fisheries has been found to be quite sensitive to the discard mortality rates in the directed fisheries (Martell et al. 2015).

In 2018, the IPHC Secretariat evaluated alternative projections for 2019-21 under alternative scenarios of no discard mortality in non-directed fisheries (bycatch) and no discard mortality in non-directed fisheries for Pacific halibut less than 26 inches (66 cm) in length (U26; IPHC-2019-AM095-INF07, IPHC-2019-AM095-INF08). That analysis rephrased the metric for comparison as potential 'yield gain', as the focus was to describe the change in the directed fisheries (a

'gain') as mortality in non-directed fisheries was reduced; however, even though the term has changed, the values can be interpreted in the same manner as estimates from historical analysis. The results indicated that over short-term projections (2019-2021) the current Catch Sharing Plans (CSPs), selectivity and biology (weight-at-age) led to a potential yield gain of 1.25-1.29 pounds of FCEY yield for every pound of discard mortality in non-directed fisheries (bycatch) removed from the projections. The methods used to create these estimates were based on maintaining a constant Spawning Potential Ratio (SPR; Goodyear 1993) while shifting yield from non-directed fisheries mortality to the directed fisheries. That approach is consistent with the concept of the 'fisheries footprint' introduced in 2016 (Martell et al. 2016). Briefly, the fisheries footprint accounts for the simultaneous nature of multiple sources of mortality to describe the relative contribution of each to the SPR of the population. This type of approach is necessary where fishing and natural mortality is simultaneous rather than sequential (e.g. 'adult equivalents' used for Pacific salmon analyses) because some of the fish that survive one source succumb to another prior to contribution to the long-term spawning output of the population.

METHODS

This analysis used the preliminary 2019 stock assessment (four models; IPHC-2019-SRB014-07) to evaluate the hypothetical yield gained by the directed Pacific halibut fisheries in the absence of annual historical discard mortality in non-directed fisheries (bycatch). Although the Commission request specified a starting year of 1991, current short time-series stock assessment models (two of the four) extend only as far back as 1992, so the analysis includes only 1992-2018.

The methods follow the conceptual approach that produced the 2018 analysis (IPHC-2019-AM095-INF07, IPHC-2019-AM095-INF08). This approach is purely numerical (iteratively solving for the solution) in order to most accurately represent the conditions estimated in the stock assessment for each year. It differs importantly in application from the analysis performed in 2018 in that this analysis is retrospective (rather than a projection), which requires a slightly different set of procedures to maintain consistency with assessment results (described below).

The steps to conduct this analysis were as follows:

a) Set all model parameters in each of the four stock assessment models to initialize at the maximum likelihood estimates from the preliminary 2019 stock assessment.
b) Set stock synthesis (the software used to implement the individual stock assessment models) input controls to calculate the time-series of population and fishery quantities without solving for new parameter values (maximum phase = 0; Methot et al. 2019).
c) For the target year (each year from 1992 through 2018 was analyzed independently), set discard mortality from non-directed fisheries (bycatch) equal to a value of zero.
d) Increase the directed commercial fishery mortality in the target year (including both landings and discard mortality) by a scaling factor, α (an arbitrary starting point of 1.0 was used for the first target year analyzed, subsequent years used the previous target year's starting point to speed convergence).
e) Recalculate the time-series of population and fishery quantities for each model.
f) Because the variance for the estimate SPR from each model is not available (the parameters are not re-estimated), the original variance from each of the preliminary 2019 stock assessment models was used to integrate the results of the four models and to calculate the median ensemble SPR for that year.
g) Compare the median ensemble SPR for the target year to the original estimate from the preliminary 2019 stock assessment. If it does not match (to the third decimal place), repeat steps d-f by adjusting α up or down accordingly.

h) Calculate the difference between the directed commercial fishery mortality after step g and the original directed commercial fishery mortality to determine the raw potential yield gained.

The raw potential yield gained was then divided by the discard mortality in non-directed fisheries that had been removed in order to determine the potential yield gain rate. In order to evaluate the hypothetical spatial distribution of yield gained by the directed Pacific halibut fisheries, basic properties of the IPHC's interim management strategy were applied as a simple approximation to historical decision-making. These properties included:

1) All discard mortality in non-directed fisheries (bycatch) of Pacific halibut greater than 26 inches (66 cm) in length (O26) was transferred to the directed commercial fishery within the IPHC Regulatory Area in which it occurred. This step is consistent with the IPHC's interim management strategy of directly transferring O26 non-directed fishery discard mortality to the directed fisheries based on projected levels.
2) The directed commercial fishery in all IPHC Regulatory Areas were then scaled up or down in proportion to the distribution of the directed commercial fishery mortality across IPHC Regulatory Areas in that year to match the overall hypothetical yield gain. This step implicitly assumes that the decision making leading to the distribution of mortality for the directed commercial fishery would have been maintained and applied to the additional (or reduced) hypothetical yield available in each year.

As a secondary analysis, a more general comparison was made using tools created for evaluation of reference points for the ongoing Management Strategy Evaluation. The underlying model and equations are documented in IPHC-2019-SRB015-11. Briefly, a simplified population dynamics model was created with options to partition fishing mortality (*F*) between a directed Pacific halibut fleet (not including discard mortality) and a fleet representing discard mortality in non-directed fisheries. The population and fleet dynamics (selectivity) parameters were based on relatively recent (2018) estimates from the stock assessment (IPHC-2019-AM095-09). A specific case of the general reference point evaluation was created to provide some comparability with the methods described above. Importantly, SPR was held constant at a value of 0.46, weight-at-age was set to resemble recent conditions (low weight-at-age scenario), and a comparison was made between the aggregate yield estimated for four scenarios: 1) 100% directed fishery, 2) 80% directed and 20% non-directed discard mortality, 3) 40% directed and 60% non-directed discard mortality, and 4) 100% non-directed discard mortality.

RESULTS

Historical discard mortality in non-directed fisheries (bycatch) has decreased almost monotonically from a high of just over 20 million pounds in 1992 to a low of 6.06 million pounds in 2018 (Table 1). This decrease was concurrent, but not in exact proportion to decreases in the estimated spawning biomass of Pacific halibut over much of this time-period (IPHC-2019-SRB014-07). The effects of discard mortality in non-directed fisheries on hypothetical yield to directed commercial Pacific halibut fishery have differed over time (Figure 1, Table 2). Specifically, during the mid-1990s, a period of very abundant young Pacific halibut and a relatively low level of fishing intensity (IPHC-2019-SRB014-07) moving yield from non-directed fisheries to the directed commercial fishery is estimated to have a larger effect on the stock (and thus a yield gain rate < 100%) as measured via SPR. In later years and over most of the time series the hypothetical yield gain rate was estimated to be larger than 100%, ranging up to 139% in 2010 (Table 2) and averaging 115% over the entire time-series.

Based on the distribution of O26 non-directed fishery discard mortality and the actual distribution of commercial fishery catch (both landings and estimated discard mortality), the hypothetical yield gain is distributed differently in each year as both sources changed over time (Table 3). Although similar to the spatial distribution of discard mortality in non-target fisheries, the aggregate yield gain over the entire time-series is greater than the observed mortality in IPHC Regulatory Areas 2B-3B and smaller than the observed mortality in IPHC Regulatory Areas 4A-4CDE (Table 4).

TABLE 1. Discard mortality in non-directed fisheries (bycatch) of all sizes 1992-2018 (million net pounds).

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
1992	0.44	1.75	0.74	4.67	1.98	2.49	1.17	7.06	20.29
1993	0.44	1.66	0.74	4.29	1.06	1.80	0.85	5.11	15.96
1994	0.44	1.22	0.53	3.91	1.39	2.20	1.04	6.24	16.95
1995	0.61	1.52	0.35	2.96	1.76	2.02	0.96	5.75	15.93
1996	0.61	0.30	0.35	2.74	1.96	1.97	0.93	5.60	14.46
1997	0.61	0.22	0.40	2.97	1.44	1.83	0.86	5.19	13.51
1998	1.08	0.21	0.09	2.66	1.39	1.79	0.85	5.09	13.16
1999	0.99	0.19	0.06	2.89	1.74	1.78	0.84	5.06	13.54
2000	0.82	0.23	0.13	2.89	1.51	1.73	0.81	4.90	13.02
2001	0.84	0.18	0.06	3.01	1.68	1.65	0.78	4.69	12.88
2002	0.64	0.24	0.06	1.95	1.92	1.69	0.80	4.79	12.09
2003	0.26	0.24	0.07	2.94	1.73	1.58	0.75	4.49	12.07
2004	0.29	0.25	0.07	3.43	1.27	1.56	0.74	4.44	12.05
2005	0.54	0.35	0.05	2.98	1.13	1.78	0.84	5.07	12.74
2006	0.58	0.29	0.05	2.73	1.35	1.74	0.82	4.94	12.50
2007	0.39	0.32	0.06	2.60	1.07	1.59	0.48	4.81	11.31
2008	0.43	0.14	0.06	2.82	1.30	1.23	0.36	4.51	10.86
2009	0.51	0.21	0.05	2.48	1.25	1.56	0.46	4.02	10.54
2010	0.35	0.18	0.06	2.30	1.10	1.06	0.48	4.18	9.70
2011	0.09	0.23	0.05	2.49	1.12	0.97	0.48	3.02	8.45
2012	0.12	0.19	0.04	1.72	1.14	1.47	0.26	4.26	9.20
2013	0.07	0.23	0.03	1.63	0.89	0.87	0.14	4.98	8.83
2014	0.10	0.25	0.02	1.89	0.97	0.81	0.13	4.77	8.93
2015	0.08	0.33	0.02	2.10	0.66	0.64	0.22	3.43	7.47
2016	0.10	0.27	0.03	1.79	0.87	0.57	0.14	3.25	7.02
2017	0.13	0.25	0.02	1.43	0.89	0.40	0.21	2.75	6.07
2018	0.13	0.29	0.03	1.65	0.46	0.28	0.23	2.99	6.06

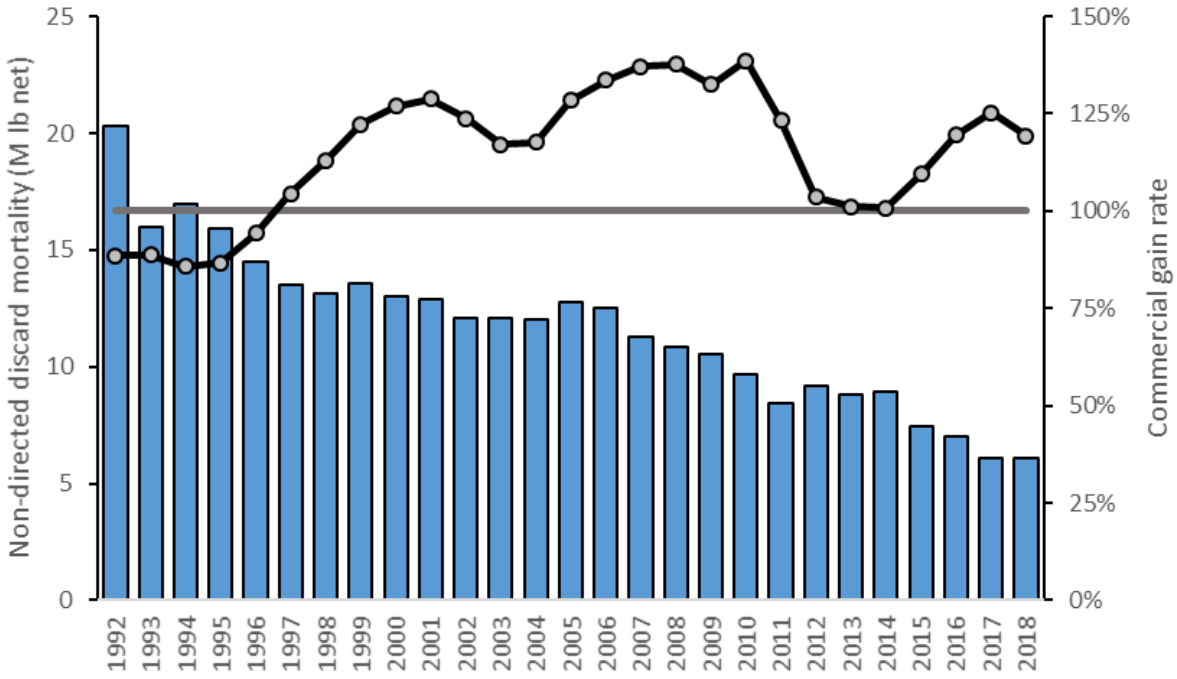

FIGURE 1. Summary of annual discard mortality in non-directed fisheries (bycatch; millions net pounds; bars) and hypothetical yield gain rate (yield gained per weight of discard mortality in non-directed fisheries removed; connected points) to directed commercial in the absence of annual discard mortality in non-directed fisheries. Horizontal line indicates a gain rate of 100%, or exact equivalency in trading yield between sectors.

TABLE 2. Summary of annual discard mortality in non-directed fisheries (bycatch; millions net pounds) by size category and hypothetical yield gain to the directed commercial fishery *including discard mortality* (millions net pounds) in the absence of annual discard mortality in non-directed fisheries (bycatch). The rate represents the hypothetical yield gained per weight of discard mortality in non-directed fisheries (bycatch) removed.

	Discard mortality from non-directed fisheries (bycatch)			Directed commercial fishery yield gain	
Year	O26	U26	Total	yield	rate
1992	13.11	7.18	20.29	17.97	89%
1993	9.20	6.76	15.96	14.17	89%
1994	12.4	4.55	16.95	14.54	86%
1995	11.78	4.16	15.93	13.80	87%
1996	11.50	2.96	14.46	13.63	94%
1997	10.85	2.66	13.51	14.13	105%
1998	10.84	2.32	13.16	14.87	113%
1999	10.33	3.21	13.54	16.56	122%
2000	9.90	3.13	13.02	16.53	127%
2001	10.04	2.83	12.88	16.58	129%
2002	8.55	3.54	12.09	14.97	124%
2003	8.18	3.89	12.07	14.14	117%
2004	8.20	3.86	12.05	14.18	118%
2005	8.65	4.09	12.74	16.36	128%
2006	8.08	4.42	12.50	16.70	134%
2007	7.28	4.03	11.31	15.52	137%
2008	7.05	3.81	10.86	14.96	138%
2009	6.87	3.67	10.54	13.97	133%
2010	6.32	3.38	9.70	13.44	139%
2011	5.49	2.96	8.45	10.41	123%
2012	5.85	3.35	9.20	9.52	104%
2013	5.80	3.03	8.83	8.93	101%
2014	6.19	2.73	8.93	9.00	101%
2015	4.89	2.58	7.47	8.18	109%
2016	4.95	2.07	7.02	8.39	120%
2017	4.34	1.73	6.07	7.61	125%
2018	4.33	1.73	6.06	7.22	119%

TABLE 3. Distribution of hypothetical yield gain (millions net pounds) to directed commercial fisheries in the absence of annual discard mortality in non-directed fisheries (bycatch).

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
1992	0.48	2.09	1.41	5.82	2.28	1.21	1.29	3.39	17.97
1993	0.49	2.01	1.39	4.82	1.35	0.54	0.89	2.68	14.17
1994	0.44	1.40	0.84	4.16	1.33	1.46	1.04	3.86	14.54
1995	0.61	1.71	0.61	3.02	1.48	1.13	0.92	4.33	13.80
1996	0.64	0.63	0.65	2.95	1.69	1.40	0.98	4.68	13.63
1997	0.65	0.74	0.80	3.50	1.54	1.33	0.98	4.59	14.13
1998	1.15	0.86	0.59	3.64	1.76	1.61	0.95	4.31	14.87
1999	1.08	1.13	0.80	4.39	2.56	1.42	1.10	4.06	16.56
2000	0.92	1.15	0.84	4.21	2.67	1.60	1.23	3.91	16.53
2001	0.95	1.02	0.73	4.23	2.57	1.70	1.14	4.24	16.58
2002	0.65	1.17	0.71	3.30	2.72	1.25	1.12	4.07	14.97
2003	0.31	1.10	0.67	3.90	2.50	1.25	1.05	3.36	14.14
2004	0.33	1.14	0.81	4.46	2.06	1.13	0.96	3.30	14.18
2005	0.54	1.52	1.07	4.81	2.09	1.34	1.07	3.93	16.36
2006	0.60	1.68	1.26	4.87	2.29	1.48	0.82	3.71	16.70
2007	0.45	1.50	1.07	4.98	1.93	1.35	0.54	3.71	15.52
2008	0.53	1.09	0.82	4.99	2.35	1.15	0.50	3.54	14.96
2009	0.59	1.02	0.65	4.43	2.31	1.30	0.54	3.13	13.97
2010	0.43	1.04	0.63	4.31	2.19	0.97	0.61	3.28	13.44
2011	0.16	0.96	0.31	3.40	1.71	0.87	0.59	2.42	10.41
2012	0.18	0.75	0.30	2.40	1.39	1.07	0.36	3.08	9.53
2013	0.12	0.76	0.30	2.25	0.99	0.66	0.24	3.60	8.93
2014	0.16	0.79	0.34	2.14	1.06	0.71	0.23	3.57	9.00
2015	0.15	1.00	0.44	2.42	0.80	0.57	0.35	2.45	8.18
2016	0.19	0.98	0.49	2.29	0.81	0.61	0.28	2.75	8.39
2017	0.22	0.91	0.47	2.07	1.10	0.43	0.34	2.07	7.61
2018	0.21	0.86	0.40	2.19	0.67	0.33	0.35	2.21	7.22

TABLE 4. Distribution of aggregate total time-series discard mortality in non-directed fisheries (1992-2018; Table 1) and hypothetical yield gain in the directed commercial fishery (Table 3).

	2A	2B	2C	3A	3B	4A	4B	4CDE
Non-directed discard mortality	3.7%	3.7%	1.3%	22.8%	11.1%	12.4%	5.3%	39.7%
Yield gain	3.7%	8.7%	5.4%	28.0%	13.5%	8.4%	5.7%	26.4%

The auxiliary analysis based on the non-time series specific model built for evaluation of reference points for Pacific halibut produced similar results to those from the time-series. Specifically, yield gain rates under equilibrium conditions (conceptually equivalent to the average over a very long time series) were estimated to range from 121-144%, between an 80:20 partition of directed:non-directed fishing mortality and a 0:100 partition (Table 5).

