INTERNATIONAL PACIFIC HALIBUT COMMISSION

IP~~H~~C-2024-AM100
Last Update: 25 January 2024

100th Session of the IPHC Annual Meeting (AM100) – *Compendium of meeting documents*

22 January – 26 January 2024, Anchorage, Alaska, USA

Commissioners

Canada	United States of America
Paul Ryall	Jon Kurland
Neil Davis	Robert Alverson
Peter DeGreef	Richard Yamada

Executive Director

David T. Wilson, Ph.D.

DISTRIBUTION: IPHC WEBSITE
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INTERNATIONAL PACIFIC HALIBUT COMMISSION

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DRAFT: AGENDA FOR THE 100th SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100)

Date: 22 January 2024
Location: Anchorage, AK, U.S.A.
Venue: Hotel Captain Cook
Time (AKST): 09:00-12:00
Chairperson: Mr Jon Kurland (USA)
Vice-Chairperson: Mr Paul Ryall (Canada)

Notes:

- ***Document deadline****: 23 December 2023 (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 100th SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100)

1. **OPENING OF THE SESSION**
2. **ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION**
3. **UPDATE ON ACTIONS ARISING FROM THE 99th SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC099)**
4. **FINANCIAL STATEMENT FOR FY2023**
5. **ANNUAL INDEPENDENT AUDITOR'S REPORT (2023)**
6. **FY2024 BUDGET – UPDATE**
7. **BUDGET ESTIMATES: FY2025 (for approval); FY2026 and FY2027 (for information)**
8. **IPHC FINANCIAL REGULATIONS (2024) - Revisions**
9. **IPHC RULES OF PROCEDURE (2024) - Revisions**
10. **OTHER BUSINESS**
11. **REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 100th SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100)**

LIST OF DOCUMENTS FOR THE 100th SESSION OF THE IPHC ANNUAL MEETING (AM100)

Meeting documents	Title	Availability
IPHC-2024-AM100-01	Agenda & Schedule for the 100th Session of the IPHC Annual Meeting (AM100)	✓ 24 Oct 2023 ✓ 08 Dec 2023 ✓ 19 Jan 2024
IPHC-2024-AM100-02	List of Documents for the 100th Session of the IPHC Annual Meeting (AM100)	✓ 24 Oct 2023 ✓ 23 Dec 2023 ✓ 25 Jan 2024
IPHC-2024-AM100-03	Update on actions arising from the 99th Session of the IPHC Annual Meeting (AM099), 2022 Special Sessions, intersessional decisions, and the 99th Session of the IPHC Interim Meeting (IM099) (D. Wilson)	✓ 11 Dec 2023
IPHC-2024-AM100-04	Report of the IPHC Secretariat (2023) (D. Wilson & B. Hutniczak)	✓ 18 Dec 2023
IPHC-2024-AM100-05	Implementation of the Recommendations from the 2nd IPHC Performance Review (PRIPHC02) (D. Wilson)	✓ 06 Dec 2023
IPHC-2024-AM100-06	International Pacific Halibut Commission 5-Year program of integrated research and monitoring (2022-26) (D. Wilson, J. Planas, I. Stewart, A. Hicks, B. Hutniczak, & R. Webster)	✓ 18 Dec 2023
IPHC-2024-AM100-07 Rev_1	Fisheries data overview (2023) (B. Hutniczak, H. Tran, T. Kong, K. Sawyer van Vleck. & K. Magrane)	✓ 11 Dec 2023 ✓ 11 Jan 2024
IPHC-2024-AM100-08 Rev_1	IPHC Fishery-independent setline survey (FISS) design and implementation in 2023 (K. Ualesi, R. Rillera, T. Jack, & K. Coll)	✓ 13 Dec 2023 ✓ 17 Jan 2024
IPHC-2024-AM100-09	Space-time modelling of survey data (R. Webster)	✓ 12 Dec 2023
IPHC-2024-AM100-10	Data overview and stock assessment for Pacific halibut (*Hippoglossus stenolepis*) at the end of 2023 (I. Stewart, A. Hicks, R. Webster, D. Wilson)	✓ 18 Dec 2023
IPHC-2024-AM100-11	IPHC Management Strategy Evaluation and Harvest Strategy Policy updates (A. Hicks, I. Stewart, & D. Wilson)	✓ 19 Dec 2023
IPHC-2024-AM100-12	Stock projections and harvest decision table for 2024-2026 (I. Stewart & A. Hicks)	✓ 18 Dec 2023

IPHC-2024-AM100-13	2024, and 2025-28 FISS Design evaluation (R. Webster, I. Stewart, K. Ualesi, & D. Wilson)	✓ 21 Dec 2023
IPHC-2024-AM100-14	Report on Current and Future Biological and Ecosystem Science Research Activities (J. Planas)	✓ 18 Dec 2023
IPHC-2024-AM100-15 Rev_1	IPHC Fishery Regulations: Proposals for the 2023-24 process (B. Hutniczak)	✓ 21 Dec 2023 ✓ 23 Dec 203
IPHC-2024-AM100-16 Rev_1	IPHC 3-year meetings calendar (2024-26) (D. Wilson)	✓ 08 Dec 2023 ✓ 24 Jan 2024
Contracting Party National Reports		
IPHC-2024-AM100-NR01 Rev_1	**Canada**: National Report (Fisheries and Oceans Canada (DFO))	✓ 20 Dec 2023 ✓ 3 Jan 2024
IPHC-2024-AM100-NR02 Rev_3	**United States of America**: National Report (NOAA Fisheries)	✓ 19 Dec 2023 ✓ 12 Jan 2024 ✓ 16 Jan 2024 ✓ 21 Jan 2024
IPHC Fishery Regulation proposals for 2024		
IPHC Secretariat Fishery Regulation proposals for 2024		
IPHC-2024-AM100-PropA1	IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5)	✓ 11 Dec 2023
IPHC-2024-AM100-PropA2	IPHC Fishery Regulations: Commercial Fishing Periods (Sect. 9)	✓ 11 Dec 2023
IPHC-2024-AM100-PropA3	IPHC Fishery Regulations: Logs (Sect. 19)	✓ 11 Dec 2023
Contracting Party Fishery Regulation proposals for 2024		
IPHC-2024-AM100-PropB1 Rev_1	IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut – IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E (Sect. 29) (Charter Management Measures in IPHC Regulatory Areas 2C and 3A (USA))	✓ 13 Dec 2023 ✓ 21 Jan 2024
IPHC-2024-AM100-PropB2	IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5), and In-Season Actions (Sect. 6) (In-season reallocation of recreational limits in IPHC Regulatory Area 2A (USA))	✓ 18 Dec 2023
Other Stakeholder Fishery Regulation proposals for 2024		
IPHC-2024-AM100-PropC1	IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5) (Regulatory Area 2A) (Timothy Greene, Makah Tribe)	✓ 21 Dec 2023
IPHC-2024-AM100-PropC2	IPHC Fishery Regulations: IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A,	✓ 23 Dec 2023

	3B, 4A, 4B, 4C, 4D, 4E (Sect. 28) – Onboard consumption (Paul Olsen)	
Information papers		
IPHC-2024-AM100-INF01 Rev_5	Stakeholder Statements on IPHC Fishery Regulations or published regulatory proposals (B. Hutniczak)	✓ 11 Dec 2023 ✓ 12 Jan 2024 ✓ 19 Jan 2024 ✓ 21 Jan 2024
IPHC-2024-AM100-INF02	International Pacific Halibut Commission (IPHC) statement on climate change (IPHC)	✓ 08 Dec 2023
IPHC-2024-AM100-INF03	IPHC data products – progress report (B. Hutniczak)	✓ 11 Dec 2023
IPHC-2024-AM100-INF04	The IPHC mortality projection tool for 2024 mortality limits (I. Stewart)	✓ 10 Jan 2023
IPHC-2024-AM100-INF05	Report on the Alaska recreational Pacific halibut fishery – correspondence from the Alaska Department of Fish and Game (B. Hutniczak)	✓ 16 Jan 2023
IPHC-2024-AM100-INF06	IPHC Interim: Harvest Strategy Policy (IPHC Secretariat)	✓ 19 Jan 2023
Reports from IPHC subsidiary bodies (2023-24)		
IPHC-2023-SRB022-R	Report of the 22nd Session of the IPHC Scientific Review Board (SRB022)	✓ 22 Jun 2023
IPHC-2023-SRB023-R	Report of the 23rd Session of the IPHC Scientific Review Board (SRB023)	✓ 26 Sept 2023
IPHC-2023-MSAB018-R	Report of the 18th Session of the IPHC Management Strategy Advisory Board (MSAB018)	✓ 25 May 2023
IPHC-2023-RAB024-R	Report of the 24th Session of the IPHC Research Advisory Board (RAB024)	✓ 29 Nov 2023
IPHC-2023-IM099-R	Report of the 99th Session of the IPHC Interim Meeting (IM099)	✓ 01 Dec 2023
IPHC-2024-FAC100-R	Report of the 100th Session of the IPHC Finance and Administration Committee (FAC100)	✓ 23 Jan 2024
IPHC-2024-PAB029-R	Report of the 29th Session of the IPHC Processor Advisory Board (PAB029)	✓ 25 Jan 2024
IPHC-2024-CB094-R	Report of the 94th Session of the IPHC Conference Board (CB094)	✓ 25 Jan 2024

Update on actions arising from the 99th Session of the IPHC Annual Meeting (AM099), 2023 Special Sessions, 2023 intersessional decisions, and the 99th Session of the IPHC Interim Meeting (IM099)

PREPARED BY: IPHC SECRETARIAT (11 DECEMBER 2023)

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.

BACKGROUND

At the 99th Session of the IPHC Annual Meeting (AM098), 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.

In addition, the Commission made a number of decisions during a Special Session in 2023 (SS013) as detailed in Appendix B, and intersessional decisions, as detailed in Appendix C.

Finally, at the 99th Session of the IPHC Interim Meeting (IM099), the Commission made a number of decisions, as detailed in Appendix D.

DISCUSSION

Noting that best practice governance requires the prompt delivery of core tasks assigned to the IPHC Secretariat by the Commission, at each session of the Commission and its subsidiary bodies, 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 from the Commission, as well as including clear progress updates and document reference numbers.

RECOMMENDATION/S

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-03, 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.

APPENDICES

Appendix A: Update on actions arising from the 99th Session of the IPHC Annual Meeting (AM099: January 2023)

Appendix B: Update on actions arising from 2023 Special Sessions of the Commission

Appendix C: Update on actions arising from 2023 intersessional decisions of the Commission

Appendix D: Update on actions arising from the 99th Session of the IPHC Interim Meeting (IM099: November-December 2023)

APPENDIX A

Update on actions arising from the 99th Session of the IPHC Annual Meeting (AM099: January 2023)

99th Session of the IPHC Annual Meeting (AM099)		
Action No.	**Description**	**Update**
	RECOMMENDATIONS	
AM099–Rec.01 (para. 12)	***International Pacific Halibut Commission 5-year program of Integrated Research and Monitoring (2022-26)*** The Commission **RECOMMENDED** that the Secretariat annually present potential changes to the Plan at the IPHC Interim Meeting. The Commission would then have the opportunity to provide any redirection based on Commission priorities and available funding. To assist in making that assessment, the Secretariat will be preparing a progress report annually.	**Lead**: IPHC Secretariat (D. Wilson) **Status/Plan**: Completed and Ongoing See paper: **IPHC-2024-AM100-06**
AM099–Rec.02 (para. 76)	***IPHC Management Strategy Evaluation: update*** The Commission **RECOMMENDED** that for the purpose of a comprehensive and intelligible Harvest Strategy Policy (HSP), four coastwide objectives should be documented within the HSP, in priority order: a) Maintain the long-term coastwide female spawning stock biomass above a biomass limit reference point (B20%) at least 95% of the time. b) Maintain the long-term coastwide female spawning stock biomass at or above a biomass reference point (B36%) 50% or more of the time. c) Optimise average coastwide TCEY. d) Limit annual changes in the coastwide TCEY.	**Lead**: IPHC Secretariat (A. Hicks) **Status/Plan**: Completed The four priority coastwide objectives are included in a draft Harvest Strategy Policy document. See paper: **IPHC-2024-AM100-11**
AM099–Rec.03 (para. 84)	The Commission **AGREED** sufficient analysis has been completed and **RECOMMENDED** not to change the current 32 inch size limit.	**Lead**: IPHC Secretariat **Status/Plan**: Completed MSE results were presented at AM099 and the status quo size limit (32 inches) was maintained in the Fishery Regulations for 2023.
AM099–Rec.04 (para. 104)	***IPHC Fishery Regulations: Logs (Sect. 20) – Logs requirements*** The Commission **RECOMMENDED** that the IPHC work with NOAA Fisheries on data sharing arrangement to retrieve Pacific halibut data submitted via Pacific Coast Groundfish non-trawl logbook.	**Lead**: IPHC Secretariat (B. Hutniczak) **Status/Plan**: Completed Data sharing agreement in place and available on IPHC website.

99th Session of the IPHC Annual Meeting (AM099)		
Action No.	**Description**	**Update**
AM099–Rec.05 (para. 137)	***IPHC meetings calendar (2023-25)*** The Commission **RECOMMENDED** that the 13th Special Session of the Commission be held electronically in mid-April 2023 to review and adopt an FY2024 budget.	**Lead**: IPHC Secretariat (D. Wilson) **Status/Plan**: Completed Meeting held 18 April 2023. https://www.iphc.int/venues/details/13th-special-session-of-the-iphc-ss013
	REQUESTS	
AM099–Req.01 (para. 35)	***2023-25 FISS design evaluation*** The Commission **REQUESTED** a desktop review to determine if reducing bait size on the FISS would substantially reduce costs, while not reducing catch rates and associated fish sale revenue to any large degree.	**Lead**: IPHC Secretariat (R. Webster) **Status/Plan**: Completed Changing the bait size was discussed among other options for FISS cost reduction in IPHC-2023-BN09
AM099–Req.02 (para. 44)	The Commission **REQUESTED** that the Secretariat provide a breakdown of costs associated with the FISS over the last three (3) years and what is projected for the 2023 FISS, and for this to be presented at the 13th Special Session of the Commission (SS013).	**Lead**: IPHC Secretariat (K. Ualesi) **Status/Plan**: Completed Detailed provided in the margins of SS013.
AM099–Req.03 (para. 61)	***Pacific halibut mortality projections using the IPHC mortality projection tool (2023)*** The Commission **REQUESTED** a table be prepared annually that details the historical TCEY decisions, that is currently published on the IPHC website [https://www.iphc.int/uploads/data/time-series-datasets/excel/iphc-2023-tsd-017.xlsx]	**Lead**: IPHC Secretariat (I. Stewart) **Status/Plan**: Completed Table to be updated annually for Commission use.
AM099–Req.04 (para. 66)	The Commission **REQUESTED** that the Secretariat provide a summary of the proposed and ongoing research projects at the Secretariat, including status updates, suggestions for potential priority setting by the Commission, links to the IPHC's mandate and how the research will inform decision-making, guidance on types of research that should be considered for internal funding versus types of research that would be contingent on the availability of external funding or partnerships, among other criteria that may be requested by the Commission.	**Lead**: IPHC Secretariat (J. Planas) **Status/Plan**: Completed See paper: **IPHC-2024-AM100-06**
AM099–Req.05 (para. 67)	***Report on current and future biological and ecosystem science research activities*** The Commission **REQUESTED** that the Secretariat highlight the elements of its 5YRPIRM (the Plan) that will inform its understanding of the impacts of climate change on Pacific halibut in its annual presentations of the research Plan to the Commission.	**Lead**: IPHC Secretariat (J. Planas) **Status/Plan**: Completed This is planned for the AM100. See paper and associated ppt: **IPHC-2024-AM100-06**

99th Session of the IPHC Annual Meeting (AM099)		
Action No.	**Description**	**Update**
AM099–Req.06 (para. 88)	***IPHC Management Strategy Evaluation: update*** **NOTING** paragraph 60 from the 21st Session of the SRB (SRB021), the Commission **REQUESTED** the Secretariat develop a description of options to responding to exceptional circumstances that would trigger a stock assessment in non-assessment years and additional MSE analyses. IPHC-2022-SRB021-R, para 60: *The SRB RECOMMENDED that Exceptional Circumstances be defined to determine whether monitoring information has potentially departed from their expected distributions generated by the MSE. Declaration of Exceptional Circumstances may warrant re-opening and revising the operating models and testing procedures used to justify a particular management procedure.*	**Lead**: IPHC Secretariat (A. Hicks) **Status/Plan**: In progress The Secretariat is working with the SRB to develop a description of options for exceptional circumstances. See paper: **IPHC-2024-AM100-11**
AM099–Req.07 (para. 132)	***IPHC Rules of Procedure (2022)*** The Commission **ADOPTED** the IPHC Rules of Procedure (2023), as provided in IPHC-2023-FAC098-09, and **REQUESTED** that the IPHC Secretariat finalise and publish them accordingly, with the following amendments: a) Amend para. 14b-e of the PAB TOR's to read as follows: *b) Proxies are allowed from accredited members from the PAB;* *c) Only one proxy per attending member;* *d) Proxies will be submitted to the IPHC Secretariat prior to the PAB meeting in written or electronic form;* *e) A general proxy will authorize a designated PAB member to vote on any or all topics brought before the PAB on behalf of a PAB member who cannot attend. A specific proxy will authorize a PAB member to vote on specifically named topics (listed on the proxy itself) on behalf of the PAB member who can not attend.*	**Lead**: IPHC Secretariat (D. Wilson) **Status/Plan**: Completed Published on 13 February 2023 via IPHC Circular (IPHC-2023-CR-002) Direct link to 2022 ROP: IPHC-2023-ROP23
AM099–Req.08 (para. 133)	The Commission **REQUESTED** that a working group involving interested PAB members, convened by the IPHC Secretariat, be formed to determine if additional edits to the PAB Rules of Procedure are necessary on topics including but not limited to membership eligibility. Any further amendments are to be provided to the Commission within three (3) months.	**Lead**: IPHC Secretariat (A. Keikkala) **Status/Plan**: Completed The suggestions by the Ad-Hoc WG were provided to the Commission.

99th Session of the IPHC Annual Meeting (AM099)		
Action No.	**Description**	**Update**
AM099–Req.09 (para. 144)	***Review of the draft and adoption of the report of the 99th Session of the IPHC Annual Meeting (AM099)*** The Commission **REQUESTED** that the IPHC Secretariat finalise and publish the IPHC *Pacific Halibut Fishery Regulations (2023)* as soon as possible, **NOTING** that only minor editorial and formatting changes are permitted beyond the decisions made by the Commission at the AM099.	**Lead**: IPHC Secretariat (B. Hutniczak) **Status/Plan**: Completed Published on 2 February 2023. Direct link to 2022 Fishery Regulations: IPHC-2023-FISHR23

APPENDIX B

Update on actions arising from 2023 Special Sessions of the Commission

Action No.	Description	Update
13th Special Session of the IPHC (SS013) (18 April 2023)		
SS013-Rec.01 (para. 17)	***Budget Estimates: FY2024 (for approval): Fund 30 – Statistics: Directed commercial catch sampling of Pacific halibut in Alaska*** The Commission **DISCUSSED** the merit in continuing with the NOAA-Fisheries grant program, and **RECOMMENDED** the following: a) The IPHC has no mandate to undertake activities on sablefish, and should only do so with an expressed directive from the Commission to do so; b) Should the Commission direct the IPHC Secretariat to undertake sablefish activities in Alaska as part of the new grant period, then: • the IPHC should not take on any risks associated with uncertainty regarding the amount of funding available or with the variation in the amount of work required to fulfill sablefish activities; • the IPHC should be reimbursed in-full for any sablefish work (100% cost-recovered) in-year and without delay, and that the Secretariat will cease work at the point that its eligible costs exceed the grant funding available; • Sablefish work would be secondary to Pacific halibut work.	**Lead**: IPHC Secretariat (D. Wilson & A. Keikkala) **Status/Plan**: Completed The Commission has not provided a directive to include sablefish into the new NOAA-Fisheries Alaska cost-recovery grant. The Grant was submitted by the deadline provided by NOAA-Fisheries, without sablefish activities included. Unless otherwise directed by the Commission, the IPHC Secretariat will provide sablefish logbooks from 2023 to NOAA-Fisheries.
SS013-Rec.02 (para. 19)	The Commission **RECOMMENDED** that further intersessional discussions be held between the IPHC and NOAA-Fisheries (including the AFSC), to determine if the sablefish logbook data could be entered into NMFS logbooks rather than IPHC logbooks, thereby removing the IPHC from the sablefish process. Alternatively, such discussion should determine if IPHC logbooks containing sablefish landings could be provided directly to NOAA-Fisheries for data entry.	**Lead**: IPHC Secretariat (B. Hutniczak) **Status/Plan**: Ongoing Sablefish logbook data can already be entered into the NMFS logbooks, rather than the IPHC logbooks. There is no impediment. Making it mandatory would require amending 50 CFR Part 679. The IPHC logbooks containing sablefish landings could be provided to NOAA Fisheries for data entry via Auke Bay Lab. A formal agreement is suggested for sharing logbooks that contain also Pacific halibut fishing activity. Safeguards provided by IPHC Data Confidentiality Policy and Data Sharing Procedures would apply.

Action No.	Description	Update
		This should be implemented also for previously collected logs. Effective date: 1 October 2023.
SS013-Rec.03 (para. 20)	The Commission **RECOMMENDED** that, as soon as possible, the IPHC Secretariat provide an analysis of commercial sampling needs for Pacific halibut in Alaska, including an examination of biological sampling rates by port, and whether all ports need to be staffed annually or could be staffed at some lesser interval on a staggered basis to reduce costs without unacceptably compromising data quality.	**Lead**: IPHC Secretariat (I. Stewart, R. Webster) **Status/Plan**: Completed **See: IPHC-2023-WM2023-INF03** PHC-2023-BN10: Potential modifications and efficiencies for IPHC sampling of directed commercial landings (IPHC Secretariat)
SS013-Rec.04 (para. 28)	***Budget Estimates: FY2024 (for approval): Contributions to the General Fund*** **NOTING** that the primary purpose of the annual IPHC Interim Meeting (typically held in November each year) is to share preliminary updates and assessment results with interested stakeholders, and that this has been achieved effectively over the past three (3) years via the use of online meeting platforms, the Commission **RECOMMENDED** that effective FY2024, the IPHC Interim Meeting shall permanently be held via online meeting platforms, including for Contracting Party delegations (FY2024 cost saving: US$13,500).	**Lead**: IPHC Secretariat (D. Wilson) **Status/Plan**: Completed The Interim Meeting was removed from the FY2024 budget. Moving forward it will be held online only.
REQUESTS		
SS013-Req.01 (para. 9)	***Budget Estimates: FY2024 (for approval): Fund 20 – Research: Biological and Ecosystem Sciences annual reporting*** The Commission **REQUESTED** that, as part of the annual reporting to the Commission on the Biological and Ecosystem Science Branch activities, that the Secretariat provide a summary table that incorporates the following elements for Commission review: a) Current project abstract, including objectives, links to IPHC's core mandate and how it will inform Commissioner's decisions; b) Related Commission decisions and directives; c) Timeline for deliverables; d) Funding sources; e) Progress report.	**Lead**: IPHC Secretariat (D. Wilson & J. Planas) **Status/Plan**: Completed Note that the 5YPIRM covers all research and monitoring and not only the BESB. See paper: **IPHC-2024-AM100-06**

APPENDIXC

Update on actions arising from 2023 Intersessional Decisions of the Commission

Intersessional Decisions (ID)		
IPHC-2023-ID001:	The Commission **AGREED** to make an exception to paragraph 3 of Rule 15 (Reports and Records) of the IPHC Rules of Procedure, and to exceptionally adopt the Report of the 13th Special Session (SS013) beyond the 15-day post-meeting deadline for report adoption by the Commission.	**Lead**: Commission and IPHC Secretariat (D. Wilson) **Status/Plan**: Completed The Report of the SS013 was adopted via correspondence on 16 May 2023 via IPHC Circular IPHC-2023-CR-007, the '*date of notification*'.
IPHC-2023-ID002:	***2023 FISS DESIGN AMENDED*** The Commission **ENDORSED** an optimized design for the 2023 FISS as provided at Attachment I, that balances the Commissions primary and secondary objectives for the FISS, noting that the design amends that which was previously endorsed at IM098 in November 2022 and will consist of 891 stations.	**Lead**: IPHC Secretariat (K. Ualesi and R. Webster) **Status/Plan**: Completed See paper **IPHC-2023-IM099-08** See also: **IPHC-2024-AM100-13**
IPHC-2023-ID003:	***SELECTION OF AUDITOR FOR FY2023, FY2024 AND FY2025 STATEMENT AUDITS*** The Commission **ENDORSED** the appointment of the external auditor 'Clark Nuber' to audit the accounts of the IPHC for FY2023, FY2024, and FY2025.	**Lead**: IPHC Secretariat (D. Wilson and A. Keikkala) **Status/Plan**: Completed. IPHC-2023-CR012 (ID003): 5 June 2023 The Contract with Clark Number was signed on 21 July 2023.
IPHC-2023-ID004:	***CONTRACTING PARTY CONTRIBUTIONS FOR FY2024*** The Commission **NOTED** the indicated Contracting Party (CP) contributions for FY2024 prescribed by each CP subsequent to the 13th Special Session of the Commission (SS013) as follows: Canada: Contribution to the IPHC General Fund would be 3% higher than the amount provided in FY2023 = US$927,419.21 U.S.A.: Contribution to the IPHC General Fund would be 3% higher than the amount provided in FY2023 = US$4,282,492.80 (subject to appropriations) Extra-budgetary funds: U.S.A.: Contribution to the IPHC Secretariat Headquarters Lease and Maintenance: US$513,712.50 Canada/U.S.A.: US$127,848.00 each (for the old IFCPF deficit - voluntary payment)	**Lead**: Commission **Status/Plan**: Completed.

IPHC-2023-ID005:	**NOTING** that the abovementioned contributions equate to US$528,812.25 less than the FY2024 budget proposed for adoption at SS013 to maintain the current staffing levels and level of operations of the IPHC Secretariat into FY2024, the Commission **RECOMMENDED** the following budget and associated service reductions: i. -US$13,500 – removal of the IPHC Interim Meeting from the IPHC Meetings budget line. The meeting shall be held in a fully remote/online format moving forward; ii. -US40,060 – removal of the IPHC MSAB meeting from the IPHC Meetings budget line for FY2024. The meetings scheduled for FY2024 (1 Oct 2023 to 30 Sept 2024) shall be held in a fully remote/online format; iii. -US$217,456 – removal of 1 x FTE at the level IPHC-GS-13 (Manager) (salary, wages, and benefits); iv. -US257,796 – removal of FTE's sufficient to match (salary, wages, and benefits)	**Lead**: IPHC Secretariat (D. Wilson and A. Keikkala) **Status/Plan**: Completed.
IPHC-2023-ID006:	The Commission **RECOMMENDED** that the IPHC Secretariat provide a revised FY2024 budget with the above-mentioned Contracting Party contributions and reductions for adoption via the Intersessional Decision-making process prescribed in the IPHC Rules of Procedure (2023).	**Lead**: IPHC Secretariat (D. Wilson and A. Keikkala) **Status/Plan**: Completed IPHC-2023-CR018: For Decision FY2024 budget IPHC-2023-CR019: Intersessional Decision ID008 – FY2024 Budget
IPHC-2023-ID007:	***2023 IPHC BAIT CALIBRATION STUDY*** The Commission **RECOMMENDED** that the IPHC Secretariat undertake a bait calibration study using two bait types (Chum salmon (*Oncorhynchus keta*) and Pink salmon (*Oncorhynchus gorbuscha*)) in fall 2023.	**Lead**: IPHC Secretariat (K. Ualesi and I. Stewart) **Status/Plan**: In progress **IPHC-2023-MR012** IPHC Media Release 2023-012 Fall 2023 Bait Comparison Study Request for Tender. Sampling has been completed. Analysis will be undertaken by the Secretariat prior to AM100.
IPHC-2023-ID008:	***Budget Estimates: FY2024*** The Commission: 1) **NOTED** paper IPHC-2023-ID008 that provided the budget estimates for FY2024 (1 October 2023 to 30 September 2024) for adoption. 2) **ADOPTED** the FY2024 budget (1 October 2023 to 30 September 2024) as detailed in Appendix I, including the contributions from the Contracting Parties to the General Fund for FY2024 as follows: • Canada: Contribution to the General Fund: **US$927,419.21** • U.S.A.: Contribution to the General Fund: **US$4,282,492.80** (subject to appropriations)	**Lead**: IPHC Secretariat (D. Wilson) **Status/Plan**: Completed Invoices will be sent to each Contracting Party no later than 1 September 2023.

	• U.S.A.: Contribution to the headquarters building lease and maintenance costs: **US$513,712.50** 3) **NOTED** the optional extra-budgetary (IFCP Fund deficit) contributions from each Contracting Party for FY2024 as follows: • Canada: ○ 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$127,848** • U.S.A.: ○ 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$127,848** 4) **NOTED** that Fund 35 – AK Cost-Recovery expenses are budgeted at **US$947,371** for FY2024, however, the amount that NOAA fisheries will agree to reimburse will not be known until March/April 2025, and the IPHC will not be reimbursed until 1 October 2025, two fiscal years after the expenses were incurred. Thus, as a precautionary measure, the heads of delegation have directed the Secretariat to include an estimated **US$875,000** to be reimbursed through the cost-recovery program and a further **US$72,371** to be provided in supplementary income from NOAA fisheries. Reductions in services may be necessary if the supplementary income received is less than the **US$72,371** needed to meet the total estimated FY2024 expenditures of **US$947,371**.	
IPHC-2023-ID009:	The Commission **ENDORSED** the amendments to the IPHC Rules of Procedure, as provided at Appendix I, and **REQUESTED** that the IPHC Secretariat finalise and publish them accordingly.	**Lead**: IPHC Secretariat **Status/Plan**: Completed IPHC-2023-CR-026 https://www.iphc.int/the-commission

APPENDIX D

Update on actions arising from the 99th Session of the IPHC Interim Meeting (IM099: November/December 2023)

Action No.	Description	Update
13th Special Session of the IPHC (SS013) (18 April 2023)		
IM099-Rec.01 (para. 13)	***Report of the 24th Session of the IPHC Research Advisory Board (RAB024)*** The Commission **RECOMMENDED** that the IPHC Secretariat investigate avenues for leveraging external co-funding from granting agencies, industry, and other sources, to undertake research aimed at fishing technological advances that would benefit Pacific halibut fisheries/sectors.	**Lead**: IPHC Secretariat (Topic specific leads) **Status/Plan**: Ongoing This will be an ongoing activity moving forward.
IM099-Rec.02 (para. 15)	***International Pacific Halibut Commission 5-year program of Integrated Research and Monitoring (2022-26)*** The Commission **RECOMMENDED** that the IPHC Secretariat add commentary on the importance / likely effects on the stock assessment of each research area within section "6.1.3 Biology and Ecology."	**Lead**: IPHC Secretariat (I. Stewart) **Status/Plan**: Completed The IPHC Secretariat will add this to the table as requested. See also: **IPHC-2024-AM100-06**
IM099-Rec.03 (para. 16)	The Commission **AGREED** that leveraging Artificial Intelligence (AI) has substantial potential to bring efficiencies and other benefits to the IPHC's research and monitoring activities. Accordingly, the Commission **RECOMMENDED** that the Secretariat explore potential applications of AI across the broad range of research and monitoring activities outlined in the IPHC's 5-Year Program of Integrated Research and Monitoring. This exploration should include identification of lessons to be learned and opportunities that AI might present for the IPHC's activities.	**Lead**: IPHC Secretariat (Topic specific leads) **Status/Plan**: Ongoing This will be an ongoing activity moving forward.
IM099-Rec.04 (para. 36)	***IPHC Management Strategy Evaluation: update*** **NOTING** the current priority objectives, the Commission **RECOMMENDED** that the Secretariat, working with the MSAB and SRB, explore the development of a new coastwide objective related to absolute spawning biomass or catch-rates, to either replace the current B36% objective or be added as a fifth priority objective. The Secretariat supports developing a new objective for the Commission to decide if it is a useful objective to assist in determining an MP that optimizes yield via optimal catch-rates or opportunity.	**Lead**: IPHC Secretariat (A. Hicks) **Status/Plan**: In progress The IPHC Secretariat will add this to the agenda of the MSAB and SRB meetings scheduled in the first half of 2024.
IM099-Rec.05 (para. 64)	***Report on Current and Future Biological and Ecosystem Science Research Activities*** The Commission **RECOMMENDED** that the IPHC Secretariat add commentary on the importance / likely effects on the stock assessment when presenting of on each of the primary biological research activities.	**Lead**: IPHC Secretariat (J. Planas) **Status/Plan**: Completed The IPHC Secretariat has incorporated responses to this Recommendation in the presentation for paper **IPHC-2024-AM100-14**.

Action No.	Description	Update
IM099-Rec.06 (para. 66)	***IPHC Fishery regulations: Proposals for the 2023-24 process*** The Commission **RECOMMENDED** that interested stakeholders note the deadline for submission of IPHC Fishery Regulation proposals, for consideration at the 100th Session of the Annual Meeting (AM100), of **23 December 2023**. Late proposals will not be considered at AM100, but stakeholders may also submit statements up until the day before the AM100. More information is available via the updated IPHC website: https://iphc.int/the-commission/fishery-regulations/.	**Lead**: IPHC Secretariat (Stakeholders) **Status/Plan**: Completed. Multiple Media Releases, Reports, and Circulars posted to the website and our contact list.
REQUESTS		
IM099-Req.01 (para. 19)	***Fishery-dependent data overview (2023)*** The Commission **REQUESTED** that moving forward, the presentation associated with the fishery-dependent data overview paper, include a comparison of the current year values for each sector with those from the previous year.	**Lead**: IPHC Secretariat (B. Hutniczak) **Status/Plan**: Completed. See the presentation associated with paper: **IPHC-2024-AM100-07**
IM099-Req.02 (para. 23)	***IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2023*** The Commission **REQUESTED** that, moving forward, a map similar to Fig.2, but of stations that were realized during the sampling season be presented and included in the meeting report, with ineffective stations being identified separately from those sampled (via a third colour or icon).	**Lead**: IPHC Secretariat (K. Ualesi) **Status/Plan**: Completed. See paper: **IPHC-2024-AM100-08**
IM099-Req.03 (para. 50)	***2024-28 FISS design evaluation*** The Commission **REQUESTED** that the IPHC Secretariat provide an intersessional decision paper within one week, that would describe the operational and financial estimates for a FISS charter region in IPHC Regulatory Area 4CDE. The intention is for the Commission to review and provide an intersessional decision on whether to proceed with a charter region in IPHC Regulatory Area 4CDE as part of the 2024 RFT process.	**Lead**: IPHC Secretariat (K. Ualesi, R. Webster) **Status/Plan**: Completed. Provided intersessionally.

Report of the IPHC Secretariat (2023)

PREPARED BY: IPHC SECRETARIAT (D. WILSON & B. HUTNICZAK, 18 DECEMBER 2023)

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1 PURPOSE

To provide the Commission with a report on the activities of the IPHC Secretariat in 2023, not already contained within other papers before the Commission.

2 IPHC SECRETARIAT 2023

The IPHC is a public international organization so designated via Presidential Executive Order 11059 and established by a Convention between Canada and the United States of America. The IPHC Convention was signed on 2 March 1923, ratified on 21 July 1924, and came into effect on **21 October 1924** upon exchange.

The basic texts of the Commission are available on the IPHC website: https://www.iphc.int/the-commission, and prescribe the mission of the organization as:

*"….. **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**. ….." IPHC Convention*, Article I, sub-article I, para. 2).

The IPHC Secretariat, formed in support the Commission's activities, is based in Seattle, WA, U.S.A. (Fig. 1) and currently consists of 29 fulltime positions (FTEs) and ~24-45 temporary/seasonal positions to staff our ports and research vessels (Appendix I). As our shared vision, ***the IPHC Secretariat aims to deliver positive economic, environmental, and social outcomes for the Pacific halibut resource for Canada and the U.S.A. through the application of rigorous science, innovation, and the implementation of international best practice*.**

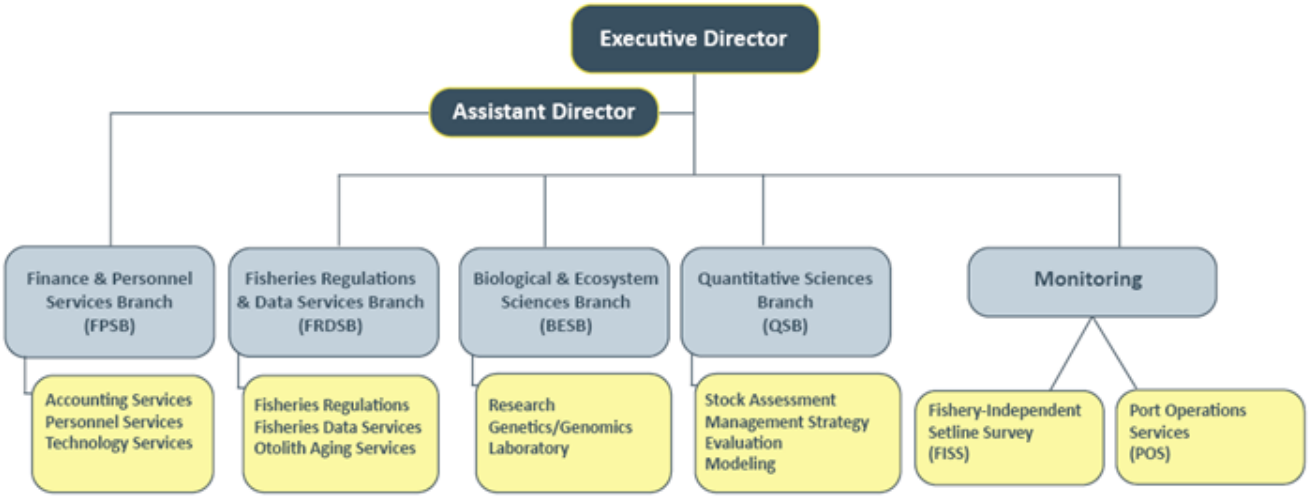

Figure 1. IPHC Secretariat organisation chart (2023).

3 IPHC INTERNSHIP PROGRAM: 2023

The IPHC funds full-time internships each summer. In 2023 the IPHC hosted one (1) undergraduate intern, Mr William Le, pursuing a major in Aquatic and Fishery Sciences at the

University of Washington (Seattle, WA). William has participated in research activities at the Biological and Ecosystem Sciences Branch and has also assisted the Otolith Services team. In addition, William has participated in the FISS and was deployed in the F/V Star Wars. In terms of his research activities, William has contributed to the research project entitled "Mapping the juvenile Pacific halibut" by mining data sources from surveys conducted in the early to mid 1990's by researchers at the University of Alaska Fairbanks. These data will be incorporated into a large database of juvenile habitat coastwide currently being compiled by the IPHC and that will be used in connectivity and population dynamics studies. The internship period runs from 13 June through 31 August 2023.

4 IPHC MERIT SCHOLARSHIP FOR 2022-25

The IPHC funds several Merit Scholarships to support university, technical college, and other post-secondary education for students from Canada and the United States of America who are connected to the Pacific halibut fishery. Generally, a single new scholarship valued at US$4,000 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.

Since the scholarships inception in 2002, the IPHC has awarded over US$150,000 in scholarship funds to 19 recipients.

In 2022, the IPHC Merit Scholarship Selection Panel reviewed applications and selected an outstanding candidate from a very strong application pool, based on academic qualifications, career goals, and relationship to the Pacific halibut industry.