TABLE 5. Distribution of hypothetical yield gain to directed commercial fisheries in the absence of annual discard mortality in non-directed fisheries (bycatch).

Scenario	Directed fishery *F*	Non-directed *F*	Relative yield	Gain rate
1	100%	0%	1.00	--
2	80%	20%	0.83	121%
3	40%	60%	0.73	137%
4	0%	100%	0.69	144%

DISCUSSION

The yield gain rate between directed fisheries and non-directed fisheries depends on a large number of temporally varying biological factors including: the population age structure, the relative population biomass, the maturity schedule as well as the weight-at-age. In addition, fishery and management factors including the aggregate level of fishing intensity exerted on the stock (SPR), the selectivity specific to each of the directed and non-directed fisheries, and also the relative allocation among components within the directed (i.e., commercial, recreational, subsistence) and non-directed (trawl, pot, hook-and-line) fisheries. A change in any of these factors will lead to a change in the yield gain rate, as evidenced by the variability over time observed even in this simple analysis.

The individual models comprising the stock assessment do not currently allow for time-varying selectivity for discard mortality in non-target fisheries (bycatch; IPHC-2019-SRB014-07); doing so would affect the results. To the degree that the size and age structure of the discard mortality reflects that of the Pacific halibut population, time-varying selectivity may dampen the variability in yield gain rates, as the more abundant demographic components (with a reduced effect on SPR) would be more heavily selected.

This analysis does **not** represent a 'replay' of history with alternative management decisions. The SPR is held constant at the actual estimate from each year, therefore the approach uses the 'fishery footprint' concept to replace one source of mortality (discard mortality in non-directed fisheries; bycatch) with another (directed Pacific halibut fisheries). Because the relative 'footprint' of each source of mortality depends on the overall fishing intensity (SPR), the effects of discard mortality in non-directed fisheries (bycatch) would have differed under alternative harvest strategies. Further, such differences would compound over the time-series: differences from the actual history beginning in 1992 would have changed the stock and fishery interactions both in 1992 and in all subsequent years. Therefore, this analysis only represents one potential measurement tool with which to gauge the relationships between yields to the directed and non-directed Pacific halibut fisheries.

In aggregate, the results of this analysis are generally consistent with those from historical analyses and those based on alternative methods. Mortality reduced in non-directed fisheries, because it has a larger effect on smaller/younger Pacific halibut, generally corresponds to a larger yield in directed fisheries, in this case an average of 115% over the period 1992-2018. The spatial distribution of this hypothetical yield is largely reflective of the distribution of mortality in non-directed fisheries; however, the actual distribution of directed fishery mortality indicates that more of this hypothetical yield may have been taken historically in the eastern IPHC Regulatory Areas of the stock. The trade-off in yield among fisheries is only one part of the IPHC's long-term harvest strategy. Considering this topic in tandem with other management decisions may be best pursued through the ongoing Management Strategy Evaluation.

RECOMMENDATION/S

That the Commission:

a) **NOTE** paper IPHC-2020-AM096-INF06 which provides an analysis of the effects of historical discard mortality in non-directed fisheries (bycatch) on yields to the directed fisheries

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INTERNATIONAL PACIFIC HALIBUT COMMISSION

IPHC–2019–PRIPHC02–R

Report of the 2nd Performance Review of the International Pacific Halibut Commission (PRIPHC02)

DISTRIBUTION:
Participants in the Session
Members of the Commission
IPHC Secretariat

BIBLIOGRAPHIC ENTRY
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ACRONYMS

AM	Annual Meeting
CB	Conference Board
EEZ	Exclusive Economic Zone
FAC	Finance and Administration Committee
FISS	Fishery-independent setline survey
IPHC	International Pacific Halibut Commission
MCS	Monitoring, control and surveillance
MSAB	Management Strategy Advisory Board
MSE	Management Strategy Evaluation
NGO	Non-governmental organisation
PAB	Processor Advisory Board
PICES	North Pacific Marine Science Organization
PRIPHC01	1st Performance Review of the IPHC
PRIPHC02	2nd Performance Review of the IPHC
PSMA	Port State Measures Agreement
RAB	Research Advisory Board
RFMO	Regional Fisheries Management Organisation
SB	Spawning Biomass
SRB	Scientific Review Board
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
USA	United States of America
VME	Vulnerable Marine Ecosystem
VMS	Vessel monitoring system

DEFINITIONS

A set of working definitions are provided in the IPHC Glossary of Terms and abbreviations: https://www.iphc.int/the-commission/glossary-of-terms-and-abbreviations

HOW TO INTERPRET TERMINOLOGY CONTAINED IN THIS REPORT

This report has been written using the following terms and associated definitions so as to remove ambiguity surrounding how particular paragraphs should be interpreted.

Level 1: **RECOMMENDED**; **RECOMMENDATION; ADOPTED** (formal); **REQUESTED; ENDORSED** (informal): A conclusion for an action to be undertaken, by a Contracting Party, a subsidiary (advisory) body of the Commission and/or the IPHC Secretariat.

Level 2: **AGREED**: Any point of discussion from a meeting which the Commission considers to be an agreed course of action covered by its mandate, which has not already been dealt with under Level 1 above; a general point of agreement among delegations/participants of a meeting which does not need to be elevated in the Commission's reporting structure.

Level 3: **NOTED/NOTING**; **CONSIDERED**; **URGED**; **ACKNOWLEDGED**: General terms to be used for consistency. Any point of discussion from a meeting which the Commission considers to be important enough to record in a meeting report for future reference. Any other term may be used to highlight to the reader of an IPHC report, the importance of the relevant paragraph. Other terms may be used but will be considered for explanatory/informational purposes only and shall have no higher rating within the reporting terminology hierarchy than Level 3.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The PRIPHC02 was carried out over the course of 2019 via three face-to-face meetings: one in Seattle, USA (4-6 June 2019), one in New York City, USA (25 August 2019) and one in Ottawa, Canada (7-11 October 2019). The Panel held several additional tele-conferences, both among themselves, and with stakeholders. The meeting was also supported by Independent Legal and Science Experts who each dedicated additional working days to providing technical reviews and reports on specific components of the review criteria relevant to their areas of expertise. The following are a subset of the complete recommendations from the PRIPHC02, which are provided at Appendix III.

(para. 22) The PRIPHC02 **CONGRATULATED** the Commission and Secretariat for the positive strides in response to the first performance review. Through the course of the consultations, document review and interviews, the panel saw consistent and significant improvements in transparency, availability and modernisation of documentation and background information, and heard resounding praise for this increased transparency and the movement away from previously "closed-door" and perceived "secretive" processes and decision-making.

Legal analysis of the IPHC Convention

PRIPHC02–Rec.02 (para. 33) The PRIPHC02 **RECOMMENDED** to update the Convention, while in the interim period seek alternate mechanisms to implement international best practices and legal principles.

Science: Status of living marine resources

PRIPHC02–Rec.03 (para. 44) The PRIPHC02 **RECOMMENDED** that opportunities to engage with western Pacific halibut science and management agencies be sought, to strengthen science links and data exchange. Specifically, consider options to investigate pan-Pacific stock structure and migration of Pacific halibut.

Conservation and Management: Data collection and sharing

PRIPHC02–Rec.09 (para. 73) The PRIPHC02 **RECOMMENDED** that observer coverage be adjusted to be commensurate with the level of fishing intensity in each IPHC Regulatory Area.

Conservation and Management: Consistency between scientific advice and fishery Regulations adopted

PRIPHC02–Rec.10 (para. 82) The PRIPHC02 **RECOMMENDED** that the development of MSE to underpin multi-year (strategic) decision-making be continued, and as multi-year decision making is implemented, current Secretariat capacity usage for annual stock assessments should be refocused on research to investigate MSE operating model development (including consideration of biological and fishery uncertainties) for future MSE iterations and regularised multi-year stock assessments.

PRIPHC02–Rec.11 (para. 83) The PRIPHC02 **RECOMMENDED** that ongoing work on the MSE process be prioritised to ensure there is a management framework/procedure with minimal room for ambiguous interpretation, and robust pre-agreed mortality limit setting frameworks.

Fishing allocations and opportunities

PRIPHC02–Rec.12 (para. 88) The PRIPHC02 **STRONGLY URGED** the Commission to conclude its MSE process and **RECOMMENDED** it meet its 2021 deadline to adopt a harvest strategy.

International cooperation: Relationship to non-Contracting Parties

PRIPHC02–Rec.22 (para. 147) The PRIPHC02 **RECOMMENDED** that if the full range of the Pacific halibut stock extends outside the Convention Area, the Contracting Parties invite collaboration with all parties involved in the harvest of this stock, to ensure science and management includes accurate data regarding all removals from the stock.

1. INTRODUCTION

1. At the 93rd Session of the International Pacific Halibut Commission (IPHC) Annual Meeting (AM093) held in January 2017, the Commission considered how best to move forward with a 2nd Performance Review of the IPHC (PRIPHC02). As a result, the Commission requested that the IPHC Secretariat finalise performance review terms of reference and criteria, as well as provide a proposed process and budget to conduct the review. The Commission subsequently adopted the terms of reference, criteria, process, and budget to conduct the PRIPHC02 at its 94th Session (AM094) in January 2018, with the intention of implementing it in 2018 and 2019.
2. The Terms of Reference, criteria, and process to conduct the PRIPHC02 is provided at Appendix I.
3. The PRIPHC02 **AGREED** to modify the criteria described in Appendix I to provide an improved review by organisational area and structure. The modification is of a technical nature and has no impact on the substance of the criteria. This involved the following modifications that are reflected in the structure of this report:
   a) Separate Criteria 3 into two sections: 1) Science - Status of living marine resources and Quality and provision of scientific advice; 2) Conservation and management - Data collection and sharing; Consistency between scientific advice and fishery regulations adopted; Compatibility of management measures; and Fishing allocations and opportunities; and
   b) Rename Criteria 5 (Decision-making and dispute settlement) to "Governance" and to move "Transparency" from Criteria 6 (International cooperation) to this new Criteria (Governance).
4. The PRIPHC02 **AGREED** that each section should include an introductory paragraph providing context (and noting progress on addressing recommendations from the first review, if relevant) and framing the remaining section. Each sub-section should include the following four points:
   a) Brief background, if required;
   b) Areas for improvement;
   c) Rationale for recommendations; and
   d) Recommendations. Each section will, however, not be split into sub-sections.
5. The PRIPHC02 **NOTED** that some recommendations are repeated as they apply to more than one set of considerations. It is expected that the Commission, in considering this report, would look at the recommendations as an ensemble but remain in each section as pertinent to the understanding and alignment of the recommendations with the PRIPHC02 discussions.

1.1 Composition of the Review Panel

6. The PRIPHC02 Panel consisted of the following seven (7) members. The IPHC Executive Director facilitated the process. A short biography for each are provided at Appendix II:
   - Chairperson: **Mr Terje Løbach** (Norway).
   - Contracting Parties: **Dr Robert Day** (Canada); **Ms Staci MacCorkle** (United States of America).
   - Science Advisor: **Dr Kevin Stokes** (New Zealand).
   - Regional Fishery Management Organisations: **Mr Peter Flewwelling** (North Pacific Fisheries Commission); **Mr Jeongseok Park** (North Pacific Anadromous Fish Commission).
   - Non-Governmental Organisations: **Ms Amanda Nickson** (The Pew Charitable Trusts).
   - IPHC Secretariat: **Dr David T. Wilson** (Facilitator).

1.2 Process for undertaking the 2nd Performance Review of the IPHC

7. The PRIPHC02 was carried out over the course of 2019 via three face-to-face meetings: one in Seattle, USA (4-6 June 2019), one in New York City, USA (25 August 2019) and one in Ottawa, Canada (7-11 October 2019). The Panel held several tele-conferences, both among themselves, and with stakeholders as detailed below. The meeting was also supported by Independent Legal and Science Experts who each dedicated additional working days to providing technical reviews and reports on specific components of the review criteria relevant to their areas of expertise (papers IPHC-2019-PRIPHC02-04 and IPHC-2019-PRIPHC02-10).

8. The PRIPHC02 utilised documentation and presentations provided by the IPHC Secretariat, as well as feedback from Contracting Parties, Commissioners, and officers of the Commission's subsidiary bodies. During each discussion with these various group representatives, the PRIPHC02 pursued three basic themes:

   a) Impressions on progress since the first review in 2012 (or, for those who may not have been engaged in the IPHC then, thoughts on engagement with IPHC to date);

   b) View of the current status of the IPHC and the support/functioning of the IPHC Secretariat;

   c) Thoughts about what is needed for the future of IPHC – from the Secretariat and/or other engagements.

9. The Contracting Parties were represented on the PRIPHC02, and thus, it was deemed to be the responsibility of that member to seek the views of the other stakeholders they represented, and to express those to the all members for consideration.

10. Additionally attempts were made to contact interested civil society organisations for their input on the same questions. This yielded limited success as there are relatively few civil society organisations engaged in Pacific halibut management issues, with the majority seemingly involved at a local level, rather than the national or international level. The limited input collected have been aggregated with other responses to maintain the anonymity of the responder.

2. BACKGROUND AND A BRIEF HISTORY OF THE IPHC

11. The IPHC is an intergovernmental organisation established by a Convention between Canada and the United States of America. The IPHC Convention was concluded in 1923 and entered into force that same year. The Convention has been revised several times since, to extend the Commission's authority and meet new conditions in the fishery (Bell 1969). The most recent change occurred in 1979 and involved an amendment to the *1953 Halibut Convention*. The amendment, termed a "protocol", was precipitated in 1976 by Canada and the United States of America extending their jurisdiction over fisheries resources to 200 miles. The 1979 Protocol along with the U.S. legislation that gave effect to the Protocol (Northern Pacific Halibut Act of 1982) has affected the way the fishery is conducted, and redefined the role of IPHC in the management of the fishery during the 1980s (Note: Canada did not require specific enabling legislation to implement the protocol).

12. In the United States of America, the IPHC is considered a "public international organization" and is entitled to particular privileges, exemptions, and immunities conferred by the International Organizations Immunities Act (22 U.S.C. Sec. 288). In 1987, the IPHC was granted 503(c) status as a not-for-profit organization.

2.1 Species, objective, and Convention Area

13. The IPHC is mandated to undertake research on, and management of, Pacific halibut (*Hippoglossus stenolepis*) occurring within Convention waters. The primary objective of the Commission, as provided in Article I, paragraph 2 of the IPHC Convention, "*is to develop the stocks of [Pacific] halibut in the Convention waters to those levels which will permit the optimum yield from the fishery and to maintain*

the stocks at those levels". The IPHC Convention Area was divided into management units (IPHC Regulatory Areas) (Fig. 1), as prescribed in Annex I of the Convention to facilitate regionally-based management.

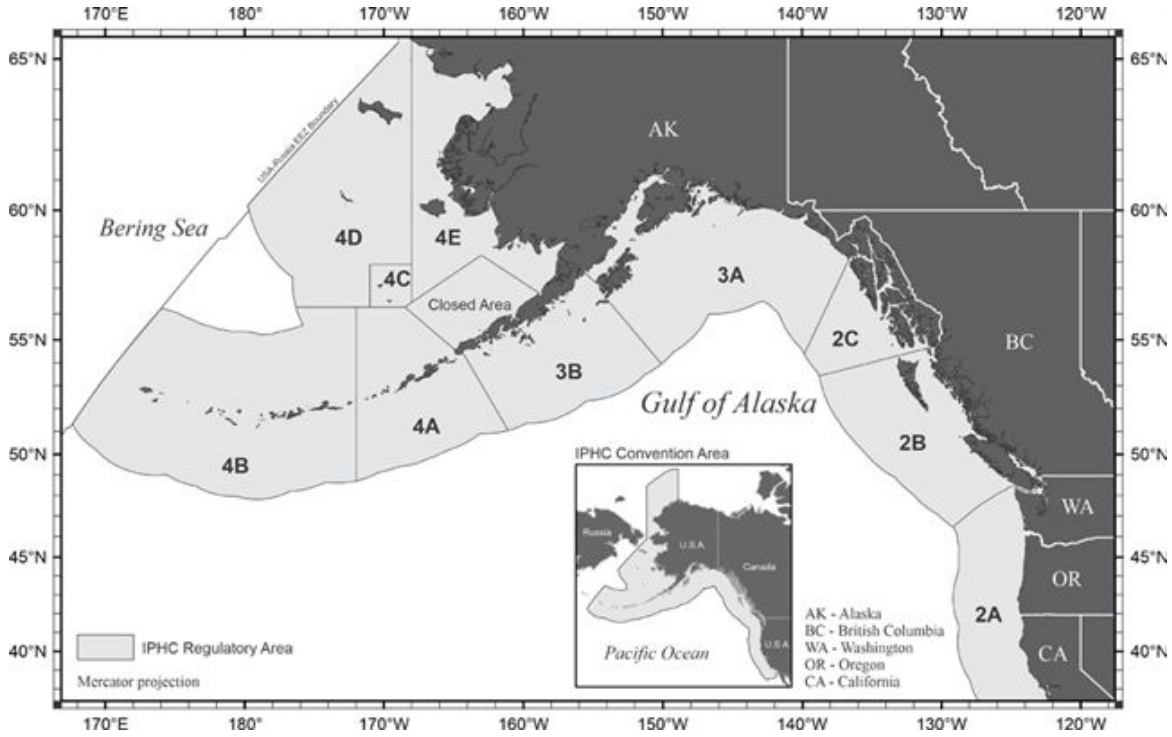

Fig. 1. IPHC Convention Area (insert) and division of IPHC Regulatory Areas.