The Selection Panel consists of the following five (5) panelists:

- Robert Alverson (USA Commissioner)
- Peter DeGreef (Canadian Commissioner)
- Patrick DePoe
- Angel Drobnica
- Christa Rusel

The Selection Panel unanimously awarded Lucy Hankins (Seward, AK, USA) 2022 IPHC Merit Scholarship. The current recipients and their expected years of receipt are provided below.

Name	2022	2023	2024	2025
Hahlen Behnken-Barkhau (Sitka, AK, USA)	$4,000	$4,000	-	-
Lucy Hankins (Seward, AK, USA)	-	$4,000	$4,000	$4,000

2024 Merit Scholarship: The Secretariat will launch the 2024 Merit Scholarship process in March 2024, seeking applications for qualified candidates by mid-June 2024. It is expected that the process will be completed by August 2024.

5 MEETINGS OF THE COMMISSION AND SUBSIDIARY BODIES DURING 2023

Meeting	No.	Date	Location	Secretariat material
Finance and Administration Committee (FAC)	99th	23 Jan	Victoria, BC, Canada	7 working papers
Annual Meeting (AM)	**99th**	**23-27 Jan**	Victoria, BC, Canada	14 working papers, 11 regulatory proposals
Conference Board (CB)	93rd	24-25 Jan	Victoria, BC, Canada	Commission papers
Processor Advisory Board (PAB)	28th	24-25 Jan	Victoria, BC, Canada	Commission papers
Special Session (SS)	13th	18 Apr	Electronic	2 working papers
Management Strategy Advisory Board (MSAB)	18th	24-25 May	Electronic	5 working papers
Scientific Review Board (SRB)	22nd	20-22 June	Seattle, USA & Electronic	7 working papers
Work Meeting (WM)	2023	11-12 Sept	Bellingham, USA	12 working papers
Scientific Review Board (SRB)	23rd	25-27 Sept	Seattle, USA & Electronic	7 working papers
Research Advisory Board (RAB)	24th	28 Nov	Seattle, USA & Electronic	6 working papers
Interim Meeting (IM)	**99th**	**30 Nov – 1 Dec**	Electronic	14 working papers

6 IPHC PACIFIC HALIBUT FISHERY REGULATIONS ADOPTED IN 2023

In 2023, the Commission adopted **eight (8)** fishery regulations proposals (IPHC-2023-AM099-R) in accordance with Article III of the Convention, as follows:

6.1 IPHC Secretariat fishery regulation proposals

IPHC Fishery Regulations: Morality and Fishery Limits (Sect. 5)

(par. 89) The Commission **ADOPTED** fishery regulation proposal IPHC-2022-AM099-PropA1, which provides the mortality and fishery limits framework for population at AM098 (Appendix IV).

(par. 90) The Commission **ADOPTED** the distributed mortality limits for each Contracting Party, by IPHC Regulatory Area, (Table 4) and sector, as provided in Appendix IV. [Unanimous]

Table 4. Adopted TCEY mortality limits for 2023

Contracting Party IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (metric tonnes)
Canada Total: 2B	**6.78**	**3,075**
USA: 2A	1.65	748
USA: 2C	5.85	2,654
USA: 3A	12.08	5,479
USA: 3B	3.67	1,665
USA: 4A	1.73	785
USA: 4B	1.36	617
USA: 4CDE	3.85	1,746
United States of America Total	**30.19**	**13,694**
Total (IPHC Convention Area)	**36.97**	**16,769**

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

(par. 97) The Commission **ADOPTED** fishing periods for 2023 as provided below, thereby superseding the relevant portions of Section 9 of the IPHC Pacific halibut fishery regulations (Appendix V) by specifying that commercial fishing for Pacific halibut in all IPHC Regulatory Areas may begin no earlier than 1200 (noon) local lime on **10 March 2023** and must cease at 1200 (noon) local time on **07 December 2023**. [Unanimous]

IPHC Fishery Regulations: Fishing Period Limits (Sect. 14) & Licensing Vessels for IPHC Regulatory Area 2A (Sect. 15) – Accommodation of the transition of management in the IPHC Regulatory Area 2A

(par. 98) The Commission **ADOPTED** fishery regulation proposal IPHC-2023-AM099-PropA3, to accommodate the transition of management in the IPHC Regulatory Area 2A from the IPHC to the Pacific Fishery Management Council (PFMC) and NOAA Fisheries (Appendix VI). [Unanimous]

IPHC Fishery Regulations: minor amendments

(par. 99) The Commission **ADOPTED** fishery regulation proposal IPHC-2023-AM099-PropA4 Rev_1, which proposed minor amendments to the existing IPHC Fishery Regulations, improving their clarity and consistency (Appendix VII). [Unanimous]

6.2 *Contracting Party fishery regulation proposals*

Recreational (sport) fishing for Pacific halibut—IPHC Regulatory areas 2c, 3a, 3b, 4a, 4b, 4c, 4d, 4e (Sect. 29) – Charter management measures in IPHC Regulatory Areas 2C and 3A

(par. 100) The Commission **ADOPTED** fishery regulation proposal IPHC-2023-AM099-PropB1, that proposed IPHC Regulation changes for charter recreational Pacific halibut fisheries in IPHC Regulatory Areas 2C and 3A (Appendix VIII), in order to achieve the charter Pacific halibut allocation under the North Pacific Fisheries Management Council's (NPFMC) Pacific halibut Catch Sharing Plan. [Unanimous]

IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut - IPHC Regulatory Area 2B (Sect. 28) - Daily bag limit in IPHC Regulatory Area 2B

(par. 101) The Commission **ADOPTED** fishery regulation proposal IPHC-2023-AM099-PropB2 Rev 1, that proposed IPHC Regulation changes to allow the daily bag limit of up to three fish per day per person in the recreational fishery in IPHC Regulatory Area 2B beginning on or after August 1 of each year until 2025 unless extended by a vote of the Commission (Appendix IX). [Unanimous]

IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut - IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E (Sect. 29) - Onboard consumption

(par. 102) The Commission **ADOPTED** fishery regulation proposal IPHC-2023-AM099-PropB3, that proposed adding flexibility to existing recreational (sport) Pacific halibut fishing regulations in Alaska Regulatory Areas and allow limited consumption of recreationally-caught Pacific halibut on board charter vessels and pleasure craft, while retaining existing regulations that provide effective enforcement of daily bag limits and possession limits (Appendix X). [Unanimous]

IPHC Fishery Regulations: Logs (Sect. 20) – Logs requirements

(par. 103) The Commission **ADOPTED** fishery regulation proposal IPHC-2023-AM099-PropB4, that proposed updates to IPHC regulatory language regarding the qualifying logbooks in IPHC Regulatory Area 2A (Appendix XI). [Unanimous]

7 INTERACTIONS WITH CONTRACTING PARTIES

7.1 Contracting Party reports

The IPHC Secretariat engages annually with agency representatives from both Contracting Parties regarding comprehensive reporting of all forms of Pacific halibut removals. The IPHC Secretariat is working to identify and address data gaps in reporting. In 2023, the focus was on additional sources of information on whale interactions.

7.2 Canada

Fisheries and Oceans Canada (DFO)

Multiyear permit for the IPHC survey in Gwaii Haanas National Marine Conservation Area

In May 2022, the Archipelago Management Board (AMB) approved the application the DFO put forward to permit multi-year approvals for the IPHC Fishery-Independent Setline Survey (FISS) in Gwaii Haanas National Marine Conservation Area (NMCA). What this means is that the IPHC has approval to fish the FISS stations within Gwaii Haanas for the 2022, 2023 and 2024 FISS without having to annually apply for these permissions when they apply for their Canadian scientific licences.

Areas of conservation concern

The IPHC Secretariat continues to work with the DFO representatives to address gaps in coverage for the IPHC FISS in the IPHC Regulatory Area 2B. Currently, the FISS license excludes Marine Protected Areas as described by Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas Regulations, and Rockfish Conservation Areas (RCAs).

Memorandum of Understanding/Collective Agreement – Rockfish

In collaboration with DFO, Pacific Halibut Management Association of BC and Archipelago Marine Research (AMR), IPHC tagged Yelloweye, Quillback and Rougheye rockfish aboard both 2B FISS vessels for dockside sampling by AMR staff. This collaboration was formed to replace prior collective agreement involving rockfish caught aboard 2B FISS vessels. 545 Yelloweye, 139 Quillback and 178 Rougheye rockfish were sampled so far throughout the 2B coast during the 2023 FISS.

Northern Shelf Bioregion

The action plan for the development of a network of marine protected areas (MPAs) in the Northern Shelf Bioregion is a collaborative partnership between the Government of Canada, the Province of British Columbia and First Nations. The action plan supports implementation of the Reconciliation Framework Agreements. The MPA Network zones have been organized into three implementation categories with category 1 zones targeted for establishment by 2025. The *What We Heard* report summarizes feedback from the public on the policy direction presented in the Coastal Marine Strategy for British Columbia Policy Intentions Paper.
While detailed management plans for individual MPAs within the network remain in the planning phase, the Secretariat follows the process in relation to network's overlap with FISS (see Fig. 2). Proposed extension of the network covers 29 FISS stations.

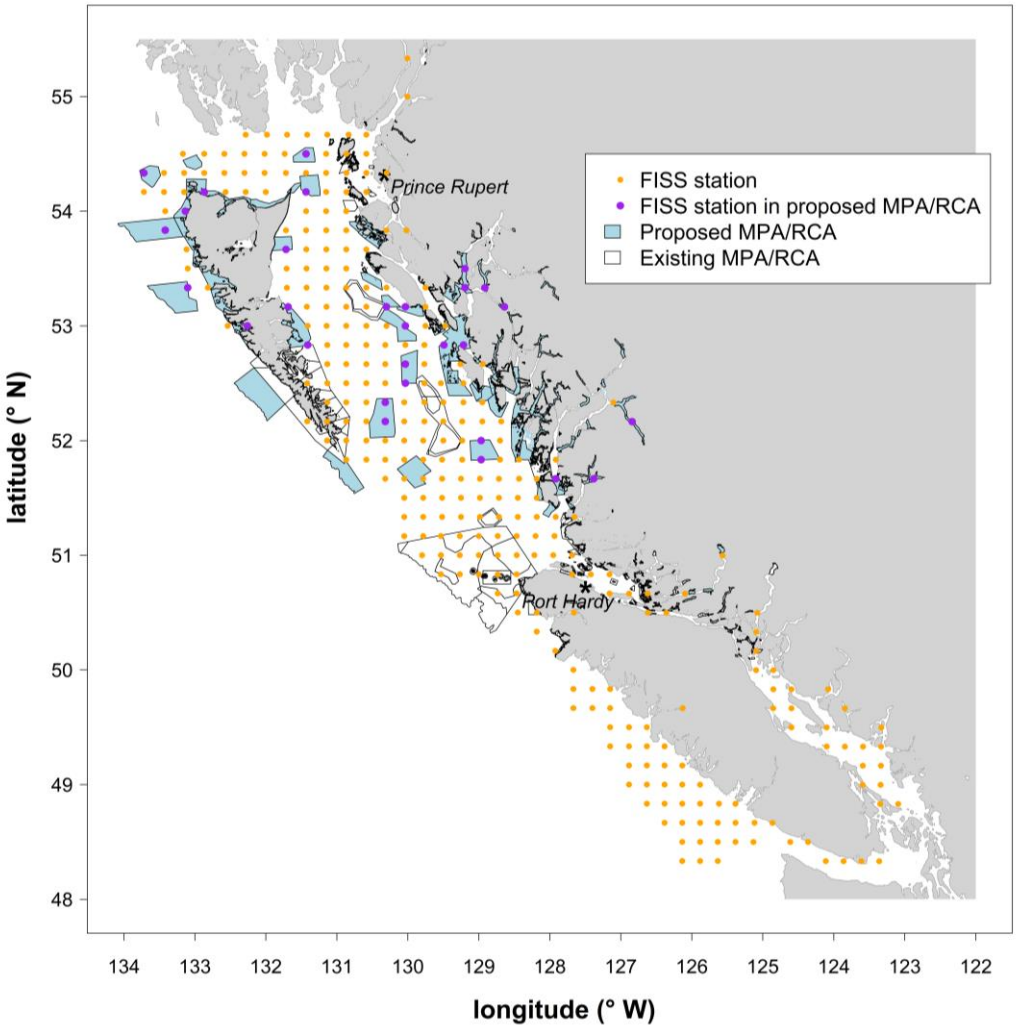

Figure 2: Overlap between locations of FISS stations and proposed area of the Northern Shelf Bioregion.

Trawl electronic monitoring

Pacific halibut length sampling protocol was developed in collaboration with industry, AMR, after discussions with IPHC. Pilot began on 3 vessels late September and will continue until fishing is complete. Data will be sent to IPHC and pending pilot review, expansion will be considered.

Halibut Advisory Board (HAB)

The Executive Director (Dr. Wilson) participates as a HAB member, with the Fisheries Regulations and Data Services Branch manager (Dr. Hutniczak) as the IPHC alternate. This relationship is expected to continue into the future given the HAB's contributions to the Canadian decision-making process.

7.3 United States of America

NOAA Fisheries

Management in IPHC Regulatory Area 2A

For the first time, the annual management measures for the non-tribal directed commercial fishery in IPHC Regulatory Area 2A were implemented by NOAA Fisheries. The process of transitioning management authority from the IPHC to NOAA Fisheries was initiated in 2019. The final rule (87 FR 74322) implementing the transition was published on 5 December 2022 and became effective on 4 January 2023. Details about the fishing periods and vessel limits were announced via NOAA Fisheries website. The IPHC Secretariat actively supported setting the measures by providing relevant data and sharing past experience.

The Secretariat has also established a data sharing agreement with NOAA Fisheries West Coast Region to access confidential data, including:

- All non-trawl logbook data submissions that include landings or discards of Pacific halibut, either sourced from the electronic application (FishVue Float) or paper logbooks, which are currently located in a data system maintained by the Pacific States Marine Fisheries Commission (PacStates); and
- All permit data for directed commercial fishery, recreational charter fishery, incidental salmon troll, and incidental longline sablefish fishery permits for Pacific halibut, which are currently located in a data system maintained by NOAA Fisheries.

These data are essential for efficient fulfilment of tasks related to collection of biological sampling and compiling log data for IPHC Regulatory Area 2A. Agreement has been signed on 16 October 2023 and is valid for five years.

Nomination of the Alaĝum Kanuux̂ (Heart of the Ocean) for consideration as a new national marine sanctuary

In June 2022, NOAA announced nomination of the Alaĝum Kanuux̂ (Heart of the Ocean) for consideration as a new national marine sanctuary (87 FR 34851), which was the first phase of the of the Pribilof Island Marine Island Ecosystem (PRIME) initiative. The IPHC will monitor the progress of the designation for potential implications for FISS survey.

Final Rule for Abundance-Based Management of Pacific halibut in the Bering Sea

On 24 November 2023, NOAA Fisheries issued a final rule to implement Amendment 123 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands management area (88 FR 82740). The final rule establishes abundance-based management of Amendment 80 trawl sector prohibited species catch limit for Pacific halibut. The rule becomes effective on 1 January 2024.

North Pacific Fishery Management Council (NPFMC)

At the meeting in February 2023, the IPHC presented to the Council the outcomes of the 99th Session of the IPHC Annual Meeting (AM099) (B8 PPT).

At the meeting in February 2023, the Council adopted for final action to remove vessel cap limitations specified at 50 CFR Section 679.42(h)(1) for IFQ halibut harvested in Areas 4A, 4B, 4C and 4D through the 2027 fishing season. If the Council takes subsequent action to modify vessel cap limits in area 4, such action will supersede if implemented before 2027.

At the same meeting, the Council also moved to rescind the February 2022 D1 Halibut CSP Review Motion. The motion proposed a review of the Pacific halibut Catch Sharing Plan (CSP) and the consideration of alternatives to address the impacts of charter management measures on the charter sector during times of lower abundance. It also noted that the preferred approach is compensated reallocation through the Recreational Quota Entity (RQE). The final action on establishing a fee collection program for charter vessel operators to fund the RQE was taken at the meeting in April 2022 (C2 CM).

At the meeting in October 2023, the Council requested (C3 CM) the Interagency [Pacific] Halibut DMR [discard mortality rates] workgroup review methods used to estimate halibut mortality with a particular focus on marine mammal feeding on discards per their recommendation, for all fisheries with marine mammal interactions in the Bering Sea and Aleutian Islands (BSAI) and the Gulf of Alaska (GOA).

During the December 2023 meeting, the Council recommended a suite of management measures (such as bag limits, size restrictions, and day-of-the-week closures) for the charter Pacific halibut fisheries in IPHC Regulatory Areas 2C and 3A (C7 CM). These measures, intended for implementation in 2024, are designed to ensure compliance with the sector's allocation under the NPFMC Catch Sharing Plan following from the final decision by the Commission on the mortality limits. Details are presented in the regulatory proposal B1 (IPHC-2024-AM100-PropB1).

PACIFIC Fishery Management Council (PFMC)

Incidental Catch Limits for Fixed Gear Sablefish Fisheries

Adopted in March 2023, the Council's final recommendation for the 2023 incidental Pacific halibut catch restrictions in the fixed gear fishery north of Point Chehalis beginning April 1 is 150 pounds of dressed weight halibut for every 1,000 pounds dressed weight of sablefish, plus 2 additional halibut in excess of the ratio, which was consistent with the Groundfish Advisory Subpanel recommendations.

Incidental Catch Limits for Salmon Troll Fishery

In April 2023, the Council adopted final incidental Pacific halibut catch limits as follows: Open May 16, 2023, through the end of the 2023 salmon troll fishery, and beginning April 1, 2024, until modified through in-season action or superseded by the 2024 management measures. License holders may land no more than one Pacific halibut per two Chinook, except one Pacific halibut may be landed without meeting the ratio requirement, and no more than 35 halibut landed per trip.

Catch Sharing Plan (CSP) and regulation changes

In response to the scoping topics report from June 2023 the Council asked for additional analysis on the following items:

1) Update and improve, where needed, the management objectives in the Pacific Halibut Catch Sharing Plan for each sector or sub-area with a specific allocation.
2) Request California review their fishery objectives to achieve a longer season (e.g., delay opening, open fewer days per week).
3) Expand the PFMC Pacific halibut Catch Sharing Plan's flexible in-season management provisions to allow transfer of projected unused quota between all WA, OR, and CA recreational sub-areas and commercial sectors after August 15.
4) Move 0.5 percent of the WA sport allocation and 1.0 percent of the OR sport allocation to the California sport sector in years when the 2A FCEY is 1.5 (option 1) or 1.3 (option 2) million pounds or greater.
5) Move 1 percent from the non-tribal WA sport allocation and 2 percent from the non-tribal OR sport allocation to the CA sport sector when the 2A FCEY is 1.5 (option 1) or 1.3 (option 2) million pounds or greater.
6) Regulatory changes as recommended by the Enforcement Consultants (Agenda Item E.1.a, Supp EC Report 1, June 2023).

At its September 2023 meeting, the Council continued their discussion from the June 2023 scoping exercise on potential changes to the Pacific Halibut CSP and adopted for public review options for the 2024 Pacific halibut non-tribal directed commercial fishery season structure (see decision summary document).

In December 2023, the Council adopted the 2024 Area 2A Pacific halibut fisheries season structures for Oregon, Washington, and California sport fisheries and the 2024 directed commercial Pacific halibut fishery. Additional changes to the CSP included minor updates and clarifications throughout the CSP, and the inclusion of an in-season process to provide more sharing on the Area 2A non-treaty sport allocation. The Council made no changes to the fixed allocations assigned to the sport fishery for each state. The Council did agree to continue work on the three regulatory items and on the in-season flexibility process as described in the meeting Decision Summary Document.

Bureau of Ocean Energy Management (BOEM) offshore wind planning activities

On 15 August 2023, the Bureau of Ocean Energy Management (BOEM) announced a 60-day public comment period on two draft Wind Energy Areas located in the existing Call Areas offshore southern Oregon. The Call was published in early 2022 to assess commercial interest in -- and obtain public input on -- potential wind energy leasing activities in federal waters off the coast of Oregon. The currently proposed area would total 219,568 acres, a reduction of 81% from BOEM's original Call. The IPHC reviewed the revised area in relation to its overlap with FISS (see Fig. 3). While the original Call encompassed eight stations, the currently proposed area does not overlap with any FISS station. There were also no Pacific halibut catches recorded in this area between 2013 and 2022.

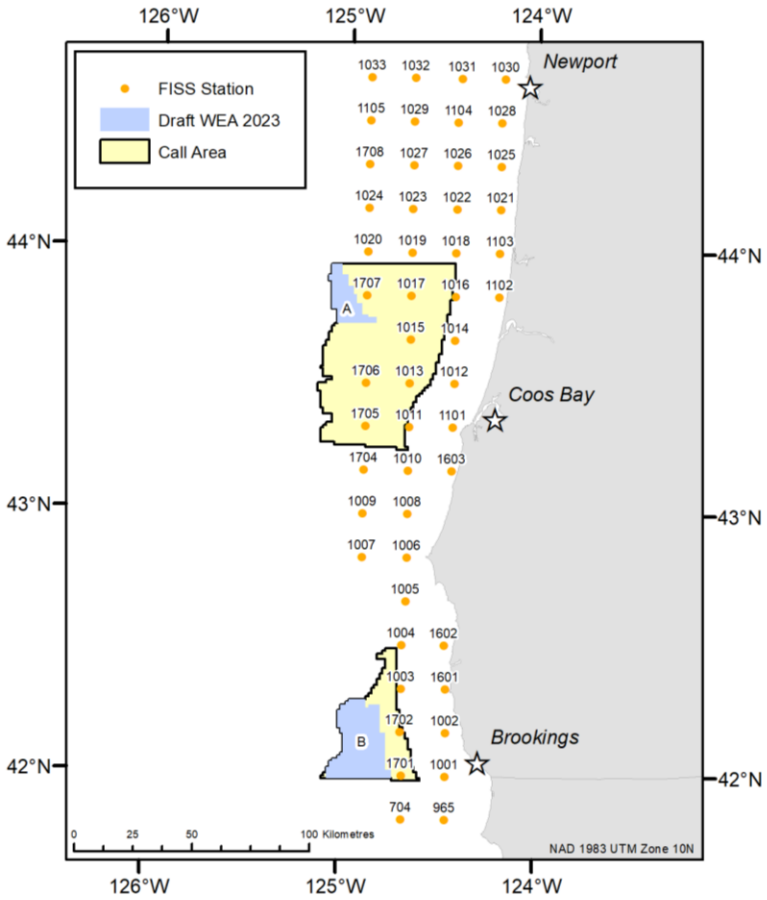

Figure 3. Overlap between locations of FISS stations and proposed area for offshore wind energy development off the Oregon Coast.

Alaska Fisheries Science Center (AFSC)

Pacific cod and Pacific spiny dogfish sampling agreement

NOAA Fisheries, through the Alaska Fisheries Science Center (AFSC), requested sex and length data from Pacific spiny dogfish and length data from Pacific cod from all FISS stations surveyed in 2023. The IPHC has been collecting these data from Pacific spiny dogfish since 2011, from Pacific cod in the Bering Sea since 2007 and from Pacific cod in the Gulf of Alaska (GOA) since 2017. In 2023, the IPHC FISS team collected so far 2,041 lengths of Pacific cod and 1,358 lengths/sex of Pacific spiny dogfish as a part of this agreement.

Data sharing agreement with the Fisheries Monitoring Division

The Secretariat has a standing data sharing agreement with the NOAA Alaska Fisheries Science Center Fisheries Monitoring Division to obtain confidential information from commercial fisheries observers and electronic monitoring systems, including haul information: fishing gear, location, date and time, lengths of specimens and species composition.

Northwest Fisheries Science Center (NWFSC)

The Secretariat has a standing data sharing agreement with the Northwest Fisheries Science Center to obtain confidential data from commercial fishing vessels observed by the West Coast

Groundfish Observer Program (WCGOP) or the At-sea Hake Observer Program (A-SHOP). This includes haul-level observer data: fishing vessel information, gear used, Pacific halibut catch, catch of other species, species biological data (e.g. length, weight, sex), mortality assessments, haul locations, tow or soak time duration, depth, date, and time.

State of Alaska Commercial Fisheries Entry Commission

The Secretariat has an active Memorandum of Understanding with the State of Alaska Commercial Fisheries Entry Commission (CFEC) which objective is to provide a framework in which the IPHC's commercial Pacific halibut landing record data may be utilized and published by CFEC.

Alaska Department of Fish and Game (ADFG)

On 16 December 2022, an ADFG emergency order closed and immediately re-opened the fishing season for directed groundfish and Pacific halibut fisheries in the Prince William Sound Area and established limits on the amount of groundfish which may be legally retained and sold by permit holder as bycatch during a directed fishery. The order expires on 31 December 2023.

Washington Department of Fish and Wildlife (WDFW)

Memorandum of Understanding – Rockfish

The objective of the Memorandum of Understanding with the WDFW is to 1) collect and utilize catch and biological sample data from species caught during FISS; 2) agree on how proceeds from the sale of Pacific halibut, rockfish and Pacific cod will be disbursed; and 3) lay forth the financial obligations associated with undertaking additional FISS stations, as requested by the WDFW, to survey rockfish populations off the Washington coastline.

In 2023, the IPHC sampled eight (8) additional stations at the request of the WDFW. The IPHC tagged 230 rockfish at sea, which were then sampled by WDFW staff during the offloads in Port Angeles, and Westport, WA. The costs incurred by these activities are 100% cost-recovered from the WDFW.

California Department of Fish and Wildlife (CDFW)

Data sharing agreement with California Department of Fish and Wildlife

The IPHC and the CDFW entered into a data sharing agreement for the purpose of tracking all Pacific halibut removals from within Convention waters. The agreement provides the Secretariat with access to commercial landing receipt data from California. The agreement, effective 16 June 2023, is valid for two years.

8 IPHC PUBLICATIONS AND OUTREACH

8.1 IPHC Website

The IPHC Secretariat continues to develop new ways to display data and statistics for our stakeholders and other interested parties, focusing particularly on the addition of timely and useful visual displays such as those listed below. In 2023, the IPHC Secretariat migrated our website to a new platform with added and simplified updating and design features.

1) **Directed commercial fisheries:**
   https://www.iphc.int/datatest/commercial-fisheries
2) **Fishery-independent setline survey (FISS):**
   https://www.iphc.int/data/datatest/fishery-independent-setline-survey-fiss
3) **Non-Directed Commercial Discard Mortality Fisheries:**
   https://www.iphc.int/data/datatest/non-directed-commercial-discard-mortality-fisheries
4) **Geospatial Data:**
   https://www.iphc.int/datatest/data/geospatial-data
5) **Recreational Fisheries:**
   https://www.iphc.int/data/datatest/pacific-halibut-recreational-fisheries-data
6) **Time Series Data Sets:**
   https://www.iphc.int/data/time-series-datasets
7) **Subsistence Fisheries:**
   https://www.iphc.int/datatest/subsistence-fisheries
8) **Water Column Profiler Data:**
   https://www.iphc.int/datatest/data/water-column-profiler-data

8.2 Annual Report

The 2022 Annual Report (1 January to 31 December 2022) was published on 28 March 2023 and is available for download from the IPHC website at the following link: https://www.iphc.int/uploads/pdf/ar/iphc-2023-ar2022-r.pdf

8.3 IPHC Circulars and Media Releases

2023 IPHC Circulars 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. The following are those published in 2023, and a full list may be accessed via the following weblink: https://www.iphc.int/library/documents/category/circulars

Circular	Title/Subject	Date published
IPHC-2023-CR-001	Reports of the 99th Session of the IPHC Finance and Administration Committee (FAC099); 93rd Session of the IPHC Conference Board (CB093); 28th Session of the IPHC Processor Advisory Board (PAB028); and 99th Session of the IPHC Annual Meeting (AM099)	13 Feb 2022
IPHC-2023-CR-002	IPHC Rules of Procedure (2023)	13 Feb 2023
IPHC-2023-CR-003	Invitation to the 13th Special Session of the IPHC (SS013)	22 Feb 2023
IPHC-2023-CR-004	Invitation to the 18th Session of the IPHC Management Strategy Advisory Board (MSAB018)	11 Mar 2023
IPHC-2023-CR-005	Invitation to the 22nd Session of the IPHC Scientific Review Board (SRB022)	23 Mar 2023
IPHC-2023-CR-006	Publication of the IPHC Annual Report 2022 (IPHC-2023-AR2022-R)	28 Mar 2023
IPHC-2023-CR-007	Intersessional Decision & Report of the 13th Special Session of the Commission (SS013)	16 May 2023
IPHC-2023-CR-008	For Decision - 2023 FISS Design Amended	24 May 2023
IPHC-2023-CR-009	For Decision - Selection of Auditor for FY2023, FY2024 and FY2025 Statement Audits	25 May 2023

IPHC-2023-CR-010	Report of the 18th Session of the IPHC Management Strategy Advisory Board (MSAB018)	25 May 2023
IPHC-2023-CR-011	For Decision - Contracting Party Contributions for FY2024	26 May 2023
IPHC-2023-CR-012	Intersessional Decisions ID002-ID003 (For Information)	5 Jun 2023
IPHC-2023-CR-013	Intersessional Decisions ID004-ID006 (For Information)	5 Jun 2023
IPHC-2023-CR-014	Invitation to the 2023 Session of the IPHC Work Meeting (WM2023	21 Jun 2023
IPHC-2023-CR-015	Report of the 22nd Session of the IPHC Scientific Review Board (SRB022)	22 Jun 2023
IPHC-2023-CR-016	Invitation to the 23rd Session of the IPHC Scientific Review Board (SRB023)	26 Jun 2023
IPHC-2023-CR-017	Intersessional Decision ID007 (bait calibration study) (for information)	31 Jul 2023
IPHC-2023-CR-018	FOR DECISION – FY2024 Budget	4 Aug 2023
IPHC-2023-CR-019	Intersessional Decision ID008 – FY2024 Budget (For Information)	11 Aug 2023
IPHC-2023-CR-020	Invitation to the 24th Session of the IPHC Research Advisory Board (RAB024)	28 Aug 2023
IPHC-2023-CR-021	Invitation to the 99th Session of the IPHC Interim Meeting (IM099)	1 Sep 2023
IPHC-2023-CR-022	Report of the 23rd Session of the IPHC Scientific Review Board (SRB023)	26 Sep 2023
IPHC-2023-CR-023	IPHC Circular 2023-023 Invitation to the 100th Session of the IPHC Finance and Administrative Committee (FAC100), and the 100th Session of the IPHC Annual Meeting (AM100)	24 Oct 2023
IPHC-2023-CR-024	IPHC Circular 2023-024 Invitation to the 94th Session of the IPHC Conference Board (CB094), and the 29th Session of the IPHC Processor Advisory Board (PAB029)	25 Oct 2023
IPHC-2023-CR-025	For Decision – IPHC Rules of Procedure (2023)	26 Oct 2023
IPHC-2023-CR-026	FOR INFORMATION – Intersessional decision ID009 - IPHC Rules of Procedure (2023)	31 Oct 2023
IPHC-2023-CR-027	FOR INFORMATION - 2023 IPHC Fishery-Independent Setline Survey data interactives	31 Oct 2023
IPHC-2023-CR-028	Report of the 24th Session of the IPHC Research Advisory Board (RAB024)	29 Nov 2023
IPHC-2023-CR-029	Report of the 99th Session of the IPHC Interim Meeting (IM099)	01 Dec 2023

2023 IPHC Media Releases are the primary informal communication with all stakeholders. https://www.iphc.int/library/documents/category/media-releases

Circular	Title/Subject	Date published
IPHC-2023-MR-001	IPHC Media Release 2023-001 Call for Members to the IPHC Processor Advisory Board (PAB)	5 Jan 2023
IPHC-2023-MR-002	IPHC Media Release 2023-002 IPHC Regulatory Area 2A Pacific halibut fishery - new permit requirements for commercial and charter vessels from NOAA Fisheries	5 Jan 2023
IPHC-2023-MR-003	IPHC Media Release 2023-003 IPHC Requests Tenders for the 2023 Catch Protection Pilot Study (CPS)	11 Jan 2023

IPHC-2023-MR-004	IPHC Media Release 2023-004 Call for Members to the IPHC Processor Advisory Board (PAB) (In-person and remote electronic participation possible)	13 Jan 2023
IPHC-2023-MR-005	IPHC Media Release 2023-005 Completion of the 99th Session of the IPHC Annual Meeting (AM099)	9 Feb 2023
IPHC-2023-MR-006	IPHC Media Release 2023-006 IPHC Requests Tenders for the 2023 Catch Protection Pilot Study (CPS)	28 Feb 2023
IPHC-2023-MR-007	IPHC Media Release 2023-007 Notification of Potential Pacific Halibut Sales in 2023, Seeking Buyers Interested in Fish Sales from the IPHC Fishery-Independent Setline Survey (FISS)	9 Mar 2023
IPHC-2023-MR-008	IPHC Media Release 2023-008 Notification of IPHC Fishery-Independent Setline Survey (FISS) 2023 Contract Awards	13 Apr 2023
IPHC-2023-MR-009	IPHC Media Release 2023-009 Fishery-Independent Setline Survey (2023 FISS) Request for Tender	13 Apr 2023
IPHC-2023-MR-010	IPHC Media Release 2023-010 Fall 2023 Gear Comparison Study Request For Tender	9 Jun 2023
IPHC-2023-MR-011	IPHC Media Release 2023-011 First fishing period in the non-tribal directed commercial fishery in IPHC Regulatory Area 2A	26 Jun 2023
IPHC-2023-MR-012	IPHC Media Release 2023-012 Fall 2023 Bait Comparison Study Request for Tender	31 Jul 2023
IPHC-2023-MR-013	IPHC Media Release 2023-013 Call for proposals: IPHC 2023-24 Fishery Regulations process	25 Sep 2023
IPHC-2023-MR-014	IPHC Media Release 2023-014 Attention Salmon Processors - Chum and Pink Salmon Needed for the IPHC Fishery-Independent Setline Survey (FISS)	4 Oct 2023
IPHC-2023-MR-015	IPHC Media Release 2023-015 100th Year of the International Pacific Halibut Commission	24 Oct 2023
IPHC-2023-MR-016	Pacific halibut stock assessment 2023 – Presentation and Q&A Sessions	28 Nov 2023
IPHC-2023-MR-017	100th Session of the IPHC Annual Meeting (AM100) and subsidiary bodies – Message from the Executive Director	06 Dec 2023
IPHC-2023-MR-018	2023 Commercial fishing period closed	07 Dec 2023

All interested persons are encouraged to request that their email addresses be added to IPHC distribution lists at the following link: https://www.iphc.int/media-news-subscription/.

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.

Committees and external organisation appointments

North America:

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

Canada:

1) *Halibut Advisory Board* (Canada) - Dr. David Wilson (Dr. Basia Hutniczak – Alternate)
2) *Status Update of Pacific Cod (Gadus macrocephalus) for West Coast Vancouver Island in 2023, Science Response Process - Pacific Region - Dr. Ian Stewart*

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) *NPFMC Scientific and Statistical Committee* - Dr. Ian Stewart
4) *North Pacific Research Board Science Panel* - Dr. Josep Planas
5) *Pacific Council STAR Panel Review for Copper Rockfish in California, Rex Sole, and Shortspine Thornyhead* - Dr. Allan Hicks
6) *Fisheries Monitoring Science Committee (NOAA-Alaska)* – Dr. Ray Webster
7) *Interagency electronic reporting system for commercial fishery landings in Alaska (eLandings) Steering Committee* – Dr. Basia Hutniczak

Academic affiliations 2023

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 - University of Washington School of Aquatic & Fishery Sciences, Seattle, WA, USA
4) Dr. Josep Planas - Alaska Pacific University, Anchorage, AK, USA

Taught courses:

1) *Principles & applications of fisheries-independent surveys*. University of Washington School of Aquatic & Fishery Sciences. Winter 2023. - Dr. Ray Webster and Dr. Allan Hicks
2) *Age-structured models in fisheries stock assessment*. University of Washington School of Aquatic & Fishery Sciences. Spring 2023. - Dr. Ian Stewart and Dr. Allan Hicks

9 IPHC PUBLICATIONS IN 2023

9.1 Published peer-reviewed journal papers

Lomeli, M.J.M., Wakefield, W.W., Abele, M., **Dykstra, C.L.,** Herrmann, B., **Stewart, I.J.,** and G.C. Christie. 2023. Testing of hook sizes and appendages to reduce yelloweye rockfish bycatch in a Pacific halibut longline fishery. Ocean & Coastal Management 241. https://doi:10.1016/j.ocecoaman.2023.106664.

Planas, J.V., Rooper, C.N., Kruse, G.H. 2023. Integrating biological research, fisheries science and management of Pacific halibut (*Hippoglossus stenolepis*) across the North Pacific Ocean. Fisheries Research. 259: 106559. https://doi.org/10.1016/j.fishres.2022.106559.

Thomas, R.E., Gauthier, S., Grandin, C., **Hicks, A.**, Parker-Stetter, S. 2024 To trawl or not to trawl: Questioning core assumptions of trawl placement choice in fisheries acoustic surveys. Fisheries Research. 270: 106897. https://doi.org/10.1016/j.fishres.2023.106897

9.2 In press peer-reviewed journal papers

Simchick, C., Simeon, A., Bolstad, K., Planas, J.V. 2023. Endocrine patterns associated with ovarian development in female Pacific halibut (*Hippoglossus stenolepis*). General and Comparative Endocrinology. In Press. https://doi.org/10.1016/j.ygcen.2023.114425.

9.3 Submitted peer-review journal papers – In review

Dykstra, C., Wolf, N., Harris, B.P., **Stewart, I.J., Hicks, A.**, Restrepo. F., **Planas, J.V.** Relating capture and physiological conditions to viability and survival of Pacific halibut discarded from commercial longline gear. Ocean & Coastal Management.

Ritchie, B., Smeltz, T.S., **Stewart, I.J**., Harris, B., Wolf, N. Exploring spatial and temporal patterns in the size-at-age of Pacific halibut in the Gulf of Alaska. Ecosphere.

Sadoris, L. L., **Webster, R. A.** and Sullivan, M. Environmental conditions on the Pacific halibut fishing grounds obtained from a decade of coastwide oceanographic monitoring, and the potential application of these data in stock analyses. Marine and Freshwater Research.

10 RECOMMENDATION

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-04 which provides the Commission with an update on activities of the IPHC Secretariat in 2023 not detailed in other papers before the Commission.

11 APPENDICES

Appendix I: IPHC Secretariat positions – Effective 1 October 2023.

Appendix I
IPHC Secretariat positions – Effective 1 October 2023

(https://www.iphc.int/locations/map)

Branch	Sub-Section	Position	Current Employee
Executive	-	Executive Director	Dr Wilson, David
Executive	-	Assistant Director	Keikkala, Andrea
-	Port Operations Services	Port Operations Coordinator	Thom, Monica
-	Port Operations Services	Fisheries Data Specialist (Field)	Multiple Employees (9-10)
-	Fishery-Independent Setline Survey	Setline Survey Coordinator	Ualesi, Kayla
-	Fishery-Independent Setline Survey	Setline Survey Specialist	Rillera, Rachel
-	Fishery-Independent Setline Survey	Setline Survey Specialist	Jack, Tyler
-	Fishery-Independent Setline Survey	Setline Survey Specialist	Coll, Kevin
-	Fishery-Independent Setline Survey	Setline Survey Specialist (Field)	Multiple Employees (15-35)
Quantitative Sciences	-	Quantitative Scientist (Stock Assessment)	Dr Stewart, Ian
Quantitative Sciences	-	Quantitative Scientist (Management Strategy Evaluation)	Dr Hicks, Allan
Quantitative Sciences	-	Quantitative Scientist (Biometrician)	Dr Webster, Raymond
Finance and Personnel Services	Personnel Services	Administrative Specialist (Snr)	Chapman, Kelly
Finance and Personnel Services	Personnel Services	Administrative / Communications Specialist	Coluccio, Tara
Finance and Personnel Services	Personnel Services	Administrative Specialist	Wietecha, Ola
Finance and Personnel Services	Personnel Services	Administrative Specialist	Burkhalter, Lorissa
Finance and Personnel Services	Accounting Services	Accountants	Sommerville & Associates

Finance and Personnel Services	Technology Services	Systems Administrator	Tynes, Robert
Finance and Personnel Services	Technology Services	Information Technology Specialist (Application Developer)	Taheri, Afshin
Finance and Personnel Services	Technology Services	Information Technology Specialist (Application Developer)	Outsourced
Biological and Ecosystem Sciences	-	Branch Manager (BES)	Dr Planas, Josep
Biological and Ecosystem Sciences	-	Research Biologist (Mortality and Survivorship)	Dykstra, Claude
Biological and Ecosystem Sciences	-	Research Biologist Genetics	Jasonowicz, Andrew
Biological and Ecosystem Sciences	-	Research Biologist (Life History)	Jones, Colin
Biological and Ecosystem Sciences	-	Biological Science Laboratory Technician	Simchick, Crystal
Fisheries Regulations and Data Services	-	Branch Manager (FRDS)	Dr Hutniczak, Barbara
Fisheries Regulations and Data Services	Fisheries Data Services	Fisheries Data Coordinator	Tran, Huyen
Fisheries Regulations and Data Services	Fisheries Data Services	Fisheries Data Specialist (HQ-GIS)	Kong, Thomas
Fisheries Regulations and Data Services	Fisheries Data Services	Fisheries Data Specialist (HQ) & Otolith Technician	Sawyer Van Vleck, Kim
Fisheries Regulations and Data Services	Fisheries Data Services	Fisheries Data Specialist (HQ) & Otolith Technician	Magrane, Kelsey
Fisheries Regulations and Data Services	Otolith Aging Services	Otolith Laboratory Technician (Snr)	Forsberg, Joan
Fisheries Regulations and Data Services	Otolith Aging Services	Otolith Laboratory Technician	Johnston, Chris

Implementation of the Recommendations from the 2nd IPHC Performance Review (PRIPHC02)

PREPARED BY: IPHC SECRETARIAT (D. WILSON; 6 DECEMBER 2023)

To provide the Commission with an update on the implementation of the recommendations arising from the 2nd Performance Review of the IPHC (PRIPHC02).

BACKGROUND

The Report of the 2nd Performance Review of the IPHC (PRIPHC02), IPHC-2019-PRIPHC02-R (adopted on 11 October 2019) is available for download from the IPHC website: https://www.iphc.int/library/documents/post/iphc-2019-priphc02-r-report-of-the-2nd-performance-review-of-the-international-pacific-halibut-commission-priphc02

At the 96th Session of the IPHC Annual Meeting (AM096), the Commission:

> *(para. 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."*
>
> *(para 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."*
>
> *(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."*

During the 6th Special Session of the IPHC (SS06) held on 3 March 2020, the Commission:

> (para. 6) "*The Commission **ENDORSED** the recommendations, priorities, responsibilities, timelines and updates provided at Appendix B, and **AGREED** that these would be reported on at each IPHC meeting.*" (IPHC-2020-SS06-R)

DISCUSSION

The following is a summary of the status of each of the detailed updated provided in Appendix A.

PRIPHC02 Recommendation	Status
Completed and/or annually ongoing	18
In Progress	5
Pending (from Contracting Parties)	2
On-Hold (decision = no action to be taken)	1
Total	**26**

RECOMMENDATION

That the Commission **NOTE** paper IPHC-2024-AM100-05 that provides the Commission with an update on the implementation of the recommendations arising from the 2nd Performance Review of the IPHC (PRIPHC02).

APPENDICES

Appendix A: Table of recommendations arising from the PRIPHC02, including 1) priorities, 2) responsibilities, 3) timeline, and 4) any new updates on status.

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)	N/A	N/A	N/A	**On-Hold:** At this time, the Contracting Parties have indicated that they do not wish to commence the process of updating the IPHC Convention. Thus, this Recommendation is on-hold until a decision is made to reopen it.
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. Commission directive: The Commission **RECOMMENDED** the exploration and implementation of alternate mechanisms to implement international best practices, such as revisions to the IPHC Rules of Procedure, IPHC Financial Regulations and IPHC Fishery Regulations.	N/A High	N/A Commission	N/A 2020-24	**N/A** **Completed & Ongoing** (2020, 2021, 2022, 2023): The IPHC Rules of Procedure (ROP) and the IPHC Financial Regulations (FR) will be periodically updated (at least once every 2 years) and where possible, should accommodate applicable improvements as recommended in the legal review of the IPHC Convention.
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	**Ongoing**: There are three non-Contracting Parties who exploit Pacific halibut: Russia, Japan, and Rep. of Korea. Most recently we have engaged Russian scientists working on Pacific halibut through PICES (https://meetings.pices.int/). We will continue to explore this avenue via PICES, noting that COVID-19 has hindered/delayed interactions to a certain degree.

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
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	**Completed & Ongoing**: 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.
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	**Completed & Ongoing**: The IPHC Secretariat continues to seek ways to ensure broad stakeholder understanding of our work. For the MSAB and associated MSE work, an interactive web-based tool has been developed to provide a user friendly means to explore and understand the utility of MSE and the simulation results arising. See paper **IPHC-2024-AM100-11** for the latest iteration. MSE Explorer tool: https://www.iphc.int/management/science-and-research/management-strategy-evaluation
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	**Completed**: The IPHC Secretariat provided the Commission with revised Rules of Procedure for consideration at AM096, which included a two-term limit. This was adopted by the Commission and is now in force. See **IPHC Rules of Procedure.**

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
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.	High	Commission; IPHC Secretariat	2020-24	**Completed & Ongoing**: The Commission approved peer review of the IPHC stock assessment which was **concluded** in 2019, the IPHC MSE which was concluded on 25 September 2020. See **IPHC-2020-CR-022**. The Commission has indicated its strong support topic-based peer review moving forward.
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	**Completed**: The IPHC Secretariat now includes both time-series' and phase plots of management-related quantities See paper **IPHC-2024-AM100-10** for the latest iteration.

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
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. Commission directive: The Commission **RECOMMENDED** that the IPHC Secretariat, in consultation with the Commission, develop minimum data collection standards for Pacific halibut by scientific observer programs. The intention would be for the Commission to review and approve the minimum standards, and recommend them for implementation by domestic agencies.	N/A High	N/A Contracting Parties	N/A 2020-24	**N/A** **In progress**: The Contracting Parties have yet to engage on this recommendation. See paper: **IPHC-2023-AM099-16.** At IM099 (Dec. 2023) the Commission provided the following update: (IM099, para. 7) The Commission **RECALLED** recommendation 09 from the PRIPHC02 (shown below) and **NOTED** that while there was no current agreement between the Contracting Parties to collectively move this recommendation forward, the Commission would continue discussions to seek common ground. PRIPHC02-Rec.09: *"The Commission RECOMMENDED that the IPHC Secretariat, in consultation with the Commission, develop minimum data collection standards for Pacific halibut by scientific observer programs. The intention would be for the Commission to review and approve the minimum standards, and recommend them for implementation by domestic agencies."*

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.	High	IPHC Secretariat; Commission	2021-24	**Completed**: MSE products, including the evaluation of multi-year (biennial and triennial) management procedures, were delivered to the MSAB017, and are to be presented at AM099 in January 2023. Evaluating multi-year stock assessments was a priority task in the MSE program of work for 2021-2023.
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; Commission	2020-21	**In progress**: ***Next steps***: The Commission to formally adopt a harvest strategy at AM100 or AM101.
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	Commission; IPHC Secretariat	2020-21	**In progress**: See paper **IPHC-2024-AM100-11** for the latest update. ***Next steps***: The Commission to formally adopt a harvest strategy.
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.	Medium	Contracting Parties	2020-24	**Pending**: To be incorporated into the Contracting Party National Reports at each Annual Meeting. Next National Report will be provided by each Contracting Party for the AM100.
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**: To be incorporated into the Contracting Party National Reports at each Annual Meeting. Next National Report will be provided by each Contracting Party for the AM100.

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; NOAA-Fisheries	2022	**Completed**: The IPHC Secretariat passed management of the 2A fishery to NOAA-Fisheries at the end of 2022, following a movement to a longer fishing period. 2023 was the first year that IPHC has not managed the day-to-day operations of the fishery.
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; Contracting Parties	2020	**Ongoing**: 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	**Completed**: The IPHC Secretariat made this request in 2020. Consolidated Contracting Party National Reports are now the standard.
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	**Completed**: IPHC Rules of Procedure (2020) published on 7 February 2020.
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	**Completed**: IPHC Rules of Procedure (2020) published on 7 February 2020. Further amendments were made in 2021.

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	**Completed & Ongoing**: Monitor progress through the annual IPHC meeting cycle and improve as identified. In June of 2022, the SRB made the following noting and recommendation of relevance: SRB020–Rec.05 (para. 36) The SRB **NOTED** the exceptional level of transparency and commitment to the principles of open science represented by the Secretariat's data and code-sharing practices and, therefore, **RECOMMENDED** that the Secretariat consider producing peer-reviewed data report publications, which would (a) enhance outreach to potential external data users and (b) allow for tracking external use of IPHC data and resources.
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, Japan, and Rep. of Korea. 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	**In progress**: The IPHC Secretariat is engaging with other countries harvesting Pacific halibut via PICES as a first step. Known harvesters are Russia, Japan, and Rep. of Korea, with the latter two harvesting very minor levels at the extremity of Pacific halibut distribution in the western Pacific.

REF#	RECOMMENDATION	PRIORITY	RESPONSIBILITY	TIMELINE	UPDATE/STATUS
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	**Completed**: The IPHC Secretariat has developed and implemented a BCP. Periodic review will ensure BC is maintained.
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	**Completed**: The first report of the IPHC Finance and Administration Committee (FAC) was adopted on 4 February 2020, and presented to the Commission at its 96th Session for consideration.
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.	N/A	Commission	N/A	**Completed & Ongoing**: The Commission agreed to keep the two subsidiary bodies separate moving forward.
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	**Completed & Ongoing**: The Commission agreed to keep the two subsidiary bodies separate moving forward, and for them to be enhanced wherever feasible.

INTERNATIONAL PACIFIC HALIBUT COMMISSION 5-YEAR PROGRAM OF INTEGRATED RESEARCH AND MONITORING (2022-26): UPDATES

PREPARED BY: IPHC SECRETARIAT (D. WILSON, J. PLANAS, I. STEWART, A. HICKS, B. HUTNICZAK, AND R. WEBSTER; 18 DECEMBER 2023)

PURPOSE

To provide the Commission with an annual opportunity to comment and amend the IPHC's 5-year Program of Integrated Research and Monitoring (2022-26) (the Plan).

BACKGROUND

Recalling that:

a) the IPHC Secretariat conducts activities to address key issues identified by the Commission, its subsidiary bodies, the broader stakeholder community, and the IPHC Secretariat;

b) the process of identifying, developing, and implementing the IPHC's science-based activities involves several steps that are circular and iterative in nature, but result in clear project activities and associated deliverables;

c) the process includes developing and proposing projects based on direct input from the Commission, the experience of the IPHC Secretariat given its broad understanding of the resource and its associated fisheries, and concurrent consideration by relevant IPHC subsidiary bodies, and where deemed necessary, including by the Commission, additional external peer review;

d) the IPHC Secretariat commenced implementation of the new Plan in 2022 and will keep the Plan under review on an ongoing basis.

Also recalling that an overarching goal of the IPHC 5-year Program of Integrated Research and Monitoring (2022-26) is to promote integration and synergies among the various research and monitoring activities of the IPHC Secretariat in order to improve knowledge of key inputs into the Pacific halibut stock assessment, and Management Strategy Evaluation (MSE) processes, thereby providing the best possible advice for management decision making processes.

The 1st iteration of the Plan was formally presented to the Commission at IM097 in November 2021 (IPHC-2021-IM097-12) for general awareness of the documents ongoing development. At the 98th Session of the IPHC Annual Meeting (AM098) in January 2022, the Commission requested a number of amendments which were subsequently incorporated.

The Plan had already been through two cycles of review and improvement with the Scientific Review Board (SRB).

In 2023, the plan went through two further cycles of review and improvement with the SRB, with amendments being suggested and incorporated accordingly. The current version will move to an annual comment and amendment process at each years' Interim and then Annual Meetings.

DISCUSSION

The Commission should note that:

a) the intention is to ensure that the new integrated plan is kept as a '*living plan*', and is reviewed and updated annually based on the resources available to undertake the work of the Commission (e.g. internal and external fiscal resources, collaborations, internal expertise);

b) the plan focuses on core responsibilities of the Commission; and any redirection provided by the Commission;

c) each year the SRB may choose to recommend modifications to the current Plan, and that any modifications subsequently made would be documented both in the Plan itself, and through reporting back to the SRB and then the Commission.

At the 22nd Session of the Scientific Review Board (SRB022) in June 2023, the SRB provided the following recommendation to the Commission.

> ***International Pacific Halibut Commission 5-year program of integrated research and monitoring (2022-26)***
>
> *SRB022–Rec.01 (para. 15) The SRB **NOTED** the reporting table draft provided by the Contracting Parties (Appendix A of paper IPHC-2023-SRB022-05) and **RECOMMENDED** further modification by adding the following and as shown in Table 1 below:*
>
> *a) New Column: Brief description of the project and how it relates to the core mandate of the Commission;*
>
> *b) Description of the problem being addressed;*
>
> *c) Objective: List of concise objectives (research and how the results will be incorporated);*
>
> *d) Impact scale and timing;*
>
> *e) Interim performance/evaluation metrics.*

At the 2023 Work Meeting of the Commission, the template (provided at Appendix V of the Plan attached) was considered and tentatively agreed to by the Commission.

Other Updates: Minor updates throughout.

5.2.3 Age composition data (both fishery-dependent and fishery-independent)

The annually collected biological samples from commercial fisheries and FISS include otoliths, a crystalline calcium carbonate structure found in the inner ear of fish which growth patterns can be analyzed to estimate the age of fish. Fish age is a key input to stock assessment models that inform management decisions related to fish exploitation. Since inception, the IPHC aged over 1.5 million otoliths manually by trained readers under the stereoscopic microscope.

6.2.3 Age composition data (both fishery-dependent and fishery-independent)

The IPHC Secretariat is looking at options for supplementing current Pacific halibut ageing protocol with automatized ageing that does not require extensive otolith-reader training. The IPHC is investigating the potential use of artificial intelligence (AI) for determining the age of Pacific halibut from images of collected otoliths. The Secretariat is in the process of initializing creation of a database of pictures with expert-provided labels, utilizing previously aged otoliths, and assessing the option for the development of a Convolutional Neural Network (CNN) model specifically designed for image classification to determine Pacific halibut age. The goal is to create an AI-based age determination system that complements traditional methods for reliable fish stock assessment and management advice.

RECOMMENDATION

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-06 which provides the latest iteration of the IPHC 5-year program of Integrated Research and Monitoring (2022-26).

APPENDICES

Appendix A: Updated: IPHC 5-year program of Integrated Research and Monitoring (2022-26)

INTERNATIONAL PACIFIC HALIBUT COMMISSION

5-YEAR PROGRAM OF INTEGRATED RESEARCH AND MONITORING

(2022 - 2026)

INTERNATIONAL PACIFIC

HALIBUT COMMISSION

Commissioners

Canada	United States of America
Paul Ryall	Jon Kurland
Neil Davis	Robert Alverson
Peter DeGreef	Richard Yamada

Executive Director

David T. Wilson, Ph.D.

BIBLIOGRAPHIC ENTRY

IPHC 2023. International Pacific Halibut Commission 5-Year program of integrated research and monitoring (2022-26). Seattle, WA, U.S.A. *IPHC–2023-5YPIRM, 58 pp.*

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ACRONYMS

AM	Annual Meeting
CB	Conference Board
DMR	Discard Mortality Rate
FAC	Finance and Administration Committee
FISS	Fishery-Independent Setline Survey
FSC	First Nations Food, Social, and Ceremonial [fishery]
IM	Interim Meeting
IPHC	International Pacific Halibut Commission
MSAB	Management Strategy Advisory Board
MSE	Management Strategy Evaluation
OM	Operating Model
PAB	Processor Advisory Board
PDO	Pacific Decadal Oscillation
PHMEIA	Pacific halibut multiregional economic impact assessment [model]
QAQC	Quality assurance/quality control
RAB	Research Advisory Board
SHARC	Subsistence Halibut Registration Certificates
SRB	Scientific Review Board
TCEY	Total Constant Exploitation Yield
U.S.A.	United States of America
WM	Work Meeting

DEFINITIONS

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

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EXECUTIVE SUMMARY

An overarching goal of the *IPHC 5-Year Program of Integrated Research and Monitoring (2022-26)* is to promote integration and synergies among the various research and support activities of the IPHC Secretariat in order to improve our knowledge of key inputs into the Pacific halibut stock assessment and Management Strategy Evaluation (MSE) processes, and to provide the best possible advice for management decision-making processes.

Along with the implementation of the short- and medium-term activities contemplated in this *IPHC 5-Year Program of Integrated Research and Monitoring (2022-26)*, and in pursuit of the overarching objective, the IPHC Secretariat will also aim to:

1) undertake cutting-edge research programs in fisheries research in support of Pacific halibut fisheries management;
2) undertake groundbreaking methodological research;
3) undertake applied research;
4) establish new collaborative agreements and interactions with research agencies and academic institutions;
5) promote the international involvement of the IPHC by continued and new participation in international scientific organizations and by leading international science and research collaborations;
6) effectively communicate IPHC research outcomes;
7) incorporate talented students and early researchers in research activities contemplated.

The research and monitoring activities conducted by the IPHC Secretariat are directed towards fulfilling the following four (4) objectives within areas of data collection, biological and ecological research, stock assessment, and Management Strategy Evaluation (MSE). In addition, the IPHC responds to Commission requests for additional inputs to management and policy development which are classified under management support.

The Secretariat's success in implementing the *IPHC 5-Year Program of Integrated Research and Monitoring (2022-26)* will be measured according to the following criteria relevant to the stock assessment, the MSE and for all inputs to IPHC management:

1) Timeliness – was the research conducted, analyzed, published, and provided to the Commission at the appropriate points to be included in annual management decisions?
2) Accessibility – was the research published and presented in such a way that it was available to other scientists, stakeholders, and decision-makers?
3) Relevance – did the research improve the perceived accuracy of the stock assessment, MSE, or decisions made by the Commission?
4) Impact – did the research allow for more precision or a better estimate of the uncertainty associated with information for use in management?
5) Reliability – has the research resulted in more consistent information provided to the Commission for decision-making?

1. Introduction

The International Pacific Halibut Commission (IPHC) is a public international organization so designated via Presidential Executive Order 11059 and established by a Convention between Canada and the United States of America. The IPHC Convention was signed on 2 March 1923, ratified on 21 July 1924, and came into effect on 21 October 1924 upon exchange. The Convention has been revised several times since, to extend the Commission's authority and meet new conditions in the fishery. The most recent change occurred in 1979 and involved an amendment to the 1953 Halibut Convention. The 1979 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 fisheries are conducted, and redefined the role of IPHC in the management of the fishery. Canada does not require specific enabling legislation to implement the protocol.

The basic texts of the Commission are available on the IPHC website: https://www.iphc.int/the-commission, and prescribe the mission of the organization as:

*"..... **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**. ....." IPHC Convention*, Article I, sub-article I, para. 2). The IPHC Convention Area is detailed in Fig. 1.

The IPHC Secretariat, formed in support the Commission's activities, is based in Seattle, WA, U.S.A. As its shared vision, ***the IPHC Secretariat aims to deliver positive economic, environmental, and social outcomes for the Pacific halibut resource for Canada and the U.S.A. through the application of rigorous science, innovation, and the implementation of international best practice.***

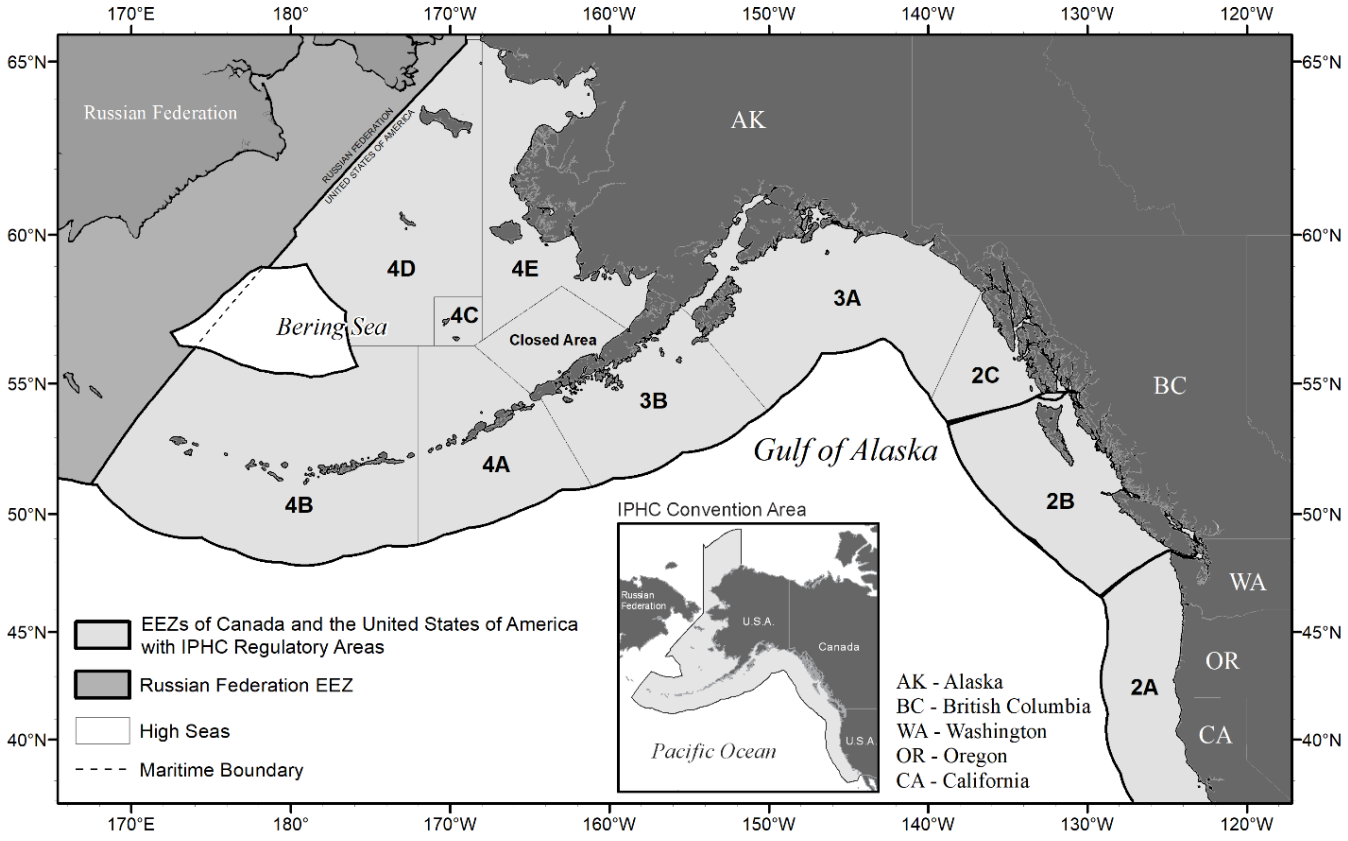

Figure 1. Map of the IPHC Convention Area (map insert) and IPHC Regulatory Areas.

2. Objectives

The IPHC has a long-standing history (since 1923) of collecting data, undertaking research, and stock assessment, devoted to describing and understanding the Pacific halibut (*Hippoglossus stenolepis*) stock and the fisheries that interact with it.

The IPHC Secretariat conducts activities to address key issues identified by the Commission, its subsidiary bodies, the broader stakeholder community, and of course, the IPHC Secretariat itself. The process of identifying, developing, and implementing our science-based activities involves several steps that are circular in nature, but result in clear research activities and associated deliverables. The process includes developing and proposing projects based on direct input from the Commission, the experience of the IPHC Secretariat given our broad understanding of the resource and its associated fisheries, and concurrent consideration by relevant IPHC subsidiary bodies, and where deemed necessary, additional external peer review.

Over the last five years (2017-2021), the research conducted by the IPHC Secretariat has been guided by a 5-Year Biological and Ecosystem Science Research Plan (IPHC–2019–BESRP-5YP) that aimed at improving knowledge on the biology of Pacific halibut in order to improve the accuracy of the stock assessment and in the management strategy evaluation (MSE) process. The IPHC-2019-BESRP-5YP contemplated research activities in five focal areas, namely Migration and Distribution, Reproduction, Growth and Physiological Condition, Discard Mortality Rates and Survival, and Genetics and Genomics. Research activities were highly integrated with the needs of stock assessment and MSE by their careful alignment with biological uncertainties and parameters, and the resulting prioritization (Appendix I). The outcomes of the IPHC-2019-BESRP-5YP have provided key inputs into stock assessment and the MSE process and, importantly, have provided foundational information for the successful pursuit of continuing and novel objectives within the new 5-Year Program of Integrated Research and Monitoring (2022-2026) (5YPIRM) (Appendix I).

The 2nd Performance Review of the IPHC (IPHC-2019-PRIPHC02-R), carried out over the course of 2019, also provided a range of recommendations to the Commission on ways in which it could continue to improve on the quality of scientific advice being provided to the Commission. There were nine (9) specific recommendations as provided below:

> ***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.*

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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.*

The work outlined in this document builds on the previous a 5-Year Biological and Ecosystem Science Research Plan (IPHC–2019–BESRP-5YP), closing completed projects, extending efforts where needed, and adding new avenues in response to new information. Appendix I provides a detailed summary of the previous plan and the status of the work specifically undertaken. Key highlights relevant to the stock assessment and MSE include:

- Completion of the genetic assay for determining sex from tissue samples, processing of commercial fishery samples collected during 2017-2020, inclusion of this information in the 2019 and subsequent stock assessments, and transfer of this effort from research to ongoing monitoring.
- Incremental progress toward population-level sampling and analysis of maturity and fecundity.
- Continued development of the understanding of physiological and environmental mechanisms determining growth for future field application.
- Published estimates of discard mortality rates for use in data processing and management accounting.
- Collection of genetic samples and genome sequencing to provide a basis for ongoing evaluation of stock structure at population-level and finer scales.

All previously described research areas continue to represent critical areas of uncertainty in the stock assessment and thus are closely linked to management performance. The previous 5-year plan was successful in either providing direct new information to the stock assessment or building the foundation for the collection/analysis

of such information in this updated plan. As noted below, some new priorities have emerged, and others have evolved based on the work completed to date. The incorporation of research objectives in the 5YPIRM that address climate change as a factor influencing Pacific halibut biology and ecology as well as fishery performance and dynamics constitutes a timely and relevant contribution towards advancing IPHC-led research to the forefront of fisheries science.

An **overarching goal** of the *IPHC 5-Year Program of integrated research and monitoring (2022-26)* is therefore to promote integration and synergies among the various research and support activities of the IPHC Secretariat in order to improve our knowledge of key inputs into the Pacific halibut stock assessment and MSE processes, in order to provide the best possible advice for management decision-making processes.

Along with the implementation of the short- and medium-term activities contemplated in this *IPHC 5-Year Program of Integrated Research and monitoring (2022-26)*, and in pursuit of the overarching objective, the IPHC Secretariat will also aim to:

1) undertake cutting-edge research programs in fisheries research in support of fisheries management of Pacific halibut;
2) undertake groundbreaking methodological research;
3) undertake applied research;
4) establish new collaborative agreements and interactions with research agencies and academic institutions;
5) promote the international involvement of the IPHC by continued and new participation in international scientific organizations and by leading international science and research collaborations.
6) effectively communicate IPHC research outcomes
7) incorporate talented students and early researchers in research activities contemplated.

The research and monitoring activities conducted by the IPHC Secretariat are directed towards fulfilling the following four (4) **objectives** within areas of data collection, biological and ecological research, stock assessment, and MSE. In addition, the IPHC responds to Commission requests for additional inputs to management and policy development which are classified under management support. The overall aim is to provide a program of integrated research and monitoring (Fig 2):

Research

1) **Stock assessment**: apply the resulting knowledge to improve the accuracy and reliability of the current stock assessment and the characterization of uncertainty in the resultant stock management advice provided to the Commission;
2) **Management Strategy Evaluation (MSE)**: to develop an accurate, reliable, and informative MSE process to appropriately characterize uncertainty and provide for the robust evaluation of the consequences of alternative management options, known as harvest strategies, using defined conservation and fishery objectives;
3) **Biology and Ecology**: identify and assess critical knowledge gaps in the biology and ecology of Pacific halibut within its known range, including the influence of environmental conditions on population and fishery dynamics;

Monitoring

4) **Monitoring**: collect representative fishery dependent and fishery-independent data on the distribution, abundance, biology, and demographics of Pacific halibut through ongoing monitoring activities;

Integrated management support

5) **Additional management-supporting inputs**: respond to Commission requests for any additional information supporting management and policy development.

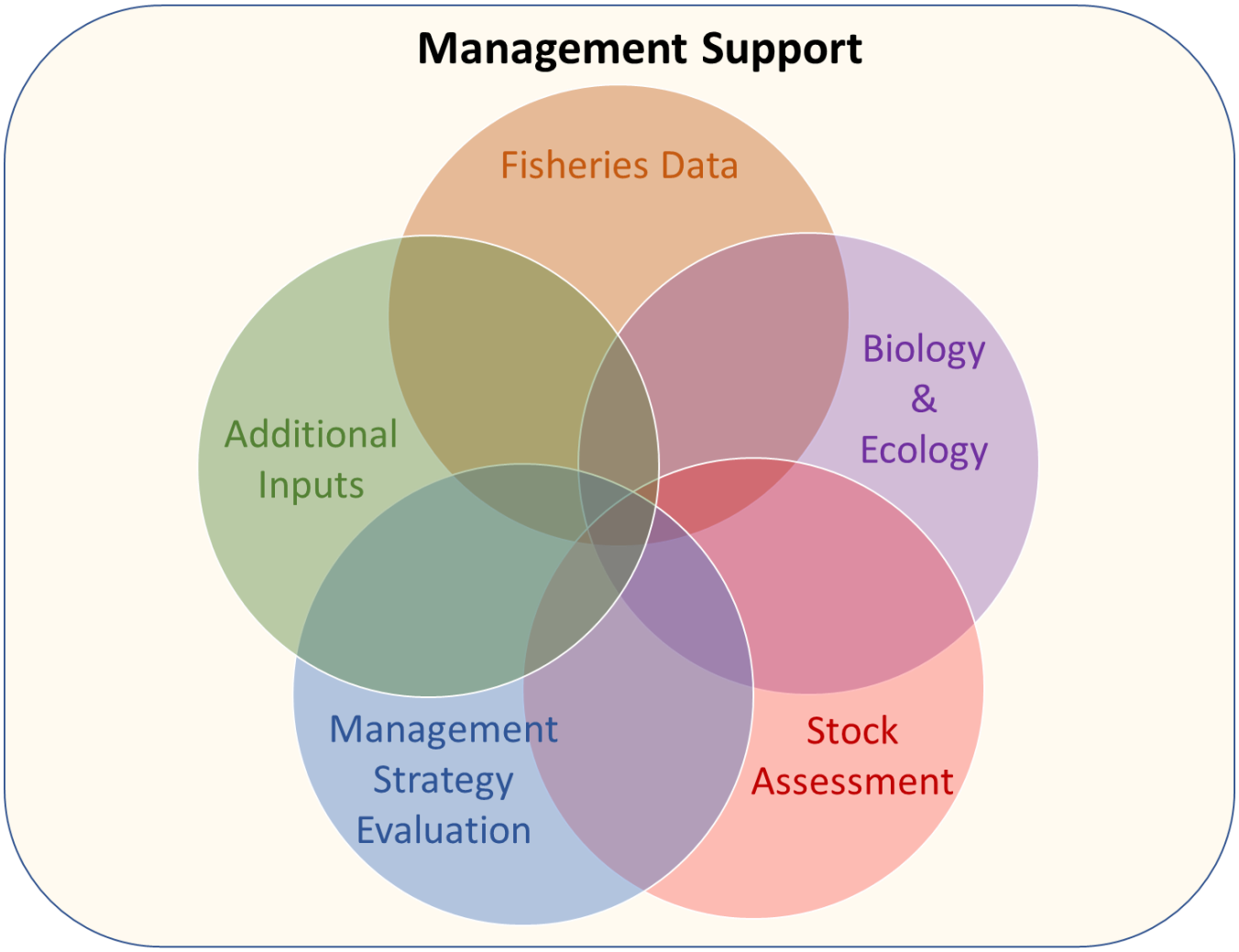

Figure 2. Core areas of the IPHC's program of integrated research and monitoring providing management support.

3. Strategy

The IPHC Secretariat has five (5) enduring strategic goals in executing our mission, including our overarching goal and associated science and research objectives, as articulated in our Strategic Plan (IPHC Strategic Plan (2019-23)): 1) To operate in accordance with international best practice; 2) Be a world leader in scientific excellence and science-based decision making; 3) To foster collaboration (within Contracting Parties and internationally) to enhance our science and management advice; 4) Create a vibrant IPHC culture; and 5) Set the

standard for fisheries commissions globally.

Although priorities and tasking will change over time in response to events and developments, the Strategic Plan provides a framework to standardise our approach when revising or setting new priorities and tasking. The Strategic goals as they apply to the science and research activities of the IPHC Secretariat, will be operationalised through a multi-year tactical activity matrix at the organisational and management unit (Branch) level (Fig. 3). The tactical activity matrix is described in the sections below and has been developed based on the core needs of the Commission, in developing and implementing robust, scientifically-based management decisions on an annual, and multi-year level. Relevant IPHC subsidiary bodies will be involved in project development and ongoing review.

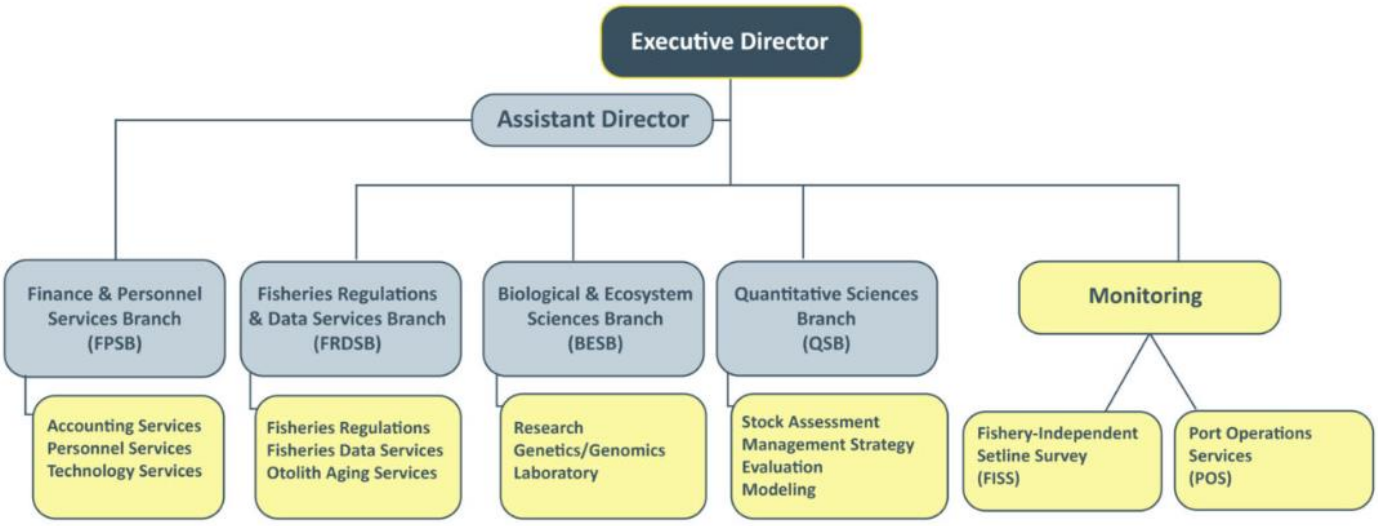

Figure 3. IPHC Secretariat organisation chart (2023).

4. Measures of Success

The Secretariat's success in implementing the *IPHC 5-Year Program of Integrated Research and Monitoring (2022-26)* will be measured according to the following criteria relevant to the stock assessment, the MSE and for all inputs to IPHC management:

1) Timeliness – was the research conducted, analyzed, published, and provided to the Commission at the appropriate points to be included in annual management decisions?
2) Accessibility – was the research published and presented in such a way that it was available to other scientists, stakeholders, and decision-makers?
3) Relevance - did the research improve the perceived accuracy of the stock assessment, MSE or decisions made by the commission?
4) Impact – did the research allow for more precision or a better estimate of the uncertainty associated with information for use in management?
5) Reliability - has research resulted in more consistent information provided to the Commission for decision-making.

4.1 Delivery of specified products

Each project line item will contain specific deliverables that constitute useful inputs into the stock assessment and the management strategy evaluation process, as well as support their implementation in the decision-making

process at the level of the Commission.

4.2 Communication

The IPHC Secretariat will disseminate information about the activities contemplated in the IPHC 5-Year Program of Integrated Research and Monitoring (2022-2026) and the resulting products to Contracting Parties, stakeholders, the scientific community, and the general public through a variety of channels:

1) IPHC website (www.iphc.int);
2) Formal documentation provided for IPHC meetings (Interim and Annual Meetings, Subsidiary Body meetings, etc.);
3) Presentations at national and international scientific conferences;
4) Published reports and peer-reviewed publications (section 4.4);
5) Outreach events;
6) Social media outlets (e.g. Facebook, Twitter, LinkedIn, etc.);
7) Informal presentations and interactions with partners, stakeholders, and decision-makers at varied times and venues when needed.

4.3 External research funding

The Secretariat has set a funding goal of at least 20% of the funds for this program to be sourced from external funding bodies on an annual basis. Continuing the successful funding-recruitment strategy adopted during the previous 5-yr research plan (IPHC–2019–BESRP-5YP) (Appendix I), the Secretariat will identify and select external funding opportunities that are timely and that aim at addressing key research objectives (as outlined in Appendix II and summarized in Appendix V) that have important implications for stock assessment and the MSE process. The IPHC Secretariat has the necessary expertise to propose novel and important research questions to funding agencies and to recruit external collaborators from research agencies and universities as deemed necessary. The IPHC Secretariat will continue to capitalize on the strong analytical contributions of quantitative scientists to the development of biological research questions within the framework of research projects funded by external as well as internal funding sources.

4.4 Peer-reviewed journal publication

Publication of research outcomes in peer-reviewed journals will be clearly documented and monitored as a measure of success. This may include single publications at the completion of a particular project, or a series of publications throughout the project as well as at its completion. Each sub-project shall be published in a timely manner and shall be submitted no later than 12 months after the end of the research. In the sections that follow, the expected publications from each research stream and cross-stream are defined.