2.2 Structure of the Commission

14. The Commission currently consists of six members, three appointed by each Contracting Party (the Governor General of Canada and the President of the United States of America), who serve their terms at the pleasure of the Contracting Party. In recent years, one Commissioner from each Contracting Party has been an employee of the federal fisheries agency, and two others involved in the fishery. The Commission has established five (5) Boards (Conference Board (CB); Management Strategy Advisory Board (MSAB); Processor Advisory Board (PAB); Research Advisory Board (RAB); Scientific Review Board (SRB)) and one (1) Committee (Finance and Administration Committee (FAC); Fig. 2)) to provide advice. The Rules of Procedure for the subsidiary bodies are contained within the IPHC Rules of Procedure of the Commission. The Commission, including its Subsidiary Bodies, are supported by an Executive Director and Secretariat staff (Fig. 2).

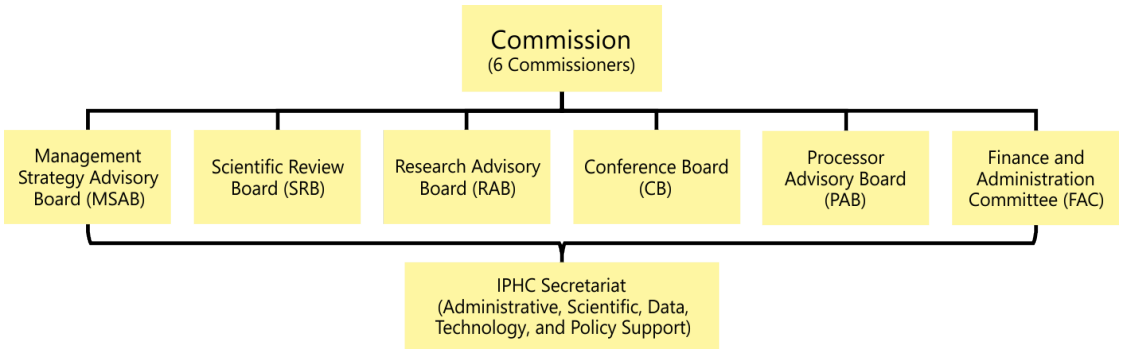

Fig. 2. Overall structure of the IPHC.

2.3 Basic texts of the IPHC

15. The basic texts of the IPHC are available from the IPHC website: https://www.iphc.int/the-commission:

- **Convention (1979)** - The Protocol amending the Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea.
- **Rules of Procedure (2019)** - The Rules of Procedure consist of rules and regulations adopted by the IPHC pursuant to the Convention between Canada and the United States of America.
- **Financial Regulations (2019)** - The Financial Regulations govern the financial administration of the IPHC and were established pursuant to the Commission's Rules of Procedure.
- **Pacific Halibut Fishery Regulations (2019)** - The Pacific halibut fishery Regulations published here are for information purposes only. Official regulations adopted by the Contracting Parties are available at the following web-links:
  - **Canada**: Canada Gazette and on the 'Condition of License';
  - **United States of America**: The Federal Register.

3. 1ST PERFORMANCE REVIEW OF THE IPHC

16. In response to calls from the international community for a review of the performance of Regional Fisheries Management Organisations (RFMOs), the IPHC agreed in 2011 to implement its first process of Performance Review. The IPHC contracted with CONCUR, Inc., a U.S.A.-based firm, to undertake the review. CONCUR performed its work independently of IPHC Commissioners and the IPHC Secretariat, and concluded its report to the Commission in April 2012.

17. In undertaking the Performance Review, the contractor relied on the following approaches to assess the IPHC's work and practices, track effectiveness, and gauge the need for revised approaches:

a) Conducting a set of 43 in-depth interviews with a representative and diverse set of stakeholders;

b) Observing the 2011 Interim and 2012 Annual Meetings and reviewing meeting background materials;

c) Reviewing practices at other RFMOs; and

d) Drawing on its professional judgment and experience.

18. In 2012, the contractor published a report outlining 12 recommendations (containing 39 parts) to improve the functioning of the IPHC (McCreary & Brooks, CONCUR, Inc. 2012).

19. In January 2014, the Commission issued a Progress Report, documenting the Commission's response to the 1st IPHC Performance Review (PERFORMANCE REVIEW 2012: A Progress Report). At Interim and Annual Meetings since then, Contracting Parties have noted the status of implementation of each of the recommendations arising from the report of the 1st Performance Review of the IPHC (PRIPHC01). In the January 2014 progress report, the Commission noted that:

"Performance reviews are an important tool to help ensure the Commission continues to fulfil its mission and maintain accountability to its stakeholders and community. The Commission has benefitted significantly from the 2012 performance review and intends to continue the work stemming from that review…"

"One fundamental best practice that stands out in the literature is the need to review performance on a regular basis. The Commission intends to make periodic performance reviews a regular feature of its operations. Future reviews may be structured as broad looks or as more focused evaluations, depending on conditions and developments at the time. They may be

performed by internal or external reviewers. Key to a successful review program is to track all recommendations, actions, and outcomes, so that each review builds on its predecessors."

"The Commission also continues to solicit comment and advice from stakeholders on its ongoing performance review process."

20. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-03, which included the recommendations arising from the 1st Performance Review of the IPHC (PRIPHC01). The associated responsibilities, timelines for implementation, priorities, and a brief summary of the actions taken in implementing the recommendations are also provided.

21. The PRIPH02 **NOTED** that of the 39 parts of the 12 general recommendations from the first Performance Review, all were considered and only 4 were not addressed further due either to being in the legal mandate of the individual parties, e.g. greater involvement of Tribes and First Nations, or requiring reopening the Convention, e.g. expansion of the number of Commissioners and the Commission composition. One recommendation about the Commission structure was not accepted, that being the one to consolidate CB and PAB subsidiary bodies into one. Re-consideration of the latter decision for a partial merging of subsidiary bodies may have merit.

22. The PRIPHC02 **CONGRATULATED** the Commission and Secretariat for the positive strides in response to the first performance review. Through the course of the consultations, document review and interviews, the panel saw consistent and significant improvements in transparency, availability and modernisation of documentation and background information, and heard resounding praise for this increased transparency and the movement away from previously "closed-door" and perceived "secretive" processes and decision-making.

23. The PRIPHC02 **NOTED** that, following this increased transparency, there could be greater benefit derived from explicit clarity of the roles, responsibilities, and respective authorities of the Commission/Commissioners, the Secretariat, and the various subsidiary bodies.

24. The PRIPHC02 **NOTED** that there is some confusion among stakeholders regarding the authorities and responsibilities of the Commission/Commissioners versus the supporting Secretariat and associated subsidiary bodies. It became apparent that there is a need to further define the process for provision of information to Commissioners, and delineation of decision-making authority resulting from that provision of information. This would be consistent with international best practices reflecting the role of secretariats as the primary support to delivery of bi- and multi-lateral agreements and their decision-making bodies.

25. The PRIPHC02 **NOTED** that many of the structural and operational changes resulting from the first review were well received, however some of the interviewees had not realised the drivers and/or genesis of these changes. This highlights an opportunity and a need for increased information dissemination regarding the reason for changes in the organisation. While the majority of these changes have been welcomed, the pace and scale of the changes have been challenging for many longstanding stakeholders.

26. The PRIPHC02 **NOTED** that while there are continued opportunities for improvement and refinement, as outlined throughout this document, it should not be lost that immense strides have been made in modernising and improving the overall operation of the IPHC with respect to international best practice.

4. LEGAL ANALYSIS OF THE IPHC CONVENTION

27. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-04, which provided a legal analysis of the IPHC Convention, prepared by Mr Terje Løbach, against global best practice principles of fisheries management.

28. The PRIPHC02 **NOTED** that the legal review evaluated the IPHC *Convention between Canada and the United States of America for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea*, from an international fisheries legal framework point of view. Specifically, the legal analysis

documented deficiencies in the IPHC Convention in terms of international best practice and principles, as well as the protocols the IPHC follows in implementing its Convention.

29. The PRIPHC02 **NOTED** that while the IPHC was established in 1923 by the *Convention between Canada and the United States of America for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and the Bering Sea*, there have been several amendments, the most recent in 1979. Since then, several global instruments concerning the conservation and management of world fishery resources have been agreed, many of them containing obligations and principles relevant to transboundary fish stocks. The key legally binding instrument is the 1982 United Nations Convention on the Law of the Sea (UNCLOS), which provides the framework for all maritime activities, including conservation and utilisation of living marine resources. Among other treaties related to fishing, and relevant to the IPHC, are the 2005 UN Fish Stocks Agreement (UNFSA) and the 2009 FAO Port State Measures Agreement (PSMA). In addition, a series of soft-law instruments have been adopted. Those relevant in this context include the:

    - 1995 FAO Code of Conduct on Responsible Fisheries (the Code of Conduct);
    - 1999 FAO International Plan of Action for the Management of Capacity (IPOA-Capacity);
    - 1999 FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds);
    - 2001 FAO International Plan of Action to Prevent, Deter and Eliminate IUU Fishing (IPOA-IUU);
    - 2010 FAO Guidelines on Bycatch Management and Reduction of Discards (the Bycatch Guidelines); and
    - 2014 FAO Guidelines for Flag State Performance (the Flag State Guidelines).

30. The PRIPHC02 **NOTED** that:

    a) the UN General Assembly annually addresses fisheries issues, among other things calling upon States, individually or through RFMOs, to address specific topics in order to achieve sustainable fisheries. Likewise, several multilateral declarations, both ministerial and other, have called for specific actions to address conservation and management of fisheries and the ecosystem in which they take place. While UNCLOS, UNFSA and the PSMA entail legally binding obligations on their parties, all these other instruments are voluntary. They serve as guidelines/toolboxes for conservation and management of fisheries, including some specific options for states and RFMOs;

    b) the results of the Legal Analysis emphasised the fact that the IPHC Convention is outdated and not consistent with newer mandatory international legal instruments.

31. The PRIPHC02 **AGREED** that 'best practice' required the IPHC Convention to be updated given its deficiencies. However, it was also recognised that the process for updating the Convention would open additional areas for discussion and may result in a very lengthy process. Thus, the process of updating the Convention should be undertaken in parallel with other mechanisms that could be used to include the principles and components of the international legal instruments in the interim period, e.g. through Commission mechanisms.

Recommendations

32. The PRIPHC02 **RECOMMENDED** that consideration be given to updating the Convention at the next opportunity, to become consistent with newer international legal instruments, and specifically consider including the following elements:

    a) Incorporate a preamble setting forth the purpose of the Convention, and make references to relevant international instruments and principles (e.g. UNCLOS, the Code of Conduct and its action plans, etc.).

b) Incorporate an article for "Definitions," thereby removing or reducing ambiguity in term usage and meaning.

c) Incorporate an article for "Objective" reflecting international standards for conservation and management of living marine resources.

d) Incorporate an article for "Area of application of the Convention," including a detailed map, noting that the northern boundary of the Convention area is vague.

e) Include explicit language confirming that the Convention applies to all removals of Pacific halibut in the Convention waters by directed and non-directed fisheries, commercial, recreational, and other.

f) Specify the current species is Pacific halibut (*Hippoglossus stenolepis*)', though other species of *Hippoglossus* could also be covered under the Convention should they be identified.

g) Incorporate an article for "General principles" to include references to long-term sustainability, science-based decisions, application of the precautionary approach, minimisation of harmful impact on the marine ecosystem, collection and sharing of data, and ensuring effective compliance, etc.

h) Maintain, but in a stand-alone article, the current provisions for continuation of the Commission, with all its assets and liabilities established by the 1923 Convention and subsequent revisions.

i) Consider whether elements of the current Rules of Procedure are better placed in the Convention or a Headquarters Agreement.

j) The functions concerning fishing set out in the Convention to be streamlined in a specific article, and to include the following additional functions:

   i. adopt standards for collection and sharing of data;

   ii. adopt measures for species belonging to the same ecosystem or dependent upon or associated with Pacific halibut;

   iii. adopt measures to avoid, reduce and minimise waste, discards, catch by lost or discarded gear;

   iv. adopt measures to prevent significant adverse impacts on VMEs; and

   v. adopt measures to ensure effective monitoring, control and surveillance, as well as compliance.

k) Consider whether the establishment of the Commission's subsidiary bodies be moved from the Rules of Procedure to the Convention.

l) Incorporate in the Convention a specific article dealing with administrative issues, such as to appoint a Director, to approve program of work, to approve budget, to adopt or amend rules of procedures, financial regulations and other internal administrative regulations.

m) Harmonise the decision-making provisions of the Convention and the Rules of Procedure, and incorporate those in a specific article of the Convention.

n) Expand the current text to also include obligations to provide national legal provisions related to measures adopted by the Commission, and submit reports on vessel activities at appropriate intervals.

o) Noting the adequate provisions in the Convention, the text should also contain follow-up actions by the flag state that include application of sanctions of sufficient gravity as to be effective in securing compliance, such as depriving offenders of benefits, and refusal, suspension, or withdrawal of authorisations.

p) Consider establishment of a Compliance Committee for reviewing implementation of measures adopted by the Commission.

q) Incorporate in a specific article of the Convention general language concerning transparency.

r) Incorporate in the Convention a specific article, which in general terms states that in order to settle a possible dispute between Contracting Parties, concerning interpretation or implementation of the Convention, the parties shall consult by means they agree upon.

s) Incorporate an article on signature, ratification, acceptance and approval, stating who are entitled to become parties, as well as the timeframe for signature.

t) Incorporate an article stating when it enters into force, and conditions thereto.

u) Incorporate an article stating whether or not reservations or exceptions may be made.

v) Incorporate an article allowing parties to make statements or declarations that do not exclude or modify the legal effect of the provisions.

w) Incorporate an article making references to for example the UNCLOS concerning sovereign rights of coastal States as well as other possible relevant instruments.

x) Incorporate an article describing the amendment mechanisms such as time frames, communication, adoption and entering into force. If annexes or appendices are regarded as an integral part of the treaty, more flexible mechanism for those.

y) Incorporate an article describing possible withdrawal procedures.

z) Incorporate an article stating who will be the depository government as well as its obligations and functions.

33. The PRIPHC02 **RECOMMENDED** to update the Convention, while in the interim period seek alternate mechanisms to implement international best practices and legal principles.

5. SCIENCE

34. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-05_Rev_1, which provided information regarding the Performance Review Criteria 3: *Conservation and management (status of living marine resources; quality and provision of scientific advice; data collection and sharing; adoption of fishery Regulations, also known in other RFMO's as Conservation and Management Measures, including measures adopted at the national level; compatibility of fishery Regulations).*

35. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-10, which provided an evaluation of the progress made on the recommendations arising from the first performance review of the IPHC related to science, and also to the criteria set forth with regards to the delivery and management of the science process and scientific advice to the Commission, prepared by Dr Kevin Stokes.

36. The PRIPHC02 **AGREED** that:

a) progress against PRIPHC01 recommendations has been carefully considered and is impressive;

b) when considered across criteria related to peer review, relevance, integrity, objectivity and reliability, plus communication, the IPHC Secretariat science processes generally meet or exceed best practice standards;

c) the IPHC science capability and capacity is strong and trusted with a variety of strengths and few relative weaknesses, but with clear opportunity for improved communication to enable more effective stakeholder engagement.

5.1 Status of living marine resources

37. The PRIPHC02 **NOTED** that:

a) the IPHC has developed a stock status report for Pacific halibut (*Hippoglossus stenolepis*), with the target audience being the general public and stakeholders;

b) Pacific halibut is targeted by the Contracting Parties throughout the Convention Area, from the Bering Sea to the central California coast, as far as San Francisco Bay;

c) In addition, the range extends into the waters of Russia and Japan (see https://www.fishbase.se/summary/Hippoglossus-stenolepis.html);

d) Historically, the IPHC has estimated relatively low density of Pacific halibut in the northern Bering Sea, approaching the Exclusive Economic Zone (EEZ) boundary. This information, along with a modest fraction of the coastwide spawning biomass estimated to occur in the Bering Sea (5.2-13.9%), and no clear information regarding movement of fish across the northern Bering Sea from tagging studies, suggested low demographic exchange. Therefore, the EEZ is currently used as a stock boundary for the purposes of the stock assessment;

e) Catches of Pacific halibut by Russian vessels operating in the Russian EEZ have ranged from 1,430 to 2,555 metric tons over the past 10 years, with an average annual catch of 1,960 mt. The highest catch reported to date was in 2013 (2,555 mt). A Fishery Improvement Plan is currently in development for the Russian fishery (http://longline.ru/index.php/en/) which should lead to greater transparency in landings;

f) The Pacific halibut fishery is comprised of a number of sectors that target (directed fisheries) the species using hook and line and pot gear (demersal longline, traps/pots, recreational/sport, traditional hook and line), as well as incidental catch sectors (non-directed fisheries), that deploy demersal trawl, hook and line (troll, longline, etc.) and pots. Sablefish (*Anoplopoma fimbria*) is a common species caught while fishing Pacific halibut and vice-versa.

g) Incidentally caught species such as rockfish (*Sebastes* spp.) are also caught by demersal longline gear targeting Pacific halibut, among other species listed under the U.S. Endangered Species Act (ESA) or the Canadian Species-at-Risk Act (SARA).

38. The PRIPHC02 **NOTED** that recent aggregate mortality estimates from all sources show that the directed commercial fishery represents the majority of the fishing mortality (Fig. 3). Mortality from all sources in 2018 was estimated to be 38.8 million pounds (~17,590 t), down 8% from 42.0 million pounds in 2017 (~19,050 t). Over the period 1919-2018 mortality has totalled 7.2 billion pounds (~3.2 million t), ranging annually from 34 to 100 million pounds (16,000-45,000 t) with an annual average of 63 million pounds (~29,000 t). Annual mortality was above this long-term average from 1985 through 2010 and was relatively stable near 42 million pounds (~19,000 t) from 2014-2017. Recent mortality estimates from all sources by individual IPHC Regulatory Area reveal that Area 3A has been the largest single source of mortality throughout the last five decades, but that Areas 3A and 3B represent a smaller fraction of the total in recent years than in previous decades. When mortality by source is compared among IPHC Regulatory areas, there are differing patterns in both the magnitude and distribution.