5. Core focal areas – Background

The goals of the main activities of the *5-Year program of integrated research and monitoring (2022-26)* are integrated across the organisation, involving 1) monitoring (fisheries-dependent and –independent data collection), and 2) research (biological, ecological), modelling (FISS and stock assessment), and MSE, as outlined in the following sub-sections. These components are closely linked to one another, and all feed into management decision-making (Fig. 4). Additionally, management-supporting information constitute a range of additional decision-making drivers within and beyond IPHC's current research and monitoring programs. The current program builds on the outcomes and experiences of the Commission arising from the implementation of the 2017-21 5-Year Biological and Ecosystem Science Research Plan (IPHC–2019–BESRP-5YP), and which is summarized in Appendix I.

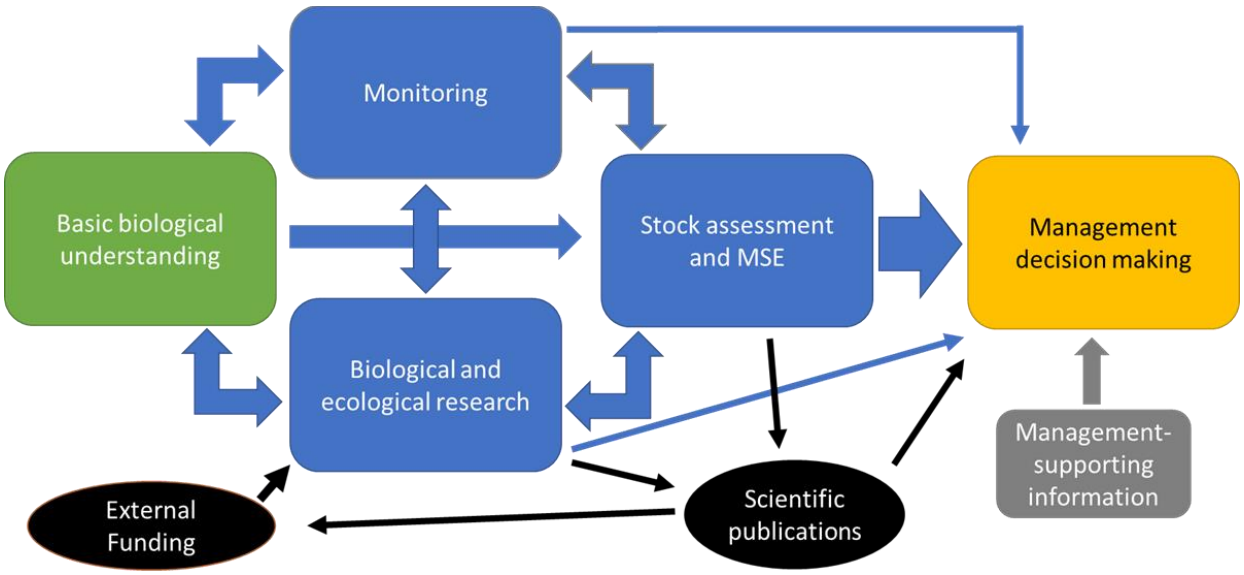

Figure 4. Flow of information from basic biological understanding of the Pacific halibut resource, through IPHC research components (monitoring, biological and ecological research, stock assessment, and MSE) to management decision-making. Management-supporting information (grey) constitute a range of additional decision-making drivers within and beyond IPHC's current research and monitoring programs. Arrows indicate the strength (size of the arrow) and direction of information exchange. Also identified (in black) are the external links from funding and scientific publications which supplement the IPHC's internal process.

5.1 Research

5.1.1 Stock Assessment

Focal Area Objective	To improve accuracy and reliability of the current stock assessment and the characterization of uncertainty in the resultant stock management advice provided to the Commission.
IPHC Website portal	https://www.iphc.int/management/science-and-research/stock-assessment

The IPHC conducts an annual stock assessment, using data from the fishery-independent setline survey (FISS), the commercial Pacific halibut and other fisheries, as well biological information from its research program. The assessment includes the Pacific halibut resource in the IPHC Convention Area, covering the Exclusive Economic Zones 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.

The 2021 stock assessment relied on an ensemble of four population dynamics models to estimate the probability distributions describing the current stock size, trend, and demographics. The ensemble is designed to capture both uncertainty related to the data and stock dynamics (due to estimation) as well as uncertainty related to our understanding of the way in which the Pacific halibut stock functions and is best approximated by a statistical model (structural uncertainty).

Stock assessment results are used as inputs for harvest strategy calculations, including mortality projection tables for the upcoming year that reflect the 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 stock assessment research priorities have been subdivided into four categories:

1) Assessment data collection and processing;
2) technical development;
3) biological inputs; and
4) fishery yield.

It is important to note that ongoing monitoring, including the annual FISS and directed commercial landings sampling programs is not considered research and is therefore not included in this research priority list despite the critical importance of these collections. These are described in the sections below.

5.1.2 Management Strategy Evaluation (MSE)

Focal Area Objective	To develop an accurate, reliable, and informative MSE process to appropriately characterize uncertainty and provide for the robust evaluation of the consequences of alternative management options, known as harvest strategies, using defined conservation and fishery objectives.
IPHC Website portal	https://www.iphc.int/management/science-and-research/management-strategy-evaluation

Management Strategy Evaluation (MSE) is a process to evaluate the consequences of alternative management options, known as harvest strategies. MSE uses a simulation tool to determine how alternative harvest strategies perform given a set of pre-defined fishery and conservation objectives, taking into account the uncertainties in the system and how likely candidate harvest strategies are to achieve the chosen management objectives.

MSE is a simulation technique based on modelling each part of a management cycle. The MSE uses an operating model to simulate the entire population and all fisheries, factoring in management decisions, the monitoring program, the estimation model, and potential ecosystem effects using a closed-loop simulation.

Undertaking an MSE has the advantage of being able to reveal the trade-offs among a range of possible management decisions. Specifically, to provide the information on which to base a rational decision, given harvest strategies, preferences, and attitudes to risk. The MSE is an essential part of the process of developing, evaluating and agreeing to a harvest strategy.

The MSE process involves:

- Defining fishery and conservation objectives with the involvement of stakeholders and managers;
- Identifying harvest strategies (a.k.a. management procedures) to evaluate;
- Simulating a Pacific halibut population using those harvest strategies;
- Evaluating and presenting the results in a way that examines trade-offs between objectives;
- Applying a chosen harvest strategy for the management of Pacific halibut;
- Repeating this process in the future in case of changes in objectives, assumptions, or expectations.

There are many tasks that would continue to improve the MSE framework and the presentation of future results to the Commission. The tasks can be divided into five general categories, which are common to MSE in general:

1. **Objectives**: The goals and objectives that are used in the evaluation.
2. **Management Procedures (MPs)**: Specific, well-defined management procedures that can be coded in the MSE framework to produce simulated Total Constant Exploitation Yields (TCEY) for each IPHC Regulatory Area.
3. **Framework**: The specifications and computer code for the closed-loop simulations including the operating model and how it interacts with the MP.
4. **Evaluation**: The performance metrics and presentation of results. This includes how the performance metrics are evaluated (e.g. tables, figures, and rankings), presented to the Commission and its subsidiary bodies, and disseminated for outreach.
5. **Application**: Specifications of how an MP may be applied in practice and re-evaluated in the future, including responses to exceptional circumstances.

All these categories provide inputs and outputs of the MSE process, but the Framework category benefits most from the integration of biological and ecosystem research because the operating model, the simulation of the monitoring program, the estimation model, and potential ecosystem effects are determined from this knowledge.

Outcomes of the MSE process will not only inform the Commission on trade-offs between harvest strategies and assist in choosing an optimal strategy for management of the Pacific halibut resource but will inform the prioritization of research activities related to fisheries monitoring, biological and ecological research, stock assessment, and fishery socioeconomics.

5.1.3 Biology and Ecology

Focal Area Objective	To identify and assess critical knowledge gaps in the biology and ecology of Pacific halibut within its known range, including the influence of environmental conditions on population and fishery dynamics.
IPHC Website portal	https://www.iphc.int/management/science-and-research/biological-and-ecosystem-science-research-program-bandesrp

Since its inception, the IPHC has had a long history of research activities devoted to describe and understand the biology of the Pacific halibut. At present, the main objectives of the Biological and Ecosystem Science Research Program 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 in the biology of the Pacific halibut and its fishery; and 3) apply the resulting knowledge to reduce uncertainty in current stock assessment models.

The primary biological research activities at the IPHC that follow Commission objectives and that are selected for their important management implications are identified and described in the proposed IPHC 5-Year Program of Integrated Research and Monitoring (2022-2026). An overarching goal of the 5-Year Program of Integrated Research and Monitoring (2022-2026) is to promote integration and synergies among the various research activities led by the IPHC to improve our knowledge of key biological inputs that feed into the stock assessment and MSE process. The goals of the main research activities of the 5-Year Program of Integrated Research and Monitoring (2022-2026) are therefore aligned and integrated with the IPHC stock assessment and MSE processes. The IPHC Secretariat conducts research activities to address key biological issues based on the IPHC Secretariat's own input as well as input from the IPHC Commissioners, stakeholders and particularly from specific subsidiary

bodies to the IPHC, including the Scientific Review Board (SRB) and the Research Advisory Board (RAB).

The biological research activities contemplated in the 5-Year Program of Integrated Research and Monitoring (2022-2026) and their specific aims are detailed in Section 6. Overall, the biological research activities at the IPHC aim to provide information on 1) factors that influence the biomass of the Pacific halibut population (e.g. distribution and movement of fish among IPHC Regulatory Areas, growth patterns and environmental influences on growth in larval, juvenile and adult fish, drivers of changes in size-at-age); 2) the spawning (female) population (e.g. reproductive maturity, skipped spawning, reproductive migrations); and 3) resulting changes in population dynamics. Furthermore, the research activities of IPHC also aim to provide information on the survival of regulatory-discarded Pacific halibut in the directed fisheries with the objective to refine current estimates of discard mortality rates and develop best handling practices, and reduce whale depredation and Pacific halibut bycatch through gear modifications and through a better understanding of behavioral and physiological responses of Pacific halibut to fishing gear. The proposed timeline of activities and of staffing and funding indicators are provided in Appendix VI and Appendix VII, respectively.

5.2 Monitoring

Focal Area Objective	To collect fishery-dependent and fishery-independent data on the distribution, abundance, and demographics of Pacific halibut, as well as other key biological data, through ongoing monitoring activities.
IPHC Website portal	***Fishery-dependent data:*** • https://www.iphc.int/datatest/commercial-fisheries • https://www.iphc.int/data/datatest/pacific-halibut-recreational-fisheries-data • https://www.iphc.int/datatest/subsistence-fisheries • https://www.iphc.int/data/time-series-datasets ***Fishery-independent data:*** • https://www.iphc.int/management/science-and-research/fishery-independent-setline-survey-fiss • https://www.iphc.int/data/datatest/fishery-independent-setline-survey-fiss • https://www.iphc.int/datatest/data/water-column-profiler-data

5.2.1 Fishery-dependent data

The IPHC estimates all Pacific halibut removals taken in the IPHC Convention Area and uses this information in its yearly stock assessment and other analyses. The data are compiled by the IPHC Secretariat and include data from Federal and State agencies of each Contracting Party. Specific activities in this area are described below.

5.2.1.1 Directed commercial fisheries data

The IPHC Secretariat collects logbooks, otoliths, tissue samples, and associated sex-length-weight data from directed commercial landings coastwide (Fig. 5). A sampling rate is determined for each port by IPHC Regulatory Area. The applicable rate is calculated from the current year's mortality limits and estimated percentages of weight of fish landed, and estimated percentages of weight sampled in that port to allow for collection of the target number of biological samples by IPHC Regulatory Area. An example of the data collected and the methods used are provided in the annually updated directed commercial sampling manual (e.g. IPHC Directed Commercial Landings Sampling Manual 2022). Directed commercial fishery landings are recorded by the Federal and State agencies of each Contracting Party and summarized each year by the IPHC. Discard mortality for the directed

commercial fishery is currently estimated using a combination of research survey (U.S.A.) and observer data (Canada).

5.2.1.2 Non-directed commercial discard mortality data

The IPHC accounts for non-directed commercial discard mortality by IPHC Regulatory Area and sector. Non-directed commercial discard mortality estimates are provided by State and Federal agencies of each Contracting Party and compiled annually for use in the stock assessment and other analyses.

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. 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 or other sources are used to generate estimates of non-directed commercial discard mortality in the few cases where fishery observations are unavailable. Non-directed fisheries off Canada British Columbia are monitored and 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.

5.2.1.3 Subsistence fisheries data

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). Subsistence fishery removals of Pacific halibut, including estimated subsistence discard mortality, are provided by State and Federal agencies of each Contracting Party, estimated, and compiled annually for use in the stock assessment and other analysis.

5.2.1.4 Recreational fisheries data

Recreational removals of Pacific halibut, including estimated recreational discard mortality, are provided by National/State agencies of each Contracting Party, estimated, and compiled annually for use in the stock assessment and other analysis.

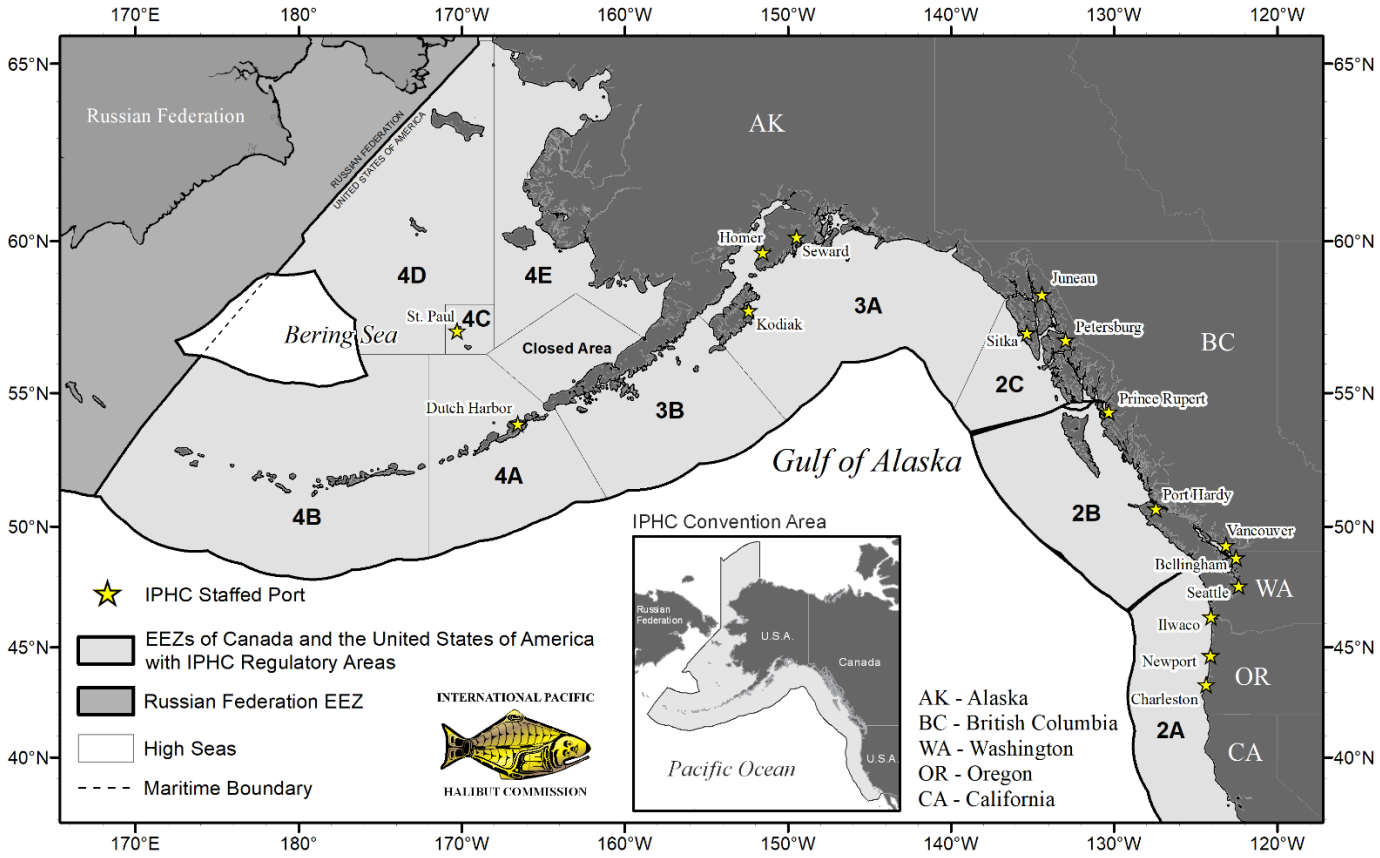

Figure 5. Ports where the IPHC has sampled directed commercial landings throughout the fishing period in recent years (note: ports sampled may change from year-to-year for operational reasons).

5.2.2 Fishery-independent data

Data collection and monitoring activities aimed at providing a standardised time-series of biological and ecological data that is independent of the fishing fleet.

5.2.2.1 Fishery-independent setline survey (FISS)

The IPHC Fishery-Independent Setline Survey (FISS) provides catch-rate information and biological data on Pacific halibut that are independent of the fishery. These data, collected using standardized methods, bait, and gear, are used to estimate the primary index of population abundance used in the stock assessment. The FISS is restricted to the summer months but encompasses the commercial fishing grounds in the Pacific halibut fishery, and almost all known Pacific halibut habitat in Convention waters outside the Bering Sea. The standard FISS grid totals 1,890 stations (Fig. 6). Biological data collected on the FISS (e.g. the length, weight, age, and sex of Pacific halibut) are used to monitor changes in biomass, growth, and mortality. In addition, records of non-target species caught during FISS operations provide insight into bait competition, and serve as an index of abundance over time, making them valuable to the potential management and avoidance of non-target species. Environmental data are also collected including water column temperature, salinity, dissolved oxygen, pH, and chlorophyll concentration to help identify the conditions in which the fish were caught, and these data can serve as co-variates in space-time modeling used in the stock assessment. An example of the data collected and the methods used are provided in the annually updated FISS sampling manual (e.g. IPHC FISS Sampling Manual 2022).

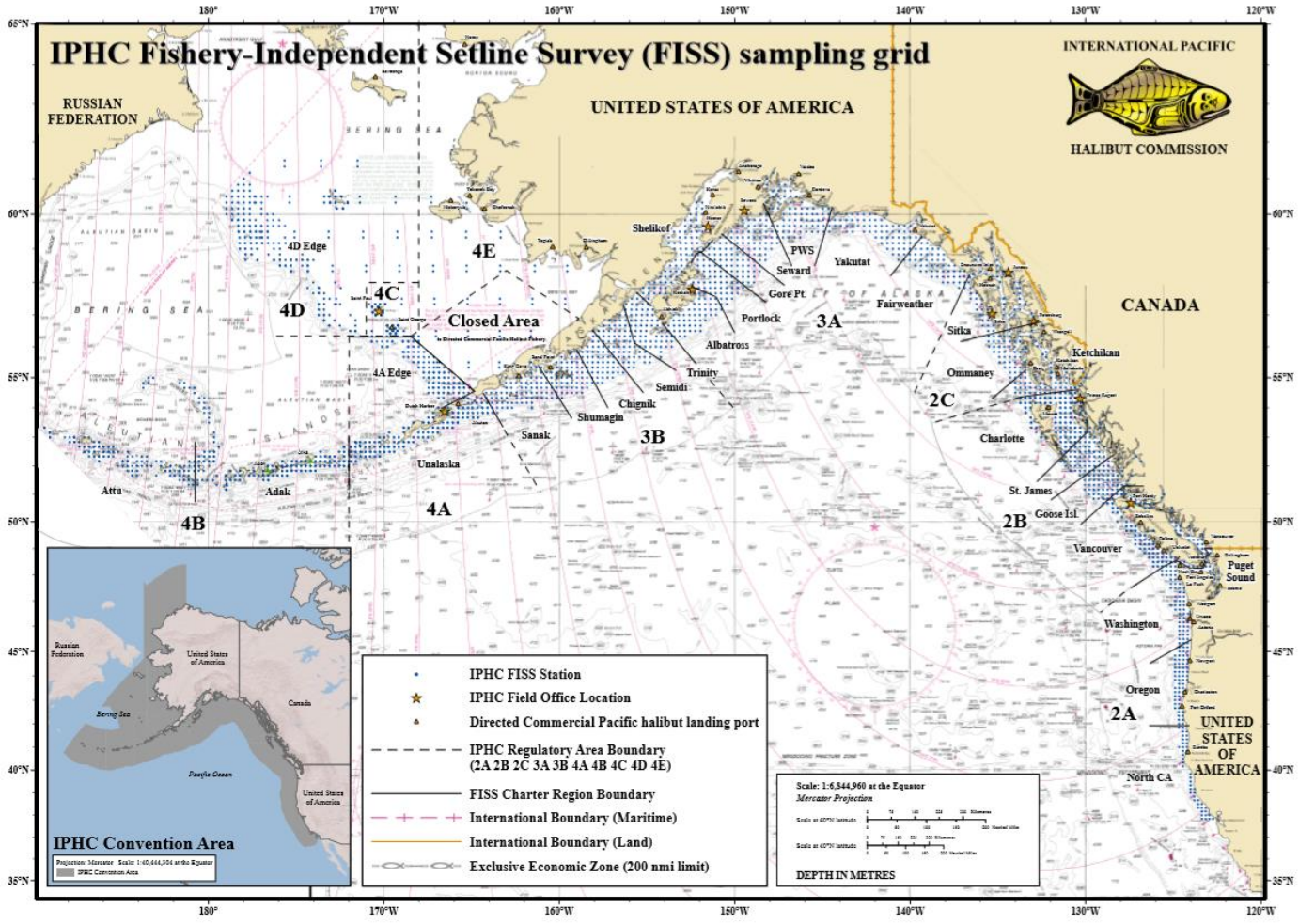

Figure 6. IPHC Fishery-Independent Setline Survey (FISS) with full sampling grid shown.

Quality control and sampling rate estimations: Following a program of planned FISS expansions from 2014-19, a process of rationialisation of the FISS was undertaken. The goal was to ensure that, given constraints on resources available for implementing the FISS, station selection was such that density indices would be estimated with high precision and low potential for bias. An annual design review process has been developed during which potential FISS designs for the subsequent three years are evaluated according to precision and bias criteria. The resulting proposed designs and their evaluation are presented for review at the June Scientific Review Board (SRB) meetings and potentially modified following SRB input before presentation to the Commissioners at the Work Meeting and Interim Meeting. Annual biological sampling rates for each IPHC Regulatory Area are calculated based on the previous year's catch rates and an annual target of 2000 sampled fish (with 100 additional archive samples).

5.2.2.2 Fishery-independent Trawl Survey (FITS)

The IPHC has participated routinely in the NOAA Fisheries trawl surveys operating in the Bering Sea (Fig. 7, annually since 1998), Aleutian Islands (intermittently since 1997) and Gulf of Alaska (since 1996). The information collected from Pacific halibut caught on these surveys, together with data from the IPHC Fishery-Independent Setline Survey (FISS) and commercial Pacific halibut data, are used directly in estimating indices of abundance and in the stock assessment and to monitor population trends, growth/size, and to supplement understanding of recruitment, distribution, and age composition of young Pacific halibut.

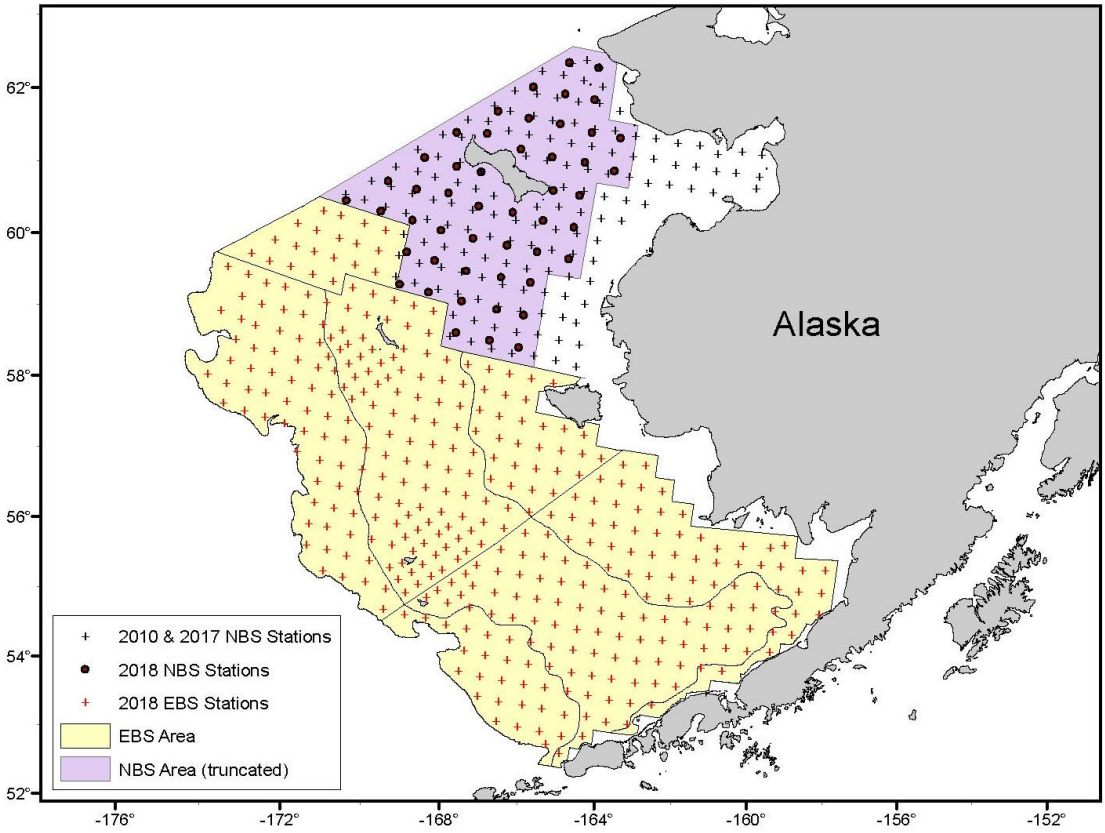

Figure 7. Sampling station design for the 2018 NOAA Bering Sea bottom trawl survey. Black dots are stations sampled in the 2018 "rapid-response" Northern Bering Sea trawl survey and black plus signs are stations sampled in standardized Northern Bering Sea trawl survey.

5.2.2.3 Norton Sound trawl survey

The Alaska Department of Fish and Game's annual Norton Sound trawl survey data contribute to the estimation of Pacific halibut indices of abundance in IPHC Regulatory Area 4E.

5.2.3 Age composition data (both fishery-dependent and fishery-independent)

The annually collected biological samples from commercial fisheries and FISS include otoliths, a crystalline calcium carbonate structure found in the inner ear of fish which growth patterns can be analyzed to estimate the age of fish. Fish age is a key input to stock assessment models that inform management decisions related to fish exploitation. Since inception, the IPHC aged over 1.5 million otoliths manually by trained readers under the stereoscopic microscope.

5.3 Management-supporting information

Successful fisheries management requires rigorous application of the scientific method of problem solving in the development of strategic alternatives and their evaluation on the basis of objectives that integrate ecosystem and human dynamics across space and time into management decision-making (Lane and Stephenson, 1995). This underscores the importance of a holistic understanding of a broad range of factors to deliver on the Commission's objective to develop the stocks of Pacific halibut to the levels that permit the optimum yield from the fishery over time. Management-supporting information beyond IPHC's current research and monitoring programs relate to,

among others, socioeconomic considerations, community development, political constraints, and operational limitations.

Responding to the Commission's "*desire for more comprehensive economic information to support the overall management of the Pacific halibut resource in fulfillment of its mandate*" (economic study terms of reference adopted at FAC095 and endorsed at AM095 in 2019), between 2019 and 2021 the IPHC conducted a socioeconomic study. The study's core product, Pacific halibut multiregional economic impact assessment (PHMEIA) model, describes economic interdependencies between sectors and regions to bring a better understanding of the role and importance of the Pacific halibut resource to regional economies of Canada and the United States of America (see project report). The model details the within-region production structure of the Pacific halibut sectors (fishing, processing, charter) and cross-regional flows of economic benefits. The model also accounts for economic activity generated through sectors that supply fishing vessels, processing plants, and charter businesses with inputs to production, by embedding Pacific halibut sectors into the model of the entire economy of Canada and the USA. The PHMEIA model fosters stakeholders' better understanding of a broad scope of regional impacts of the Pacific halibut resource. The results highlight that the harvest stage accounts for only a fraction of economic activity that would be forgone if the resource was not available to fishers in the Pacific Northwest. Moreover, the study informs on the vulnerability of communities to changes in the state of the Pacific halibut stock throughout its range, highlighting regions particularly dependent on economic activities that rely on Pacific halibut. Leveraging multiple sources of socioeconomic data, the project provides complementary input for designing policies with desired effects depending on regulators' priorities which may involve balancing multiple conflicting objectives. A good understanding of the localized effects is pivotal to policymakers who are often concerned about community impacts, particularly in terms of impact on employment opportunities and households' welfare.

The economic impact assessment is supplemented by an analysis of the formation of the price paid for Pacific halibut products by final consumers (end-users) that is intended to provide a better picture of Pacific halibut contribution to the gross domestic product (GDP) along the entire value chain, from the hook-to-plate. This supplemental material is available in IPHC's Pacific halibut market analysis.

6. Core focal areas – Planned and opportunistic activities (2022-2026)

Research at IPHC can be classified as "use-inspired basic research" (Stokes 1997) which combines knowledge building with the application of existing and emerging knowledge to provide for the management of Pacific halibut. The four core focal areas: stock assessment, management strategy evaluation, management supporting information, and biology & ecology, all interact with each other as well as with fisheries monitoring activities in the IPHC program of integrated research and monitoring. Progress and knowledge building in one focal area influences and informs application in other core focal areas, also providing insight into future research priorities. The circular feedback loop is similar to the scientific method of observing a problem, creating a hypothesis, testing that hypothesis through research and analysis, drawing conclusions, and refining the hypothesis.

The IPHC Secretariat has been working with IPHC advisory bodies, such as the Scientific Review Board (SRB), and the Commission to conduct scientific research in a way that utilizes the scientific method. Problems are often identified by an advisory body or Commission and hypotheses are developed by the IPHC Secretariat. Research is reviewed by the SRB and refined hypotheses are presented to advisory bodies and the Commission. This process occurs via an annual schedule of meetings, as shown in Fig. 8. In May, an MSE informational session may be held if there is significant progress in the MSE such that it would be useful to prepare stakeholders for the Management Strategy Advisory Board (MSAB) meeting in October. Recommendations related to the MSE, and development of a harvest strategy directed to the Commission are a result of the MSAB meeting. The SRB holds two meetings each year: one in June where requests are typically directed to IPHC Secretariat, and one in September where recommendations are made to the Commission. The June SRB meeting has a focus on research;

the September meeting represents a final check of science products to be presented to the Commission for use in management. The Research Advisory Board (RAB) meets in November to discuss ongoing research, provide guidance and recommend new research projects. The Work Meeting (WM) is held in September and is a working session with IPHC Secretariat and the Commission to prepare for the Interim Meeting (IM) held in November and the Annual Meeting (AM) held in January. Outcomes from the AM include mortality limits (coastwide and by IPHC Regulatory Area), directed fishery season dates, domestic regulations, and requests and recommendations for the IPHC Secretariat. In conjunction with the AM are meetings of the Finance and Administration Committee (FAC), the Conference Board (CB), and the Processor Advisory Board (PAB). The Commission may also hold Special Sessions (SS) throughout the year to take up and make decisions on specific topics.

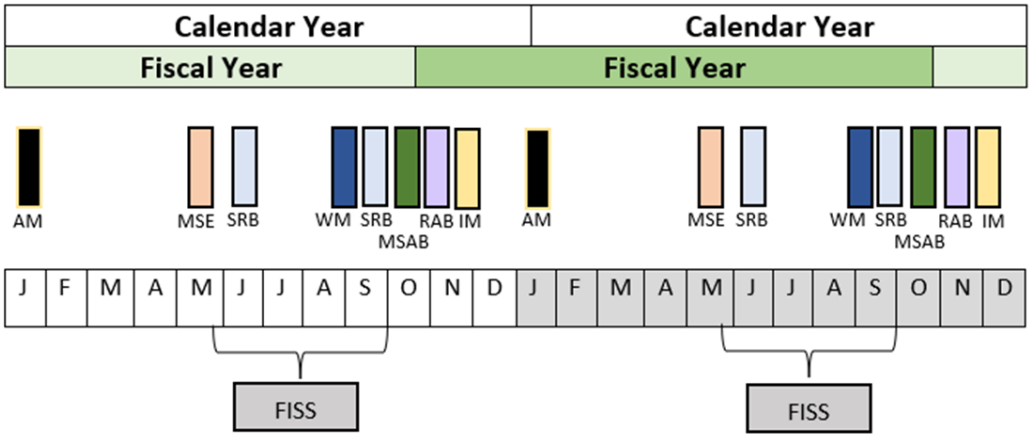

Figure 8. The typical IPHC annual meeting schedule with the calendar year and fiscal year shown. The meetings, shown in the middle row are: Annual Meeting where the Commission makes many final decisions for that year (AM), an MSE informational session (MSE), Scientific Review Board meetings (SRB), the Commission Work Meeting (WM), the Management Strategy Advisory Board meeting (MSAB), the Research Advisory Board Meeting (RAB), and the Interim Meeting (IM). The annual FISS schedule is also shown.

In addition to the annual meeting process at IPHC, individual core focal areas of research may identify and prioritize research for other core focal areas. For example, stock assessment research often identifies gaps in the knowledge of Pacific halibut biology and ecology, which then identifies priority research for the Biology and Ecology core area. Vice versa, basic biological and ecological research can identify concepts that could be better understood and result in improved implementation in any of the core areas. Furthermore, Management Strategy Evaluation can often be used to identify priority research topics for any core areas by simulation testing to identify research that may have the largest benefit to improving the management of Pacific halibut.

The top priorities of research for various categories in each of the core focal areas are provided below. The top priorities are a subset of the potential research topics in each core focal area. More exhaustive and up-to-date lists of research topics, that may extend beyond a five-year timeframe, can be found in recent meeting documents related to each core focal area.

6.1 Research

6.1.1 Stock Assessment

Within the four assessment research categories, the following topics have been identified as top priorities in order to focus attention on their importance for the stock assessment and management of Pacific halibut. A brief narrative is provided here to highlight the specific use of products from these studies in the stock assessment.

6.1.1.1 Stock Assessment data collection and processing

6.1.1.1.1 Commercial fishery sex-ratio-at-age via genetics

Commercial fishery sex-ratio information has been found to be closely correlated with the absolute scale of the population estimates in the stock assessment and has been identified as the greatest source of uncertainty since 2013. With only four years (2017-20) of commercial sex-ratio-at-age information available for the 2021 stock assessment, the annual genetic assay of fin clips sampled from the landings remains critically important. When the time series grows longer, it may be advantageous to determine the ideal frequency at which these assays need to be conducted. Development of approaches to use archived otoliths, scales or other samples to derive historical estimates (if possible) could provide valuable information on earlier time-periods (with differing fishery and biological properties), and therefore potentially reconcile some of the considerable historical uncertainty in the present stock assessment. This assessment priority directly informs *6.1.3.2 Reproduction* as described below.

6.1.1.1.2 Whale depredation accounting and tools for avoidance

Whale depredation currently represents a source of unobserved and unaccounted-for mortality in the assessment and management of Pacific halibut. A logbook program has been phased in over the last several years, in order to record whale interactions observed by commercial harvesters. Estimation of depredation mortality, from logbook records and supplemented with more detailed data and analysis from the FISS represents a first step in accounting for this source of mortality; however, such estimates will likely come with considerable uncertainty. Reduction of depredation mortality through improved fishery avoidance and/or catch protection would be a preferable extension and/or solution to basic estimation. As such, research to provide the fishery with tools to reduce depredation is considered a closely-related high priority. This assessment priority directly informs *6.1.3.4 Mortality and Survival Assessment* as described below.

6.1.1.2 Stock Assessment technical development

6.1.1.2.1 Maintaining coordination with the MSE

The stock assessment and MSE operating models have been developed in close coordination, in order to identify plausible hypotheses regarding the processes governing Pacific halibut population dynamics. Important aspects of Pacific halibut dynamics include recruitment (possibly related to extrinsic environmental factors in addition to spawning biomass), size-at-age, movement/migration and spatial patterns in fishery catchability and selectivity. Many approaches developed as part of the tactical stock assessment have been explored in the MSE operating model, and conversely, the MSE operating model has highlighted areas of data uncertainty or alternative hypotheses for exploration in the assessment (e.g. movement rates). Although these two modelling efforts target differing objectives (tactical vs. strategic) continued coordination is essential to ensure that the stock assessment and the MSE represent the Pacific halibut similarly and provide consistent and useful advice for tactical and strategic decision-making.

6.1.1.2.2 Data weighting

The stock assessment currently relies on iterative "Francis" weighting of the age compositional data using a multinomial likelihood formulation (Francis 2011) based on the number of samples available in each year. Exploration of a stronger basis for input sample sizes through analysis of sampling design, estimation of sample weighting and alternative likelihoods may all provide for a more stable approach and a better description of the associated uncertainty.

6.1.1.2.3 Environmental covariates to recruitment

The two long time-series models included in the stock assessment ensemble allow for the Pacific Decadal

Oscillation (PDO; Mantua et al. 1997) to be a binary covariate indicating periods of higher or lower average recruitment. This relationship has been observed to be consistent since its development over 20 years ago (Clark et al 1999) and is re-estimated in each year's stock assessment models. With additional years of data, evaluation of the strength of this relationship, as compared to other metrics of the PDO (e.g., annual deviations, running averages) or other indicators of NE Pacific Ocean productivity should be undertaken in order to provide the best estimates and projections of Pacific halibut recruitment and to provide for alternative hypotheses for use in the MSE. This assessment priority partially informs *6.1.3.2 Reproduction* as described below.

6.1.1.2.4 'Leading' parameter estimation

Stock assessments are generally very sensitive to the estimates of leading parameters (stock-recruitment parameters, natural mortality, sex-specific dynamics, etc.). For Pacific halibut some of these are fully integrated into the estimation uncertainty (average unexploited recruitment), or partially integrated (e.g. estimation of natural mortality in two of the four models). As time-series of critically informative data sources like the FISS and the sex-ratio of the commercial landings grow longer it may be possible to integrate additional leading parameters directly in the assessment models and/or include them as nested models within the ensemble.

6.1.1.3 Stock Assessment biological inputs

6.1.1.3.1 Maturity, skip-spawning, and fecundity

Management of Pacific halibut is currently based on reference points that rely on relative female spawning biomass. Therefore, any changes to the understanding of reproductive output – either across age/size (maturity), over time (skip spawning) or as a function of body mass (fecundity) are crucially important. Each of these components directly affects the annual reproductive output estimated in the assessment. Ideally, the IPHC would have a program in place to monitor each of these three reproductive processes over time and use that information in the estimation of the stock-recruitment relationship, and the annual reproductive output relative to reference points. This would reduce the potential for biased time-series estimates created by non-stationarity in these traits (illustrated via sensitivity analyses in several of the recent assessments). However, at present we have only historical time-aggregated estimates of maturity and fecundity schedules. Therefore, the current research priority is to first update our estimates for each of these traits to reflect current environmental and biological conditions. After current stock-wide estimates have been achieved, a program for extending this information to a time-series via transition from research to monitoring can be developed. This assessment priority directly informs *6.1.3.2 Reproduction* as described below.