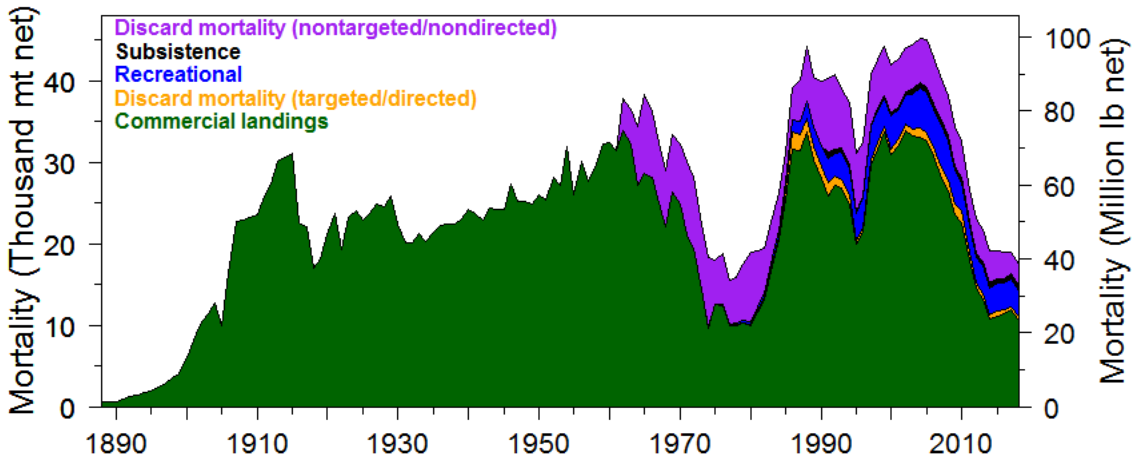

Fig. 3. Summary of estimated historical mortality by source since 1888-2018.

39. The PRIPHC02 **NOTED** that:

a) stock structure of Pacific halibut is not known, and thus, populations are currently considered to constitute a single stock for assessment and management purposes. Investigations are currently underway to verify this assumption;

b) the Commission's harvest strategy directive is to conserve population structure over at least four Biological Regions (2A-2B-2C, 3A-3B, 4A-4CDE, and 4B);

c) in 2018, an ensemble of four (4) equally-weighted models, two long time-series models, and two short time-series models either using data sets by geographical region, or aggregating all data series into coastwide summaries, were applied to the Pacific halibut stock in the IPHC Convention Area, using the stock synthesis software. The results of the 2018 stock assessment indicate that the Pacific halibut stock declined continuously from the late 1990s to around 2011 (Fig. 4);

d) the estimated female spawning biomass (SB) stabilised near 190 million pounds (~86,200 t) in 2011. The SB at the beginning of 2019 is estimated to be 199 million pounds (~90,300 t) (SB_{2019}/SB_0: 43% (27-63)), with an approximate 95% confidence interval ranging from 125 to 287 million pounds (~56,700-130,200 t);

e) the stock is projected to decrease over the period from 2019-21 for all fishing mortality estimates greater than 20 million pounds (~9,070 t). At the 2018 mortality levels (37.2 million lb, ~16,900 t), the probability of at least a 5% decrease in stock size (from 2019 levels) increases from 30% (2020) to 79% (2022). The stock projection merits continued close monitoring under the precautionary approach to fisheries management.

Other species

40. The PRIPHC02 **NOTED** that the IPHC Secretariat works closely with other organisations, and domestic agencies within each Contracting Party on non-target species in Pacific halibut fisheries. This collaboration includes work on marine mammal interactions, seabird interactions and other non-target species, including rockfish, spiny dogfish, sablefish, and Pacific cod. At present, the IPHC does not conduct specific bycatch research, but rather collaborates with domestic organisations by providing them with catches of other species during its annual Fishery-independent setline survey (FISS). The following link provides a data interactive for all species caught during the IPHC's FISS: https://www.iphc.int/data/iphc-secretariat-data.

41. The PRIPHC02 **NOTED** that in the independent review of the IPHC stock assessment (IPHC 2019), opportunities for liaison between the IPHC Secretariat and scientists working on western Pacific halibut should be explored and encouraged.

42. The PRIPHC02 **AGREED** that a lack of historical engagement between the IPHC and western Pacific halibut science and management agencies, may undermine the comprehensiveness of science carried out and advice provided. However, since 2017, efforts have been undertaken to build science relationships, the most notable recent engagement being a dedicated Pacific halibut workshop as part of the annual meetings of the North Pacific Marine Science Organization (PICES): https://meetings.pices.int/meetings/annual/2019/pices/scope.

43. The PRIPHC02 **NOTED** that Pacific halibut are distributed across the coastal North Pacific Ocean from Hokkaido (Japan) to California (United States of America) but life history and genetic studies to date are inconclusive as to distinction between western and eastern North Pacific stocks. More generally, opportunities for liaison between the IPHC Secretariat and scientists working on western Pacific halibut could be explored and encouraged.

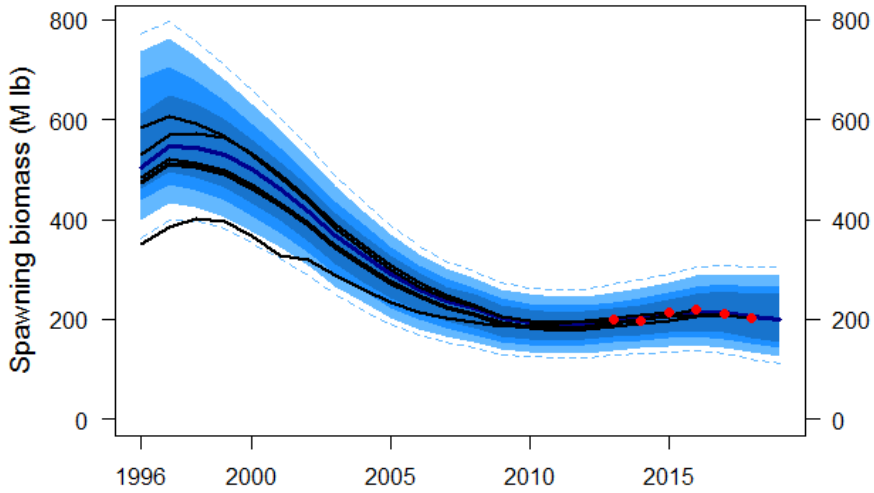

Fig. 4. Retrospective comparison among recent IPHC stock assessments. Black lines indicate estimates of spawning biomass from assessments conducted from 2012-18 with the terminal estimate shown as a point, the shaded distribution denotes the 2018 ensemble: the dark blue line indicates the median (or "50:50 line") with an equal probability of the estimate falling above or below that level; coloured bands moving away from the median indicate the intervals containing 50/100, 75/100, and 95/100 estimates; dashed lines indicating the 99/100 interval.

Recommendations

44. The PRIPHC02 **RECOMMENDED** that opportunities to engage with western Pacific halibut science and management agencies be sought, to strengthen science links and data exchange. Specifically, consider options to investigate pan-Pacific stock structure and migration of Pacific halibut.

45. The PRIPHC02 **RECOMMENDED** that:

    a) further efforts be made to lead and collaborate on research to assess the ecosystem impacts of Pacific halibut fisheries on incidentally caught species (retained and/or discarded);

    b) where feasible, this research be incorporated within the IPHC's 5-Year Research Plan (https://www.iphc.int/uploads/pdf/besrp/2019/iphc-2019-besrp-5yp.pdf);

    c) findings from the IPHC Secretariat research and that of the Contracting Parties be readily accessible via the IPHC website.

5.2 Quality and provision of scientific advice

46. The PRIPHC02 **NOTED** that the science and research activities conducted by the IPHC are directed towards fulfilling the following continuing objectives of the Commission:

    a) improving the annual stock assessment and quota recommendations;

    b) developing information on current management issues (including stock structure, bycatch, and ecosystem impacts/solution); and

    c) contributing to improve the knowledge of the biology and life history of Pacific halibut.

47. The PRIPHC02 **NOTED** that three Secretariat branches (Biological & Ecosystem Sciences Branch, Quantitative Sciences Branch, and Fisheries Statistics & Services Branch) work effectively together to ensure relevant research is conducted to support fundamental understanding of Pacific halibut but with a focus on the needs to inform stock assessment and management strategy evaluation (MSE).

Biological and Ecosystem Sciences Research

48. The PRIPHC02 **NOTED** that since its inception, the IPHC has had a long-standing history of conducting research activities devoted to describing and understanding the biology and ecology of Pacific halibut.

49. The PRIPHC02 **NOTED** that biological research activities at the IPHC are guided by a 5-Year Research Plan, which is available on the IPHC website: https://www.iphc.int/uploads/pdf/besrp/2019/iphc-2019-besrp-5yp.pdf. At the present time, the main objectives of the Biological and Ecosystem Science Research Plan at the IPHC are to:

    a) identify and assess critical knowledge gaps in the biology of the Pacific halibut;

    b) understand the influence of environmental conditions; and

    c) apply the resulting knowledge to provide biological inputs and reduce uncertainty in the current stock assessment and management strategy evaluation models.

50. The PRIPHC02 **NOTED** that the successful pursuit of the objectives detailed in the 5-Year Research Plan is aligned with the Commission's strategic goals to position IPHC as a global leader in scientific excellence in support of science-based decision-making and to foster collaboration (within Contracting Parties and internationally) to enhance IPHC's science and management advice. Individual research projects and results are published in meeting papers of the IPHC's subsidiary bodies, in the scientific literature and on the IPHC website: https://www.iphc.int/management/science-and-research/biological-and-ecosystem-science-research-program-bandesrp.

51. The PRIPHC02 **NOTED** that an overarching goal of the 5-Year Research Plan is to promote integration and synergies among the various management-driven research activities implemented by the IPHC Secretariat in order to improve our knowledge of key biological inputs that feed into the stock assessment and MSE processes, which are directed by management needs. Typically, the IPHC Secretariat responds to the Commission's needs through new and continuing project proposals, designed to address key biological and management-related issues based on the IPHC Secretariat's input as well as input from the IPHC Commissioners, stakeholders and particularly from specific subsidiary bodies of the IPHC, including the SRB and the RAB.

52. The PRIPHC02 **AGREED** that IPHC's 5-Year Research Plan is wide ranging but focused on management needs. Analyses are well focused and are generally supported by sufficient documentation. Presentations to Commission meetings (Interim and Annual Meetings) are for the most part succinct and cover aspects of research pertinent to decision-making.

Stock Assessment

53. The PRIPHC02 **NOTED** that the IPHC conducts an annual stock assessment, using data from the FISS, the commercial Pacific halibut and other fisheries, as well biological information collected under its 5-

yr Research Plan. The assessment includes the Pacific halibut resource in the IPHC Convention Area, covering the waters under national jurisdiction of Canada and the United States of America. Data sources are updated each year to reflect the most recent scientific information available for use in management decision-making. Stock assessment results are used as inputs for harvest strategy calculations, including mortality tables for the upcoming year that reflect the draft IPHC's harvest strategy policy and other considerations, as well as the harvest decision table, which provides a direct tool for the management process. The harvest decision table uses the probability distributions from short-term (three-year) assessment projections to evaluate the trade-offs between alternative levels of potential yield (catch) and the associated risks to the stock and fishery. The most recent stock assessment files are available on each Annual Meeting page, as well as the Stock assessment page on the IPHC website: https://www.iphc.int/management/science-and-research/stock-assessment.

54. The PRIPHC02 **AGREED** that the IPHC Secretariat has strengthened its internal science capacity, and implemented rigorous science peer review processes since the PRIPHC01, and science is largely aimed at delivering relevant decision-support materials. The overall science support provided by the IPHC Secretariat is highly regarded by Commissioners, stakeholders, and internationally.

55. The PRIPHC02 **AGREED** that maintaining the existing, highly credible science capacity and capability of the IPHC Secretariat is crucial, while strengthening it as appropriate to meet specific future interests (e.g. in economics).

Harvest Strategy Policy and Management Strategy Evaluation

56. The PRIPHC02 **NOTED** that the draft IPHC Harvest Strategy Policy provides a framework for applying a science-based approach to setting harvest levels for Pacific halibut within the Convention Area. It defines the biological and economic objectives of the Commission. It also identifies potential reference points for use in the harvest strategy to achieve the Commission's stated objectives. This policy, together with the *Protocol amending the Convention between Canada and the United States of America for the preservation of the [Pacific] halibut fishery of the northern Pacific Ocean and Bering Sea (1979)*, provides the basis to manage the risk to Pacific halibut fisheries and the Pacific halibut population. The full document is available on the IPHC website: https://www.iphc.int/the-commission/harvest-strategy-policy.

57. The PRIPHC02 **NOTED** that at its 89th Annual Meeting in 2013, the Commission endorsed the development of a program of MSE for the Pacific halibut resource occurring within the Convention Area. In doing so, the Commission approved the formation of the MSAB. Appendix V of the IPHC Rules of Procedure (2019) define the role of the MSAB as follows (para. 1):

> "*The primary role of the MSAB is to advise the Commission on the Management Strategy Evaluation (MSE) process*".

58. The PRIPHC02 **NOTED** the latest progress and documents relating to the MSE process are located on the MSAB meeting pages. https://www.iphc.int/library/documents/meeting-documents/iphc-meeting-index. A brief overview of MSE is also provided at the following link: https://www.iphc.int/management/science-and-research/management-strategy-evaluation.

59. The PRIPHC02 **NOTED** that it is clear that considerable progress has been made with advancing the MSE through the MSAB with technical support from the IPHC Secretariat. It is recognised that the process is iterative (between science and management) and that the Commission is encouraged to ensure a coherent process is maintained among managers, scientists and stakeholders. This will help confirm recommendations on objectives and performance measures that need to be adopted by the Commission in order to advance the MSE itself and the consideration of a harvest strategy.

Science peer review and communication

60. The PRIPHC02 **AGREED** that continued high-quality peer review through the SRB mechanism is required. The SRB mechanism is dependent on its membership, and by itself does not guarantee the

quality and credibility of IPHC science, but the current membership of the SRB is of a high calibre with complementary attributes; this standard should be maintained and strengthened as necessary.

61. The PRIPHC02 **AGREED** that the Secretariat scientific staff is highly skilled at communicating complex scientific information to IPHC stakeholders. Additional opportunities include:

    a) assisting subsidiary bodies to understand science and engage effectively in stakeholder processes such as through small planning meetings (onboarding) led by the IPHC Secretariat with participation of subsidiary body chairs, selected Commissioners and selected Secretariat staff; and

    b) providing a simple graphical update of stock status for use by the Commission.

62. The PRIPHC02 **NOTED** that through the MSE process it is expected that reference points would be developed that would allow for a phase plot to be developed. This would allow for easier communication of important science information concerning the status of the stock.

Recommendations

63. The PRIPHC02 **RECOMMENDED** that simplified materials be developed for RAB and especially MSAB use, including training/induction materials.

64. The PRIPHC02 **RECOMMENDED** that consideration be given to amending the Rules of Procedure to include appropriate fixed terms of service to ensure SRB peer review remains independent and fresh; a fixed term of three years seems appropriate, with no more than one renewal.

65. The PRIPHC02 **RECOMMENDED** that the peer review process be strengthened through expanded subject specific independent reviews including data quality and standards, the FISS, MSE, and biological/ecological research; as well as conversion of "grey literature" to primary literature publications. The latter considered important to ongoing information outreach efforts given the cutting-edge nature of the Commission's scientific work.

66. The PRIPHC02 **RECOMMENDED** that the IPHC Secretariat develop options for simple graphical summaries (i.e. phase plot equivalents) of fishing intensity and spawning stock biomass for provision to the Commission.

6. CONSERVATION AND MANAGEMENT

67. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-05_Rev_1, which provided information regarding the Performance Review Criteria 3: *Conservation and management (status of living marine resources; quality and provision of scientific advice; data collection and sharing; adoption of fishery Regulations, also known in other RFMO's as Conservation and Management Measures, including measures adopted at the national level; compatibility of fishery Regulations).*

6.1 Data collection and sharing

68. The PRIPHC02 **NOTED** the following IPHC webpages that detail current formats, specifications, timelines for data submission, and sharing of data:

    a) IPHC Fishery Regulations: https://www.iphc.int/the-commission/fishery-regulations/

    b) In-season landing reports: https://www.iphc.int/data/landings-2019

    c) Overview of the fisheries: https://www.iphc.int/management/fisheries

    d) Commercial Fisheries: https://www.iphc.int/management/fisheries/commercial-fisheries

    e) Recreational Fisheries: https://www.iphc.int/management/fisheries/recreational-fisheries

    f) Subsistence Fisheries: https://www.iphc.int/management/fisheries/subsistence-fisheries

    g) Bycatch (non-targeted discard mortality): https://www.iphc.int/management/fisheries/bycatch

h) Most recent fisheries summary provided at the annual IPHC meeting: https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-05.pdf

i) IPHC Data Confidentiality Policy and Procedures: https://www.iphc.int/uploads/pdf/key-policies/iphc-data-use-and-confidentiality-policy.pdf

69. The PRIPHC02 **NOTED** that the IPHC does not currently collect socio-economic data. However the Commission approved the staffing of a fishery economist position to commence in November 2019. This will be the first Fishery Economist position created within an RFMO globally. The primary duties assigned to this position are to:

a) undertake and guide a broad economic study, including the identification of any knowledge gaps, of the Pacific halibut fishery;

b) advise on economic principles, compliance with IPHC guidance on economic issues, economic research, or the economic effects of proposed actions; and

c) prepare written analyses of the costs, benefits, and other impacts of proposed IPHC Fishery Regulations or policies on affected individuals and entities.

70. The PRIPHC02 **NOTED** that underpinning the credibility and utility of any models is trust in the quality of data. The IPHC Secretariat has made recommendations related both to estimates of discard mortality in directed and non-directed fisheries. The independent review of the stock assessment (IPHC 2019) comments on these in the context of the stock assessment and MSE. Further, during discussion with Commissioners, comments were made that reveal concerns about data quality as it relates to adequate observer coverage of non-directed fisheries in areas of higher fishing effort. Concerns have been expressed that this may undermine the integrity of the assessment.

71. The PRIPHC02 **NOTED** that generally all data used in developing advice are subject to scrutiny by Contracting Parties and the IPHC Secretariat. Methods used to analyse data are subject to extensive verification by developers and through collaborative usage. Notable amongst methods and software used is the stock assessment software (i.e. Stock Synthesis), which is subject to continuous and rigorous verification. Other statistical software used is subject to similar ongoing scrutiny through collaborative mechanisms. Verification of correct implementation is through internal collaboration and internal and external peer review. The annual IPHC stock assessment includes careful "bridging" analyses to check on potential influences of software changes.

72. The PRIPHC02 **NOTED** that:

a) Non-representative scientific monitoring and data collection activities in the non-directed sector of the northern spawning areas and intense fishing in IPHC Regulatory Areas 3A, 3B, and 2C could have a negative impact on fishing opportunities for those participants further down the migration paths in Areas 2A and 2B;

b) deficiencies were observed in monitoring and data collection, most notably with respect to Pacific halibut discard mortality in non-directed fisheries, especially juveniles in IPHC Regulatory Area 4;

c) IPHC Regulatory Areas 4 and 3 are areas of lowest observer coverage and hence weakest monitoring, despite the significant Monitoring, Control and Surveillance (MCS) resources applied:

i. Observer coverage in the Bering Sea at 10%;

ii. No observer coverage for vessels less than 40 feet; and

iii. Gulf of Alaska (GOA) observer coverage at 7% in areas with highest fishing pressures.

Recommendations

73. The PRIPHC02 **RECOMMENDED** that observer coverage be adjusted to be commensurate with the level of fishing intensity in each IPHC Regulatory Area.

6.2 Consistency between scientific advice and fishery Regulations adopted

74. The PRIPHC02 **NOTED** that the documents and reports of the IPHC Annual Meetings provide the decision-support materials developed by the IPHC Secretariat, and the subsequent decisions of the Commission based on the advice received, are publically available on the IPHC website. The most recent three (3) years, and the current Fishery Regulations are linked below:

    a) 2019: https://www.iphc.int/venues/details/95th-session-of-the-iphc-annual-meeting-am095

    b) 2018: https://www.iphc.int/venues/details/94th-session-of-the-iphc-annual-meeting-am094

    c) 2017: https://www.iphc.int/venues/details/93rd-session-of-the-iphc-annual-meeting-am093

    d) IPHC Fishery Regulations: https://www.iphc.int/the-commission/fishery-regulations/

75. The PRIPHC02 **NOTED** the draft IPHC Harvest Strategy Policy (https://www.iphc.int/the-commission/harvest-strategy-policy is a draft document based on an amalgamation of current IPHC practices and best practices in harvest strategy policy. It is not intended to be a definitive policy, noting that the IPHC is yet to adopt a formal harvest strategy for Pacific halibut. It is expected that over the coming two years, the IPHC will develop and implement a harvest strategy, and that this policy document will then be updated accordingly.

76. The PRIPHC02 **NOTED** that the draft IPHC Harvest Strategy Policy provides an interim framework for applying a science-based approach to setting harvest levels for Pacific halibut within the Convention Area. In the 96-year history of the IPHC, a rebuilding plan has not been deemed required by the Commission. A process for developing a rebuilding plan has been incorporated in the draft IPHC Harvest Strategy Policy.

77. The PRIPHC02 **NOTED** that because the IPHC Secretariat provides decision-support materials for setting mortality limits rather than definitive advice, it is difficult to assess comprehensively or categorically whether there is consistency between scientific advice and management measures adopted by the Commission.

78. The PRIPHC02 **NOTED** that fishing mortality advice is provided via a risk framework. Under international best practice and application of the precautionary approach, scientific advice would comprise a recommendation toward the lowest risk of the stock falling below an agreed reference point. In the current situation at IPHC, where reference points have not formally been adopted with associated risk tolerance levels, assessment of what may be considered acceptable risk is left to interpretation. This is an area where conflict could arise between Contracting Parties, stakeholders, and partners.

79. The PRIPHC02 **NOTED** that the IPHC currently has high calibre, motivated Secretariat staff working on biological and ecosystem research, stock assessment, and MSE. The Secretariat staff work collaboratively within IPHC and with outside agencies. Comments made as part of the PRIPHC02 process signal high respect for, and trust in Secretariat staff. The current high level of trust is a function of processes per se but also of staff and staff leadership. No signals of staff dissatisfaction have been noted and staff retention and high calibre staff recruitment is critical to continued quality and trust by stakeholders and Commissioners.

80. The PRIPHC02 **NOTED** that the SRB provides a key function of peer review to ensure the relevance, integrity, objectivity and reliability of the science outputs. Ensuring continuity is critical though needs to be balanced against potential perceptions of the SRB as an internal, collegiate science advisory body. The recent strengthening of the SRB is a positive step and signal of Secretariat understanding and oversight of the processes that needs to be maintained. Nevertheless, the lack of a formal means of ensuring a balance between continuity and turnover of SRB membership is a risk that should be mitigated.

81. The PRIPHC02 **NOTED** the full benefit of MSE will be realised if the MSE-derived harvest strategy can be implemented for a reasonable time period, e.g. 7-10 years. This would reduce the demands for

annual decision support tools because annual decision-making, using the harvest strategy, would rely upon the modelled survey abundance indices.

Recommendations

82. The PRIPHC02 **RECOMMENDED** that the development of MSE to underpin multi-year (strategic) decision-making be continued, and as multi-year decision making is implemented, current Secretariat capacity usage for annual stock assessments should be refocused on research to investigate MSE operating model development (including consideration of biological and fishery uncertainties) for future MSE iterations and regularised multi-year stock assessments.

83. The PRIPHC02 **RECOMMENDED** that ongoing work on the MSE process be prioritised to ensure there is a management framework/procedure with minimal room for ambiguous interpretation, and robust pre-agreed mortality limit setting frameworks.

6.3 Compatibility of management measures

84. The PRIPHC02 **NOTED** that UNFSA Article 7 provides that, without prejudice to the sovereign rights of coastal States over resources within areas under national jurisdiction, and the rights of all States to fish on the high seas, coastal States and States fishing on the high seas are required to "seek to agree" on the measures necessary for the conservation of straddling fish stocks in the adjacent high seas areas. These measures must be compatible with and not undermine the effectiveness of conservation and management measures adopted by coastal States within areas of their national jurisdiction "in order to ensure conservation and management of straddling fish stocks in their entirety".

85. The PRIPHC02 **NOTED** that the range of Pacific halibut extends into the waters of Japan and Russia presuming that the highest annual catches are within the waters of Russia. There are no registered catches on the high seas (while acknowledging that there may be catches occurring in the high seas pocket between Russia and the Convention Area), and consequently UNFSA is currently considered not applicable, and the issue will be addressed under the section 'International Cooperation: Relationship to non-Contracting Parties'.

6.4 Fishing allocations and opportunities

86. The PRIPHC02 **NOTED** the previous challenges encountered by the Commission in setting fishing mortality levels and the process that the Commission has taken to agree on an allocation decision for 2019 and the next three years (for IPHC Regulatory Areas 2A and 2B).

87. The PRIPHC02 **NOTED** the substantial resources that the Commission has allocated to the MSE process since 2017.

Recommendation

88. The PRIPHC02 **STRONGLY URGED** the Commission to conclude its MSE process and **RECOMMENDED** it meet its 2021 deadline to adopt a harvest strategy.

7. COMPLIANCE AND ENFORCEMENT

89. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-06_Rev_1, which provided information regarding the Performance Review Criteria 4: *Compliance and enforcement (flag State duties; monitoring, control and surveillance activities; port State measures; follow-up on infringements; cooperative mechanisms to detect and deter non-compliance; market-related measures).*

7.1 Flag State duties

90. The PRIPHC02 **NOTED** that the IPHC is unlike most RFMOs in that it is comprised of two Contracting Parties, with a focus on management of a single resource, Pacific halibut, which occurs for the most part within their EEZs. The IPHC was established in 1923 and the update of its Convention in 1979 precludes the formal ideas of flag State responsibilities to control fisheries activities on the high seas under

UNCLOS and UNFSA by several years. Noting the age of IPHC, the bilateral arrangement and focus on operations within the two EEZs, the concept of flag State responsibilities to control their flag vessels when operating on the high seas may not be relevant in this situation, however the general principles can be assessed noting the basic responsibilities addressed under UNFSA Article 18 paragraph 3 and in the Code of Conduct for Responsible Fisheries, Article 8.2, and the IPHC actions with respect to use of these principles within the EEZs of each Contracting Party.

91. The PRIPHC02 **NOTED** the relevant principles of flag State duties include:

a) control of such vessels by means of fishing licenses, authorisations or permits with terms and conditions for fishing operations;

b) establishment of regulations requiring carriage of licenses, production on demand, etc.;

c) requirements for marking of fishing vessels and fishing gear;

d) requirements for recording and timely reporting of vessel position, catch of target and non-target species, fishing effort and other relevant fisheries data in accordance with set standards for collection of such data;

e) requirements for verifying the catch of target and non-target species through such means as observer programs, inspection schemes, unloading reports, supervision of transshipment and monitoring of landed catches and market statistics;

f) monitoring, control and surveillance of such vessels, their fishing operations and related activities by, inter alia:

i. the implementation of national inspection schemes;

ii. the implementation of national observer programs; and

iii. the development and implementation of vessel monitoring systems, including, as appropriate, satellite transmitter systems, in accordance with any national programs: and

g) regulation of fishing activities to ensure compliance with set measures.

92. The PRIPHC02 **AGREED** that IPHC Pacific Halibut Fishery Regulations (2019) address all these principles directly or in part, through either the IPHC regulations or through national regulations for individual flag State control of its fishing fleets. Consequently, although the idea of flag State responsibilities is meant for the high seas, the two Contracting Parties making up the Commission do apply the principles in their management regimes. Further, noting the adherence to the principles of flag State control measures, there are no suggestions for improvement and as the current regulatory actions of the Commission are consistent with the principles noted above, no further recommendations are required.

7.2 Port State measures

93. The PRIPHC02 **NOTED** that the PSMA applies to vessels not entitled to fly the flag of the port State (i.e. foreign vessels), with two categories that may be exempted, namely vessels of a neighbouring state engaged in artisanal fishing for subsistence and particular container vessels that are not carrying fish, or if carrying fish, only fish that have been previously landed. It should be noted that application by a port State is not required to vessels chartered by nationals exclusively for fishing in their own zones. Such vessels shall be subject to measures by the Party which are as effective as measures applied in relation to vessels entitled to fly its flag. Further, the UNFSA Article 23 and the Code of Conduct for Responsible Fisheries, Article 8.3 focus on measures related to foreign vessels.

94. The PRIPHC02 **NOTED** that the Pacific halibut fisheries managed by the IPHC occur entirely within the EEZs of the two Contracting Parties, and all Pacific halibut are landed in ports of the two countries. Landings are almost exclusively in ports of the same country as the fishing vessel, the primary exception being the IPHC's own research catch, which may be landed in either country. Thus, although not stated

explicitly, the Convention effectively assigns the equivalent of Port State duties to the Contracting Parties to carry out with respect to their ports. Both Canada and the United States of America are parties to the PSMA.

95. The PRIPHC02 **NOTED** the current bilateral nature of this Commission, limits of its mandate to the activities within its EEZs, authorisation requirements, gear limitations, season limitations, Vessel Monitoring Systems (VMS), log books requirements, inspections and monitoring of landings, plus the plethora of enforcement agencies involved in at-sea and in port MCS activities as noted in their annual reports, it is suggested that the principles of PSMA are generally implemented, noting that the majority of landings are by domestic vessels at their Contracting Party ports.

Recommendation

96. The PRIPHC02 **RECOMMENDED** that Contracting Party enforcement agencies adopt common standards for assessment of implementation of the principles of port State measures.

7.3 Monitoring, control and surveillance (MCS)

97. The PRIPHC02 **NOTED** that MCS measures are the individual responsibility of the IPHC Contracting Parties as part of their management of the fisheries and enforcement of regulations. A number of MCS measures are included in the IPHC Pacific Halibut Fishery Regulations (2019) at the request of the Contracting Parties for purposes of domestic management and enforcement.

98. The PRIPHC02 **NOTED** that the PRIPHC01 did not have any specific recommendations on MCS, although they did have recommendations regarding transparency, stakeholder engagement and the need to strengthen stock assessment processes and development of a long-term strategic plan for the fishery and enhanced involvement of the Commissioners in their leadership roles.

99. The PRIPHC02 **NOTED** the IPHC Fishery Regulations are reviewed and updated annually, including the implementation of mortality limits, partial VMS coverage, observers, data collectors, monitoring of landings, etc. These are all very positive steps to implementation of sustainable, 'best practice', management measures recognising that MCS is the implementing arm for fisheries management through two key approaches, 'voluntary' compliance strategies and 'deterrent' enforcement strategies.

100. The PRIPHC02 **NOTED** that the implementation of the management measures is the responsibility of each of the Contracting Parties. The common indicator of compliance trends for RFMOs to input into future management measures and the Compliance Monitoring Scheme is weak and appears to be segmented through the submission of 15 separate MCS reports (2 for Canada and 13 for the United States of America) with no integration or focus on what the results mean with respect to successful implementation.

101. **NOTING** the plethora of enforcement agency reports, especially from the USA, including significant duplication of data, the PRIPHC02 **AGREED** with the IPHC request for coordination of agency efforts to re-focus on an integration of MCS efforts for sustainable fisheries management, and coordination of efforts amongst MCS partner agencies.

102. The PRIPHC02 **AGREED** that the establishment of common standards and levels for monitoring, observers and data collection could greatly enhance the management process and ensure greater equity or balance in fishing opportunities for all areas and sectors.

103. The PRIPHC02 **NOTED** that some efforts on the 'educational, voluntary compliance' mechanisms to involve all participants, however the greater effort and focus appeared to remain on the 'deterrent' enforcement activities which are only one part of the MCS regime for sustainable management of the fisheries, and in fact, the last resort to ensure compliance. Earlier efforts on educational involvement and 'voluntary compliance' may assist in higher compliance levels, peer pressure for compliance and hence a better balance in the management regime for all participants.

104. The PRIPHC02 **NOTED** the pressures and negative impacts that limited MCS resources can have on monitoring and controlling the 'derby style' of management of the fishery in IPHC Regulatory Area 2A. This type of management scheme encourages fishers to take greater safety risks to participate in the fishery, consequently consideration might be given to alternate management processes.

Recommendation

105. The PRIPHC02 **RECOMMENDED** enhancement of coordination of MCS activities to result in a common, integrated enforcement report for each Contracting Party to facilitate assessment of compliance efforts, trends and input into management decisions.

106. The PRIPHC02 **RECOMMENDED** that the Commission re-assess the 'derby-style' fisheries management concept in operation in IPHC Regulatory Area 2A in terms of available resources, impact on validity of monitoring results, and safety of fishers, and amend the management processes, if and as necessary.

7.4 Follow-up on infringements

107. The PRIPHC02 **NOTED**:

a) the "Contracting Party (by agency) Reports" prepared for the 95th Session of the IPHC Annual Meeting (AM095) for the most recent compliance monitoring and reporting: https://www.iphc.int/venues/details/95th-session-of-the-iphc-annual-meeting-am095;

b) the level of effort on 'voluntary' compliance mechanisms by the Contracting Parties was not reported because most of the compliance reports provided only spatial/time commitments for 'deterrent' enforcement operations;

c) that the Commission has not received any information on follow-up on the infringements reported;

d) that at present, follow-up on infringements is left largely to each Contracting Party, independent of the other. However, there is a benefit in providing more transparency in this regard through consolidated National Reporting to the Commission. The Commission is currently developing a template for reporting in a consistent format annually;

e) that efficiencies are likely to be gained by modifying the format and content for Contracting Parties reports to the Commission.

Recommendations

108. The PRIPHC02 **RECOMMENDED** that the IPHC request information regarding Contracting Party follow-up of infringements, to assist in determining the overall efficacy of MCS and enforcement activities. This would support best practices with respect to transparency.

109. The PRIPHC02 **RECOMMENDED** that the Commission improve the process of Contracting Party reporting to the Commission by aggregating individual agency reports into a consolidated, standardised, Contracting Party report to the Commission.

7.5 Cooperative mechanisms to detect and deter non-compliance

110. The PRIPHC02 **NOTED** that the IPHC relies on its Contracting Parties to detect and deter non-compliance as part of their domestic management of the fishery and enforcement of IPHC Fishery Regulations. This is generally carried out by each of the two Contracting Parties independently of the other because the fisheries they manage take place entirely within waters under their respective national jurisdictions.

7.6 Market-related measures

111. The PRIPHC02 **NOTED** it did not identify any need for consideration under this section.

8. GOVERNANCE

112. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-07 Rev_1, and paper IPHC-2019-PRIPHC02-08 Rev_1 which provided information regarding the Performance Review Criteria 5: *Decision-making and dispute-settlement*, and an item from Criteria 6: *transparency*, respectively.

8.1 Decision-making

113. The PRIPHC02 **NOTED** that among other things, Article III, paragraph 1 of the IPHC Convention also includes a decision-making clause. All decisions of the Commission shall be made by concurring vote of at least two of the Commissioners of each Party. However, this is modified by Rule 11, paragraph 1 of the Rules of Procedure (2019), which states that as a general rule, decision-making in the Commission should be by consensus, defined to mean the absence of any formal objection made at the time the decision was taken. A voting procedure will be invoked if it appears that all efforts to reach consensus have been exhausted, and the decision will be made by voting as referred to in Article III, paragraph 1 of the Convention.

114. The PRIPHC02 **NOTED** that the IPHC Convention does not make reference to observer participation at IPHC meetings. However, according to Rule 6.2 of the Rules of Procedure 2019 meetings of the Commission may be open to observers and the general public. Rule 12 specifies the IPHC's relationship to observers and the general public, and states that all sessions of the Commission and its subsidiary bodies may be open to observers and the general public, unless the Commission decides otherwise. It may invite States, RFMOs and other relevant governmental and intergovernmental organisations and non-governmental organisations. The current position of the Commission is that all meetings are open to observers and the general public.