6.1.1.3.2 Stock structure of IPHC Regulatory Area 4B relative to the rest of the convention area

The current stock assessment and management of Pacific halibut assume that IPHC Regulatory Area 4B is functionally connected with the rest of the stock, i.e., that recruitment from other areas can support harvest in Area 4B and that biomass in Area 4B can produce recruits that may contribute to other Areas. Tagging (Webster et al. 2013) and genetic (Drinan et al. 2016) analyses have indicated the potential for Area 4B to be demographically isolated. An alternative to current assessment and management structure would be to treat Area 4B separately from the rest of the coast. This would not likely have a large effect on the coastwide stock assessment as Area 4B represents only approximately 5% of the surveyed stock (Stewart and Webster 2022). However, it would imply that the specific mortality limits for Area 4B could be very important to local dynamics and should be separated from stock-wide trends. Therefore, information on the stock structure for Area 4B has been identified as a top priority. This assessment priority directly informs *6.1.3.1 Migration and Population Dynamics* as described below.

6.1.1.3.3 Meta-population dynamics (connectivity) of larvae, juveniles, and adults

The stock assessment and current management procedure treat spawning output, juvenile Pacific halibut abundance, and fish contributing to the fishery yield as equivalent across all parts of the Convention Area. Information on the connectivity of these life-history stages could be used for a variety of improvements to the assessment and current management procedure, including: investigating recruitment covariates, structuring spatial assessment models, identifying minimum or target spawning biomass levels in each Biological Region, refining the stock-recruitment relationship to better reflect source-sink dynamics and many others. Spatial dynamics have been highlighted as a major source of uncertainty in the Pacific halibut assessment for decades and will continue to be of high priority until they are better understood. This assessment priority directly informs *6.1.3.1 Migration and Population Dynamics* as described below.

6.1.1.4 Stock Assessment fishery yield

6.1.1.4.1 Biological interactions with fishing gear

In 2020, 16% of the total fishing mortality of Pacific halibut was discarded (Stewart et al. 2021). Discard mortality rates can vary from less than 5% to 100% depending on the fishery, treatment of the catch and other factors (Leaman and Stewart 2017). A better understanding of the biological underpinnings for discard mortality could lead to increased precision in these estimates, avoiding potential bias in the stock assessment. Further, improved biological understanding of discard mortality mechanisms could allow for reductions in this source of fishing mortality, and thereby increased yield available to the fisheries. This assessment priority directly informs *6.1.3.4 Mortality and Survival Assessment* as described below.

6.1.1.4.2 Guidelines for reducing discard mortality

Much is already known about methods to reduce discard mortality, in non-directed fisheries as well as the directed commercial and recreational sectors. Promotion and adoption of best handling practices could reduce discard mortality, lead to greater retained yield, and reduce the potential uncertainty associated with large quantities of estimated mortality due to discarding. This assessment priority directly informs *6.1.3.4 Mortality and Survival Assessment* as described below.

Outside of the four general assessment categories, the IPHC has recently considered adding close-kin genetics (e.g., Bravington et al. 2016) to its ongoing research program (see section 6.1.3.1). Close-kin mark-recapture can potentially provide estimates of the absolute scale of the spawning output from the Pacific halibut population. This type of information can be fit directly into the stock assessment, and if estimated with a reasonable amount of precision, even a single data point could substantially reduce the uncertainty in the scale of total population estimates. Further, close-kin genetics may provide independent estimates of total mortality (and therefore natural mortality conditioned on catch-at-age), relative fecundity-at-age, and the spatial dynamics of spawning and recruitment. All of these quantities could substantially improve the structure of the current assessment and reduce uncertainty. Data collection of genetic samples from 100% of the sampled commercial landings has been in place since 2017 (as part of the sex-ratio monitoring) and from the FISS since 2021. The genetic analysis required to produce data allowing the estimation of reproductive output and other population parameters from close-kin mark-recapture modelling is both complex and expensive, and it could take several years for this project to get fully underway. This five-year plan should consider a pilot evaluation, such that a broader study could be undertaken in the future, providing the likely results would meet the Commission's objectives and prove possible given financial constraints. Research related to close-kin genetics would be pursued under *6.1.3.1 Migration and Population Dynamics* as described below.

6.1.2 Management Strategy Evaluation

MSE priorities have been subdivided into three categories: 1) biological parameterisation, 2) fishery parameterization, and 3) technical development. Research provides specifications for the MSE simulations, such as inputs to the Operating Model (OM), but another important outcome of the research is to define the range of plausibility to include in the MSE simulations as a measure of uncertainty. The following topics have been identified as top priorities.

6.1.2.1 MSE Biological and population parameterization

6.1.2.1.1 Distribution of life stages and stock connectivity

Research topics in this category will mainly inform parameterization of movement in the OM, but will also provide further understanding of Pacific halibut movement, connectivity, and the temporal variability. This knowledge may also be used to refine specific MSE objectives to reflect reality and plausible outcomes. Research under Section 6.1.3.1 will inform this MSE priority.

This research includes examining larval and juvenile distribution which is a main source of uncertainty in the OM that is currently not fully incorporated. Outcomes will assist with conditioning the OM, verify patterns simulated from the OM, and provide information to develop reasonable sensitivity scenarios to test the robustness of MPs.

Also included in this number one priority is stock structure research, especially regarding IPHC Regulatory Area 4B. The dynamics of this IPHC Regulatory Area are not fully understood and it is useful to continue research on the connectivity of IPHC Regulatory Area 4B with other IPHC Regulatory Areas.

Finally, genomic analysis of population size is also included in this ranked category because that would help inform development of the OM as well as the biological sustainability objective related to maintaining a minimum spawning biomass in each IPHC Regulatory Area. An understanding of the spatial distribution of population size will help to inform this objective as well as the OM conditioning process.

6.1.2.1.2 Spatial spawning patterns and connectivity between spawning populations

An important parameter that can influence simulation outcomes is the distribution of recruitment across Biological Regions. Continued research in this area will improve the OM and provide justification for parameterising temporal variability. Research includes assigning individuals to spawning areas and establishing temporal and spatial spawning patterns. Outcomes may also provide information on recruitment strength and the relationship with environmental factors. For example, recent work by Sadorus et al (2020) used a biophysical and spatio-temporal models to examine connectivity across the Bering Sea and Gulf of Alaska. Furthermore, close-kin mark-recapture (Bravington et al. 2016) may provide insights into spatial relationships between juveniles and adults as well as abundance in specific regions. Research under Sections 6.1.3.1 and 6.1.3.2 will inform this MSE priority.

6.1.2.1.3 Understanding growth variation

Changes in the average weight-at-age of Pacific halibut is one of the major drivers of changes in biomass over time. The OM currently simulates temporal changes in weight-at-age via a random autocorrelated process which is unrelated to population size or environmental factors. Ongoing research in drivers related to growth in Pacific halibut will help to improve the simulation of weight-at-age. Research under Section 6.1.3.3 will inform this MSE priority.

6.1.2.1.4 MSE fishery parameterization

The specifications of fisheries and their parameterizations involved consultation with Pacific halibut stakeholders but some aspects of those parameterizations benefit from targeted research. One specific example is knowledge of discarding and discard mortality rates in directed and non-directed fisheries. Discard mortality can be a significant source of fishing mortality in some IPHC Regulatory Areas and appropriately modelling that mortality will provide a more robust evaluation of MPs. Research under Sections 6.1.3.4 and 6.1.3.5 will inform this MSE priority.

6.1.2.2 MSE technical development

Technical improvements to the MSE framework will allow for rapid development of alternative operating models and efficient simulation of management strategies for future evaluation. Coordination with the technical development of the stock assessment (Section 6.1.1.2.1) is necessary to ensure consistent assumptions and hypotheses for tactical (i.e. stock assessment) and strategic (i.e. MSE) models. Investigations done in the stock assessment will inform the stock assessment, which will then be informed by investigations using the closed-loop simulation framework. Multi-year assessments may allow for additional opportunity to coordinate between stock assessment and MSE.

6.1.2.2.1 Alternative migration scenarios

Including alternative migration hypotheses in the MSE simulations will assist in identifying management procedures that are robust to this uncertainty. This exploration will draw on general research on the movement and migration of Pacific halibut, observations from FISS and fisheries data, and outcomes of the stock assessment. Identification of reasonable hypotheses for the movement of Pacific halibut is essential to the robust investigation of management procedures. Research under Section 6.1.3.1 will inform this MSE priority.

6.1.2.2.2 Realistic simulations of estimation error

Closed loop simulation uses feedback from the management procedure to update the population in the projections. The management procedure consists of data collection, an estimation model, and harvest rules; currently IPHC uses a stock assessment as the estimation model. Future development of an efficient simulation process to mimic the stock assessment will more realistically represent the current management process. This involves using multiple estimation models to represent the ensemble and appropriately adding data and updating those models in the simulated projections. Improvements to the current MSE framework include adding additional estimation models to better represent the ensemble stock assessment, ensuring that the simulated estimation accurately represent the stock assessment now and, in the future, and speeding up the simulation process.

6.1.2.2.3 Incorporate additional sources of implementation uncertainty

Implementation uncertainty consists of three subcategories: 1) decision-making uncertainty, 2) realized uncertainty, and 3) perceived uncertainty. Decision-making uncertainty is the difference between mortality limits determined from the management procedure and those adopted by the Commission. This uncertainty is currently not implemented in the MSE framework but has been requested by the SRB and the independent peer review of the MSE. Realized uncertainty is the difference between the mortality limit set by the Commission and the actual mortality realized by the various fisheries. This type of uncertainty is currently partially implemented in the MSE framework. Finally, perceived uncertainty is the difference between the realized mortality and the estimated mortality limits from the various fisheries, which would be used in the estimation model. This third type of implementation uncertainty has not been implemented in the MSE framework. Implementing decision-making uncertainty is a priority for the MSE and will assist in understanding the performance of management procedures when they may not be followed exactly.

6.1.2.3 MSE Program of Work for 2021–2023

Following the 11th Special Session of the IPHC, an MSE program of work for 2021–2023 was developed. Seven tasks were identified that pertained to further developments of the MSE framework, evaluation of alternative MPs, and improvements in evaluation and presentation of results. Table 1 lists these tasks and provides a brief description. Additional details can be found in the program of work available on the MSE webpage.

Table 1. Tasks recommended by the Commission at SS011 (IPHC-2021-SS011-R para 7) for inclusion in the IPHC Secretariat MSE Program of Work for 2021–23.

ID	Category	Task	Deliverable
F.1	Framework	Develop migration scenarios	Develop OMs with alternative migration scenarios
F.2	Framework	Implementation variability	Incorporate additional sources of implementation variability in the framework
F.3	Framework	Develop more realistic simulations of estimation error	Improve the estimation model to more adequately mimic the ensemble stock assessment
F.5	Framework	Develop alternative OMs	Code alternative OMs in addition to the one already under evaluation.
M.1	MPs	Size limits	Identification, evaluation of size limits
M.3	MPs	Multi-year assessments	Evaluation of multi-year assessments
E.3	Evaluation	Presentation of results	Develop methods and outputs that are useful for presenting outcomes to stakeholders and Commissioners

6.1.2.4 Potential Future MSE projects

Management Strategy Evaluation is an iterative process where new management procedures may be evaluated, current management procedures may be re-evaluated under different assumptions, and the understanding of the population, environment, and fisheries may be updated with new information stemming from the stock assessment and biological/ecological research. The current Program of Work (Table 1) focuses on two elements of Management Procedures, but in the future other elements may be of interest, such as distribution procedures. The research being done now will inform the development of the MSE in the future to ensure a robust evaluation of any management procedure.

6.1.3 Biology and Ecology

Capitalizing on the outcomes of the previous 5-year plan (IPHC–2019–BESRP-5YP) (Appendix I), the IPHC Secretariat has identified five research areas that will provide key inputs for stock assessment and the MSE process. In addition to linking genetics and genomics with migration and distribution studies in the newly coined area of Migration and Population Dynamics, the IPHC Secretariat has incorporated a novel research area on Fishing Technology. A series of key objectives for each of the five research areas have been identified that integrate with specific needs for stock assessment and MSE processes and that are ranked according to their relevance (Appendix II). To further describe the IPHC Secretariat's rationale for establishing research priorities, a ranked list of biological uncertainties and parameters for stock assessment and the MSE process and their links to research activities and outcomes derived from the IPHC 5-Year Program of Integrated Research and Monitoring (2022-2026) are provided in Appendix III and Appendix IV.

6.1.3.1 Migration and Population Dynamics

Genetic and genomic studies aimed at improving current knowledge of Pacific halibut migration and population dynamics throughout all life stages in order to achieve a complete understanding of stock structure and distribution across the entire distribution range of Pacific halibut in the North Pacific Ocean and the biotic and abiotic factors that influence it (specifically excluding satellite tagging). Specific objectives in this area include:

- Improve current knowledge of the genetic structure of the Pacific halibut population through the use of state-of-the-art low-coverage whole genome resequencing approaches. Establishment of genetic signatures of spawning sites.
- Improve our understanding of the mechanisms and magnitude of larval connectivity in the North Pacific Ocean. Identification of environmental and biological predictors of larval abundance and recruitment.
- Improve our understanding of spawning site contributions to nursery/settlement areas in relation to year-class, recruit survival and strength, and environmental conditions in the North Pacific Ocean. Measure of genetic diversity of Pacific halibut juveniles from the eastern Bering Sea and the Gulf of Alaska.
- Improve our understanding of the relationship between nursery/settlement origin and adult distribution and abundance over temporal and spatial scales. Genomic assignment of individuals to source populations and assessment of distribution changes.
- Integrate analyses of Pacific halibut connectivity and distribution changes by incorporating genomic approaches.
- Improve estimates of population size, migration rates among geographical regions, and demographic parameters (e.g. fecundity-at-age, survival rate), through the application of close-kin mark-recapture-based approaches.
- Improve our understanding of the influences of oceanographic and environmental variation on connectivity, population structure and adaptation at a genomic level using seascape genomics approaches.
- Exploration and development of alternative methods for aging Pacific halibut based on genetic analyses of DNA methylation patterns in tissues (fin clips).
- Exploration of methods for individual identification based on computer-assisted tail image matching systems as an alternative for traditional mark and recapture tagging.

6.1.3.2 Reproduction

Studies aimed primarily at addressing two critical issues for stock assessment analysis based on estimates of female spawning biomass: 1) the sex ratio of the commercial catch and 2) maturity estimations. Specific objectives in this area include:

- Continued improvement of genetic methods for accurate sex identification of commercial landings from fin clips and otoliths in order to incorporate recent and historical sex-at-age information into the stock assessment process.
- Improve our understanding of the temporal progression of reproductive development and gamete production during an entire annual reproductive cycle in female and male Pacific halibut.
- Update current maturity-at-age estimates.
- Provide estimates of fecundity-at-age and fecundity-at-size.
- Investigate the possible presence of skip spawning in Pacific halibut females.

- Improve accuracy in current staging criteria of maturity status used in the field.
- Investigate possible environmental effects on the ontogenetic establishment of the phenotypic sex and their influence on sex ratios in the adult Pacific halibut population.
- Improve our understanding of potential temporal and spatial changes in maturity schedules and spawning patterns in female Pacific halibut and possible environmental influences.
- Improve our understanding of the genetic basis of variation in age and/or size-at-maturity, fecundity, and spawning timing, by conducting genome-wide association studies.

6.1.3.3 Growth

Studies aimed at describing the role of factors responsible for the observed changes in size-at-age and at evaluating growth and physiological condition in Pacific halibut. Specific objectives in this area include:

- Evaluate possible variation in somatic growth patterns in Pacific halibut as informed by physiological growth markers, physiological condition, energy content and dietary influences.
- Investigate the effects of environmental and ecological conditions that may influence somatic growth in Pacific halibut. Evaluate the relationship between somatic growth and temperature and trophic histories in Pacific halibut through the integrated use of physiological growth markers.
- Improve our understanding of the genetic basis of variation in somatic growth and size-at-age by conducting genome-wide association studies.

6.1.3.4 Mortality and Survival Assessment

Studies aimed at providing updated estimates of discard mortality rates (DMRs) for Pacific halibut in the guided recreational fisheries and at evaluating methods for reducing mortality of Pacific halibut. Specific objectives in this area include:

- Provide information on the types of fishing gear and fish handling practices used in the Pacific halibut recreational (charter) fishery as well as on the number and size composition of discarded Pacific halibut in this fishery.
- Establish best handling practices for reducing discard mortality of Pacific halibut in recreational fisheries.
- Investigate new methods for improved estimation of depredation mortality from marine mammals.

6.1.3.5 Fishing Technology

Studies aimed at developing methods that involve modifications of fishing gear with the purpose of reducing Pacific halibut depredation and bycatch. Specific objectives in this area include:

- Investigate new methods for whale avoidance and/or deterrence for the reduction of Pacific halibut depredation by whales (e.g. catch protection methods).
- Investigate physiological and behavioral responses of Pacific halibut to fishing gear in order to reduce bycatch.

6.2 Monitoring

The Commission's extensive monitoring programs include both direct data collection and coordination with domestic agencies to produce both fishery-dependent and fishery-independent information on the stock and fishery trends, and other information. These critical sources include estimates of fishing mortality from all

fisheries encountering Pacific halibut, biological sampling from these fisheries as well as catch-rates and biological sampling from longline and trawl surveys. Monitoring data provide the basis for stock assessment and MSE analysis, many biological research studies, and some inputs directly to the decision-making process (Figure 4). While not the primary focus of this 5-year plan, a basic summary of the components led by the IPHC and those that are provided by domestic agencies is provided below.

6.2.1 Fishery-dependent data

Data collection and monitoring activities aimed at providing standardised time-series of mortality, fishery, and biological data from both direct target fisheries as well as fisheries that incidentally catch Pacific halibut. Directed commercial fisheries data are managed by IPHC. Non-directed commercial discard mortality data, subsistence fisheries data, and recreational fisheries data are managed by Contracting Party domestic agencies.

6.2.1.1 Directed commercial fisheries data

6.2.1.2 Annually review the spatial distribution of sampling effort among ports, data collection methods, sampling rates, and quality assurance/quality control (QAQC) processes, including in-season review of port sampling activities

Ensure current data collection efforts meet current and future needs of stock assessment, MSE and management. Collaborate and coordinate with other Secretariat functions to develop methods and procedures for incorporating promising research results into long-term monitoring program. The IPHC relies on domestic and Tribal agency programs to report annual mortality from incidental catches in non-directed commercial fisheries, catches from subsistence fisheries, and catches from recreational fisheries. Non-directed commercial discard mortality data

Annually collaborate with observer programs and other partners to ensure robust data collection and sampling, QAQC processes, and reporting of incidental catch and mortality, as well as biological sampling.

6.2.1.3 Subsistence fisheries data

Annually collaborate with Tribal, State and Federal agencies of each Contracting Party to ensure high quality data collection, sampling, and reporting in the subsistence fisheries in Canada and the United States of America.

6.2.1.4 Recreational fisheries data

Annually collaborate with National/State agencies of each Contracting Party to ensure and validate high quality data and reporting of recreational fishery mortality estimates and biological data.

6.2.2 Fishery-independent data

Data collection and monitoring activities aimed at providing a standardised time-series of biological and ecological data that is independent of the fishing fleet.

6.2.2.1 Fishery-independent setline survey (FISS)

An annual review process for the FISS station design has been developed (Fig. 9) and is expected to continue in coming years. This process involves scientific review of proposed FISS designs by the Scientific Review Board and includes input from stakeholders prior to review and approval of designs by the Commissioners.

Direct weighing of Pacific halibut has been integrated into the annual FISS sampling since 2019 and will continue into the future to ensure accurate estimation of WPUE and other weight-derived quantities. Sample rates for genetic monitoring will need to be determined for future sampling. Sampling rates of otoliths for aging, archive otoliths and tagged fish will continue to be reviewed annually to ensure the data needs of the IPHC stock assessment and research program are met. Annual FISS sampler training and data QAQC (including at point of

data collection and during post-sampling review) will ensure high quality data from the FISS program. Procedures are reviewed annually.

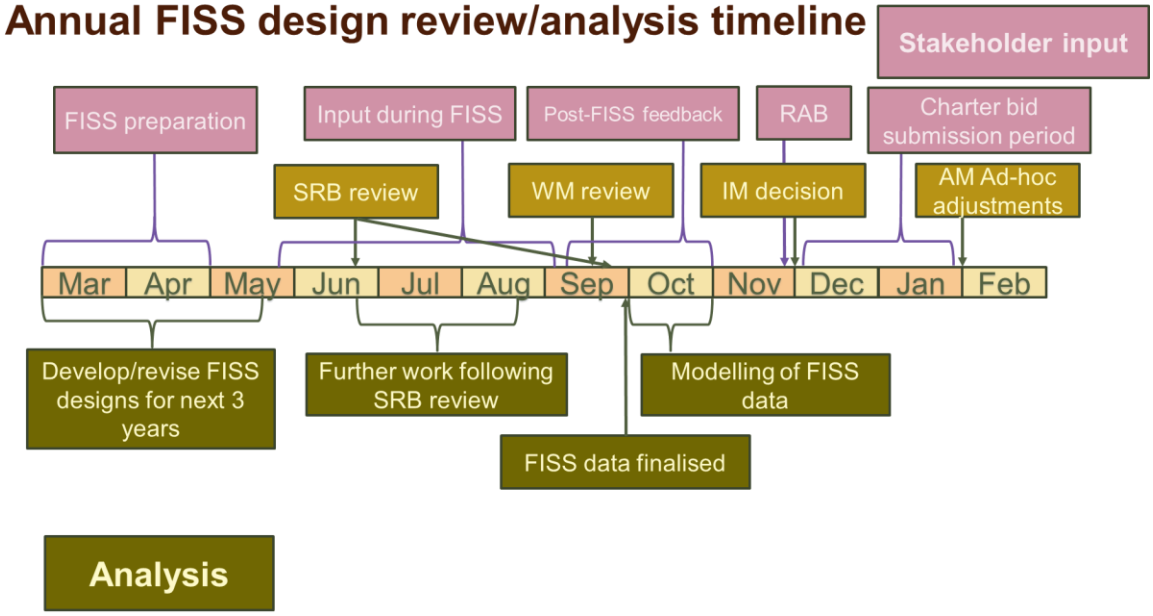

Figure 9. Timeline of annual FISS design review process.

6.2.2.2 Fishery-independent Trawl Survey (FITS)

The IPHC will continue to collaborate with NMFS on sampling procedures for Pacific halibut on the placement of an IPHC sampler onboard a survey vessel for the collection of biological data.

6.2.3 Age composition data (both fishery-dependent and fishery-independent)

The IPHC Secretariat is looking at options for supplementing current Pacific halibut ageing protocol with automatized ageing that does not require extensive otolith-reader training. The IPHC is investigating the potential use of artificial intelligence (AI) for determining the age of Pacific halibut from images of collected otoliths. The Secretariat is in the process of initializing creation of a database of pictures with expert-provided labels, utilizing previously aged otoliths, and assessing the option for the development of a Convolutional Neural Network (CNN) model specifically designed for image classification to determine Pacific halibut age. The goal is to create an AI-based age determination system that complements traditional methods for reliable fish stock assessment and management advice.

6.3 Potential of integrating human dynamics into management decision-making

The evolution of modern fisheries management is taking a transformative turn, emphasizing the integration of human dynamics into decision-making processes. As our world becomes more interconnected through globalization, understanding the intricate human dimension of the fisheries sector is emerging as a critical aspect of sustainable resource management. This forward-looking approach seeks to proactively address challenges while capitalizing on new opportunities.

In a global marketplace where local and imported products compete for consumer attention, vulnerability to disruptions, as evidenced by the COVID-19 pandemic (OECD 2020), has highlighted the need for adaptable strategies embracing the broader picture encompassing external influences. Recent IPHC's socioeconomic study underlines the far-reaching impacts of such dynamics, showcasing the income fluctuations experienced by

households dependent on Pacific halibut during the pandemic. Acknowledging these complexities, there is a growing realization of the need for expanding the scope of management-supporting information the IPHC provides beyond stock condition.

The question of how small remote communities can capitalize on the high prices that the final customers are paying for premium seafood products demands innovative thinking. In 2021, fresh Alaskan Pacific halibut fillets routinely sold for USD 24-28 a pound, and often more, in downtown Seattle (e.g. USD 38 at Pike Place Market). Pacific halibut dishes at the restaurants typically sell for USD 37-43 for a dish including a 6oz fish portion. The IPHC's socioeconomic study detailed the geography of impacts of the Pacific halibut fisheries, providing a coherent picture of the exposure of fisheries-dependent households by location to changes in resource availability, but paying closer attention to quantifying leakage of economic benefits from communities strongly involved in fisheries, highlighted that the local earnings often do not align with how much fishing occurs within the community. This suggests the need for research focused on how to operationalize social equity in the context of the globalized market dynamics and the pursuit of stock sustainability.

In parallel, the accelerating impacts of climate change is placing fisheries at the forefront of environmental challenges. The rapid increase in water temperature off the coast of Alaska in 2014-16, termed *the blob*, exemplifies the changes that disrupt ecosystems and fisheries (Cheung and Frölicher 2020), and may have a long-term impact on Pacific halibut distribution. The consequences may include shifts in the distribution of benefits, but possibly go further, affecting the stability of agreements over allocation of a shared resource. Research on decision quality under fast-progressing climate-induced changes to stock distribution emerges as an avenue for impactful work.

Conflicting objectives among stakeholders regarding the use of limited resource in the context of globalization, calls for social equity and climate change are a major challenge of decision-making in fisheries management. Integrating approaches aimed at understanding the human dynamics and external factors with stock assessment and MSE can assist fisheries in bridging the gap between the current and the optimal performance without compromising the stock biological sustainability. For example, socioeconomic performance metrics presented alongside already developed biological/ecological performance metrics would supplement IPHC's portfolio of tools for assessing policy-oriented issues (as requested by the Commission, IPHC-2021-AM097-R, AM097-Req.02) and support decision-making. Moreover, continuing investment in understanding the human dimension of Pacific halibut fishing can also inform on other drivers such as human behavior or human organization that affect the dynamics of fisheries, and thus contribute to improved accuracy of the stock assessment and the MSE (Lynch et al.2018). As such, it can contribute to research integration at the IPHC and provide a complementary resource for the development of harvest control rules.

Lastly, Pacific halibut value is also in its contribution to the diet through subsistence fisheries and importance to the traditional users of the resource. To native people, traditional fisheries constitute a vital aspect of local identity and a major factor in cohesion. One can also consider the Pacific halibut's existence value as an iconic fish of the Pacific Northwest. Recognizing and adopting such an all-encompassing definition of the Pacific halibut resource contribution, the IPHC echoes a broader call to include the human dimension into the research on the impact of management decisions, as well as changes in environmental or stock conditions.

7. Amendment

The intention is to ensure the plan is kept as a '*living plan'*, that is reviewed and updated annually based on the resources available to undertake the work of the Commission (e.g. internal and external fiscal resources, collaborations, internal expertise). The IPHC Secretariat is committed to ensuring an exceptional level of transparency and commitment to the principles of open science.

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APPENDICES

Appendix I: Outcomes of the IPHC 5-Year Biological and Ecosystem Science Research Plan (2017-21)

Appendix II: Biological research areas in the 5-Year Program of Integrated Research and Monitoring (2022-2026) and ranked relevance for stock assessment and management strategy evaluation

Appendix III: List of ranked research priorities for stock assessment

Appendix IV: List of ranked research priorities for management strategy evaluation

Appendix V: Proposed schedule of outputs

Appendix VI: Proposed schedule with funding and staffing indicators

APPENDIX I

Outcomes of the IPHC 5-Year Biological and Ecosystem Science Research Plan (2017-21) (IPHC–2019–BESRP-5YP)

A. Outcomes by Research Area:

1. Migration and Distribution.

1.1. Larval and juvenile connectivity and early life history studies. Planned research outcomes: improved understanding of larval and juvenile distribution.

Main results:

- Larval connectivity between the Gulf of Alaska and the Bering Sea occurs through large island passes across the Aleutian Island chain.
- The degree of larval connectivity between the Gulf of Alaska and the Bering Sea is influenced by spawning location.
- Spawning locations in the western Gulf of Alaska significantly contribute Pacific halibut larvae to the Bering Sea.
- Pacific halibut juveniles counter-migrate from inshore settlement areas in the eastern Bering Sea into the Gulf of Alaska through Unimak Pass.
- Elemental signatures of otoliths from juvenile Pacific halibut vary geographically at a scale equivalent to IPHC regulatory areas.

Publications:

Sadorus, L.; Goldstein, E.; Webster, R.; Stockhausen, W.; Planas, J.V.; Duffy-Anderson, J. Multiple life-stage connectivity of Pacific halibut (*Hippoglossus stenolepis*) across the Bering Sea and Gulf of Alaska. *Fisheries Oceanography*. 2021. 30:174-193. doi: https://doi.org/10.1111/fog.12512.

Loher, T., Bath, G. E., Wischniowsky, S. The potential utility of otolith microchemistry as an indicator of nursery origins in Pacific halibut (*Hippoglossus stenolepis*) in the eastern Pacific: the importance of scale and geographic trending. *Fisheries Research*. 2021. 243: 106072. https://doi.org/10.1016/j.fishres.2021.106072.

Links to 5-Year Research Plan (2022-2026):

- Evaluate the level of genetic diversity among juvenile Pacific halibut in the Gulf of Alaska and the Bering sea due to admixture.
- Assignment of individual juvenile Pacific halibut to source populations.

Integration with Stock Assessment and MSE: The relevance of research outcomes from activities in this research area for stock assessment is in the improvement of estimates of productivity. Research outcomes will be used to generate potential recruitment covariates and to inform minimum spawning biomass targets by Biological Region and represent one of the top three biological inputs into stock assessment. The relevance of these research outcomes for MSE is in the improvement of the parametrization of the Operating Model and represent the top ranked biological input into the MSE.

2. Reproduction.

2.1 Sex ratio of commercial landings. Planned research outcomes: sex ratio information.

Main results:

- Establishment of TaqMan-based genetic assays for genotyping Pacific halibut in the IPHC Biological Laboratory.
- Sex ratio information for the 2017-2020 commercial landings.
- Transfer of genotyping efforts for sex identification to IPHC monitoring program.

Links to 5-Year Research Plan (2022-2026):

- Monitoring effort.

2.2 Histological maturity assessment. Planned research outcomes: updated maturity schedule.

Main results:

- Oocyte developmental stages have been characterized and fully described in female Pacific halibut for the first time.
- Oocyte developmental stages have been used for the classification of female developmental stages and to be able to characterize female Pacific halibut as group synchronous with determinate fecundity.
- Female developmental stages have been used for the classification of female reproductive phases and to be able to characterize female Pacific halibut as following an annual reproductive cycle with spawning in January and February.
- Female developmental stages and reproductive phases of females collected in the central Gulf of Alaska have been used to identify the month of August as the time of the transition between the Vtg2 and Vtg3 developmental stages marking the beginning of the spawning capable reproductive phase.
- Future gonad collections for revising maturity schedules and estimating fecundity can be conducted in August during the FISS.

Publications:

Fish, T., Wolf, N., Harris, B.P., Planas, J.V. A comprehensive description of oocyte developmental stages in Pacific halibut, *Hippoglossus stenolepis*. *Journal of Fish Biology* 2020. 97: 1880-1885. doi: 10.1111/jfb.14551.

Fish, T., Wolf, N., Smeltz, T. S., Harris, B. P., and Planas, J. V. Reproductive Biology of Female Pacific Halibut (*Hippoglossus stenolepis*) in the Gulf of Alaska. *Frontiers in Marine Science* 2022. 9:801759. doi: 10.3389/fmars.2022.801759.

Links to 5-Year Research Plan (2022-2026):

- Revision of maturity schedule by gonad collection during the FISS, as informed by previous studies on reproductive development.

- Estimation of fecundity by age and size, as informed by previous studies demonstrating determinate fecundity.

Integration with Stock Assessment and MSE: Research activities in this Research Area aim at providing information on key biological processes related to reproduction in Pacific halibut (maturity and fecundity) and to provide sex ratio information of Pacific halibut commercial landings. The relevance of research outcomes from these activities for stock assessment is in the scaling of Pacific halibut biomass and in the estimation of reference points and fishing intensity. These research outputs will result in a revision of current maturity schedules and will be included as inputs into the stock assessment and represent the most important biological inputs for stock assessment. The relevance of these research outcomes for MSE is in the improvement of the simulation of spawning biomass in the Operating Model.

3. Growth.

3.1 Identification of physiological growth markers and their application for growth pattern evaluation. Planned research outcomes: informative physiological growth markers.

Main results:

- Transcriptomic profiling by RNAseq of white skeletal muscle from juvenile Pacific halibut subjected to growth suppression and to growth stimulation resulted in the identification of a number of genes that change their expression levels in response to growth manipulations.
- Proteomic profiling by LC-MS/MS of white skeletal muscle from juvenile Pacific halibut subjected to growth suppression and to growth stimulation resulted in the identification of a number of proteins that change their abundance in response to growth manipulations.
- Genes and proteins that changed their expression levels in accordance to changes in the growth rate in juvenile Pacific halibut were selected as putative growth markers for future studies on growth pattern evaluation.

Publications:

Planas et al. 2022. In Preparation.

Links to 5-Year Research Plan (2022-2026):

- Application of identified growth markers in studies aiming at investigating environmental influences on growth patterns and at investigating dietary influences on growth patterns and physiological condition.

3.2 Environmental influences on growth patterns. Planned research outcomes: information on growth responses to temperature variation.

Main results:

- Laboratory experiments under controlled temperature conditions have shown that temperature affects the growth rate of juvenile Pacific halibut through changes in the expression of genes that regulate growth processes.

Publications:

Planas et al. 2022. In Preparation.

Links to 5-Year Research Plan (2022-2026):

- Identification of temperature-specific responses in skeletal muscle through comparison between transcriptomic responses to temperature-induced growth changes and to density- and stress-induced growth changes.
- Application of growth markers for additional studies investigating the link between environmental variability and growth patterns and the effects of diet (prey quality and abundance) on growth and physiological condition.

Integration with Stock Assessment and MSE: Research activities conducted in this Research Area aim at providing information on somatic growth processes driving size-at-age in Pacific halibut. The relevance of research outcomes from these activities for stock assessment resides, first, in their ability to inform yield-per-recruit and other spatial evaluations for productivity that support mortality limit-setting, and second, in that they may provide covariates for projecting short-term size-at-age and may help delineate between fishery and environmental effects, thereby informing appropriate management responses. The relevance of these research outcomes for MSE is in the improvement of the simulation of variability and to allow for scenarios investigating climate change.

4. Mortality and Survival Assessment.

4.1 Discard mortality rate estimation in the longline Pacific halibut fishery. Planned research outcomes: experimentally-derived DMR.

Main results:

- Different hook release methods used in the longline fishery result in specific injury profiles and viability classification.
- Plasma lactate levels are high in Pacific halibut with the lowest viability classification.
- Mortality of discarded fish with the highest viability classification is estimated to be between 4.2 and 8.4%.

Publications:

Kroska, A.C., Wolf, N., Planas, J.V., Baker, M.R., Smeltz, T.S., Harris, B.P. Controlled experiments to explore the use of a multi-tissue approach to characterizing stress in wild-caught Pacific halibut (*Hippoglossus stenolepis*). *Conservation Physiology* 2021. 9(1):coab001; doi:10.1093/conphys/coab001.

Loher, T., Dykstra, C.L., Hicks, A., Stewart, I.J., Wolf, N., Harris, B.P., Planas, J.V. Estimation of postrelease longline mortality in Pacific halibut using acceleration-logging tags. *North American Journal of Fisheries Management*. 2022. 42: 37-49. DOI: https://doi.org/10.1002/nafm.10711.

Links to 5-Year Research Plan (2022-2026):

- Integration of information on capture and handling conditions, injury and viability assessment and physiological condition will lead to establishing a set of best handling practices in the longline fishery.

4.2 Discard mortality rate estimation in the guided recreational Pacific halibut fishery. Planned research outcomes: experimentally-derived DMR.

Main results:

- Field experiments testing two different types of gear types (i.e. 12/0 and 16/0 circle hooks) resulted in the capture, sampling and tagging of 243 Pacific halibut in IPHC Regulatory Area 2C (Sitka, AK) and 118 in IPHC Regulatory Area 3A (Seward, AK).
- The distributions of fish lengths by regulatory area and by hook size were similar.

Links to 5-Year Research Plan (2022-2026):

- Estimation of discard mortality rate in the guided recreational fishery.
- Integration of information on capture and handling conditions, injury and viability assessment and physiological condition linked to survival.
- Establishment of a set of best handling practices in the guided recreational fishery.

Integration with Stock Assessment and MSE: The relevance of research outcomes from these activities for stock assessment resides in their ability to improve trends in unobserved mortality in order to improve estimates of stock productivity and represent the most important inputs in fishery yield for stock assessment. The relevance of these research outcomes for MSE is in fishery parametrization

5. Genetics and genomics.

5.1 Generation of genomic resources for Pacific halibut. Planned research outcomes: sequenced genome and reference transcriptome.

Main results:

- A first draft of the chromosome-level assembly of the Pacific halibut genome has been generated.
- The Pacific halibut genome has a size of 602 Mb and contains 24 chromosome-size scaffolds covering 99.8% of the complete assembly with a N50 scaffold length of 27 Mb at a coverage of 91x.
- The Pacific halibut genome has been annotated by NCBI and is available as NCBI Hippoglossus stenolepis Annotation Release 101 (https://www.ncbi.nlm.nih.gov/assembly/GCA_022539355.2/).
- Transcriptome (i.e. RNA) sequencing has been conducted in twelve tissues in Pacific halibut and the raw sequence data have been deposited in NCBI's Sequence Read Archive (SRA) under the bioproject number PRJNA634339 (https://www.ncbi.nlm.nih.gov/bioproject/PRJNA634339) and with SRA accession numbers SAMN14989915 - SAMN14989926.

Publications:

Jasonowicz, A.C., Simeon, A., Zahm, M., Cabau, C., Klopp, C., Roques, C., Iampietro, C., Lluch, J., Donnadieu, C., Parrinello, H., Drinan, D.P., Hauser, L., Guiguen, Y., Planas, J.V. Generation of a chromosome-level genome assembly for Pacific halibut (*Hippoglossus stenolepis*) and characterization of its sex-determining genomic region. *Molecular Ecology Resources. 2022. In Press*. doi: https://doi.org/10.1111/1755-0998.13641.

Jasonowicz et al. 2022. In Preparation.

Links to 5-Year Research Plan (2022-2026):

- Genome-wide analysis of stock structure and composition.

5.2 Determine the genetic structure of the Pacific halibut population in the Convention Area. Planned research outcomes: genetic population structure.

Main results:

- The collection of winter genetic samples in the Aleutian Islands completed the winter sample collection needed to conduct studies on the genetic population structure of Pacific halibut in the Convention Area.
- Initial results of low coverage whole genome resequencing of winter samples indicate that an average of 26.5 million raw sequencing reads per obtained per sample that provided average individual genomic coverages for quality filtered alignments of 3.2x.

Links to 5-Year Research Plan (2022-2026):

- Fine-scale delineation of population structure, with particular emphasis on IPHC Regulatory 4B structure.

Integration with Stock Assessment and MSE: The relevance of research outcomes from these activities for stock assessment resides in the introduction of possible changes in the structure of future stock assessments, as separate assessments may be constructed if functionally isolated components of the population are found (e.g. IPHC Regulatory Area 4B), and in the improvement of productivity estimates, as this information may be used to define management targets for minimum spawning biomass by Biological Region. These research outcomes provide the second and third top ranked biological inputs into stock assessment. Furthermore, the relevance of these research outcomes for MSE is in biological parametization and validation of movement estimates and of recruitment distribution.

B. List of ranked biological uncertainties and parameters for stock assessment (SA) and their links to research areas and activities contemplated in the IPHC 5-Year Biological and Ecosystem Science Research Plan (2017-21)

SA Rank	Research outcomes	Relevance for stock assessment	Specific analysis input	Research Area	Research activities
1. Biological input	Updated maturity schedule	Scale biomass and reference point estimates	Will be included in the stock assessment, replacing the current schedule last updated in 2006	Reproduction	Histological maturity assessment
	Incidence of skip spawning		Will be used to adjust the asymptote of the maturity schedule, if/when a time-series is available this will be used as a direct input to the stock assessment		Examination of potential skip spawning
	Fecundity-at-age and -size information		Will be used to move from spawning biomass to egg-output as the metric of reproductive capability in the stock assessment and management reference points		Fecundity assessment
	Revised field maturity classification		Revised time-series of historical (and future) maturity for input to the stock assessment		Examination of accuracy of current field macroscopic maturity classification
2. Biological input	Stock structure of IPHC Regulatory Area 4B relative to the rest of the Convention Area	Altered structure of future stock assessments	If 4B is found to be functionally isolated, a separate assessment may be constructed for that IPHC Regulatory Area	Genetics and Genomics	Population structure
3. Biological input	Assignment of individuals to source populations and assessment of distribution changes	Improve estimates of productivity	Will be used to define management targets for minimum spawning biomass by Biological Region		Distribution
	Improved understanding of larval and juvenile distribution		Will be used to generate potential recruitment covariates and to inform minimum spawning biomass targets by Biological Region	Migration	Larval and juvenile connectivity studies
1. Assessment data collection and processing	Sex ratio-at-age	Scale biomass and fishing intensity	Annual sex-ratio at age for the commercial fishery fit by the stock assessment	Reproduction	Sex ratio of current commercial landings
	Historical sex ratio-at-age		Annual sex-ratio at age for the commercial fishery fit by the stock assessment		Historical sex ratios based on archived otolith DNA analyses
2. Assessment data collection and processing	New tools for fishery avoidance/deterence; improved estimation of depredation mortality	Improve mortality accounting	May reduce depredation mortality, thereby increasing available yield for directed fisheries. May also be included as another explicit source of mortality in the stock assessment and mortality limit setting process depending on the estimated magnitude	Mortality and survival assessment	Whale depredation accounting and tools for avoidance
1. Fishery yield	Physiological and behavioral responses to fishing gear	Reduce incidental mortality	May increase yield available to directed fisheries	Mortality and survival assessment	Biological interactions with fishing gear
2. Fishery yield	Guidelines for reducing discard mortality	Improve estimates of unobserved mortality	May reduce discard mortality, thereby increasing available yield for directed fisheries	Mortality and survival assessment	Best handling practices: recreational fishery

C. List of ranked biological uncertainties and parameters for management strategy evaluation (MSE) and their links to research areas and activities contemplated in the IPHC 5-Year Biological and Ecosystem Science Research Plan (2017-21)

MSE Rank	Research outcomes	Relevance for MSE	Research Area	Research activities
1. Biological parameterization and validation of movement estimates	Improved understanding of larval and juvenile distribution	Improve parametization of the Operating Model	Migration	Larval and juvenile connectivity studies
	Stock structure of IPHC Regulatory Area 4B relative to the rest of the Convention Area		Genetics and Genomics	Population structure
2. Biological parameterization and validation of recruitment variability and distribution	Assignment of individuals to source populations and assessment of distribution changes	Improve simulation of recruitment variability and parametization of recruitment distribution in the Operating Model		Distribution
	Establishment of temporal and spatial maturity and spawning patterns	Improve simulation of recruitment variability and parametization of recruitment distribution in the Operating Model	Reproduction	Recruitment strength and variability
3. Biological parameterization and validation for growth projections	Identification and application of markers for growth pattern evaluation	Improve simulation of variability and allow for scenarios investigating climate change	Growth	Evaluation of somatic growth variation as a driver for changes in size-at-age
	Environmental influences on growth patterns			
	Dietary influences on growth patterns and physiological condition			
1. Fishery parameterization	Experimentally-derived DMRs	Improve estimates of stock productivity	Mortality and survival assessment	Discard mortality rate estimate: recreational fishery

D. External funding received during the IPHC 5-Year Biological and Ecosystem Science Research Plan (2017-21):

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 (NOAA 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	April 2019 – November 2021
6	**North Pacific Research Board**	Pacific halibut discard mortality rates (NPRB Award No. 2009)	IPHC	Alaska Pacific University,	$210,502	Bycatch estimates	January 2021 –March 2022
7	**Bycatch Reduction Engineering Program - NOAA**	Gear-based approaches to catch protection as a means for minimizing whale depredation in longline fisheries (NA21NMF4720534)	IPHC	Deep Sea Fishermen's Union, Alaska Fisheries Science Center-NOAA, industry representatives	$99,700	Mortality estimations due to whale depredation	November 2021 – October 2022
8	**North Pacific Research Board**	Pacific halibut population genomics (NPRB Award No. 2110)	IPHC	Alaska Fisheries Science Center-NOAA	$193,685	Stock structure	December 2021- January 2024
				Total awarded ($)	**$1,020,801**		

E. Publications in the peer-reviewed literature resulting from the IPHC 5-Year Biological and Ecosystem Science Research Plan (2017-21):

2020:

Fish, T., Wolf, N., Harris, B.P., Planas, J.V. A comprehensive description of oocyte developmental stages in Pacific halibut, *Hippoglossus stenolepis*. *Journal of Fish Biology*. 2020. 97: 1880-1885. https://doi: 10.1111/jfb.14551.

2021:

Carpi, P., Loher, T., Sadorus, L., Forsberg, J., Webster, R., Planas, J.V., Jasonowicz, A., Stewart, I. J., Hicks, A. C. Ontogenetic and spawning migration of Pacific halibut: a review. *Rev Fish Biol Fisheries*. 2021. https://doi.org/10.1007/s11160-021-09672-w.

Kroska, A.C., Wolf, N., Planas, J.V., Baker, M.R., Smeltz, T.S., Harris, B.P. Controlled experiments to explore the use of a multi-tissue approach to characterizing stress in wild-caught Pacific halibut (*Hippoglossus stenolepis*). *Conservation Physiology* 2021. 9(1):coab001. https://doi:10.1093/conphys/coab001.

Loher, T., Bath, G. E., Wischniowsky, S. The potential utility of otolith microchemistry as an indicator of nursery origins in Pacific halibut (*Hippoglossus stenolepis*) in the eastern Pacific: the importance of scale and geographic trending. *Fisheries Research*. 2021. 243: 106072. https://doi.org/10.1016/j.fishres.2021.106072.

Lomeli, M.J.M., Wakefield, W.W., Herrmann, B., Dykstra, C.L., Simeon, A., Rudy, D.M., Planas, J.V. Use of Artificial Illumination to Reduce Pacific Halibut Bycatch in a U.S. West Coast Groundfish Bottom Trawl. *Fisheries Research*. 2021. 233: 105737. doi: 10.1016/j.fishres.2020.105737.

Sadorus, L., Goldstein, E., Webster, R., Stockhausen, W., Planas, J.V., Duffy-Anderson, J. Multiple life-stage connectivity of Pacific halibut (*Hippoglossus stenolepis*) across the Bering Sea and Gulf of Alaska. *Fisheries Oceanography*. 2021. 30:174-193. doi: https://doi.org/10.1111/fog.12512.

2022:

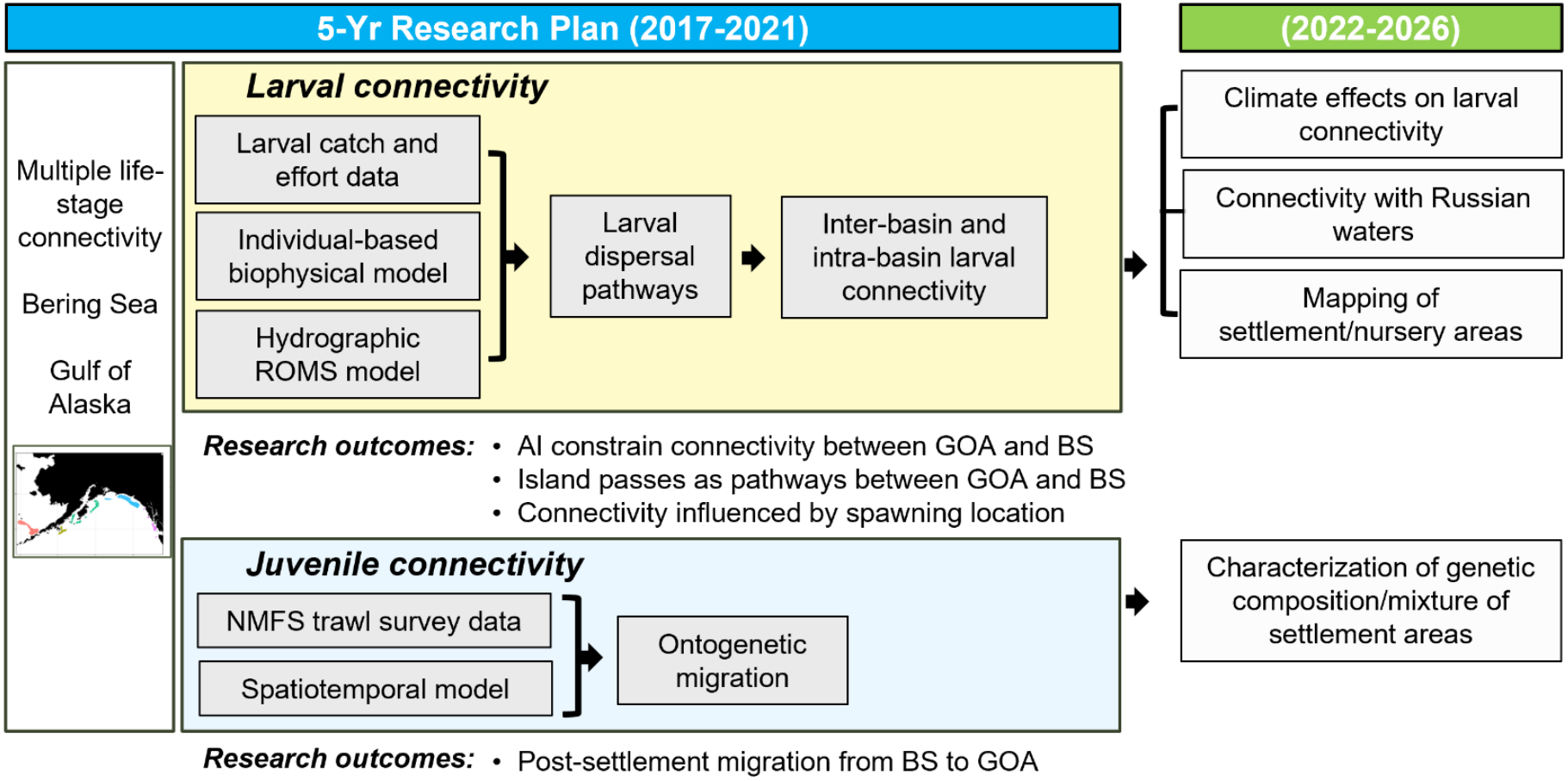
Fish, T., Wolf, N., Smeltz, T. S., Harris, B. P., and Planas, J. V. Reproductive Biology of Female Pacific Halibut (*Hippoglossus stenolepis*) in the Gulf of Alaska. *Frontiers in Marine Science* 2022. 9:801759. doi: 10.3389/fmars.2022.801759.

Jasonowicz, A.C., Simeon, A., Zahm, M., Cabau, C., Klopp, C., Roques, C., Iampietro, C., Lluch, J., Donnadieu, C., Parrinello, H., Drinan, D.P., Hauser, L., Guiguen, Y., Planas, J.V. Generation of a chromosome-level genome assembly for Pacific halibut (*Hippoglossus stenolepis*) and characterization of its sex-determining genomic region. *Molecular Ecology Resources.* 2022. In Press. doi: https://doi.org/10.1111/1755-0998.13641.

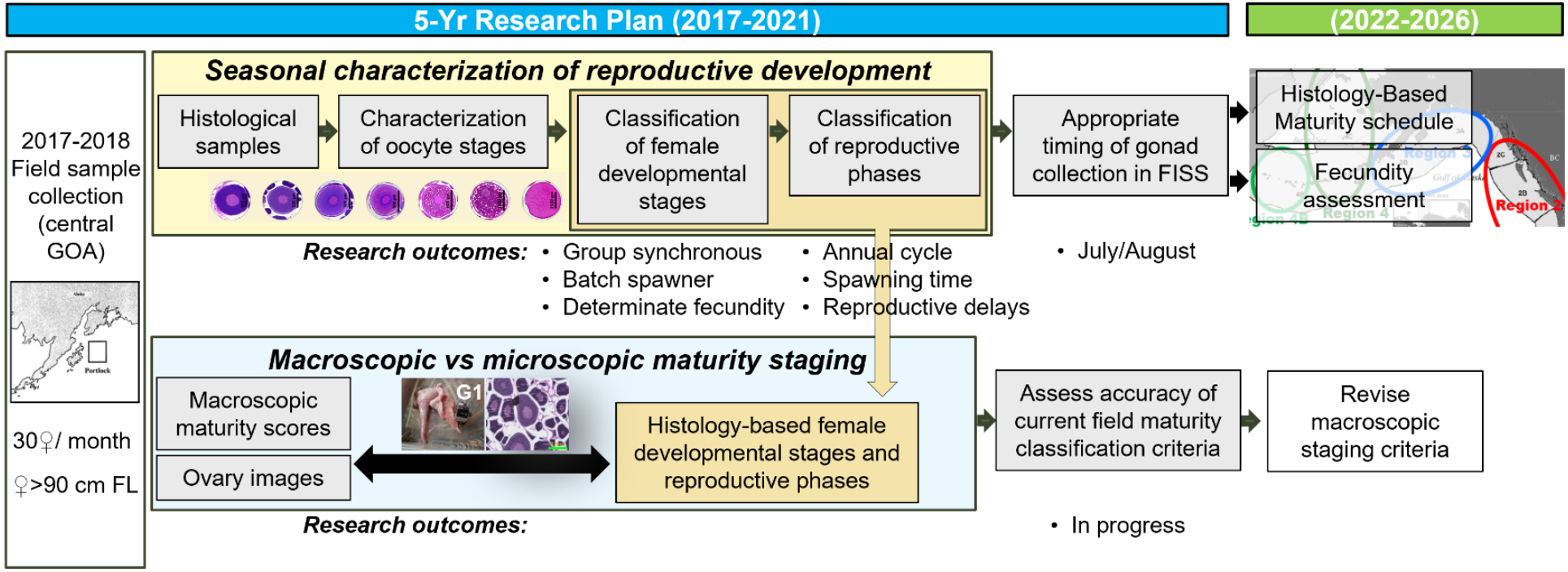
Loher, T., Dykstra, C.L., Hicks, A., Stewart, I.J., Wolf, N., Harris, B.P., Planas, J.V. Estimation of postrelease longline mortality in Pacific halibut using acceleration-logging tags. *North American Journal of Fisheries Management*. 2022. 42: 37-49. DOI: http://dx.doi.org/10.1002/nafm.10711.

F. Flow chart of progress resulting from the IPHC 5-Year Biological and Ecosystem Science Research Plan (2017-21) by research area leading to the IPHC 5-Year Program of Integrated Research and Monitoring (2022-2026)

1. Migration and Distribution

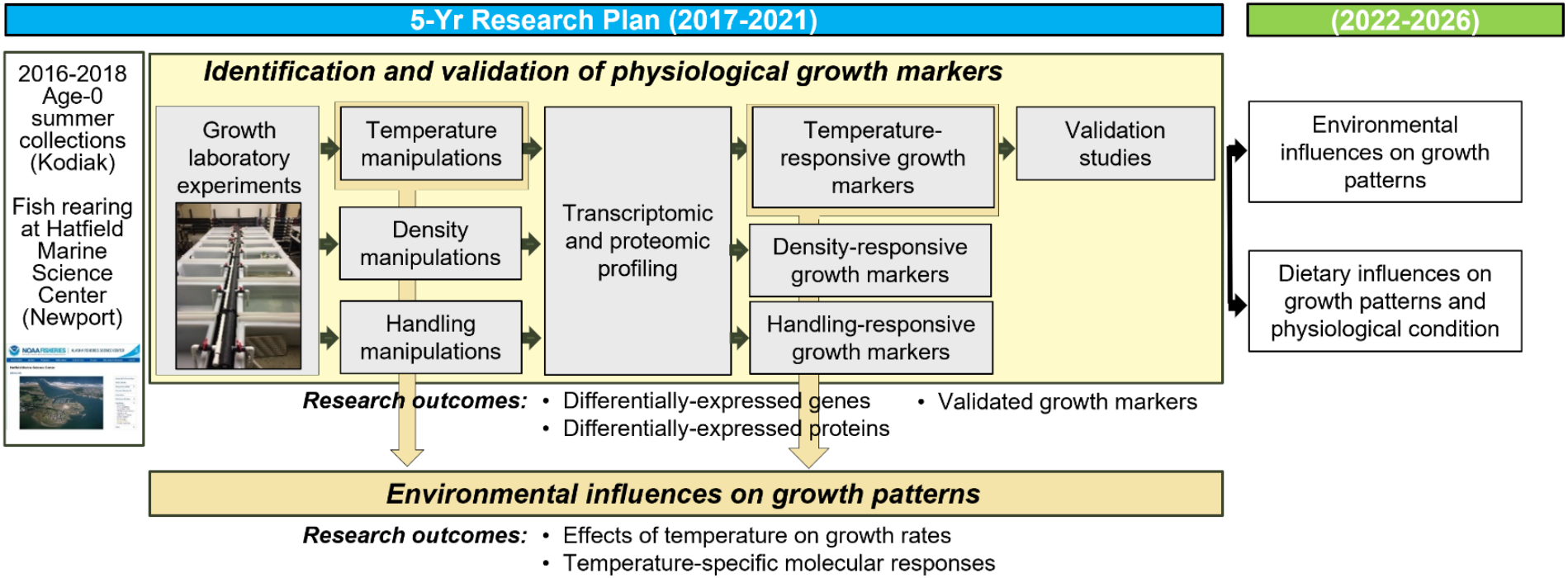


2. Reproduction



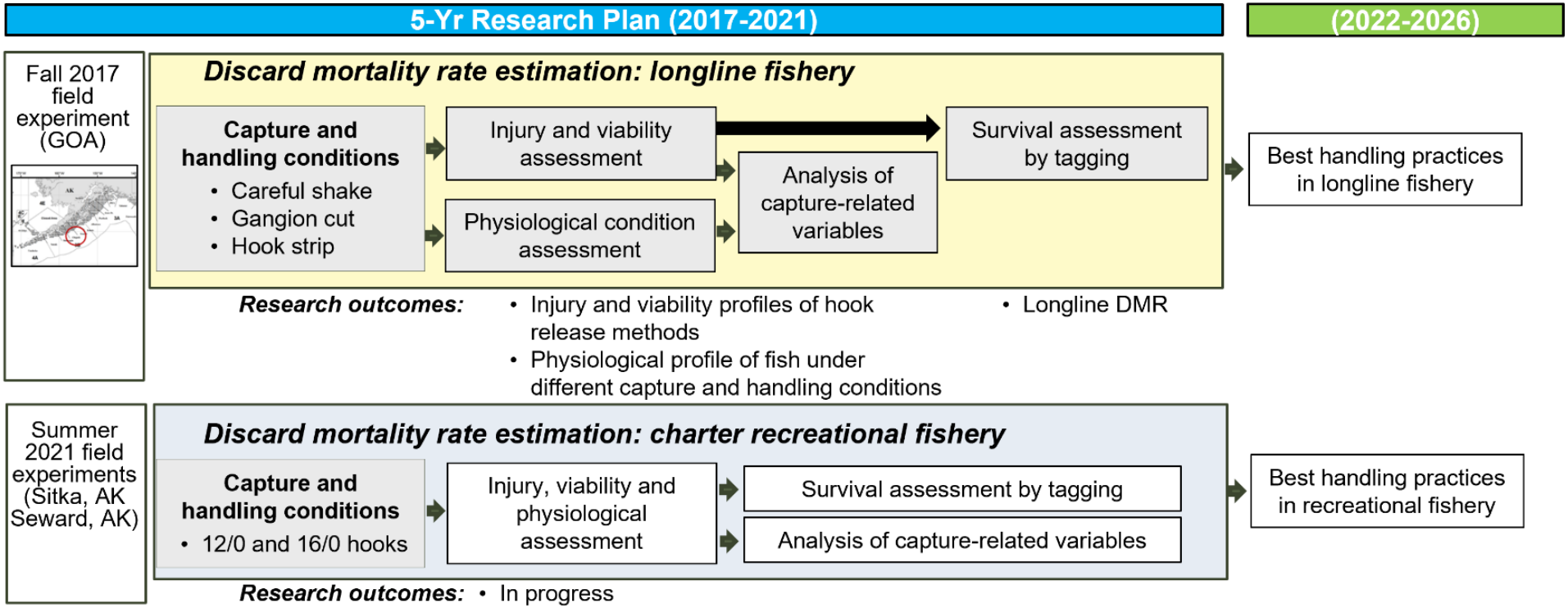
Staff involved: Teresa Fish, MSc APU (2018-2020), Crystal Simchick, Ian Stewart, Allan Hicks, Josep Planas
Funding: IPHC (2018-2020)
Publications (2): Fish et al. (2020) *J. Fish Biol*. **97**: 1880–1885 ; Fish et al. (2022) Front. Mar. Sci. 9:801759

3. Growth



Staff involved: Andy Jasonowicz, Crystal Simchick, Josep Planas
Funding: NPRB Grant#1704 (Sept. 2017-Feb. 2020)
Publications: Planas et al. (in preparation)

4. Mortality and Survival Assessment



Staff involved: Claude Dykstra, Allan Hicks, Ian Stewart, Josep Planas
Funding (3): Saltonstall-Kennedy NOAA (Sept. 2017-Aug. 2020); NFWF (Apr. 2019-Nov. 2021); NPRB#2009 (Jan. 2021-Mar. 2022)
Publications (2): Kroska et al. (2021) *Conserv. Physiol.*; Loher et al. (2022) *North Amer. J. Fish. Manag. 42: 37-49*

5. Genetics and Genomics

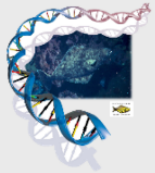
5-Yr Research Plan (2017-2021)

Collection of genetic samples of spawning aggregations spanning the Gulf of Alaska, Bering Sea and Aleutian Islands

(1999-2020)

Development and application of genomic approaches

Chromosome-level genome assembly



Development of methods based on low-coverage whole genome resequencing

Establishment of a bioinformatic pipeline in the cloud (Microsoft Azure)

Population structure analyses

(2022-2026)

Establishment of a baseline of genetic diversity

Delineation of fine-scale stock structure

Research outcomes:

- Sequenced genome (size=602 Mbp)
- Full annotation (NCBI) (27,944 genes)
- 24 chromosome-length scaffolds
- SNP detection and genotyping

Staff involved: Andy Jasonowicz, Josep Planas
Funding: IPHC, NPRB#2110
Publications: Jasonowicz et al. (2022) *Mol. Ecol. Resour. (In Review)*

APPENDIX II

Biological research areas in the 5-Year Program of Integrated Research and Monitoring (2022-2026) and ranked relevance for stock assessment and management strategy evaluation (MSE)

Research areas	Research activities	Research outcomes	Relevance for stock assessment	Relevance for MSE	Specific analysis input	SA Rank	MSE Rank	Research priorization
Migration and population dynamics	Population structure	Population structure in the Convention Area	Altered structure of future stock assessments	Improve parametization of the Operating Model	If 4B is found to be functionally isolated, a separate assessment may be constructed for that IPHC Regulatory Area	2. Biological input	1. Biological parameterization and validation of movement estimates and recruitment distribution	2
	Distribution	Assignment of individuals to source populations and assessment of distribution changes	Improve estimates of productivity		Will be used to define management targets for minimum spawning biomass by Biological Region	3. Biological input		2
	Larval and juvenile connectivity studies	Improved understanding of larval and juvenile distribution	Improve estimates of productivity		Will be used to generate potential recruitment covariates and to inform minimum spawning biomass targets by Biological Region	3. Biological input	1. Biological parameterization and validation of movement estimates	2
Reproduction	Histological maturity assessment	Updated maturity schedule	Scale biomass and reference point estimates	Improve simulation of spawning biomass in the Operating Model	Will be included in the stock assessment, replacing the current schedule last updated in 2006	1. Biological input		1
	Examination of potential skip spawning	Incidence of skip spawning			Will be used to adjust the asymptote of the maturity schedule, if/when a time-series is available this will be used as a direct input to the stock assessment			1
	Fecundity assessment	Fecundity-at-age and -size information			Will be used to move from spawning biomass to egg-output as the metric of reproductive capability in the stock assessment and management reference points			1
	Examination of accuracy of current field macroscopic maturity classification	Revised field maturity classification			Revised time-series of historical (and future) maturity for input to the stock assessment			1
Growth	Evaluation of somatic growth variation as a driver for changes in size-at-age	Identification and application of markers for growth pattern evaluation	Scale stock productivity and reference point estimates	Improve simulation of variability and allow for scenarios investigating climate change	May inform yield-per-recruit and other spatial evaluations of productivity that support mortality limit-setting		3. Biological parameterization and validation for growth projections	5
		Environmental influences on growth patterns			May provide covariates for projecting short-term size-at-age. May help to delineate between effects due to fishing and those due to environment, thereby informing appropriate management response			5
		Dietary influences on growth patterns and physiological condition			May provide covariates for projecting short-term size-at-age. May help to deleineate between effects due to fishing and those due to environment, thereby informing appropriate management response			5
Mortality and survival assessment	Discard mortality rate estimate: longline fishery	Experimentally-derived DMR	Improve trends in unobserved mortality	Improve estimates of stock productivity	Will improve estimates of discard mortality, reducing potential bias in stock assessment results and management of mortality limits	1. Fishery yield	1. Fishery parameterization	4
	Discard mortality rate estimate: recreational fishery				Will improve estimates of discard mortality, reducing potential bias in stock assessment results and management of mortality limits			4
	Best handling and release practices	Guidelines for reducing discard mortality			May reduce discard mortality, thereby increasing available yield for directed fisheries	2. Fishery yield		4
Fishing technology	Whale depredation accounting and tools for avoidance	New tools for fishery avoidance/deterence; improved estimation of depredation mortality	Improve mortality accounting	Improve estimates of stock productivity	May reduce depredation mortality, thereby increasing available yield for directed fisheries. May also be included as another explicit source of mortality in the stock assessment and mortality limit setting process depending on the estimated magnitude	1. Assessment data collection and processing		3

APPENDIX III

List of ranked research priorities for stock assessment

SA Rank	Research outcomes	Relevance for stock assessment	Specific analysis input	Research Area	Research activities
1. Biological input	Updated maturity schedule	Scale biomass and reference point estimates	Will be included in the stock assessment, replacing the current schedule last updated in 2006	Reproduction	Histological maturity assessment
	Incidence of skip spawning		Will be used to adjust the asymptote of the maturity schedule, if/when a time-series is available this will be used as a direct input to the stock assessment		Examination of potential skip spawning
	Fecundity-at-age and -size information		Will be used to move from spawning biomass to egg-output as the metric of reproductive capability in the stock assessment and management reference points		Fecundity assessment
	Revised field maturity classification		Revised time-series of historical (and future) maturity for input to the stock assessment		Examination of accuracy of current field macroscopic maturity classification
2. Biological input	Stock structure of IPHC Regulatory Area 4B relative to the rest of the Convention Area	Altered structure of future stock assessments	If 4B is found to be functionally isolated, a separate assessment may be constructed for that IPHC Regulatory Area	Migration and population dynamics	Population structure
3. Biological input	Assignment of individuals to source populations and assessment of distribution changes	Improve estimates of productivity	Will be used to define management targets for minimum spawning biomass by Biological Region		Distribution
	Improved understanding of larval and juvenile distribution		Will be used to generate potential recruitment covariates and to inform minimum spawning biomass targets by Biological Region		Larval and juvenile connectivity studies
1. Assessment data collection and processing	Sex ratio-at-age	Scale biomass and fishing intensity	Annual sex-ratio at age for the commercial fishery fit by the stock assessment	Reproduction	Sex ratio of current commercial landings
	Historical sex ratio-at-age		Annual sex-ratio at age for the commercial fishery fit by the stock assessment		Historical sex ratios based on archived otolith DNA analyses
2. Assessment data collection and processing	New tools for fishery avoidance/deterence; improved estimation of depredation mortality	Improve mortality accounting	May reduce depredation mortality, thereby increasing available yield for directed fisheries. May also be included as another explicit source of mortality in the stock assessment and mortality limit setting process depending on the estimated magnitude	Fishing technology	Whale depredation accounting and tools for avoidance
1. Fishery yield	Physiological and behavioral responses to fishing gear	Reduce incidental mortality	May increase yield available to directed fisheries	Fishing technology	Biological interactions with fishing gear
2. Fishery yield	Guidelines for reducing discard mortality	Improve estimates of unobserved mortality	May reduce discard mortality, thereby increasing available yield for directed fisheries	Mortality and survival assessment	Best handling practices: recreational fishery

APPENDIX IV

List of ranked research priorities for management strategy evaluation (MSE)

MSE Rank	Research outcomes	Relevance for MSE	Research Area	Research activities
1. Biological parameterization and validation of movement estimates	Improved understanding of larval and juvenile distribution	Improve parametization of the Operating Model	Migration and population dynamics	Larval and juvenile connectivity studies
	Stock structure of IPHC Regulatory Area 4B relative to the rest of the Convention Area			Population structure
2. Biological parameterization and validation of recruitment variability and distribution	Assignment of individuals to source populations and assessment of distribution changes	Improve simulation of recruitment variability and parametization of recruitment distribution in the Operating Model		Distribution
	Establishment of temporal and spatial maturity and spawning patterns	Improve simulation of recruitment variability and parametization of recruitment distribution in the Operating Model	Reproduction	Recruitment strength and variability
3. Biological parameterization and validation for growth projections	Identification and application of markers for growth pattern evaluation	Improve simulation of variability and allow for scenarios investigating climate change	Growth	Evaluation of somatic growth variation as a driver for changes in size-at-age
	Environmental influences on growth patterns			
	Dietary influences on growth patterns and physiological condition			
1. Fishery parameterization	Experimentally-derived DMRs	Improve estimates of stock productivity	Mortality and survival assessment	Discard mortality rate estimate: recreational fishery

APPENDIX V

List of ongoing and planned research projects (Will be linked to the website)

Research Project #	Project Title	Abstract	Objectives	Deliverables	Progress report	SYPRIM Research area	Management implications	Specific inputs into management	Period of Performance	PI	Funding source	Budget	Research prioritization for SA/MSE
1	Leveraging multiple genomic approaches to investigate population structure and dynamics of Pacific halibut	The Pacific halibut (Hippoglossus stenolepis) is a key flatfish species in the North Pacific Ocean ecosystem that supports important commercial, recreational and subsistence fisheries and that is managed as a single stock by the International Pacific Halibut Commission. The overarching goal of the present study is to advance our understanding of Pacific halibut population structure and dynamics in a changing climate through the use of genomic approaches to inform fishery management. In particular, we seek to improve our current understanding of stock structure among spawning groups of Pacific halibut in the northeast Pacific Ocean by conducting low coverage whole genome resequencing, a method that allows the characterization of genomic variation at the highest resolution possible and with which we will establish a baseline of Pacific halibut genetic diversity. Subsequently, we will leverage the obtained genomic data to identify markers that display high differentiation among the different genetic baseline datasets. The results from this study will inform on the delimitation of management units and provide preliminary information on stock composition in the Pacific halibut fishery, as well as provide a tool to monitor changes in distribution associated with climate change.	1. Investigate fine scale Pacific halibut population structure in the northeast Pacific Ocean using low coverage whole genome resequencing: characterization of neutral and adaptive variation at very high resolution among spawning groups leading to the identification of millions of genome-derived genetic markers. 2. Develop a high-throughput genetic marker panel consisting of a selection of genome-derived, high resolution markers	1.Establishment of a baseline of Pacific halibut genetic diversity. The genomic data produced will represent a detailed baseline of Pacific halibut genetic structure and diversity at neutral and adaptive markers over a large geographical scale (Gulf of Alaska, Aleutian Islands and Bering Sea) and over a broad temporal scale (last 30 years). 2.Delineation of fine-scale Pacific halibut stock structure. 3. Assignment of individuals to source populations and assessment of distribution changes.	IPHC-2023-SRB022-09/INPRB Interim Report July 2023/IPHC-2023-WM2023-12	Migration and Population Dynamics	1. Altered structure of future stock assessments and MSE operating models. 2. Improve estimates of productivity. 3. Improve understanding of population distribution and the effects of distributing fishing effort.	If IPHC Regulatory Area 4B is found to be functionally isolated, a separate assessment may be constructed for that IPHC Regulatory Area. Research outcomes will be used to define management targets for minimum spawning biomass by Biological Region.	12/01/2021-02/16/2024	Josep Planas	External (North Pacific Research Board; Project No. 2110)	$193,685	Priority Rank #2
2	Mapping of Pacific halibut juvenile habitat	The IPHC Secretariat recently completed a study to investigate the connectivity between spawning grounds and possible settlement areas based on a biophysical larval transport model (Sadorus et al., 2021; https://doi.org/10.1111/fog.12512). Although it is known that Pacific halibut, following the pelagic larval phase, begin their demersal stage as roughly 6-month-old juveniles, settling in shallow nursery (settlement) areas, near or outside the mouths of bays (Cargi et al., 2021; https://doi.org/10.1007/s11160-021-09672-w), very little information is available on the geographic location and physical characteristics of these areas. In order to fill this knowledge gap, the IPHC Secretariat has initiated studies to identify potential settlement areas for juvenile Pacific halibut throughout IPHC Convention Waters.	1. Collect data sources on juvenile Pacific halibut presence. 2. Create a map of suitable settlement habitat by combining available bathymetry information (e.g. benthic sediment composition and shoreline morphological data) and information on recorded presence of age-0, age-1 and age-2 Pacific halibut juveniles as well as absence of young Pacific halibut noted by various nursery habitat projects focused on other flatfish species.	Map of juvenile Pacific halibut habitat.	IPHC-2023-SRB022-09/IPHC-2023-WM2023-12	Migration and Population Dynamics	Improve estimates of productivity	Will be used to generate potential recruitment covariates and to inform minimum spawning biomass targets by Biological Region	01/01/2023-12/31/2025	Josep Planas	Internal	$0	Priority Rank #2
3	Female reproductive assessment	In fisheries, understanding the reproductive biology of a species is important for estimating the reproductive potential and spawning biomass of the stock and, consequently, for optimizing management of the species. Recent sensitivity analyses have shown the importance of changes in spawning output in female Pacific halibut due to changes in maturity schedules, in fecundity estimations and/or in skip spawning for stock assessment (Stewart and Hicks, 2020). These results highlight the need for a better understanding of factors influencing reproductive biology and spawning success in Pacific halibut. In order to fill existing knowledge gaps related to the reproductive biology of female Pacific halibut, research efforts are being conducted to characterize female reproductive capacity in this species. Improved knowledge on key aspects of the reproductive physiology of Pacific halibut (e.g., maturity schedules, fecundity, etc.) will provide an updated and more comprehensive description of reproductive capacity and success in this important species.	1.Produce an accurate description of oocyte developmental stages in female Pacific halibut that can be used to classify female maturity stages. 2.Describe changes in female and male maturity stages throughout an entire annual reproductive cycle based on histological assessment and physiological parameters that will be used to revise current estimates of female and male age-at-maturity. 3.Compare macroscopic (based on field observations) and microscopic (based on histological assessment) female and male maturity stages and revise maturity criteria used in FISS. 4.Update maturity schedules based on histological classification of female maturity. 5. Conduct investigations on fecundity and on the incidence of skip-spawning in female Pacific halibut. 6.Conduct investigations on possible temporal and spatial changes in reproductive performance (maturity, fecundity, skip-spawning) in female Pacific halibut.	1. Updated maturity schedule coastwide. 2. Fecundity-at-age and -size estimates. 3. Revised field maturity classification. 4. Information on skip-spawning.	IPHC-2023-SRB022-09/IPHC-2023-WM2023-12	Reproduction	Scale biomass and reference point estimates. Improve estimates of spawning biomass in the stock assessment and improve simulations of spawning biomass in the MSE operating model.	Research outcomes will be included in the stock assessment, replacing the current maturity schedule last updated in 2006. Research outcomes will be used to adjust the asymptote of the maturity schedule, if/when a time-series is available this will be used as a direct input to the stock assessment. Research outcomes will be used to move from spawning biomass to egg-output as the metric of reproductive capability in the stock assessment and management reference points. Research outcomes will result in revised time-series of historical (and future) maturity for input to the stock assessment.	01/01/2017-12/31/2026	Josep Planas	Internal	$51,834 (FY2024)	Priority Rank #1
4	Gear-based approaches to catch protection as a means for minimizing whale depredation in longline fisheries	In the north Pacific, both Killer (Orcinus orca) and Sperm (Physeter macrocephalus) whales are involved in depredation behavior in Pacific halibut (Hippoglossus stenolepis). In 2011 and 2012 fisheries observers estimated that 6.9% of Pacific halibut sets were affected by whale depredation in the Bering Sea. Reductions in catch per unit effort (CPUE) when whales were present ranged across geographic regions from 5 15-57% for Pacific halibut. These impacts also incur significant time, fuel, and personnel costs to fishing operations. From a fisheries management perspective, depredation creates an additional and highly uncertain source of mortality, loss of data (e.g. compromised survey activity), and reduces fishery efficiency. Stock assessments of both Pacific halibut (Stewart et al. 2020) and sablefish (Goethel et al. 2020) have adjusted their analysis of fishery independent data to account for the effects of whale depredation on catch rates. In the sablefish assessment, fishery limits are also adjusted downward to reflect expected depredation during the commercial fishery. Meanwhile, potential risks to the whales include physical injury due to being near vessels and gear, disruption of social structure , and developing an artificial reliance on food items that can be affected by fishery dynamics. Many efforts have been made over the years to mitigate this problem, with fishers generally limited to simple methods that can be constructed, deployed, or enacted without significantly disrupting normal fishing operations, or without violating gear regulations. Existing approaches include catch protection, physical and auditory deterrents, and spatial or temporal avoidance. These approaches have had variable degrees of success and ease of adoption in each fishery but none have provided a long-term solution. There are increasing data sources supporting the notion that technologies which reduce initial contact between gear and depredators will reduce the likelihood of foraging attempts around the gear, thereby sustaining levels of target catch while simultaneously reducing risk of depredator mortality and gear damage. Recent studies using physical catch protection methods include the development of underwater shuttles that unhook, and transport catch to the surface (Patagonian toothfish), light and expandable 'slinky' pots (sablefish), and flashers or mesh panels attached to the gear to obscure catch (tuna) (IPHC 2022). While slinky pots had quick uptake in the sablefish longline fishery, depredation occurring with this gear has been reported (Goethel et al. 2022), demonstrating the urgency of ongoing challenges to interrupting the reward cycle underpinning this problem.	1. Identify potential methods for protecting hook captured fish from whale depredation. 2. Develop and field-test several simple low-cost catch-protection designs that can be deployed effectively using current longline fishing techniques.	1. Cost effective prospective terminal gear modifications designed to protect longline catch from whale depredation. 2. Demonstration of the functionality of these proof-of-concept catch protection devices in field tests and provide direction for further modifications and larger scale experimental testing.	IPHC-2023-SRB022-09/IPHC-2023-WM2023-12/BREP Interim Report May 2023	Fishing technology	Improve mortality accounting. Improve estimates of stock productivity.	Research outcomes may reduce depredation mortality, thereby increasing available yield for directed fisheries. May also be included as another explicit source of mortality in the stock assessment and mortality limit setting process depending on the estimated magnitude.	11/01/2021-10/30/2023	Claude Dykstra/Ian Stewart	External (Bycatch Reduction Engineering Program - NOAA; Project NA21NMF4720534)	$99,700	Priority Rank #3
5	Use of artificial intelligence (AI) for determining the age of Pacific halibut from images of collected otoliths	The IPHC Secretariat is looking at options for supplementing current Pacific halibut ageing protocol with automatized ageing that does not require extensive otolith-reader training. The IPHC is investigating the potential use of artificial intelligence (AI) for determining the age of Pacific halibut from images of collected otoliths. The Secretariat is in the process of initializing creation of a database of pictures with expert-provided labels, utilizing previously aged otoliths, and assessing the option for the development of a Convolutional Neural Network (CNN) model specifically designed for image classification to determine Pacific halibut age. The goal is to create an AI-based age determination system that complements traditional methods for reliable fish stock assessment and management advice.	1. Develop a labeled image database from previously aged otoliths 2.Train and validate a CNN model for automated ageing 3. Verify the accuracy of the CNN model against traditional ageing methods	1. Predictive CNN model for ageing Pacific halibut complementing traditional methods 2. A report comparing CNNI model performance to traditional ageing techniques	N/A	Age composition data (both fishery-dependent and fishery-independent)	Age data is a critical input for stock assessment.	AI-driven age determination offers a critical enhancement to stock assessment methodologies, aiding in the estimation of growth rates, maturity, and population structure of Pacific halibut.	09/2023-12/2024+	Barbara Hutniczak	Internal	$0	Priority Rank #1