115. The PRIPHC02 **NOTED** that since the PRIPHC01, the Commission progressively decided to treat all meetings (Commission and its subsidiary bodies) as open unless specifically closed (sessions pertaining to personnel remain closed). All open sessions are also live webcast to the public and the web broadcast incorporates the ability to receive questions from and respond to the on-line audience. Audio recordings of all open sessions are also published on the website, and YouTube channels for the public record. For example, see the following two links, the first being for the 95th Session of the IPHC Annual Meeting, and the second being a sub-link to the audio recording from the same meeting posted on YouTube. The link is included in the 'Meeting results' of the AM095 page:

a) AM095 meeting page: https://www.iphc.int/venues/details/95th-session-of-the-iphc-annual-meeting-am095

b) YouTube link: https://www.youtube.com/playlist?list=PLww0sbZpeo2dBacOa8qPmBQyOW0LkDvD1

116. The PRIPHC02 **NOTED** that in session, all attendees, including observers and members of the public, as well as the webinar audience, are able to pose questions and have them answered by the Commission in two-way dialogue during the meeting. The Commission also directed the CB and PAB to open their meetings to the public from 2017. Thus, all IPHC subsidiary bodies are open to the public. In addition, meetings of the MSAB are webcast (one-way only), and the meetings of the MSAB, the SRB, and the RAB are recorded.

117. The PRIPHC02 **NOTED** that the Commission's Rules of Procedure have been updated three times since the PRIPHC01.

a) IPHC Rules of Procedure (2014): Minor improvements made to clarify the functions of the Commission;

b) IPHC Rules of Procedure (2017): Substantially updated by incorporating terms of reference and processes for subsidiary bodies. A requirement for review and revision every two (2) years; and

c) IPHC Rules of Procedure (2019): Further revisions to refine the terms of reference and procedures the subsidiary bodies to reduce potential overlaps in mandate. In addition, a 'code of conduct' was added to guide the interactions of the subsidiary bodies. The decision making process in-session and also intersessionally are clearly defined in the IPHC Rules of Procedure (2019), Rule 11 – Decision making. https://www.iphc.int/uploads/pdf/basic-texts/iphc-2019-rules-of-procedure.pdf

118. The PRIPHC02 **NOTED** that from 2017, all documents for Commission and subsidiary body meetings are prepared in a standard format and posted at the IPHC website (https://www.iphc.int/iphc-meetings). Documents prepared for meetings are posted not later than 30 days in advance of the session, and a comprehensive meeting report is posted as efficiently as possible following each session. In addition to posting at the IPHC website, meeting results are published to stakeholders and the public via IPHC Media Releases and Circulars. (See the IPHC Documents webpage at https://www.iphc.int/library/documents for examples).

119. The PRIPHC02 **NOTED** that the IPHC operates on a regular annual meeting cycle, and since 2018, has operated on a three-year calendar of meetings, approved annually by the Commission. The timing of the IPHC annual meeting cycle, with major decisions made by the Commission in January or early February of each year, is geared to support the needs of the domestic regulatory processes for the Pacific halibut fisheries in both Contracting Parties. (see discussion in https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-22.pdf.).

120. The PRIPHC02 **NOTED** that accessibility to meeting materials and meetings is an area where the IPHC has demonstrated leadership among RFMOs globally.

121. The PRIPHC02 **NOTED** that all observer organisations and the general public are able to register and attend all IPHC meetings, via the meeting webpages. However, a clearer pathway and recognition of Observer organisations is needed.

122. The PRIPHC02 **NOTED** that IPHC decision-making is annual, based on objective and current science. The adoption of a consistent ensemble model approach to providing the scientific basis for decision-making has been welcomed. The move toward strategic decision-making and management based on MSE is an opportunity to strengthen science-based decision-making and to increase capacity for the annual stock assessment process.

123. The PRIPHC02 **NOTED** that the involvement of civil society organisations as contributors, stakeholders and partners at all levels of the management process is welcomed, however the Commission process lacks formal pathways for participation by observer organisations, particularly civil society representatives.

Recommendation

124. The PRIPHC02 **RECOMMENDED** that the IPHC Rules of Procedure be modified to include a clear category and recognition for observer organisations, which would be in addition to the general public.

8.2 Dispute settlement

125. The PRIPHC02 **NOTED** that each Contracting Party actively manages its fisheries in accordance with the IPHC Fishery Regulations (current IPHC Fishery Regulations 2019). However, the published Pacific Halibut Fishery Regulations are for information purposes only. Official regulations are adopted by the Contracting Parties, and are available at the following web-links:

a) Canada: Canada Gazette and on the 'Condition of License': http://www.dfo-mpo.gc.ca/acts-lois/regulations-reglements-eng.htm

b) United States of America: The Federal Register: https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan

126. The PRIPHC02 **NOTED** that Contracting Parties may choose to object and thus not enact specific IPHC fishery regulations, and notify the other Party accordingly at the time the decision is made. As the IPHC currently acts in a bilateral context, consent by both parties is required to adopt a new regulatory measure. In instances where agreement is not reached, the parties will enter into an inter-sessional discussion process. Should agreement be reached intersessionally, the intersessional decision must be made by consensus of all 6 Commissions (while the current practice, that is not reflected in the Rules of Procedure). Alternatively, the decision is moved to the next session of the Commission for deliberation (ref. IPHC Rules of Procedure 2019, Rule 11, para. 5-10. At that point, only 2 Commissioners from each Contracting Party (4 in total) are required to be in favour in order for a decision to be adopted. The IPHC Rules of Procedure (2019) describe how the above process works. The Commission receives from each Contracting Party regular reports about management actions they have taken and the ensuing results, including data on removals in the directed and non-directed fisheries. Because they each directly manage the fisheries in their own waters, disputes or disagreements between the Contracting Parties tend to be focused on the annual decision-making process, in particular the setting of mortality limits (catch limits) for each IPHC Regulatory Area.

127. The PRIPHC02 **NOTED** that regulations adopted by the IPHC remain in force until changed or superseded by the Commission. The IPHC Convention requires that in session, "all decisions of the Commission shall be made by a concurring vote of at least two of the [three] Commissioners of each Party." In the absence of such agreement, existing regulations remain in force, thus the operation of the fisheries is not hampered or restricted in the event the Commission fails to update regulations. The Commission strives to avoid this situation and it is rare, occurring only twice in the past 96 years.

Recommendation

128. The PRIPHC02 **RECOMMENDED** updating the rules of procedure to reflect intersessional decision making approaches.

8.3 Transparency

129. The PRIPHC02 **AGREED** that the issue of transparency is two-fold – internal (i.e. whether decisions within IPHC are made in a transparent manner) and external (i.e. its relationship with other organisations and civil society). The first one is addressed under decision-making.

130. The PRIPHC02 **NOTED** that since 2017, all reports from meetings of the Commission and its subsidiary bodies are now required to be published within 15 days of the close of the respective meeting. This rule was included in the 2017 version of the IPHC Rules of Procedure. Since that time, time taken to publish IPHC meeting reports has continuously been reduced, with the most recent Report of the 95th Session of the IPHC Annual Meeting (AM095) being published on the same day that the meeting closed. At each subsequent session, an Actions Arising paper is published, detailing progress made during the inter-sessional period. In 2017, numerical tracking of actions was introduced for the first time, to facilitate tracking and reporting. An example from the recent AM095 meeting of the Commission: https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-03.pdf. All papers for meetings of the Commission or its subsidiary bodies are required to be published 30 days prior to the commencement of a meeting. This rule has been adhered to for all meetings since it was introduced in the 2017 version of the IPHC Rules of Procedure. See Rule 8 – Order of Business, of the IPHC Rules of Procedure (2019).

131. The PRIPHC02 **NOTED** that the Commission has contracted separate independent peer reviews of the stock assessment, the most recent being in 2019. As for all IPHC reports, the independent stock assessment review is available online. It is debatable whether the Commission should additionally contract independent reviews on other matters. The SRB mechanism is in principle sufficient but while it is independent, it is also internalised and could potentially be perceived as institutionalised. Stakeholder, Commissioner and public trust may be enhanced by judicious contracting of occasional additional external peer reviews.

132. The PRIPHC02 **AGREED** that with respect to the MSE, timely review would be prior to finalisation and decision-making on implementation. Other areas for potential review are the FISS, specific biological and ecological research activities, and catch data quality and standards. Opportunities to publish in the primary literature could also be taken advantage of, providing a highly visible form of peer review.

133. The PRIPHC02 **AGREED** that the SRB could be more responsive and assist in strengthening internal engagement of members. Careful consideration is needed of the SRB role and whether it could be widened to serve such purposes. As mandated through the Rules of Procedure it has an independent, scientific peer review function. Any move to widen that function could undermine it and perceptions of independence. To meet best practice standards, a clear peer review mechanism is required. The current functioning of the SRB and occasional external review meets those standards.

134. The PRIPHC02 **NOTED** that less formally, the IPHC employs world-class analysts and biologists and exists in what might best be termed a fisheries Center of Excellence; Seattle provides a fertile ground for informal scientific peer review and the interactions between permanent IPHC scientists and the wider scientific northwest Pacific fisheries science community further ensure continuous scrutiny.

135. The PRIPHC02 **AGREED** that:

a) IPHC Science processes are robust and implementation as evidenced by transparent documentation and reports is excellent with most improvements occurring after 2016;

b) Transparency is a strong attribute of all IPHC work, particularly since 2017. The scope and quality of science documentation is impressive. However, as is common in fisheries, the science products are generally restricted to "grey literature" documents. There is considerable opportunity for much of the IPHC science to be published in primary literature, providing further peer review and credibility but also motivation for Secretariat staff.

136. The PRIPHC02 **NOTED** the need for a visible and clear pathway for Observer participation, with specific input and feedback points at all key points in the management and governance process. The PRIPHC02 considers Observers to include "civil society" (e.g. those with an interest such as NGOs and other entities without financial stake in the fishery, but for whom input into the management of public resources is a component of their core business).

Recommendations

137. The PRIPHC02 **RECOMMENDED** that the significant level of transparency achieved across Commission business continue to be improved.

9. INTERNATIONAL COOPERATION

138. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-08_Rev_1, which provided information regarding the Performance Review Criteria 6: *International cooperation (relationship to non-Contracting Parties; cooperation with other RFMOs).* Note that '*transparency'* has been moved to Governance, above.

9.1 Relationship to non-Contracting Parties

139. The PRIPHC02 **NOTED** that there are three non-Contracting Parties who exploit Pacific halibut, Russia, the Republic of Korea and Japan. Both the Republic of Korea and Japan harvest Pacific halibut as incidental catch. To date the IPHC has been unable to obtain landing figures. Russia has a longline fishery landing Pacific halibut in excess of 2,000 metric tons annually. The IPHC has engaged Russia both on a scientific and management/policy level in the past with mixed engagement success. Most recently it has engaged Russian scientists working on Pacific halibut through PICES. Russian managers and scientists intermittently participate in the IPHC process, an example being the 1993 Annual meeting, among others: https://www.iphc.int/uploads/pdf/am/iphc-1993-am069-r.pdf. The IPHC Secretariat

organised a joint scientific working group meeting on Pacific halibut at the PICES meeting in October 2019, including the participation of Russian and Japanese scientists, in addition to scientists from the Contracting Parties.

140. The PRIPHC02 **NOTED** that there are no vessels from non-Contracting Parties authorised to fish in the IPHC Convention Area. This is enforced by the Contracting Parties. Russia has previously fished in IPHC Convention Area under access agreements, however this arrangement was terminated in the 1980s.

141. The PRIPHC02 **NOTED** that the IPHC management processes currently focus solely on Pacific halibut in the waters under the national jurisdictions of the Contracting Parties, and appear to discount or ignore the harvests of the same Pacific halibut stock in the areas outside the Convention Area, thereby creating a risk in the application of 'best practices' for stock management. A possible ~13% of the annual mortality of Pacific halibut is harvested outside the IPHC Convention Area (i.e. by Russia, Japan, and, possibly, the Republic of Korea) and accurate data on these fisheries is not included in either the stock assessments or management strategies. This lack of attention to fishing outside the Convention Area creates an information gap and may bias any stock assessment exercises or management efforts to an unknown degree.

142. The PRIPHC02 **NOTED** that pursuant to Article 63, paragraph 1 of UNCLOS that where the same stock occurs within the EEZ of two or more coastal States, these States shall seek to agree upon measures necessary to coordinate and ensure that coordination and development of such a stock. As IPHC has in place a management system that implements this obligation for two coastal States, it would seem appropriate that IPHC reaches out to relevant additional coastal States in order to find suitable cooperative arrangements within the obligations set out in UNCLOS.

143. The PRIPHC02 **NOTED** that although catches had been registered by Russia, Japan, and the Republic of Korea, it is a question to whether the magnitude of the catches in all three countries' waters falls within a definition of the word "occurs" referred to in Article 63, paragraph of UNCLOS. The catches in Russian waters show, however, that Pacific halibut occurs in Russian waters.

144. The PRIPHC02 **RECOGNISED** that UNFSA is not applicable for the management of transboundary fish stocks, Article 17 contains a principle that could be noted; i.e. that a non-member of an RFMO, which not otherwise agree to apply the conservation and management measures established by such an RFMO is not discharged from the obligation to cooperate in accordance with UNCLOS.

145. The PRIPHC02 **NOTED** that best practices for sustainable management of fisheries and ecosystems requires access to all information about removals and impacts of such harvesting on the stock and ecosystem over the full geographic range of the stock.

Recommendations

146. The PRIPHC02 **RECOMMENDED** that the Commission prioritise scientific work to confirm the full range of the Pacific halibut stock.

147. The PRIPHC02 **RECOMMENDED** that if the full range of the Pacific halibut stock extends outside the Convention Area, the Contracting Parties invite collaboration with all parties involved in the harvest of this stock, to ensure science and management includes accurate data regarding all removals from the stock.

9.2 Cooperation with other RFMOs (and other international bodies)

148. The PRIPHC02 **NOTED** that the Secretariat regularly interacts with other RFMOs in a number of forms. This includes with the International Fisheries Commissions based in North America via annual joint meetings, and also via meetings of the IPHC Secretariat staff. The IPHC Secretariat also participates in the Regional Fishery Body Secretariats, PICES, and at COFI meetings, and the Executive Director is scheduled to convene a session on RFMO's at the upcoming World Fisheries Congress 2020.

149. The PRIPHC02 **NOTED** that the IPHC works closely with the domestic agencies of the Contracting Parties, both at the Halibut Advisory Board in Canada, and the Fishery Management Councils in the USA.

    a) North Pacific Fishery Management Council (NPFMC): https://www.npfmc.org/;

    b) Pacific Fishery Management Council (PFMC): https://www.pcouncil.org/;

    c) Halibut Advisory Board (HAB): https://www.pac.dfo-mpo.gc.ca/consultation/ground-fond/hab-ccf/index-eng.html.

150. The PRIPHC02 **NOTED** the recent MOU that has been established between IPHC and PICES, as well as the workshop that will be undertaken at PICES on Pacific halibut. This approach is **ENCOURAGED** as it will provide a simplified process to bring together skilled science capacity from the North Pacific, and as with other fisheries management organisations (e.g. North Pacific Fisheries Commission), allows for discussions on broader ecosystem considerations including influence of changing ocean conditions.

9.3 Participation

151. The PRIPHC02 **NOTED** that participation was addressed in sections 8.1, 8.3, and 9.1.

10. EFFICIENCY AND TRANSPARENCY OF FINANCIAL AND ADMINISTRATIVE MANAGEMENT

152. The PRIPHC02 **NOTED** paper IPHC-2019-PRIPHC02-09_Rev_1, which provided information regarding the Performance Review Criteria 7: *Efficiency and transparency of financial and administrative management.*

10.1 Availability of resources for IPHC activities

153. The PRIPHC02 **NOTED** that the documents related to each budget cycle, and the associated decisions of the Commission are provided in the Annual Meeting pages: https://www.iphc.int/library/documents/meeting-documents/iphc-meeting-index. The decisions of the Commission are contained within each Annual Meeting report. Intersessional budget related decisions are recorded in IPHC Circulars: https://www.iphc.int/library/documents/category/circulars. For example, recent intersessional decisions are provided in IPHC Circular 2019-010. Prior to 2017, the record keeping of decisions made and the associated supporting evidence are not well recorded. Since that time however, all documents are available to the public via each meeting page. An example of the most recent (2019) Annual Meeting documents and decisions are provided at: https://www.iphc.int/venues/details/95th-session-of-the-iphc-annual-meeting-am095.

154. The PRIPHC02 **NOTED** that, in addition to the readily available meeting records of financial information, the Secretariat is establishing a Business Continuity Plan in order to ensure memorialised institutional knowledge and capabilities.

155. The PRIPHC02 **NOTED** the importance of maintaining strong financial controls that are regularly audited. These controls would address both the Contracting Parties' assessed contributions and the revenue generated from the sale of fish from the FISS.

Recommendation

156. The PRIPHC02 **RECOMMENDED** the continued establishment of a Business Continuity Plan (BCP), which will serve to strengthen the long-term viability of IPHC Secretariat functioning and accountability, in line with best practices of an organisation of its size and breadth. Prioritising a financial and administrative BCP, with the ultimate goal of establishing a comprehensive BCP for the IPHC Secretariat as a whole.

10.2 Efficiency and cost-effectiveness

157. The PRIPHC02 **NOTED** that the IPHC currently employs 35 regular ongoing staff based in Seattle, WA, USA, and 32-40 seasonal staff. Fig. 5 provides a schematic of the Secretariat's structure.

A directory of IPHC Secretariat, including staff bios, is provided at: https://www.iphc.int/the-commission/secretariat-staff.