Proposed

Research Project #	Project Title	Abstract	Objectives	Deliverables	Progress report	5YPRIM Research area	Management implications	Specific inputs into management	Requested period of performance	PI	Targeted funding source	Requested budget	Research prioritization for SA/MSE
1	Genomic analyses of Pacific halibut in Washington State waters to inform population structure and dynamics affecting coastal communities	Current studies at the IPHC, with funding from a grant from the North Pacific Research Board (Project #2110; 2022-2024), are devoted to the application of genome-based approaches (i.e. low coverage whole genome resequencing, lcWGR) to investigate stock structure among known spawning groups of Pacific halibut in the Gulf of Alaska (as far South as Haida Gwaii), Bering Sea and Aleutian Islands. By leveraging the recently sequenced and annotated reference Pacific halibut genome (Jasonowicz et al., 2022: GCF_022539355.2), the IPHC has conducted lcWGR for a total of 600 individual samples from the above-mentioned spawning groups at a coverage of 3X. This effort has so far resulted in the identification of 11.5 million autosomal single nucleotide polymorphisms (SNPs), of which 4 million SNPs have a minor allele frequency higher than 0.05. Considerable progress is currently being made towards using genome approaches to establish a genetic baseline for the available spawning groups, and towards the development of genomic tools aimed at addressing important ecological, environmental, and management-related issues with respect to Pacific halibut in the Gulf of Alaska, Bering Sea and Aleutian Islands. However, the lack of genetic samples from spawning groups off the WA coast limits the application of the above-mentioned genomic tools to advance our understanding of population structure, movement, connectivity, adaptive characteristics, and environmental responses of Pacific halibut in Convention waters. Although no major spawning ground has been mapped south of Cape St. James in the southern tip of Haida Gwaii (St. Pierre, 1984), archeological records along with traditional and ecological knowledge from Indian Tribes (e.g., Makah tribe, etc.) that fished Pacific halibut in the winter off the WA coast indicate that Pacific halibut, at least historically, spawned in what is now IPHC Regulatory Area 2A (Salmen-Hartley, 2018). Additionally, contemporary reports of spawning Pacific halibut south of Cape Flattery and the existence of suitable spawning habitat for Pacific halibut (i.e., deep areas off the continental slope, 200-600 m) are strongly indicative of the presence of spawning grounds for Pacific halibut off the WA coast. Therefore, the identification of potential winter spawning groups of Pacific halibut in WA waters and their biological (i.e., genetic and reproductive) characterization are important for addressing key issues related to Pacific halibut that impact coastal communities within Convention Waters. The overarching goal of this proposal is to characterize the genetic composition of Pacific halibut found off the WA coast using state-of-the-art genomic approaches. The results of this proposal will improve our understanding	1. To identify winter spawning groups of Pacific halibut off the WA coast with the use of traditional and ecological knowledge and collect biological samples. 2. To characterize the reproductive condition of female and male Pacific halibut off the WA coast during the winter spawning season. 3. To generate and incorporate genomic data from winter spawning groups off the WA coast to existing data from winter spawning groups in other geographic areas in the northeastern Pacific Ocean to establish an expanded baseline of Pacific halibut genetic diversity.	1. Information on Pacific halibut spawning groups off the WA coast: location information, spawning time and collection of biological (genetic and reproductive) samples. 2. Extended baseline of Pacific halibut genetic diversity and delineation of fine-scale Pacific halibut stock structure in WA waters and coastwide.	N/A	Migration and Population Dynamics	Altered structure of future stock assessments and MSE operating models. Improved estimates of productivity coastwide.	Information of stock structure of the Pacific halibut population in Convention waters will inform management actions by validating management units. Research outcomes will be used to define management targets for minimum spawning biomass by Biological Region.	02/01/2024-1/31/2026	Josep Planas	External (Washington Sea Grant). Full proposal submitted in May 2023. Proposal not selected for funding.	$288,652	Priority Rank #2
2	Full scale testing of devices to minimize whale depredation in longline fisheries	In the north Pacific, both Killer (Orcinus orca) and Sperm (Physeter macrocephalus) whales are involved in depredation behavior in Pacific halibut (Hippoglossus stenolepis). In 2011 and 2012 fisheries observers estimated that 6.9% of Pacific halibut sets were affected by whale depredation in the Bering Sea (Peterson et al. 2014). Reductions in catch per unit effort (CPUE) when whales were present ranged across geographic regions from 5 15-57% for Pacific halibut (Peterson et al. 2014). These impacts also incur significant time, fuel, and personnel costs to fishing operations. From a fisheries management perspective, depredation creates an additional and highly uncertain source of mortality, loss of data (e.g. compromised survey activity), and reduces fishery efficiency. Stock assessments of both Pacific halibut (Stewart et al. 2020) and sablefish (Goethel et al. 2020) have adjusted their analysis of fishery independent data to account for the effects of whale depredation on catch rates. In the sablefish assessment, fishery limits are also adjusted downward to reflect expected depredation during the commercial fishery. Meanwhile, potential risks to the whales include physical injury due to being near vessels and gear, disruption of social structure (e.g., Chilvers and Corkeron 2001), and developing an artificial reliance on food items that can be affected by fishery dynamics. Many efforts have been made over the years to mitigate this problem, with fishers generally limited to simple methods that can be constructed, deployed, or enacted without significantly disrupting normal fishing operations, or without violating gear regulations. Existing approaches include catch protection, physical and auditory deterrents, and spatial or temporal avoidance. These approaches have had variable degrees of success and ease of adoption in each fishery (Werner et al. 2015) but none have provided a long-term solution. There are increasing data sources supporting the notion that technologies which reduce initial contact between gear and depredators will reduce the likelihood of foraging attempts around the gear, thereby sustaining levels of target catch while simultaneously reducing risk of depredator mortality and gear damage. Recent studies using physical catch protection methods include the development of underwater shuttles that unhook, and transport catch to the surface (Patagonian toothfish), light and expandable 'slinky' pots (sablefish), and flashers or mesh panels attached to the gear to obscure catch (tuna) (IPHC 2022). While slinky pots had quick uptake in the sablefish longline fishery, depredation occurring with this gear has been reported (Goethel et al. 2022), demonstrating the	1. Assess the performance of catch protection devices to effectively reduce depredation of longline captured fish in the presence of toothed whales. 2. Assess the performance metrics of catch protection devices on the size, number, and condition of fish successfully entrained in the devices	1. Further define and develop previously identified high priority work that can break the reward cycle of depredation behavior and thereby suppress its prevalence. 2. Build on strategies to protect already captured fish in cost effective manners that are compatible with currently employed hook and line fishing practices in the North Pacific halibut fishery.	N/A	Fishing technology	Improved accuracy of mortality estimates. Improve estimates of productivity	Will be used to generate potential recruitment covariates and to inform minimum spawning biomass targets by Biological Region	11/1/2023-04/30/2025	Claude Dykstra/Ian Stewart	External (Bycatch Reduction Engineering Program - NOAA). Full proposal submitted in March 2023. Awarded.	$199,870	Priority Rank #3
3	Development of a non-lethal genetic-based method for aging Pacific halibut	Robust methods to estimate the ages of commercially exploited fish species are critical for stock assessment. Furthermore, when combined with data on other biological characteristics; such as length/weight, maturity, movement, and distribution; the age distribution structure of a fish population provides essential information on population dynamics related to age, predicted reproductive status, life history stage, etc. For Pacific halibut; an ecologically, economically and culturally important fish species in Alaska; age estimations are critical to our understanding of the composition of the stock for sustainable management, of historical changes in size-at-age, maturity-at-age, year class strength, mortality, etc., as well as of the response of the Pacific halibut stock to current and future climate variability. For many managed groundfish species, such as Pacific halibut, age has been traditionally estimated by manually counting the number of annuli or concentric lamellae present in sagittal otoliths (i.e. calcified structures located in the head that are used for balance and hearing) under a compound microscope. The International Pacific Halibut Commission (IPHC) has used sagittal otoliths for aging Pacific halibut since 1914, employing a method referred to as "surface aging" until 2002 and switching to a methodological variation known as "break-and-burn" thereafter (Forsberg, 2001). However, for various reasons, alternative methods to traditional otolith age estimations are being explored, developed and applied in fisheries. One of these is a genetic method for aging based on the known observation that the methylation patterns on genomic DNA change predictably with age. DNA methylation (DNAm) is an epigenetic modification of the DNA that consists in the covalent modification of cytosine, one of the four nucleobases found in DNA, and that regulates the expression of genes. Therefore, age-associated DNA methylation patterns can be modelled to generate molecular (i.e., epigenetic) age predictors capable of estimating chronological age with high accuracy. These are referred to as "epigenetic clocks" and can be developed from DNA isolated from any tissue, including non-lethal biological samples, such as a fin clip. Epigenetic clocks have been developed for many vertebrate species, including fish, with high accuracy (r between 0.84 and 0.99) and an average MAE of 0.87 years, that corresponds to 3.5% of the total lifespan of the species examined. Since DNA sequencing for measuring methylation levels is becoming cost effective and is a high throughput technique with little or no inherent human error or bias, epigenetic clocks have moved to the forefront among the alternative methods for aging that are currently available for fish species. The	1. To identify DNA methylation signals in Pacific halibut fin tissue. 2. To develop an age prediction model based on DNA methylation patterns: an epigenetic clock for Pacific halibut. 3. To develop a targeted DNA methylation assay for larger scale age estimations.	1. Reduced representation genome-wide map of DNA methylation at single base-pair resolution for Pacific halibut fin tissue. 2. Age predicting model for Pacific halibut using fin tissue.	N/A	Migration and Population Dynamics/Female Reproductive Assessment/Growth	Age is a critical input for stock assessment.	Age is a key biological input into stock assessment as it is used for estimating fish growth, fish maturity and fecundity-at-age, and mortality rates as well as population structure. Age distribution of Pacific halibut captured in the different fisheries and surveys is used in stock assessment.	02/01/2024-1/31/2026	Josep Planas	External (Alaska Sea Grant). Full proposal submitted in May 2023. Decision expected January 2024.	$60,374	Priority Rank #1

APPENDIX VI

Proposed schedule of outputs

	2022		2023		2024		2025		2026	
Biology and Ecology										
Migration and population dynamics										
Reproduction										
Growth										
Mortality and survival assessment										
Fishing technology										
Stock Assessment										
Management Strategy Evaluation										
Monitoring										

APPENDIX VII

Proposed schedule of funding and staffing indicators: Biology and Ecology

Research areas	Research activities	Required FTEs/Year	IPHC FTEs/Year	2022	2023	2024	2025	2026	IPHC Funds	Grant Funds
Migration and Population Dynamics	Larval and juvenile connectivity and early life history studies	0.45	0.45		RB1	RB2			Yes	NPRB #2100
	Population structure	0.4	0.8		RB1				No	NPRB #2110
	Adult migration and distribution	0.4							No	NPRB #2110
	Close-kin mark-recapture studies	1	0						No	Planned
	Seascape genomics	1	0						No	Planned
	Genome-wide association analyses	1	0						No	Planned
	Genomic-based aging methods	1	1		RS 1				Yes	No
Reproduction	Maturity-at-age estimations	0.75	0						Yes	No
	Fecundity assessment	0.5	0.25			RB4	RS 2		Yes	No
	Examination of accuracy of current field macroscopic maturity classification	0.25							Yes	No
	Sex ratio of current commercial landings	0.5	0.75	LT					Yes	No
	Recruitment strength and variability	0.5	0				RS 2		Yes	Planned
Growth	Environmental influences on growth patterns	0.5	0.5		MSc student				No	Planned
	Dietary influences on growth patterns and physiological condition	0.5	0.2		RB3				No	Planned
Mortality and survival assessment	Discard mortality rate estimate: recreational fishery	0.5	1						No	NPRB #2009
	Best handling practices: recreational fishery	0.5		RB 3					No	NPRB #2009
	Whale depredation accounting and tools for avoidance	0.5							No	BREP
	Biological interactions with fishing gear	0.5							No	BREP

IPHC staff (Planned):

RS1: Research Scientist 1(PhD; Life History Modeler I). Full time temporary position (100% research;
RS2: Research Scientist 1(PhD; Life History Modeler II). Full time temporary position (100% research;
RB1: Research Biologist 1 (Geneticist; MSc). Full time temporary position (until April 2022; 1 FTE). 55% of salary covered by Grant NPRB#2110.
RB2: Research Biologist 2 (Early Life History; MSc). Full time permanent position (40% research; 0.4 FTE)
RB3: Research Biologist 3 (DMR; MSc). Full time permanent position (100% research; 1 FTE)
RB4: Research Biologist 4 (Maturity and Fecundity; MSc). Full time permanent position (100% research; 1 FTE)
LT: Laboratory Technician (MSc). Full time temporary position (100% research; 1 FTE)

Fisheries Data Overview (2023)

PREPARED BY: IPHC SECRETARIAT (B. HUTNICZAK, H. TRAN, T. KONG, K. SAWYER VAN VLECK, K. MAGRANE; 11 DECEMBER 2023 & 11 JANUARY 2024)

PURPOSE

To provide an overview of the 2023 Pacific halibut removals, including the status of mortality reported against fishery limits adopted by the Commission and outlined in the IPHC Fishery Regulations (2023). Data provided in this paper include current and projected values available as of 5 January 2024.

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-2024-AM100-10) and other analyses. The data are compiled by the IPHC Secretariat and include data from federal and state agencies of each Contracting Party. All 2023 data are in net weight (head-off, dressed, ice and slime deducted) and considered preliminary at this time. The IPHC Regulatory Areas are provided in Figure 1.

The report provides a preliminary summary of removals in Tables 1 and 2. Table 2 provides estimates of mortality reported against the fishery limits (FCEY) resulting from the IPHC-adopted distributed mortality (TCEY) limits and the existing Contracting Party catch sharing arrangements, as well as non-FCEY mortality projections, by IPHC Regulatory Area. Figure 2 provides cumulative percentage of directed commercial Pacific halibut limit landed by week.

DEFINITIONS

Directed commercial fisheries include commercial landings and discard mortality. Directed commercial discard mortality continues to include estimates of sub-legal Pacific halibut (under 81.3 cm or 32 inches, 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 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 that uses Alaska Subsistence [Pacific] Halibut Registration Certificate (SHARC), and
iv) U32 Pacific halibut retained for personal use by the Community Development Quota (CDQ) fishery in IPHC Regulatory Areas 4D and 4E.

Non-directed commercial discard mortality includes incidentally caught Pacific halibut by fisheries targeting other species and that cannot legally be retained, e.g. by the trawl fleet. This category 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 (FISS) and other research.

Table 1. Projected 2023 mortality reported against mortality limits (TCEYs) by IPHC Regulatory Area and U26 non-directed discards (as of 5 January 2024).

IPHC Regulatory Area	Mortality limits (TCEY) (net weight)		Mortality to date (net weight)		Percent attained
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	(%)
IPHC Regulatory Area 2A	748	1,650,000	713	1,570,850	95
IPHC Regulatory Area 2B	3,075	6,780,000	3,145	6,982,511	102
IPHC Regulatory Area 2C	2,654	5,850,000	2,629	5,795,054	99
IPHC Regulatory Area 3A	5,479	12,080,000	4,855	10,702,480	89
IPHC Regulatory Area 3B	1,665	3,670,000	1,540	3,394,199	92
IPHC Regulatory Area 4A	785	1,730,000	567	1,249,174	72
IPHC Regulatory Area 4B	617	1,360,000	251	553,300	41
IPHC Regulatory Area 4CDE and Closed Area	1,746	3,850,000	1,272	2,803,715	73
Subtotal (TCEY)	**16,769**	**36,970,000**	**14,969**	**33,000,283**	**89**
Non-directed commercial discard mortality (U26)	621	1,370,000	711	1,567,000	114
Total	**17,391**	**38,340,000**	**15,679**	**34,567,283**	**90**

Table 2. 2023 estimates of mortality reported against fishery limits (FCEY) and mortality projections by IPHC Regulatory Area (as of 5 January 2024).

IPHC Regulatory Area	Fishery limit/mortality projection (net weight)[1]		Mortality to date (net weight)		Percent attained
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	(%)
USA – 2A (California, Oregon, and Washington)[10]	**748.43**	**1,650,000**	**712.53**	**1,570,850**	**95**
Non-treaty directed commercial	116.94	257,819	117.58	259,226	101
Non-treaty incidental to salmon troll fishery	20.64	45,497	11.00	24,255	53
Non-treaty incidental to sablefish fishery[2]	31.75	70,000	20.68	45,595	65
Treaty Indian directed commercial	227.93	502,500	224.60	495,161	99
Directed commercial discard mortality[3]	22.68	50,000	45.36	100,000	200
Recreational – Washington	127.79	281,728	118.29	260,786	93
Recreational – Oregon	133.10	293,436	103.54	228,266	78
Recreational – California	17.93	39,520	17.39	38,337	97
Recreational discard mortality	--	--	0.93	2,058	--
Treaty Indian ceremonial and subsistence	13.38	29,500	13.38	29,500	100
Non-directed commercial discard mortality (O26)[3]	36.29	80,000	34.47	76,000	95
IPHC fishery-independent setline survey and research[4]	--	--	5.29	11,666	--
Non-directed commercial discard mortality (U26)	--	--	1.36	3,000	--
Canada – Area 2B (British Columbia)[10]	**3,075.36**	**6,780,000**	**3,144.53**	**6,932,511**	**102**
Directed commercial fishery landings	2,281.57	5,030,000	2,232.91	4,922,721	98
Directed commercial discard mortality[3]	81.65	180,000	87.09	192,000	107
Recreational fishery[8]	403.70	890,000	403.64	889,881	100
Recreational discard mortality[3]	18.14	40,000	12.40	27,330	68
Recreational fishery (XRQ - Experimental Quota)[5]	--	--	7.16	15,790	--
Subsistence[3,6]	185.97	410,000	183.70	405,000	99
Non-directed commercial discard mortality (O26)[3]	108.86	240,000	159.66	352,000	147
IPHC fishery-independent setline survey and research[4]	--	--	57.96	127,789	--
Non-directed commercial discard mortality (U26)	13.61	30,000	22.68	50,000	167

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IPHC Regulatory Area	Fishery limit/mortality projection (net weight)[1]		Mortality to date (net weight)		Percent attained
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	(%)
USA – Area 2C (southeastern Alaska)[10]	**2,653.51**	**5,850,000**	**2,628.59**	**5,795,054**	**99**
Directed commercial fishery landings	1,546.75	3,410,000	1,368.86	3,017,811	88
Directed commercial discard mortality	68.04	150,000	51.26	113,000	75
Metlakatla (Annette Islands Reserve)	--	--	17.30	38,140	--
Guided recreational fishery	362.87	800,000	356.72	786,438	102
Guided recreational discard mortality[7]	--	--	11.95	26,338	--
Guided recreational fishery (GAF – guided angler fish)[5]	--	--	49.86	109,927	--
Unguided recreational fishery[3]	517.10	1,140,000	476.27	1,050,000	93
Unguided recreational discard mortality[7]	--	--	6.80	15,000	--
Subsistence[3]	131.54	290,000	114.53	252,492	87
Non-directed commercial discard mortality (O26)[3]	27.22	60,000	17.69	39,000	65
IPHC fishery-independent setline survey and research[4]	--	--	157.35	346,908	--
Non-directed commercial discard mortality (U26)	--	--	0.00	0	--
USA – Area 3A (central Gulf of Alaska)[10]	**5,479.39**	**12,080,000**	**4,854.56**	**10,702,480**	**89**
Directed commercial fishery landings	3,556.16	7,840,000	3,247.19	7,158,822	91
Directed commercial discard mortality	263.08	580,000	258.55	570,000	98
Guided recreational fishery	857.29	1,890,000	701.46	1,546,445	83
Guided recreational discard mortality[7]	--	--	4.18	9,219	--
Guided recreational fishery (GAF)[5]	--	--	3.81	8,395	--
Unguided recreational fishery[3]	544.31	1,200,000	439.08	968,000	82
Unguided recreational discard mortality[7]	--	--	8.62	19,000	--
Subsistence[3]	81.65	180,000	55.18	121,642	68
Non-directed commercial discard mortality (O26)[3]	176.90	390,000	102.97	227,000	58
IPHC fishery-independent setline survey and research[4]	--	--	33.55	73,957	--
Non-directed commercial discard mortality (U26)	108.86	240,000	72.57	160,000	67
USA – Area 3B (western Gulf of Alaska)[10]	**1,664.68**	**3,670,000**	**1,539.58**	**3,394,199**	**92**
Directed commercial fishery landings	1,401.60	3,090,000	1,271.89	2,804,039	91
Directed commercial discard mortality[3]	131.54	290,000	108.86	240,000	83
Recreational fishery[3]	4.54	10,000	2.72	6,000	60
Recreational discard mortality[7]	--	--	0.00	0	--
Subsistence[3]	4.54	10,000	4.75	10,475	105
Non-directed commercial discard mortality (O26)[3]	122.47	270,000	84.82	187,000	69
IPHC fishery-independent setline survey and research[4]	--	--	66.54	146,685	--
Non-directed commercial discard mortality (U26)	45.36	100,000	30.84	68,000	68
USA – Area 4A (eastern Aleutians)[10]	**784.71**	**1,730,000**	**566.62**	**1,249,174**	**72**
Directed commercial fishery landings	639.57	1,410,000	419.12	924,010	66
Directed commercial discard mortality[3]	22.68	50,000	15.42	34,000	68
Recreational fishery[3]	4.54	10,000	2.27	5,000	50
Recreational discard mortality[7]	--	--	0.00	0	--
Subsistence[3]	4.54	10,000	1.89	4,164	42
Non-directed commercial discard mortality (O26)[3]	113.40	250,000	127.91	282,000	113
IPHC fishery-independent setline survey and research[4]	--	--	--	--	--
Non-directed commercial discard mortality (U26)	45.36	100,000	60.78	134,000	134

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IPHC Regulatory Area	Fishery limit/mortality projection (net weight)[1]		Mortality to date (net weight)		Percent attained
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	(%)
USA – Area 4B (central/western Aleutians)[10]	**616.89**	**1,360,000**	**250.97**	**553,300**	**41**
Directed commercial fishery landings	553.38	1,220,000	182.83	403,082	33
Directed commercial discard mortality[3]	4.54	10,000	2.27	5,000	50
Recreational fishery[3]	0.00	0	0.00	0	--
Recreational discard mortality[7]	--	--	0.00	0	--
Subsistence[3]	--	--	0.10	218	--
Non-directed commercial discard mortality (O26)[3]	58.97	130,000	65.77	145,000	112
IPHC fishery-independent setline survey and research[4]	--	--	--	--	--
Non-directed commercial discard mortality (U26)	4.54	10,000	6.35	14,000	140
USA – Area 4CDE and Closed (Bering Sea)[10]	**1,746.33**	**3,850,000**	**1,271.74**	**2,803,715**	**73**
Directed commercial fishery landings	916.26	2,020,000	574.47	1,266,498	63
Directed commercial discard mortality[3]	36.29	80,000	23.59	52,000	65
Recreational fishery[3]	0.00	0	0.00	0	--
Recreational discard mortality[7]	--	--	0.00	0	--
Subsistence[3,9]	18.14	40,000	6.00	13,217	33
Non-directed commercial discard mortality (O26)[3]	780.18	1,720,000	667.69	1,472,000	86
IPHC fishery-independent setline survey and research[4]	--	--	--	--	--
Non-directed commercial discard mortality (U26)	399.16	880,000	515.73	1,137,000	129
Totals[10]	**16,769.31**	**36,970,000**	**14,968.67**	**33,000,283**	**89**
Directed commercial fishery	11,924.94	26,290,000	10,280.83	22,665,360	86
Recreational fishery	2,989.17	6,590,000	2,727.09	6,012,210	91
Subsistence[3,9]	435.45	960,000	379.52	836,708	87
Non-directed commercial discard mortality (O26)[3]	1,419.74	3,130,000	1,260.53	2,779,000	89
IPHC fishery-independent setline survey and research[4]	--	--	320.69	707,005	--
Non-directed commercial discard mortality (U26)	621.42	1,370,000	710.78	1,567,000	114

[1] Totals by IPHC Regulatory area include all TCEY components, i.e. exclude non-directed commercial discard mortality (U26).
[2] Non-treaty incidental to sablefish fishery limit allocated from Washington sport allocation in accordance with the Pacific halibut Catch Sharing Plan for IPHC Regulatory Area 2A.
[3] Fishery projection is value from 2022 AM estimates which were used in setting the TCEY for each IPHC Regulatory Area (i.e., non-FCEY components of TCEY).
[4] Includes U32 Pacific halibut landed during FISS.
[5] XRQ and GAF leased from commercial quota.
[6] Rollover value provided by the Fisheries and Oceans Canada (DFO) as end-of-year projection since 2007.
[7] Limit/projection included in limit/projection listed above; percent attained reflects all mortality components included in the limit/projection.
[8] Estimation method applied by DFO under review, mortality value updated on 14 November.
[9] Includes U32 CDQ landings retained for personal consumption and not accounted as commercial CDQ landings in IPHC Regulartory Areas 4D and 4E.
[10] Sum excludes non-directed commercial discard mortality (U26).

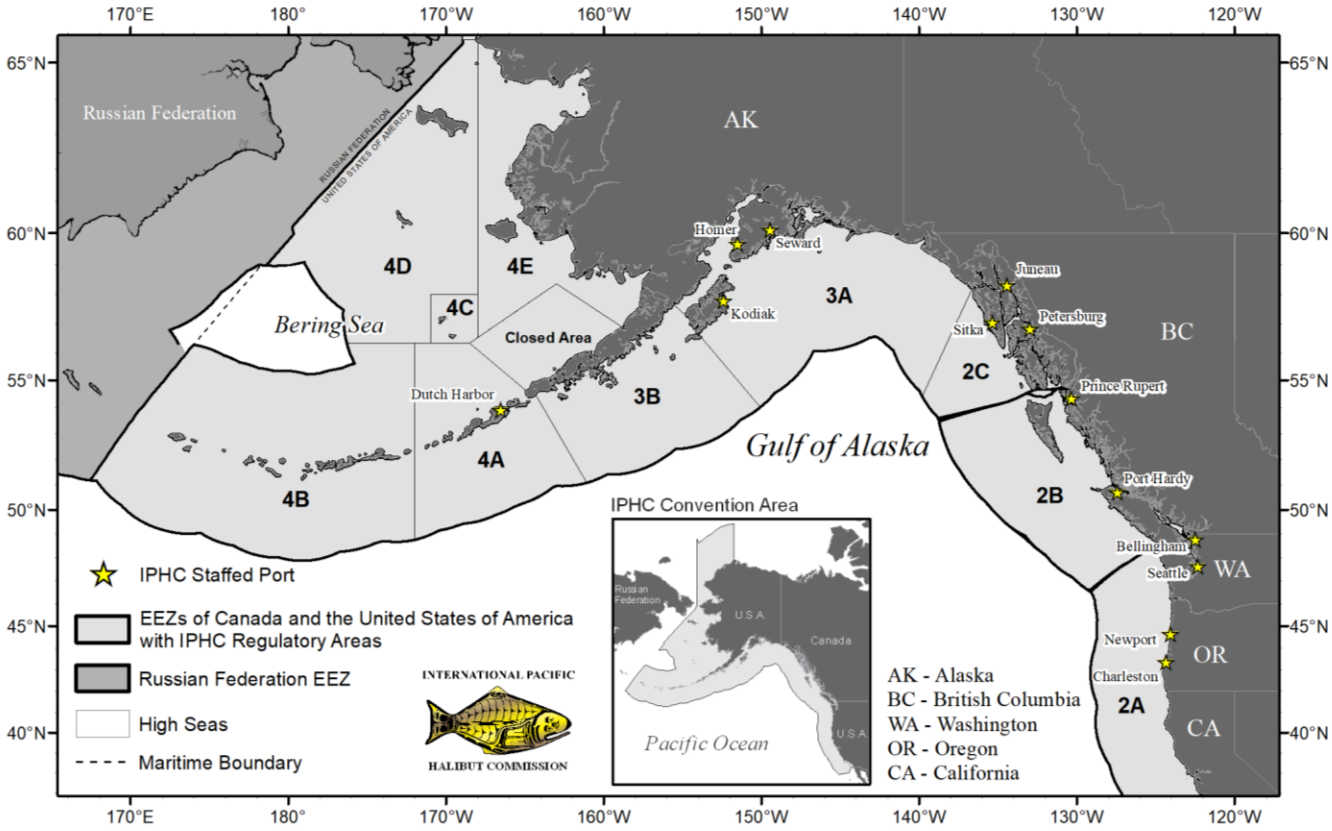

Figure 1. IPHC Convention Area and associated IPHC Regulatory Areas.

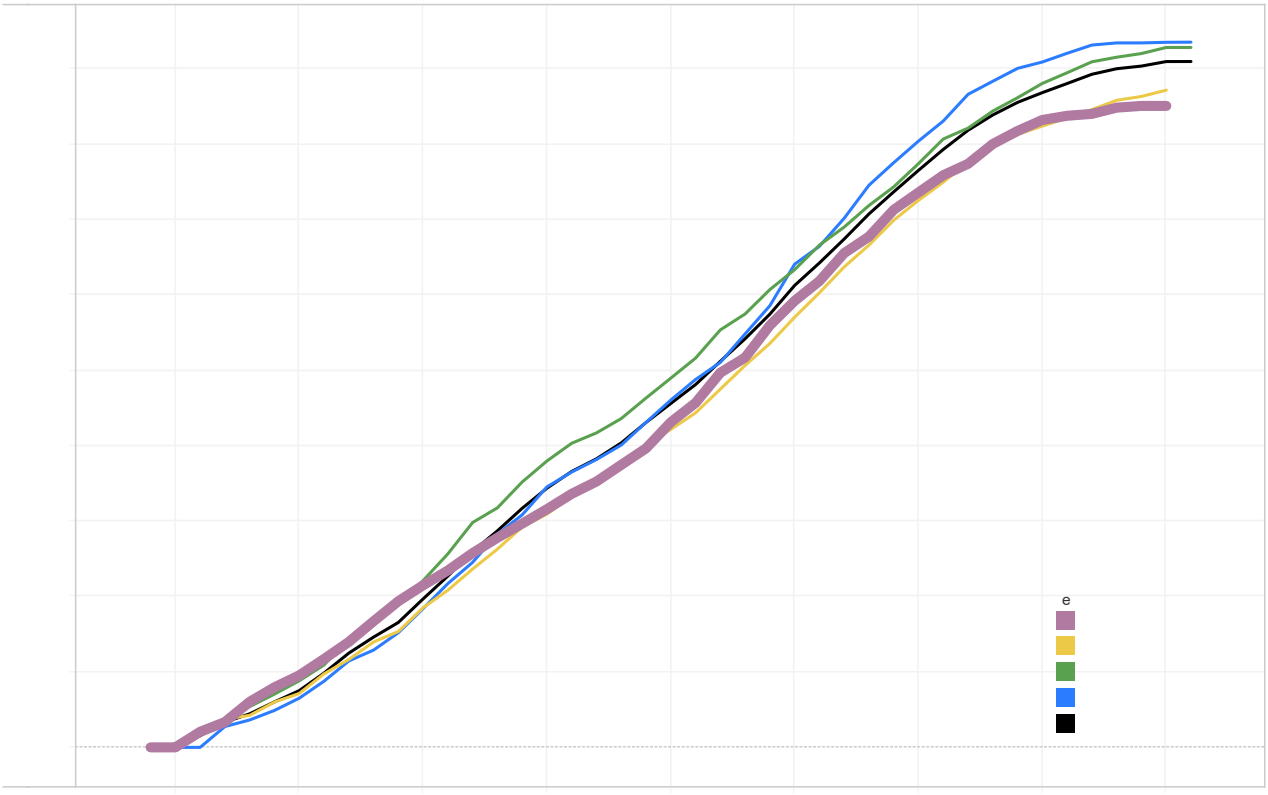

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Figure 2. Cumulative percentage of quota share directed commercial Pacific halibut limit landed by week.

DIRECTED COMMERCIAL FISHERIES

The IPHC's directed commercial fisheries span from northern California through to northern and western Alaska in USA and Canadian waters of the northeastern Pacific Ocean. The IPHC sets annual limits for the retention 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 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 in British Columbia, Canada; the Metlakatla fishery in IPHC Regulatory Area 2C; the Individual Fishing Quota (IFQ) system in Alaska, USA; and the CDQ fisheries in IPHC Regulatory Areas 4B and 4CDE.

Directed 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 10 March and closed at 12 (noon) local time on 7 December (Table 3). The IPHC Regulatory Area 2A directed commercial fisheries, including the treaty Indian commercial fisheries, occurred during the same calendar period (10 March to 7 December 2023). In IPHC Regulatory Area 2A, the non-treaty directed commercial fishery operated under 58-hour fishing periods beginning on the fourth Tuesday in June. Each fishing period began on the Tuesday at 0800 and ended on the following Thursday at 1800 local time, and was further restricted by fishing period limits. The fishery closed for the remainder of the year after the third opening that commenced on 1 August, when the IPHC Regulatory Area 2A directed commercial non-treaty fishery allocation was estimated to have been reached.

Table 3. Fishing periods for directed commercial Pacific halibut fisheries by IPHC Regulatory Area, 2019-2023 (d = days; h = hours).

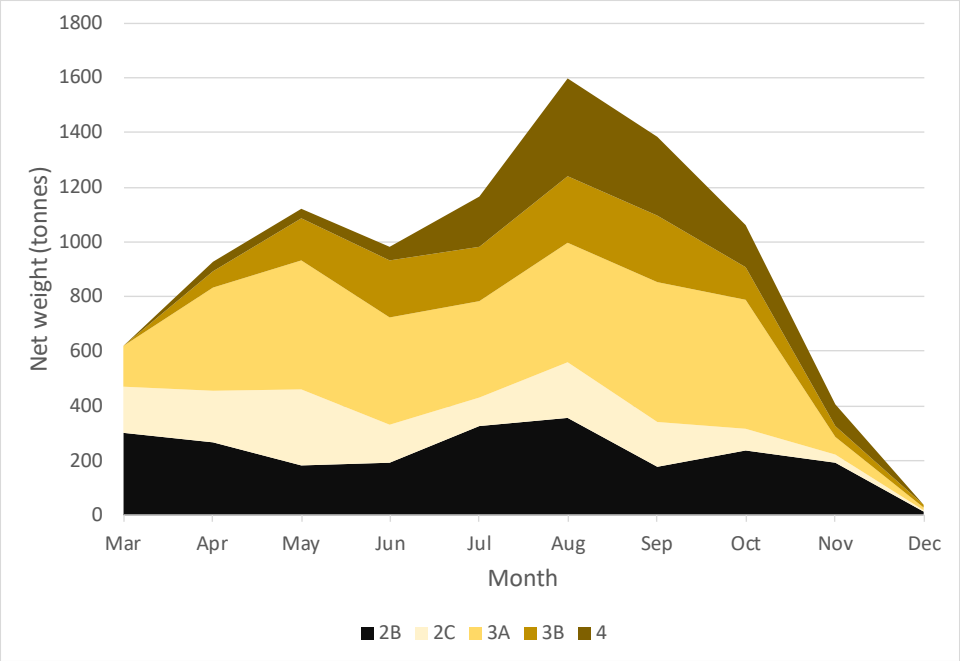
IPHC Regulatory Area		Year			
	2023	2022	2021	2020	2019
Canada: 2B	10 Mar–7 Dec (272 d)	6 Mar–7 Dec (276 d)	6 Mar–7 Dec (276 d)	14 Mar-7 Dec (268 d)	15 Mar-14 Nov (244 d)
USA: 2A Treaty Indian	10 Mar-10 June (55 h) (Unrestricted) 10 Mar-31 May (122 h) (Restricted) 1 June-31 July (2x 24 h) (Restricted) 17 June-31 July (20 h) (Unrestricted) 1 Sept-15 Oct (2x24 h) (Restricted)	6 Mar-31 May (55 h) (Unrestricted) 6 Mar-31 May (122 h) (Restricted) 3 Jun-30 Sept (48 h and 72 h) (Restricted)	6 Mar-16 May (55 h) (Unrestricted) 6 Mar-16 May (102 h) (Restricted) 16 May-20 Jun (24 h)	14 Mar-30 Sep (55 h) (Unrestricted) 14 Mar-30 Sep (222 h) (Restricted) 5 Oct -18 Oct (13 d)	15 Mar-15 May (55 h) (Unrestricted) 15 Mar-15 May (84 h) 20 May-15 Jun (72 h) (Restricted) 11 Jun-24 Jul (35 d)
USA: 2A Commercial Directed	27-29 Jun 11-13 Jul 1-3 Aug (58 h each)	28-30 Jun 12-14 Jul 26-28 Jul (58 h each)	22-24 Jun 6-8 Jul 20-22 Jul (58 h each)	22-24 Jun 6-8 Jul 20-22 Jul 3-5 Aug 17-19 Aug (58 h each)	26 Jun 10 Jul 24 Jul (10 h each)

USA: 2A Commercial Incidental	Salmon 1 Apr – 31 Oct (213 d) Sablefish 1 Apr – 7 Dec (250 d)	Salmon 1 Apr – 31 Oct (213 d) Sablefish 1 Apr – 31 Oct (213 d)	Salmon 1 Apr – 7 Dec (250 d) Sablefish 1 Apr – 7 Dec (250 d)	Salmon 15 Apr–30 Sep (WA – 168 d) 15 Apr–31 Oct (OR - 199 d) 1 Aug–30 Sep (CA - 60 d) Sablefish 1 Apr – 15 Nov (228 d)	Salmon 20 Apr - 30 Sep (WA, CA - 163 d) 20 Apr - 31 Oct (OR - 194 d) Sablefish 1 Apr- 31 Oct (213 d)
USA: Alaska (2C, 3A, 3B, 4A, 4B, 4CDE)	10 Mar–7 Dec (272 d)	6 Mar–7 Dec (276 d)	6 Mar–7 Dec (276 d)	14 Mar-15 Nov (246 d)	15 Mar-14 Nov (244 d)

Directed Commercial Landings

Directed commercial fishery limits and landings by IPHC Regulatory Area for the 2023 fishing season are shown in Table 2. The directed commercial fishery limit, as referred to here, is the IPHC commercial fishery limit set by the Contracting Parties following the IPHC Annual Meeting and is equivalent to the Fishery Constant Exploitation Yield (FCEY). The fishery limits with adjustments from the underage and overage p og ms om the p evious ye 's quot sh e p og ms e not shown. The *Use of Fish* allocation in IPHC Regulatory Area 2B, as defined in the Pacific Region Integrated Fisheries Management Plan – Groundfish are also not presented. Historical landings and fishery limits are available on the IPHC website (https://www.iphc.int/data).