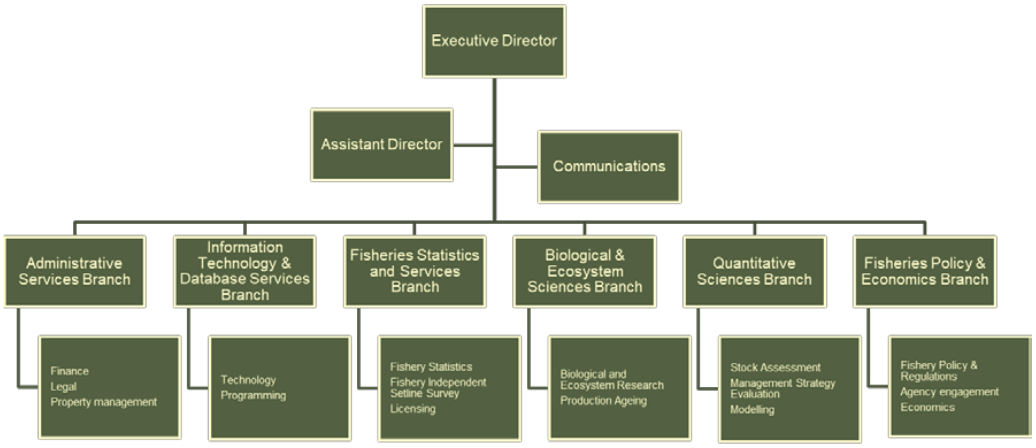

Fig. 5. Schematic of the IPHC Secretariat's structure.

158. The PRIPHC02 **NOTED** that the IPHC undergoes an annual independent audit. The most recent of which is available on the IPHC website, annual meeting documents (linked below). The following text from the report of the 95th Session of the IPHC Annual Meeting (AM095), provides the Commissions current stance on the audits. ***Annual independent auditor's report (2017 & 2018)***

159. The PRIPHC02 **NOTED** the extent to which the IPHC Rules of Procedure and the IPHC Financial Regulations comply with international best practice:

a) IPHC Rules of Procedure (2019): The Rules of Procedure consist of rules and regulations adopted by the IPHC pursuant to the Convention between Canada and the United States of America;

b) IPHC Financial Regulations (2019): The Financial Regulations govern the financial administration of the IPHC and were established pursuant to the Commission's Rules of Procedure.

160. The PRIPHC02 **AGREED** that the FAC by-and-large fulfils the Terms of Reference for the committee with one exception. Terms of Reference for the FAC call for a report to be prepared at the conclusion of each meeting and for the report to be transmitted to the Commission. The practice has been to conclude the meetings without a report because the FAC participants are, in fact, also the members of the Commission. However, there is a risk of incomplete capture of the FAC process.

161. The PRIPHC02 **AGREED** that there is a need to align the FAC process with those of all other subsidiary bodies.

Recommendation

162. The PRIPHC02 **RECOMMENDED** the FAC produce a report detailing the actual FAC meeting and that the presentation of the report be incorporated into the Annual Meeting agenda and report, along with the final decisions of the Commission.

10.3 Advisory structure

163. The PRIPHC02 **NOTED** that the Commission is advised by one (1) committee and five (5) boards, as illustrated in Fig. 2. The IPHC Rules of Procedure (2019) describe the various terms of reference for each subsidiary body, as listed in Rule 14.

164. The PRIPHC02 **NOTED** that from a science process and advisory perspective, the IPHC is unusual in that opportunities are provided for stakeholder engagement during all stages. Informally, Secretariat staff are in frequent contact while sampling or visiting ports and during the extensive annual FISS, which typically contracts 14-18 vessels each year from the Contracting Parties. Formally, both the RAB (see

e.g.: https://www.iphc.int/uploads/pdf/rab/2019/iphc-2019-rab020-r.pdf) and the MSAB (see also Recommendation 8, and e.g.: https://www.iphc.int/uploads/pdf/msab/msab13/iphc-2019-msab013-r.pdf), are standing bodies with multi-sector representation, clear mandates set out by the Commission, and operating under the IPHC Rules of Procedure (see: https://www.iphc.int/the-commission), which include clear terms of reference for each Board. The RAB meets annually and the MSAB meets twice a year. The RAB mandate provides opportunity to make inputs directly to the Secretariat in the development of research plans and also directly to the SRB, itself mandated in the Rules of Procedure, as well as reporting to the Annual Meeting alongside the RAB, MSAB and other subsidiary boards. All RAB, MSAB and SRB activities are transparent. Materials provided to the meetings and meeting reports are all available online. The MSAB provides critical input to the development and testing of management strategies with direct consequences for future harvest strategies and fishing opportunities. The SRB provides independent scientific peer review of all science-related matters including review of recommendations from the RAB and MSAB.

Recommendations

165. The PRIPHC02 **RECOMMENDED** that when revisiting PRIPHC01 Recommendation 3.1 on unifying subsidiary bodies, treat the CB and PAB as non-science process and maintain separated RAB and MSAB at least until the 2021 adoption and implementation of a new management strategy.

166. The PRIPHC02 **RECOMMENDED** that continued support for high quality stakeholder engagement through the science-focused subsidiary bodies (RAB and MSAB) or any future subsidiary bodies be maintained.

11. CONCLUDING COMMENTS

167. In conclusion, the PRIPHC02 reiterates its praise for the progress made since the last review. The recommendations contained herein provide ample opportunity to continue building on and refining this progress. It is noteworthy that, throughout this review and deliberation, the following themes emerged, prompting robust discussions:

a) Roles and responsibilities among the Commission, Secretariat and subsidiary bodies;

b) The importance of the results of the MSE process as a tool for multi-year management;

c) Data from the full geographic range of Pacific halibut, including consideration that the stock may stretch all the way to the Republic of Korea;

d) Concerns about the non-directed fishery mortality data; and

e) Changing ocean dynamics and the impact on future management.

168. The PRIPHC02 members are grateful for the opportunity to participate in this valuable exercise.

169. The PRIPHC02 **ADOPTED** the report of the 2nd Performance Review of the IPHC (IPHC-2019-PRIPHC02-R), including the consolidated set of Recommendations provided in Appendix III, on 11 October 2019.

APPENDIX I
TERMS OF REFERENCE, CRITERIA, AND PROCESS TO CONDUCT THE 2ND PERFORMANCE REVIEW OF THE IPHC

1. Terms of reference for the implementation of the 2nd Performance Review of the International Pacific Halibut Commission (PRIPHC02)

1.1 Scope of the review:

The review will evaluate progress made on the recommendations arising from the 1st performance review of the IPHC. In addition, it will focus on the effectiveness of the Commission to fulfil its mandate, in accordance with the criteria set forth below. In conducting the review, the strengths, weakness, opportunities and risks to the organisation shall also be evaluated.

1.2 Composition of the Review Panel:

Chairperson: An independent Chairperson with legal fisheries background and a good understanding of Regional Fisheries Management Organisations (RFMO). The Chairperson should not be directly affiliated with any IPHC Contracting Party.

Contracting Parties: 1 representative of each IPHC Contracting Party.

Science Advisor: A science expert not affiliated with the IPHC Contracting Parties, and with expertise on groundfish and the ecosystems affected by Pacific halibut fisheries.

RFMOs: At least two members from other Regional Fisheries Management Organisations: e.g. Inter-American Tropical Tuna Commission (IATTC), North Pacific Fisheries Commission (NPFC), North Pacific Anadromous Fish Commission (NPAFC).

NGOs: Two Non-Governmental Organisations: e.g. The Pew Charitable Trusts, Birdlife International (BL)).

IPHC Secretariat: The IPHC Secretariat will not be a part of the Review Panel but it will act as a facilitator of its activities, providing access to information and facilities that the Review Panel will require to conduct its work.

1.3 Meeting locations:

At least two (2) in-person Review Panel meetings will take place, one in the USA (at the seat of the Commission in Seattle or in Alaska) and one in Canada (location to be decided by Canada). Contracting Parties will cover the costs associated with the participation of their representative. However, the attendance of other Panel Members to the Review Panel meetings shall be funded under the Commission's budget. Additional meetings may be required, as determined by the Panel, and will be conducted via electronic means facilitated by the IPHC Secretariat.

1.4 Work schedule

The report of the Review Panel will be completed and made available no later than 30 days prior to the 96th Session of the IPHC Annual Meeting (AM096) in 2020, and published on the IPHC website so as to maximise transparency.

2. Criteria for the 2nd Performance Review of the International Pacific Halibut Commission (PRIPHC02)

Criteria 1: ***1st Performance Review***: to evaluate progress made on the implementation of the recommendations arising from the 1st performance review of the IPHC

Criteria 2: ***Legal analysis of the Convention*** to ensure its adequacy relative to current global best practice principles of fisheries management

Criteria 3: ***Conservation and management*** (status of living marine resources; quality and provision of scientific advice; data collection and sharing; adoption of fishery Regulations, also known in other RFMO's as Conservation and Management Measures, including measures adopted at the national level; compatibility of fishery Regulations)

i. Status of living marine resources
   - Status of Pacific halibut stock under the purview of the IPHC in relation to relevant biological standards.
   - Trends in the status of the stock.
   - Status of species that belong to the same ecosystems as, or are associated with or dependent upon, Pacific halibut (hereinafter "non-target species").
   - Trends in the status of non-target species.

ii. Quality and provision of scientific advice
   - Extent to which the IPHC receives and/or produces the best scientific advice relevant to the fish stocks and other living marine resources under its purview, as well as to the effects of fishing on the marine environment.
   - Extend to which the IPHC obtains and evaluates scientific advice, reviews the status of the stock, promotes the conduct of relevant scientific research and disseminates the results thereof.

iii. Data collection and sharing
   - Extent to which the IPHC has agreed formats, specifications and timeframes for data submission, taking into account UNFSA Annex I.
   - Extent to which IPHC Contracting Parties, individually or through the IPHC, collect and share complete and accurate fisheries data concerning target stocks and non-target species and other relevant data in a timely manner.
   - Extent to which fishing data and fishing vessel data are gathered by the IPHC and shared among Contracting Parties and other relevant bodies.
   - Extent to which the IPHC is addressing any gaps in the collection and sharing of data as required.
   - Extent to which the IPHC has set standards for the collection of socio-economic data from the fisheries; and extent to which this information is used to inform decisions by the Commission.
   - Extent to which the IPHC has set security and confidentiality standards and rules for sharing of sensitive science and operational/compliance data.

iv. Consistency between scientific advice and fishery Regulations adopted;
   - Extent to which the IPHC has adopted fishery Regulations for both Pacific halibut, and proposed regulations for non-target species to relevant bodies, that ensure the long-term

sustainability of the ecosystem as well as of such stocks and species and are based on the best scientific evidence available.

- Extent to which the IPHC has applied the precautionary approach as set forth in UNFSA Article 6 and the Code of Conduct for Responsible Fisheries Article 7.5, including the application of precautionary reference points and harvest control rules.
- Extent to which the IPHC has adopted and implemented effective rebuilding plans for depleted or overfished stocks.
- Extent to which the IPHC has taken due account of the need to conserve marine biological diversity and minimise harmful impacts of fisheries on living marine resources and marine ecosystems.
- Extent to which the IPHC has adopted measures to minimise pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.

v. Compatibility of management measures
- Extent to which measures have been adopted as reflected in UNFSA Article 7.

vi. Fishing allocations and opportunities
- Extent to which the IPHC agrees on the allocation of allowable catch or levels of fishing effort, including taking into account requests for participation from new Contracting Parties or participants as reflected in UNFSA Article 11.

Criteria 4: ***Compliance and enforcement*** (flag State duties; monitoring, control and surveillance activities; port State measures; follow-up on infringements; cooperative mechanisms to detect and deter non-compliance; market-related measures)

i. Flag State duties
- Extent to which IPHC Contracting Parties are fulfilling their duties as flag States under the Convention establishing the IPHC, pursuant to measures adopted by the IPHC, and under other international instruments, including, *inter alia*, the 1982 Law of the Sea Convention, and the UNFSA, as applicable.

ii. Port State measures
- Extent to which the IPHC has adopted measures relating to the exercise of the rights and duties of its members as port States, as reflected in UNFSA Article 23 and the Code of Conduct for Responsible Fisheries Article 8.3 and the FAO Port State Agreement.
- Extent to which these measures are effectively implemented.

iii. Monitoring, control and surveillance (MCS)
- Extent to which the IPHC has adopted integrated MCS measures (e.g. required use of VMS, observers, catch documentation and trade tracking schemes, restrictions on transhipment, boarding and inspection schemes).
- Extent to which these measures are effectively implemented.

iv. Follow-up on infringements

- Extent to which the IPHC Contracting Parties follow up on infringements to management measures.

v. Cooperative mechanisms to detect and deter non-compliance
- Extent to which the IPHC has established adequate cooperative mechanisms to both monitor compliance and detect and deter non-compliance (e.g. compliance committees, vessel lists, sharing of information about non-compliance, joint patrols, common Minimum Terms and Conditions for access, harmonised regulatory mechanisms, boarding schemes, regional/compatible VMS equipment and operational criteria, observer schemes, with common training standards for inspectors and observers, intra-regional cooperation, etc.).
- Extent to which these mechanisms are being effectively utilised.
- Extent to which the IPHC has adopted new measures to foster (reward/penalise) compliance within IPHC and effectiveness of such measures.

vi. Market-related measures
- Extent to which the IPHC has adopted measures relating to the exercise of the rights and duties of its Members as market States.
- Extent to which these market-related measures are effectively implemented.

Criteria 5: ***Decision-making and dispute settlement***

i. Decision-making
- Extent to which IPHC has transparent and consistent decision-making procedures that facilitate the adoption of management regulations in a timely and effective manner.

ii. Dispute settlement
- Extent to which the IPHC has established adequate mechanisms for resolving disputes among Contracting Parties.

Criteria 6: ***International cooperation*** (transparency; relationship to non-Contracting Parties; cooperation with other RFMOs)

i. Transparency
- Extent to which the IPHC is operating in a transparent manner, as reflected in UNFSA Article 12 and the Code of Conduct for Responsible Fisheries Article 7.1.9.
- Extent to which IPHC decisions, meeting reports, scientific advice upon which decisions are made, and other relevant materials are made publicly available in a timely fashion.

ii. Relationship to non-Contracting Parties
- Extent to which the IPHC facilitates cooperation among Contracting Parties and non-Contracting Parties which exploit the Pacific halibut stock, including through the adoption and implementation of procedures for granting Cooperating Non-Contracting Party status.
- Extent of fishing activity by vessels of non-Contracting Parties that are not cooperating with the IPHC, as well as measures to deter such activities.

iii. Cooperation with other RFMOs

- Extent to which the IPHC cooperates with other RFMOs, including through the network of Regional Fishery Body Secretariats.
- Extent to which IPHC works intra-regionally to adopt common regulatory principles, standards and operational schemes, and processes where appropriate, e.g. observer coverage, gear management, access rules and appropriate financial mechanisms.

iv. Participation

- Extent to which all fishing entities active in the Convention area, and the stock range, discharge their obligations in line with the UNFSA.

Criteria 7: ***Efficiency and transparency of financial and administrative management***

i. Availability of resources for IPHC activities

- Extent to which financial and other resources are made available to achieve the aims of the IPHC and to implement the Commission's decisions.

ii. Efficiency and cost-effectiveness

- Extent to which the IPHC is efficiently and effectively managing its human and financial resources.
- Extent to which the IPHC is managing its budget as well as its capacity to monitor and audit annual and multiannual expenditures.
- Extent to which the IPHC Rules of Procedure and the IPHC Financial Regulations comply with international best practice.

iii. Advisory structure

- Extent to which the IPHC has an adequate and effective set of subsidiary bodies which provide it with sound advice, and in accordance with best practice governance processes.

APPENDIX II
COMPOSITION OF THE REVIEW PANEL

Chairperson:
Mr Terje Løbach (Norway)

Terje Løbach is a lawyer, specialising in the law of the sea, in particular concerning marine living resources. He has been employed by the Norwegian fisheries authorities and the Norwegian foreign service. He has also been working at UN DOALOS and at the FAO Legal Office.

He has extensive experience in bilateral and multilateral negotiations, in particular concerning conservation and management of straddling fish stocks, but also general conservation and management issues including monitoring, control and enforcement, and he has been a major contributor to the fight against IUU fishing at regional and global levels. He has been Norway's representative to CCAMLR, FAO, ICCAT, IOC/ABE-LOS, NAFO, NEAFC, SEAFO and to the UN. He had the position as president of NAFO for four years and the chairperson of CCAMLR for two years.

He was the legal adviser and chair of both the first and second performance review panels of the IOTC, he was a member the first SEAFO performance review panel, and he was on the panel for the second NAFO performance review. He has also been selected to many FAO expert consultations, and he has contributed to several publications on the conservation and management of marine living resources and he has been speaker, chairperson, panellist or resource person at numerous conferences, symposia, seminars and workshops.

Contact details: Ovre Sandviksveien 29, 5034 Bergen, NORWAY, Mobile: +47 908 35 495, Email: terje.lobach@fiskeridir.no

Contracting Parties:
Dr Robert Day (Canada)

Dr. Robert Day has worked at Fisheries and Oceans Canada since 2001 in the field of international fisheries and oceans management. He is currently the Director of International Fisheries Management with responsibility for overall support for Canada's fisheries where there is an international management regime. He has supported and been Head of Delegation to a number of RFMOs and also served as Canadian Commissioner to the IPHC in 2018. This includes his current role as Canada's HoD to the North Pacific Fisheries Commission (a new RFMO in 2014) and selection as inaugural chair of its Technical and Compliance Committee. Dr. Day has also led delegations to tuna RFMO meetings and has actively supported the development of management strategy evaluation (MSE) on North Pacific albacore in the Northern Committee of the Western and Central Pacific Fisheries Commission.

He has co-chaired the ecosystem approach to fisheries working group as the fisheries representative in the Northwest Atlantic Fisheries Organization (cochaired with Science rep). This novel approach increased the ability for management and science to work collaboratively in a timely way while respecting individual roles.

Contact details: Director, International Fisheries Management, Department of Fisheries and Oceans Canada, 200 Kent St., Ottawa, On, K1A 0E6, +1-613-668-1907, Email: Robert.Day@dfo-mpo.gc.ca

Ms Staci MacCorkle (United States of America)

Staci MacCorkle is a Foreign Service Officer with the U.S. Department of State. Her current assignment is with the Office of Marine Conservation (OMC) in the Bureau of Oceans and International Environmental and Scientific Affairs (OES). Ms. MacCorkle is the State Department Representative to three important bilateral fisheries agreements with Canada: the International Pacific Halibut Commission, the Pacific Salmon Commission along with the related Yukon River Panel, and the Pacific Hake/Whiting Advisory Panel. She also supports her OMC colleagues with the Department's engagement in the multilateral North Pacific Anadromous Fish Commission, the North Pacific Fisheries Commission, and the Bering Sea "Donut Hole" Convention. Prior to arriving in OES/OMC, Ms. MacCorkle was posted to the U.S. Embassy in Panama City, Panama, where she managed the environment, science, technology, and health ("ESTH") portfolio. Her first diplomatic posting was as a Consular Officer at U.S. Embassy Guatemala City.

Before joining the Department of State, Ms. MacCorkle was an environmental consultant in Portland, Oregon. She managed a variety of projects to determine their potential impacts to natural resources. Much of her project work was in support of federal, state, and local government projects that had the potential to alter the natural environment and/or set long-term management strategies for protected natural areas throughout the U.S. Pacific Northwest. Ms. MacCorkle continues to maintain her Project Management Professional credential.

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Science Advisor:

Dr Kevin Stokes (New Zealand)

Kevin Stokes has worked at senior management levels in both the public and private sectors as a fisheries scientist, manager and advisor. He worked for the UK government for 15 years where he was responsible for all finfish monitoring, assessment and advice and worked extensively in Europe, serving as chair of the EC Scientific, Technical and Economic Committee for Fisheries (STECF) and as UK representative on the International Council for the Exploration of the Sea (ICES) Advisory Committee for Fisheries Management (ACFM), as well as chairing working groups and committees. He served on multiple UK research councils, led the UK scientific delegation to the International Whaling Commission (IWC) and served as UK Alternate IWC Commissioner for many years. Kevin worked as Chief Scientist for the New Zealand Seafood Industry Council (SeafIC) from 2000-2009, with responsibility for science policy and process as well as leading a consulting group drawing on diverse international expertise. Since 2009. He has worked internationally as an independent consultant.

He has worked on a wide range of fish, other marine species, and environmental issues and has provided advice nationally and internationally at senior governmental and ministerial levels, as well as to fishing, processing and retail industries, and to environmental NGOs. For the past ten years, he has worked as a private consultant in the general area of fisheries but extending to governance and wider advisory matters, and chairing and facilitating committees and processes. He is the current independent chair of the Extended Scientific Committee of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT).

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Regional Fishery Management Organisations:

Mr Peter Flewwelling (North Pacific Fisheries Commission)

Peter Flewwelling is a Canadian Fisheries and MCS Practitioner. Career 1 included 11 years in the British and Canadian Navy (Submarine Officer); Career 2 – starting in 1977 as a Canadian Fisheries and ICNAF Officer and 14 years later concluding as Acting Director, Regulations and Enforcement for Canada and Chief, Surveillance and Enforcement; Career 3, has been similarly rewarding with 27 years as an international fisheries advisor. Work experience has been in Asia/Pacific, Africa/Indian and Atlantic Ocean, Central and South Americas for World Bank, Asian Development Bank, UNDP, UNESCO, Norwegian Aid, CIDA, USAID, FAO for Fisheries and Disaster Recovery and Rehabilitation, and work with a few RFMOs: NAFO, IOTC, SWIOFC, WCPFC and now Compliance Manager for NPFC.

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Mr Jeongseok Park (North Pacific Anadromous Fish Commission)

Jeongseok started working for the Korea Maritime Institute (KMI) as a fisheries researcher, where he studied Korean domestic fisheries issues, including socio-economic assessments and evaluations. In 2006, he joined the International Cooperation Division of the Ministry of Oceans and Fisheries (MOF) of the Republic of Korea. Over the last ten years, he represented the Korean government as a Fisheries Negotiator at international fisheries organisations, including the International Commission for the Conservation of Atlantic Tunas (ICCAT), Indian Ocean Tuna Commission (IOTC), North Pacific Fisheries Commission (NPFC), North Pacific Anadromous Fish Commission (NPAFC), International Whaling Commission (IWC), and other regional fisheries management organisations.

Jeongseok served as the Vice-Chairperson of the IOTC from May 2013 to January 2017. At NPAFC, he also served as Chairperson of the Committee on Enforcement from 2011 to 2014, and from 2014 to 2016 he was the Chairperson of the Committee on Finance and Administration. In May 2016, he was elected Vice President of NPAFC, and since February 2017, Jeongseok has joined the NPAFC Secretariat as Deputy Director.

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Non-Governmental Organisations:

Ms Amanda Nickson (The Pew Charitable Trusts)

Amanda Nickson directs Pew's international fisheries efforts to conserve important marine species through science-based policy development and advocacy. Her work includes reducing overfishing; minimising the impact of destructive fishing gear; and eliminating illegal, unreported, and unregulated fishing. She also helps lead advocacy efforts with regional fisheries management organisations, the international bodies that govern the treaties regulating commercial fishing on the high seas. Nickson's work also addresses the overfishing of other valuable marine species in international waters and helps to protect the ocean environment.

Before joining Pew, Nickson worked for the World Wildlife Fund, most recently directing international efforts to protect threatened charismatic species such as tigers, pandas, and marine turtles. She also developed and led WWF's Bycatch Initiative, a major policy and field program aimed at reducing the incidental catch of non-target species in fisheries in more than 20 countries throughout the world.

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IPHC Secretariat:

Dr David T. Wilson (Facilitator)

Dr Wilson joined the IPHC in mid-2016 as its Executive Director. Although originally from Australia, Dr Wilson spent the majority of his professional working life abroad. Most of this time has been spent in fisheries science institutional management and in developing and implementing multilateral arrangements for the conservation and management of highly migratory fish stocks, and shared fish stocks in the Pacific Ocean, Indian Ocean and Caribbean. My experience was largely gained while working at the Indian Ocean Tuna Commission (Deputy and Acting Executive Secretary); Australian Government International Fisheries Science Head (Department of Agriculture, Forestry and Fisheries – Australian Bureau of Agricultural and Resource Economics and Sciences); Northern Fisheries Senior Manager at the Australian Fisheries Management Authority; Director of the Center for Marine Resource Studies in the Turks and Caicos Islands, and Fisheries Biologist with the Department of Marine and Wildlife Resources in American Samoa. Dr Wilson obtained my doctorate from James Cook University, Australia, in tandem with the Australian Institute of Marine Science, and the Smithsonian Tropical Research Institute in Panama.

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APPENDIX III
CONSOLIDATED SET OF RECOMMENDATIONS OF THE 2ND PERFORMANCE REVIEW OF THE INTERNATIONAL PACIFIC HALIBUT COMMISSION (PRIPHC02)

Legal analysis of the IPHC Convention

PRIPHC02–Rec.01 (para. 32) The PRIPHC02 **RECOMMENDED** that consideration be given to updating the Convention at the next opportunity, to become consistent with newer international legal instruments, and specifically consider including the following elements:

a) Incorporate a preamble setting forth the purpose of the Convention, and make references to relevant international instruments and principles (e.g. UNCLOS, the Code of Conduct and its action plans, etc.).

b) Incorporate an article for "Definitions," thereby removing or reducing ambiguity in term usage and meaning.

c) Incorporate an article for "Objective" reflecting international standards for conservation and management of living marine resources.

d) Incorporate an article for "Area of application of the Convention," including a detailed map, noting that the northern boundary of the Convention area is vague.

e) Include explicit language confirming that the Convention applies to all removals of Pacific halibut in the Convention waters by directed and non-directed fisheries, commercial, recreational, and other.

f) Specify the current species is Pacific halibut (*Hippoglossus stenolepis*)', though other species of *Hippoglossus* could also be covered under the Convention should they be identified.

g) Incorporate an article for "General principles" to include references to long-term sustainability, science-based decisions, application of the precautionary approach, minimisation of harmful impact on the marine ecosystem, collection and sharing of data, and ensuring effective compliance, etc.

h) Maintain, but in a stand-alone article, the current provisions for continuation of the Commission, with all its assets and liabilities established by the 1923 Convention and subsequent revisions.

i) Consider whether elements of the current Rules of Procedure are better placed in the Convention or a Headquarters Agreement.

j) The functions concerning fishing set out in the Convention to be streamlined in a specific article, and to include the following additional functions:

   i. adopt standards for collection and sharing of data;
   ii. adopt measures for species belonging to the same ecosystem or dependent upon or associated with Pacific halibut;
   iii. adopt measures to avoid, reduce and minimise waste, discards, catch by lost or discarded gear;
   iv. adopt measures to prevent significant adverse impacts on VMEs; and
   v. adopt measures to ensure effective monitoring, control and surveillance, as well as compliance.

k) Consider whether the establishment of the Commission's subsidiary bodies be moved from the Rules of Procedure to the Convention.

l) Incorporate in the Convention a specific article dealing with administrative issues, such as to appoint a Director, to approve program of work, to approve budget, to adopt or amend rules of procedures, financial regulations and other internal administrative regulations.

m) Harmonise the decision-making provisions of the Convention and the Rules of Procedure, and incorporate those in a specific article of the Convention.
n) Expand the current text to also include obligations to provide national legal provisions related to measures adopted by the Commission, and submit reports on vessel activities at appropriate intervals.
o) Noting the adequate provisions in the Convention, the text should also contain follow-up actions by the flag state that include application of sanctions of sufficient gravity as to be effective in securing compliance, such as depriving offenders of benefits, and refusal, suspension, or withdrawal of authorisations.
p) Consider establishment of a Compliance Committee for reviewing implementation of measures adopted by the Commission.
q) Incorporate in a specific article of the Convention general language concerning transparency.
r) Incorporate in the Convention a specific article, which in general terms states that in order to settle a possible dispute between Contracting Parties, concerning interpretation or implementation of the Convention, the parties shall consult by means they agree upon.
s) Incorporate an article on signature, ratification, acceptance and approval, stating who are entitled to become parties, as well as the timeframe for signature.
t) Incorporate an article stating when it enters into force, and conditions thereto.
u) Incorporate an article stating whether or not reservations or exceptions may be made.
v) Incorporate an article allowing parties to make statements or declarations that do not exclude or modify the legal effect of the provisions.
w) Incorporate an article making references to for example the UNCLOS concerning sovereign rights of coastal States as well as other possible relevant instruments.
x) Incorporate an article describing the amendment mechanisms such as time frames, communication, adoption and entering into force. If annexes or appendices are regarded as an integral part of the treaty, more flexible mechanism for those.
y) Incorporate an article describing possible withdrawal procedures.
z) Incorporate an article stating who will be the depository government as well as its obligations and functions.

PRIPHC02–Rec.02 (para. 33) The PRIPHC02 **RECOMMENDED** to update the Convention, while in the interim period seek alternate mechanisms to implement international best practices and legal principles.

Science: Status of living marine resources

PRIPHC02–Rec.03 (para. 44) The PRIPHC02 **RECOMMENDED** that opportunities to engage with western Pacific halibut science and management agencies be sought, to strengthen science links and data exchange. Specifically, consider options to investigate pan-Pacific stock structure and migration of Pacific halibut.

PRIPHC02–Rec.04 (para. 45) The PRIPHC02 **RECOMMENDED** that:
a) further efforts be made to lead and collaborate on research to assess the ecosystem impacts of Pacific halibut fisheries on incidentally caught species (retained and/or discarded);
b) where feasible, this research be incorporated within the IPHC's 5-Year Research Plan (https://www.iphc.int/uploads/pdf/besrp/2019/iphc-2019-besrp-5yp.pdf);
c) findings from the IPHC Secretariat research and that of the Contracting Parties be readily accessible via the IPHC website.

Science: Quality and provision of scientific advice

PRIPHC02–Rec.05 (para. 63) The PRIPHC02 **RECOMMENDED** that simplified materials be developed for RAB and especially MSAB use, including training/induction materials.

PRIPHC02–Rec.06 (para. 64) The PRIPHC02 **RECOMMENDED** that consideration be given to amending the Rules of Procedure to include appropriate fixed terms of service to ensure SRB peer review remains independent and fresh; a fixed term of three years seems appropriate, with no more than one renewal.

PRIPHC02–Rec.07 (para. 65) The PRIPHC02 **RECOMMENDED** that the peer review process be strengthened through expanded subject specific independent reviews including data quality and standards, the FISS, MSE, and biological/ecological research; as well as conversion of "grey literature" to primary literature publications. The latter considered important to ongoing information outreach efforts given the cutting-edge nature of the Commission's scientific work.

PRIPHC02–Rec.08 (para. 66) The PRIPHC02 **RECOMMENDED** that the IPHC Secretariat develop options for simple graphical summaries (i.e. phase plot equivalents) of fishing intensity and spawning stock biomass for provision to the Commission.

Conservation and Management: Data collection and sharing

PRIPHC02–Rec.09 (para. 73) The PRIPHC02 **RECOMMENDED** that observer coverage be adjusted to be commensurate with the level of fishing intensity in each IPHC Regulatory Area.

Conservation and Management: Consistency between scientific advice and fishery Regulations adopted

PRIPHC02–Rec.10 (para. 82) The PRIPHC02 **RECOMMENDED** that the development of MSE to underpin multi-year (strategic) decision-making be continued, and as multi-year decision making is implemented, current Secretariat capacity usage for annual stock assessments should be refocused on research to investigate MSE operating model development (including consideration of biological and fishery uncertainties) for future MSE iterations and regularised multi-year stock assessments.

PRIPHC02–Rec.11 (para. 83) The PRIPHC02 **RECOMMENDED** that ongoing work on the MSE process be prioritised to ensure there is a management framework/procedure with minimal room for ambiguous interpretation, and robust pre-agreed mortality limit setting frameworks.

Fishing allocations and opportunities

PRIPHC02–Rec.12 (para. 88) The PRIPHC02 **STRONGLY URGED** the Commission to conclude its MSE process and **RECOMMENDED** it meet its 2021 deadline to adopt a harvest strategy.

Compliance and enforcement: Port State measures

PRIPHC02–Rec.13 (para. 96) The PRIPHC02 **RECOMMENDED** that Contracting Party enforcement agencies adopt common standards for assessment of implementation of the principles of port State measures.

Compliance and enforcement: Monitoring, control and surveillance (MCS)

PRIPHC02–Rec.14 (para. 105) The PRIPHC02 **RECOMMENDED** enhancement of coordination of MCS activities to result in a common, integrated enforcement report for each Contracting Party to facilitate assessment of compliance efforts, trends and input into management decisions.

PRIPHC02–Rec.15 (para. 106) The PRIPHC02 **RECOMMENDED** that the Commission re-assess the 'derby-style' fisheries management concept in operation in IPHC Regulatory Area 2A in

terms of available resources, impact on validity of monitoring results, and safety of fishers, and amend the management processes, if and as necessary.

Compliance and enforcement: Follow-up on infringements

PRIPHC02–Rec.16 (para. 108) The PRIPHC02 **RECOMMENDED** that the IPHC request information regarding Contracting Party follow-up of infringements, to assist in determining the overall efficacy of MCS and enforcement activities. This would support best practices with respect to transparency.

PRIPHC02–Rec.17 (para. 109) The PRIPHC02 **RECOMMENDED** that the Commission improve the process of Contracting Party reporting to the Commission by aggregating individual agency reports into a consolidated, standardised, Contracting Party report to the Commission.

Governance: Decision-making

PRIPHC02–Rec.18 (para. 124) The PRIPHC02 **RECOMMENDED** that the IPHC Rules of Procedure be modified to include a clear category and recognition for observer organisations, which would be in addition to the general public.

Governance: Dispute settlement

PRIPHC02–Rec.19 (para. 128) The PRIPHC02 **RECOMMENDED** updating the rules of procedure to reflect intersessional decision making approaches.

Governance: Transparency

PRIPHC02–Rec.20 (para. 137) The PRIPHC02 **RECOMMENDED** that the significant level of transparency achieved across Commission business continue to be improved.

International cooperation: Relationship to non-Contracting Parties

PRIPHC02–Rec.21 (para. 146) The PRIPHC02 **RECOMMENDED** that the Commission prioritise scientific work to confirm the full range of the Pacific halibut stock.

PRIPHC02–Rec.22 (para. 147) The PRIPHC02 **RECOMMENDED** that if the full range of the Pacific halibut stock extends outside the Convention Area, the Contracting Parties invite collaboration with all parties involved in the harvest of this stock, to ensure science and management includes accurate data regarding all removals from the stock.

Efficiency and transparency of financial and administrative management: Availability of resources for IPHC activities

PRIPHC02–Rec.23 (para. 156) The PRIPHC02 **RECOMMENDED** the continued establishment of a Business Continuity Plan (BCP), which will serve to strengthen the long-term viability of IPHC Secretariat functioning and accountability, in line with best practices of an organisation of its size and breadth. Prioritising a financial and administrative BCP, with the ultimate goal of establishing a comprehensive BCP for the IPHC Secretariat as a whole.

Efficiency and transparency of financial and administrative management: Efficiency and cost-effectiveness

PRIPHC02–Rec.24 (para. 162) The PRIPHC02 **RECOMMENDED** the FAC produce a report detailing the actual FAC meeting and that the presentation of the report be incorporated into the Annual Meeting agenda and report, along with the final decisions of the Commission.

Efficiency and transparency of financial and administrative management: Advisory structure

PRIPHC02–Rec.25 (para. 165) The PRIPHC02 **RECOMMENDED** that when revisiting PRIPHC01 Recommendation 3.1 on unifying subsidiary bodies, treat the CB and PAB as non-science process and maintain separated RAB and MSAB at least until the 2021 adoption and implementation of a new management strategy.

PRIPHC02–Rec.26 (para. 166) The PRIPHC02 **RECOMMENDED** that continued support for high quality stakeholder engagement through the science-focused subsidiary bodies (RAB and MSAB) or any future subsidiary bodies be maintained.