The 2023 directed commercial fishery landings were spread over ten months (March – December) of the year in Canada and the USA (Figure 2). On a month-to-month comparison, August took the lead as the busiest month for total poundage (16%) landed from IPHC Regulatory Area 2B. On a month-to-month comparison, August was also the busiest month for total poundage (18%) from Alaska, USA. A year-to-date visualization is also available on the IPHC website.



Regulatory Area 2B landings from DFO Fishery Operations System (FOS).
Regulatory Areas 2C, 3, and 4 landings from NOAA Fisheries Restricted Access Management (RAM) Program. Regulatory Area 3B: March combined with and shown above in April and December combined with and shown above in November to preserve confidentiality. Regulatory Area 4: March combined with and shown above in April to preserve confidentiality.

Figure 2. 2023 directed commercial landings (tonnes, net weight, preliminary) of Pacific halibut for individual quota fisheries by IPHC Regulatory Area and month.

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

The 2023 IPHC Regulatory Area 2A fisheries and respective fishery limits are listed in Table 2. The total IPHC Regulatory Area 2A commercial landings (directed and incidental to salmon troll sablefish, and Treaty Indian) of 374 tonnes (824,237pounds) was 6% below the fishery limit. The total non-treaty directed commercial landings of 118 tonnes (259,226 pounds) was over 1% of the fishery limit of 117 tonnes (257,819 pounds) after three 58-hour openers. The fishing period limits by vessel size class for each opening in 2023 are listed in Table 4.

The salmon troll fishery season was open from 1 April to 31 October in Oregon and Washington with an allowable incidental landing ratio of one Pacific halibut per two Chinook, plus an additional Pacific halibut per landing, and a vessel trip limit of 35 fish. On 30 June, the fishery was extended at the same ratio and landing limit. Total landings of 11 tonnes (24,255 pounds) were 47% under the fishery limit (21 tonnes or 45,497 pounds).

Incidental Pacific halibut retention during the limited-entry sablefish fishery was open from 1 April to 7 December. The allowable landing ratio was 0.07 tonnes (150 pounds) of Pacific halibut to 0.45 tonnes (1,000 pounds) of sablefish, and up to two additional Pacific halibut in excess of the ratio limit. The total landings of 21 tonnes (45,595 pounds) were 35% under the fishery limit (32 tonnes or 70,000 pounds).

In IPHC Regulatory Area 2A, north of Point Chehalis (46°53.30´ N. latitude), the treaty Indian tribes manage the directed 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. The initial unrestricted fishery, which was originally scheduled to occur between 10 March and 31 May, was extended until 10 June. The fishery had a 55-hour period limit and landed 111 tonnes (244,933 pounds). For tribes that completed their unrestricted fishery by 31 May, there were two extra 24-hour, 0.23 tonnes (500 pounds) trip limit restricted fisheries to be completed between 1 June and 31 July. A total of 0.42 tonnes (932 pounds) were landed during the extra openings. The regular season restricted fishery

was conducted between 10 March and 31 May. Each tribe had 122 hours of duration for the restricted sub-fishery, not to be prosecuted over more than six calendar days, limited to a total of 6 landings of 0.23 tonnes (500 pounds) each with no more than one landing per calendar day. A total of 39 tonnes (84,964 pounds) were landed from these restricted openings.

The initial late season unrestricted fishery occurred between 17 June and 31 July for 20 hours for each tribe. This was followed by two restricted fishery openings not to exceed 24 hours with a limit of 0.23 tonnes (500 pounds) between 1 September and 15 October. A total of 75 tonnes (164,332 pounds) were landed. Estimated overall total landings of 225 tonnes (495,161 pounds) were 1% under the fishery limit (228 tonnes or 502,500 pounds).

Table 4. The fishing periods and limits (tonnes, dressed, head-on with ice/slime) by vessel class used in the 2023 directed commercial fishery in IPHC Regulatory Area 2A.

Vessel Class		Fishing Period (dates) & Limits (t)		
Letter	**Feet**	**27-29 June**	**11-13 July**	**1-3 August**
A, B and C	1-35	1.2	1.2	.45
D and E	36-45	1.9	1.9	.45
F and G	46-55	2.5	2.5	.45
H	56+	2.8	2.8	.45

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 138 in 2023. In addition, Pacific halibut can be landed as incidental catch in other licensed groundfish fisheries. In 2023, this occurred from a total of 80 licences from other fisheries. The 2023 directed commercial landings represented 2,233 tonnes (4,922,721 pounds) of Pacific halibut. Additionally, 7 tonnes (15,790 pounds) were leased from commercial quota to the recreational sector.

Directed commercial trips from IPHC Regulatory Area 2B were delivered into 14 different ports in 2023. The ports of Port Hardy (including Coal Harbour and Port McNeill) and Prince Rupert/Port Edward were the major landing locations, receiving 93% of the commercial landings. Port Hardy received 45% while Prince Rupert received 48% of the directed commercial landings. All IVQ landings were landed in IPHC Regulatory Area 2B. In 2023, a total of 33 Canadian vessels landed frozen, head-off Pacific halibut for a total of 31 tonnes (68,867 pounds) over 65 landings. Live landings resulted in a total landed weight of <1 tonne (1,336 pounds).

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

In Alaska, the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) Restricted Access Management (RAM) Program 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 2023, RAM reported that 2,241 persons/entities held QS.

The total 2023 landings from the IFQ/CDQ Pacific halibut fishery for the waters off Alaska through 7 December 2023 were 7,064 tonnes (15,574,262 pounds), 18% under the directed commercial fishery limit. By IPHC Regulatory Area, the directed commercial landings were under the fishery limit by 12% for Area 2C, 9% for Area 3A, 9% for Area 3B, 35% for Area 4A, 67% for Area 4B (IFQ/CDQ), and 37% for 4CDE/Closed (IFQ/CDQ).

Homer received approximately 21% (1,469 tonnes or 3,239,937 pounds) of the Alaskan directed commercial landings, making it the port that received the greatest landed volume in 2023. Kodiak received the second largest landing volume at 13% (890 tonnes or 1,963,063pounds) of the Alaskan commercial landings. In Southeast Alaska, the two largest landing volumes were received in Sitka and Juneau, with

their combined landings representing 14% (957 tonnes or 2,108,928 pounds) of the directed commercial Alaskan landings. The Alaskan QS catch that was landed in Bellingham, WA was less than 2%.

In Alaska, 25 tonnes (56,000 pounds) of Pacific halibut were caught with pot gear and landed within the directed commercial fishery, representing 0.4% of the total Alaska landings.

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 12 two-day openings between 14 April and 15 September for total landings of 17 tonnes (38,140 pounds). The fishery closed on 17 September.

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 FISS 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 an estimated 16% mortality rate and Pacific halibut mortality from lost gear is assumed 100%.

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

RECREATIONAL FISHERIES

The 2023 recreational removals of Pacific halibut, including discard mortality, was estimated at 2,727 tonnes (6,012,210 pounds). Changes in harvests varied across areas, in some cases, in response to changes in size restrictions. Recreational fishery limits and landings are detailed by IPHC Regulatory Area in Table 2. Historical recreational removals are also available at the IPHC website, section on fishery information.

Recreational Landings

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

The 2023 IPHC Regulatory Area 2A recreational allocation was 279 tonnes (614,684 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 128 tonnes (281,728 pounds) being allocated to Washington subareas, 133 tonnes (293,436 pounds) to Oregon subareas and 18 tonnes (39,520 pounds) to California. The IPHC Regulatory Area 2A recreational harvest totaled 239 tonnes (WA, OR and CA; 527,389 pounds), 14% under the recreational fishery limit. Recreational fishery harvest seasons by subareas varied and were managed in season with fisheries open in Washington from 6 April to 30 September, in Oregon from 1 May to 31 October, and in California from 1 May to 4 August.

Canada – IPHC Regulatory Area 2B (British Columbia)

IPHC Regulatory Area 2B operated under a 133 cm (52.4 inch) maximum size limit and one Pacific halibut had to be between 90 and 133 cm (35.4 - 52.4 inches) or two under 90 cm (35.4 inch) when attaining the two fish possession limit, with an annual limit of ten per licence holder (FN100). Effective 1 April, the

maximum size limit was decreased to 126 cm (49.6 inch) (FN0264). On 8 July, the daily limit was increased to equal the possession limit, that is one fish between 90 and 126 cm (35.4 - 49.6 inch) or two fish under 90 cm (35.4 inch) (FN0628). The fishery closed on 30 September (FN1049). The IPHC Regulatory Area 2B recreational harvest was at 100% of the recreational fishery limit at 404 tonnes (889,881 pounds).

Note: The estimates of the recreational landings in Canada have been revised to include corrected and updated length-weight relationship (IPHC-2023-AM099-INF04). See 2023 Canadian National Report (IPHC-2023-AM100-NR01 Rev_1) for details.

Recreational landings in British Columbia are also allowed under Pacific Region Experimental Recreational [Pacific] Halibut Program.

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

A reverse slot limit allowing for the retention of one Pacific halibut, if less or equal 101.6 cm (40 inches) or more or equal 203.2 cm (80 inches) in total length, was in place for the charter fishery in IPHC Regulatory Area 2C. Retention was also forbidden on any Monday from 24 July to 31 December. In IPHC Regulatory Area 3A, charter anglers were allowed to retain two fish per day, but only one could exceed 71.1 cm (28 inches) in length. One trip per calendar day per charter permit was allowed, with no charter retention of Pacific halibut on Wednesdays or on the following Tuesdays: 20 June, 27 June, 4 July, 11 July, 18 July, 25 July, 1 August, 8 August, and 15 August.

In addition, a Guided Angler Fish (GAF) program allows recreational harvesters to land fish that is leased from commercial fishery quota shareholders for the current season.

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 USA agencies of recreational discard mortality have been received and are provided in Table 2. Canada has not provided recreational discard mortality estimates; therefore, the discard mortality rate from IPHC Regulatory Area 2C is applied to the estimated landings from IPHC Regulatory Area 2B.

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, the First Nations Food, Social, and Ceremonial (FSC) fishery in British Columbia, and the subsistence fishery by rural residents and federally recognized native tribes in Alaska documented via Subsistence [Pacific] Halibut Registration Certificates (SHARC).

The coastwide subsistence estimate for 2023 was 380 tonnes (836,708 pounds) (Table 2). This includes U32 fish retained for personal consumption in CDQ fishery (excluded from commercial CDQ landings statistics), reported directly to the IPHC in accordance with Section 14 of the IPHC Fishery Regulations (2023). Historical subsistence removals are also available at the IPHC website, section on fishery information.

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, with exception of U32 fish retained by CDQ groups, are accounted for as commercial catch and are not included here.

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

The P ci ic Fishe y M n gement Council's C tch Sh ing Pl n lloc tes the P ci ic h libut ishe y 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 C&S fisheries. It is estimated that 13 tonnes (29,500 pounds) were retained as C&S.

IPHC Regulatory Area 2B (Canada: 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).

IPHC Regulatory Areas 2C, 3, and 4 (USA: 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 applicants must obtain a SHARC license. The Division of Subsistence at Alaska Department of Fish and Game (ADF&G) was contracted by NOAA Fisheries to estimate the subsistence harvest in Alaska through a data collection program. A voluntary survey of fishers is conducted by mail or phone, with some onsite visits. Beginning in 2018, this survey is conducted on a biannual schedule, rather than annually. The 2022 estimate has been carried forward for 2023 and provided in Table 2.

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, if 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 2023 removals were received from three CDQ management organizations: Bristol Bay Economic Development Corporation (BBEDC), Norton Sound Economic Development Corporation (NSEDC), and Coastal Villages Regional Fund (CVRF).

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 then 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 primarily in King Salmon and Naknek in a lesser amount. BBEDC reported 3 harvesters landed 25 U32 Pacific halibut (<1 tonne; 295 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. The fish were not washed nor were the heads removed. The U32 Pacific halibut were then returned to the harvester. NSEDC reported 35 U32 Pacific halibut weighing <1 tonne (350 pounds), weighted head-on, were caught in the local CDQ fishery and landed at the Nome plant.

NON-DIRECTED COMMERCIAL DISCARD MORTALITY

The IPHC accounts for non-directed commercial discard mortality by IPHC Regulatory Area and sector. All removals for 2023 are provided in Table 2. Historical data are also available on the IPHC website, section on fishery information.

Estimating Non-Directed Commercial Discard Mortality

Non-directed commercial discard mortality (CDM)

Estimates of non-directed CDM of Pacific halibut are provided by Contracting Party agencies. The amounts are estimated because not all fisheries have 100% monitoring, and not all Pacific halibut that are discarded are assumed not to survive. The IPHC relies upon information supplied by observer programs run by Contracting Party agencies for non-directed CDM estimates in most fisheries. Non-IPHC research survey information is used to generate estimates of non-directed CDM in the few cases where fishery observations are unavailable.

Non-directed Commercial Discard Mortality by Area

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. Non-directed commercial discard mortality projected estimates are provided by NOAA Fisheries, which operates observer programs off the USA West Coast.

Canada – IPHC Regulatory Area 2B (British Columbia)

In Canada, Pacific halibut non-directed commercial discard mortality in trawl fisheries are monitored and capped at 454 tonnes round weight by DFO. Non-trawl non-directed CDM is handled under the IVQ system within the directed Pacific halibut fishery cap. Non-directed CDM information is provided to IPHC by DFO.

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 are provided by NOAA Fisheries and ADF&G.

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. In 1998, a no trawl zone was established in the Gulf of Alaska eliminating trawl fishing in this area.

Fisheries occurring within state waters and resulting in Pacific halibut non-directed CDM include pot fisheries for red and golden king crab, and tanner crab. Information is provided periodically by ADF&G, and the estimate was rolled forward from 2022 to 2023.

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

IPHC Regulatory Area 3 is comprised of Areas 3A and 3B. For the purposes of stock assessment and management, IPHC tracks non-directed commercial discard mortality in both IPHC Regulatory Areas. Federal groundfish fisheries operate throughout both areas and a subset of these vessels are monitored for discarded Pacific halibut. Trawl fisheries are responsible for most of the non-directed CDM in Regulatory Area 3, with hook-and-line fisheries a distant second. State-managed crab and scallop fisheries are also known to take Pacific halibut as non-directed CDM, but data from these state-managed fisheries are currently unavailable.

Estimates of non-directed CDM in IPHC Regulatory Area 3 reflect different levels of observer coverage by gear and type of fishing trip. 2021 coverage rates vary from 100% to 15% of the estimated discarded groundfish pounds by gear and fishery (Table 3-4 in AFSC 2021). The lowest coverage rates are realized for the non-pelagic trawl fishery, which also has the highest likelihood of encountering Pacific halibut. Analyses of observed and unobserved trip properties (magnitude of the landings, trip duration, species composition of the landed catch, etc.) have shown that observed trips are not representative of all trips in some of these metrics (observed and unobserved) (Appendix A in AFSC 2019). Therefore, non-directed CDM estimates for IPHC Regulatory Area 3 have both a greater uncertainty and potential for bias then those from areas with higher coverage rates and/or where there is no evidence of different behavior when observed.

IPHC Regulatory Area 4 (Bering Sea and Aleutian Islands)

In IPHC Regulatory Area 4CDE non-directed commercial discard mortality estimates have typically been the highest (Table 2) due to groundfish fisheries which target flatfish in the Bering Sea.

IPHC FISHERY-INDEPENDENT SETLINE SURVEY (FISS)

In 2023, 321 tonnes (707,005 pounds) of Pacific halibut were landed from the FISS and other IPHC research, including IPHC Bait Study. Totals landed from each IPHC Regulatory Area documented in Table 2.

NON-IPHC RESEARCH REMOVALS

In 2023, four IPHC research permits were issued to NOAA to allow the harvest of Pacific halibut while conducting their Gulf of Alaska, Eastern Bering Sea, and Northern Bering Sea standardised bottom trawl surveys. A fifth research permit was issued to the U.S. Department of Energy to allow retention of Pacific halibut for radionuclide analysis. Amounts retained will be reported when available.

RECOMMENDATION

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-07 Rev_1 which provides the Commission with an overview of the 2023 Pacific halibut removals, including the status of mortality reported against fishery limits adopted by the Commission and outlined in the IPHC Fishery Regulations (2023).

IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2023

PREPARED BY: IPHC SECRETARIAT (K. UALESI , T. JACK, R. RILLERA, K. COLL; 13 DECEMBER 2023 & 17 JANUARY 2024)

PURPOSE

To provide a summary of the IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2023.

BACKGROUND

The annual IPHC Fishery-Independent Setline Survey (FISS) of the Pacific halibut stock was augmented from 2014-2019 with expansion stations that filled in gaps in coverage in the annual FISS. Prior to 2020, the standard grid of stations comprised 1,200 stations. Following the completion in 2019, expansion stations were added to the standard grid in all IPHC Regulatory Areas, now totaling 1,890 stations for the full FISS design (Figure 1), within the prescribed depth range of 18 to 732 metres (10 to 400 fathoms).

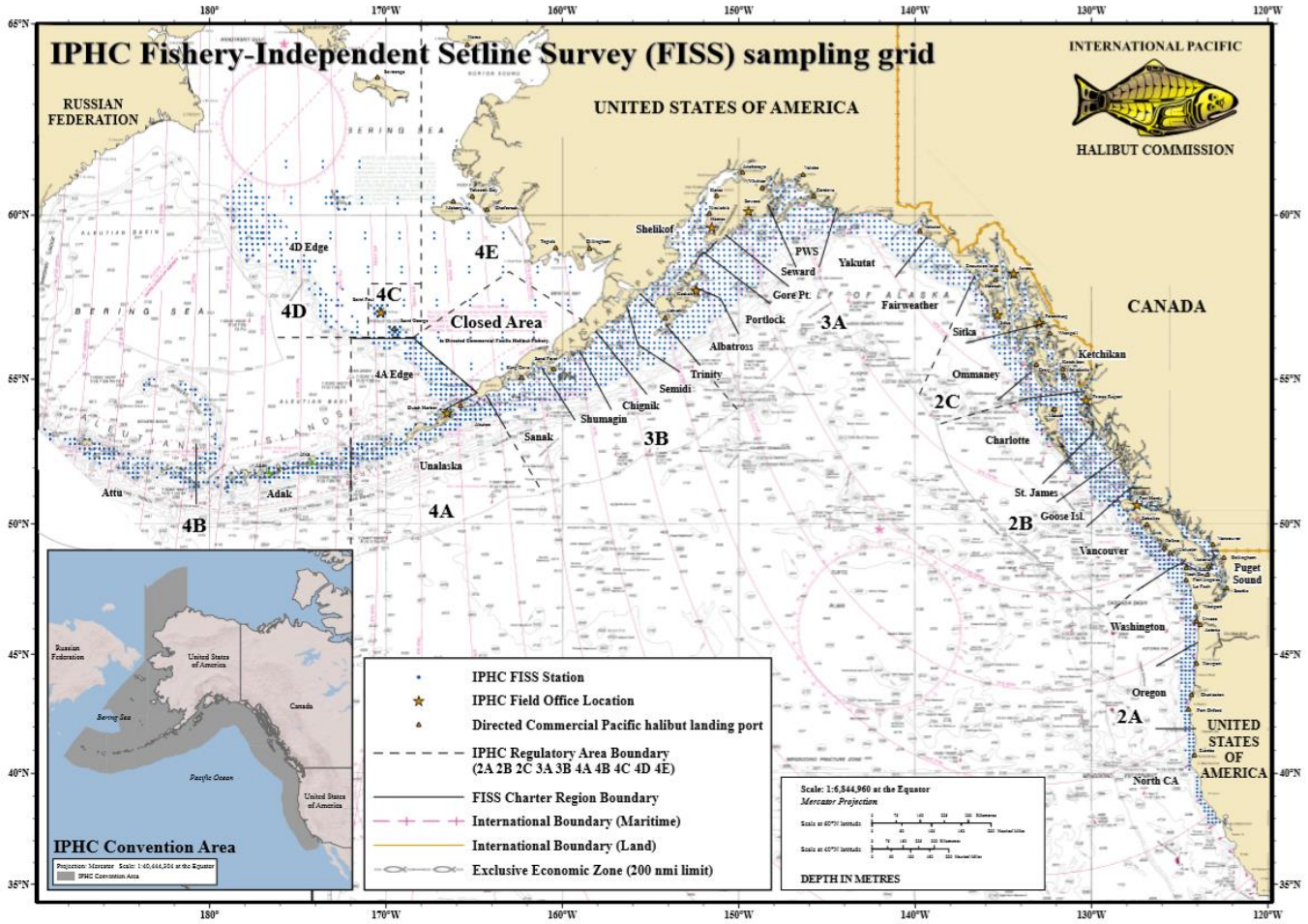


Figure 1. IPHC Fishery-Independent Setline Survey (FISS) with full sampling grid shown.

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 with this work being done in 2019, 2020,

and again in 2021. While no study was completed in 2022, we recognized the increased use of snap gear and integrated snap gear into the FISS tender specifications for 2023.

Beginning in 2019, individual weight data were collected coastwide from Pacific halibut caught on the FISS to eliminate questions that have arisen regarding the accuracy of estimates that depend on these weights, including weight per unit effort (WPUE) indices of density. Data from IPHC collections from commercial landings and other sources had provided evidence that the current standard length-net weight curve used for estimating Pacific halibut weights on the FISS may have been over-estimating weights on average in most IPHC Regulatory Areas, and that the relationship between weight and length may vary spatially.

2023 FISS design

At the 98th Session of the IPHC Interim Meeting (IM098), the Commission endorsed a FISS design for 2023 that included 958 stations coastwide (Fig. 2). The design comprised sampling of subareas within IPHC Regulatory Areas 2A, 2B, 3A, 3B, 4A, and 4B intended to balance the Commission's primary and secondary objectives for the FISS. 2023 sampling in IPHC Regulatory Areas 2C included 100% of the full FISS design.

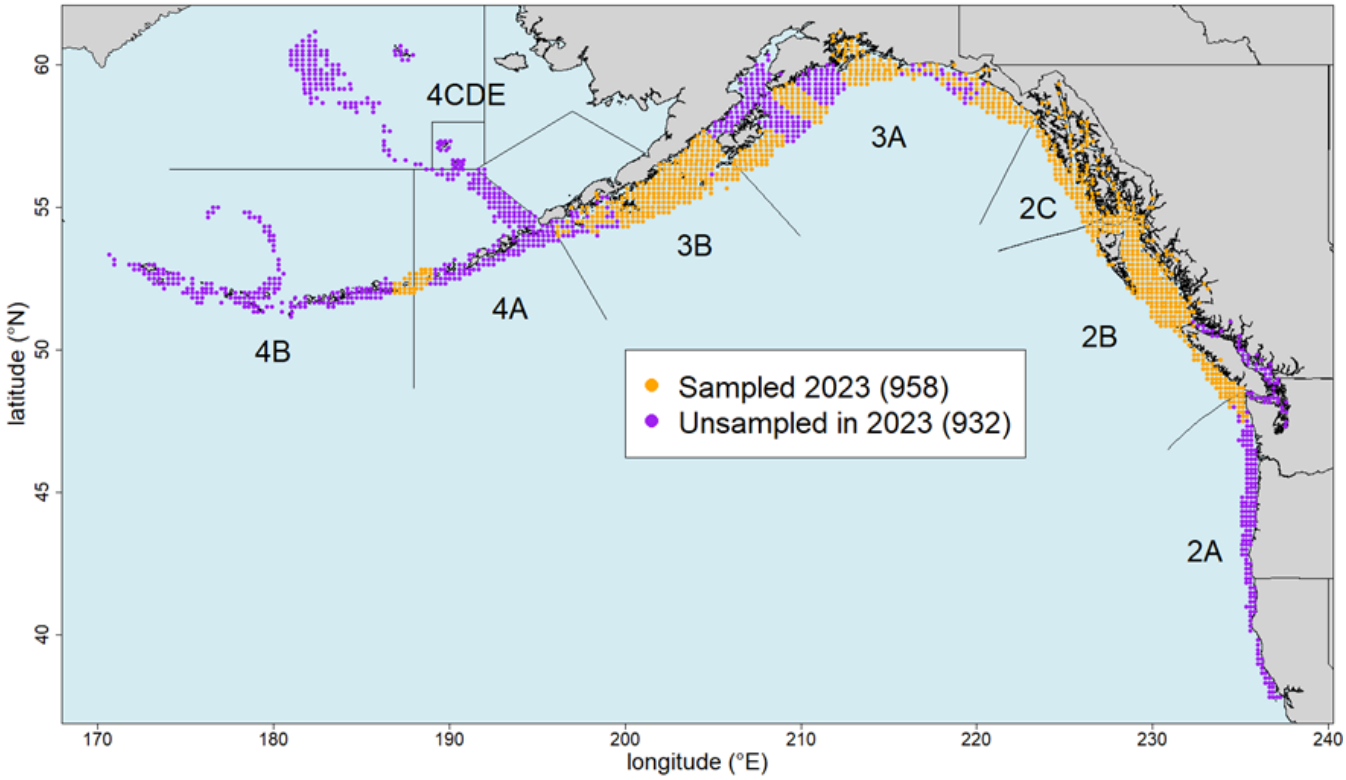


Figure 2. Map of the 2023 FISS design endorsed by the Commission on 1 December 2022 (IPHC-2022-IM098). Purple circles were not sampled in 2023.

At the 99th Session of the IPHC Annual Meeting (IPHC-2023-AM099-R), the Commission:

> (para. 30) "***NOTED*** *paper IPHC-2023-AM099-10 which provided the designs for the IPHC's Fishery-Independent Setline Survey (FISS) for the 2023-25 period, as reviewed by the Scientific Review Board (SRB) in 2022, and endorsed at IM098: IPHC-2022-IM098-R, para. 31: "The Commission* ***ENDORSED*** *an optimized design for the 2023 FISS as provided at Appendix IV, that balances the Commission's primary and secondary objectives for the FISS. As with all years, the Commission will have an additional opportunity to modify the 2023 FISS design at AM099."*

MATERIALS AND METHODS

The IPHC's FISS design encompasses nearshore and offshore waters of the IPHC Convention Area (Fig. 1). The IPHC Regulatory Areas are divided into 29 charter regions, each requiring between 10 and 46 charter days to complete. FISS stations are located at the intersections of a 10 nmi by 10 nmi square grid within the depth range occupied by Pacific halibut during summer months (18 – 732 m [10 – 400 fm]). Figure 2 depicts the 2023 FISS station positions, and IPHC Regulatory Areas.

Fishing vessels are chosen through a competitive bid process where up to four (4) charter regions per vessel may be awarded and typically 10-15 vessels are chosen. In 2023, the process has been clearly documented on the IPHC website for accountability and transparency purposes:https://www.iphc.int/management/science-and-research/fishery-independent-setline-survey-fiss/62-fiss-vessel-recruiting.

In 2023, 8 vessels were chartered to complete the FISS, as detailed in Media Release 2023-008: Notification of IPHC Fishery-Independent Setline Survey (FISS) 2023 Contract Awards.

Sampling protocols

IPHC Setline Survey Specialists (Field) collected data according to protocols established in the 2023 FISS Sampling Manual (IPHC-2023-VSM01).

Sampling challenges - 2023

In addition to the 958 FISS stations planned for the 2023 FISS season, there were an additional eight (8) rockfish index stations added in IPHC charter region Washington, and one (1) station added back to IPHC charter region Trinity to ensure 100% sampling in that region. Of this total of 967 FISS stations planned, 864 (89%) were effectively sampled (Figure 3).

Not sampled: A total of 68 initially planned stations were not sampled in 2023. There were challenges with vessel recruitment this season due to 1) increased sablefish quota availability and 2) vessels unable to meet FISS tender specifications regarding deck space, communication capabilities, safety equipment, etc.

Due to the challenges with vessel recruitment, the following stations within IPHC charter regions were not sampled: Yakutat (36 stations), Unalaska (16 stations) and Adak (16 stations).

In addition, two (2) stations in Sitka were unsampled as they were within Glacier Bay National Park, and we were not permitted to complete these stations within the park this year by NOAA. There were also two (2) stations in Prince William Sound not sampled due to poor weather; and two (2) stations in St. James/Charlotte (one in each charter region) that could not be completed due to the station's location within the Hecate MPA.

Ineffective stations: Coastwide, twenty-nine (29) stations were ultimately deemed ineffective due to Orca depredation (n=3), Sperm whale depredation (n=16), gear soak time (n=1), shark predation (n=3), pinniped predation (n=1), and setting and gear issues (n=5).

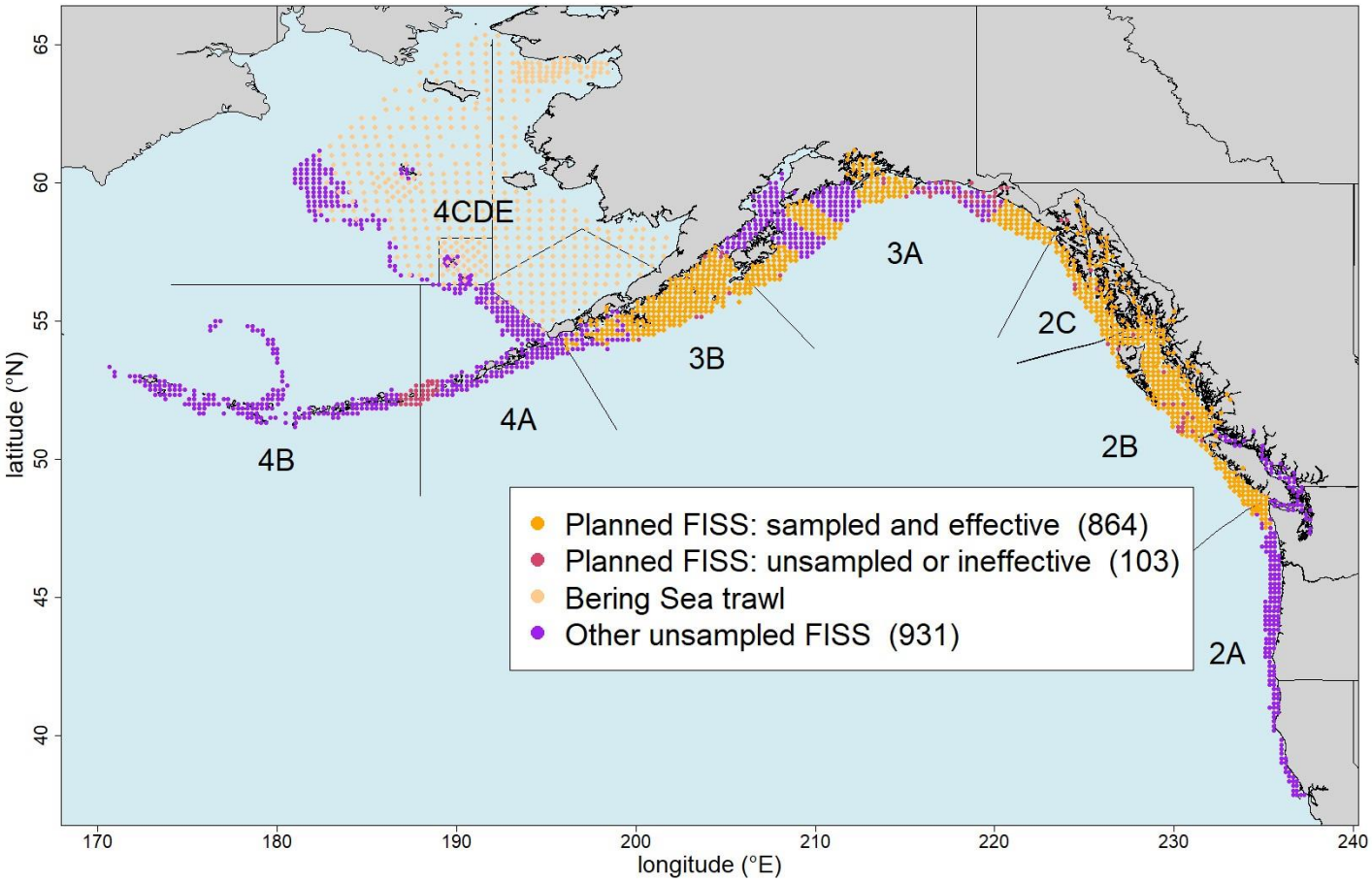


Figure 3. Map of the 2023 FISS design endorsed by the Commission on 1 December 2022 (IPHC-2022-IM098), with sampled and effective stations in orange and unsampled or ineffective stations in gray. Purple circles were not planned to be sampled in 2023.

Bait (Chum salmon)

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. Bait usage is based on 0.17 kilograms (0.37 pounds) per hook resulting in approximately 136 kilograms (300 pounds) per eight skate station. Bait quality was monitored and documented throughout the season and found to meet the standard as described above.

Pre-season: In August 2022 (IPHC Media Release 2022-015), the Secretariat made pre-season bait purchases of approximately 105 tonnes (210,000 lbs) to ensure a smooth start to the 2023 FISS.

In-season: Throughout the FISS season, the Secretariat secured an additional 14,400 lb of bait, to supplement pre-season purchases and complete the 2023 FISS successfully.

RESULTS

Interactive views of the FISS results are provided via the IPHC website and can be found here once published:

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

As in previous years, legal-sized (O32) Pacific halibut that were caught on FISS stations and sacrificed in order to obtain biological data were retained and sold. In addition, beginning in 2020, sub-legal (U32) Pacific halibut that were caught and randomly selected for otolith sampling were also retained and sold. This helps to offset costs of the FISS. 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 2023 FISS chartered 8 commercial longline vessels (four Canadian and four USA) during a combined 48 trips and 497 charter days (Tables 1). Otoliths were removed from 8,506 fish coastwide. Approximately 232 tonnes (512,491 pounds) of Pacific halibut, 38 tonnes (83,839 pounds) of Pacific cod, and 39 tonnes (86,871 pounds) of rockfish were landed from the FISS stations.

Table 1a. Effort and landing summary by FISS charter region and vessel for all 2023 stations and all Pacific halibut (sampled U32 and all O32).

IPHC Regulatory Area	Charter Region	Vessel	Vessel Number[1]	Charter Days[2]	Planned Stations	Effective Stations[3]	Pacific halibut Sold (t)[4]	Pacific halibut Sold (lb) [4]	Average Price USD/kg [5]	Average Price USD/lb [5]
2A	Washington	*Pacific Surveyor*	947061	12	24	24	5	11666	$10.60	$4.81
2B	Charlotte	*Pender Isle*	27282	42	89	86	25	55957	$17.42	$7.90
2B	Goose Island	*Star Wars II*	175688	32	57	48	10	21226	$17.25	$7.83
2B	St. James	*Star Wars II*	175688	33	60	57	14	31242	$16.78	$7.61
2B	Vancouver Outside	*Vanisle*	80000	33	57	56	9	19364	$17.62	$7.99
2C	Ketchikan	*Vanisle*	80000	26	43	42	16	35003	$14.99	$6.80
2C	Ommaney	*Bold Pursuit*	383527	30	52	49	36	78373	$12.66	$5.74
2C	Sitka	*Star Wars II*	175688	30	52	49	18	39018	$13.36	$6.06
3A	Albatross	*Kema Sue*	41033	25	49	48	12	26181	$11.09	$5.03
3A	Fairweather	*Bold Pursuit*	383527	25	51	51	5	10975	$12.93	$5.87
3A	Gore Point	*Dangerous Cape*	77199	27	48	48	7	16306	$14.27	$6.47
3A	Prince William Sound	*Dangerous Cape*	77199	39	67	64	9	20495	$11.27	$5.11
3B	Chignik	*Kema Sue*	41033	23	48	46	10	21813	$9.93	$4.51
3B	Sanak	*Kema Sue*	41033	20	36	35	9	20468	$0.34	$4.52
3B	Semidi	*Devotion*	42892	34	56	56	16	35323	$10.64	$4.82
3B	Shumagin	*Kema Sue*	41033	32	54	53	16	34185	$11.04	$5.01
3B	Trinity	*Devotion*	42892	34	56	52	16	34896	$10.99	$4.98
Total		**8 Vessels**		**497**	**899**	**864**	**232**	**512,491**	**$13.31**	**$6.04**

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 Stations that did not meet setting parameters or deemed ineffective are excluded.

4 Net weight (head-off, dressed, washed). May not sum to correct total due to rounding.

5 Ex-vessel price.

Table 1b. Effort and landing summary by FISS charter region and vessel for all 2023 stations and O32 Pacific halibut.

IPHC Regulatory Area	Charter Region	Vessel	Vessel Number[1]	Charter Days[2]	Planned Stations	Effective Stations[3]	Pacific halibut Sold (t) [4]	Pacific halibut Sold (lb)[4]	Average Price USD/kg[5]	Average Price USD/lb[5]
2A	Washington	*Pacific Surveyor*	947061	12	24	24	4	8,421	$11.54	$5.23
2B	Charlotte	*Pender Isle*	27282	42	89	86	25	54,521	$17.48	$7.93
2B	Goose Island	*Star Wars II*	175688	32	57	48	9	20,464	$17.34	$7.86
2B	St. James	*Star Wars II*	175688	33	60	57	14	30,430	$16.83	$7.63
2B	Vancouver	*Vanisle*	80000	33	57	56	0	0	$17.67	$8.01
2C	Ketchikan	*Vanisle*	80000	26	43	42	16	34,396	$15.01	$6.81
2C	Ommaney	*Bold Pursuit*	383527	30	52	49	35	78,075	$12.67	$5.75
2C	Sitka	*Star Wars II*	175688	30	52	49	17	38,367	$13.38	$6.07
3A	Albatross	*Kema Sue*	41033	25	49	48	11	25,183	$11.13	$5.05
3A	Fairweather	*Bold Pursuit*	383527	25	51	51	5	10,555	$12.97	$5.88
3A	Gore Point	*Dangerous Cape*	77199	27	48	48	7	15,255	$14.36	$6.51
3A	Prince William Sound	*Dangerous Cape*	77199	39	67	64	8	18,674	$11.43	$5.19
3B	Chignik	*Kema Sue*	41033	23	48	46	9	19,332	$10.03	$4.55
3B	Sanak	*Kema Sue*	41033	20	36	35	9	20,059	$9.99	$4.53
3B	Semidi	*Devotion*	42892	34	56	56	16	34,798	$10.67	$4.84
3B	Shumagin	*Kema Sue*	41033	32	54	53	15	33,046	$11.07	$5.02
3B	Trinity	*Devotion*	42892	34	56	52	15	33,211	$11.05	$5.01
Total		**8 Vessels**		**497**	**899**	**864**	**215**	**474,787**	**$13.40**	**$6.08**

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 Stations that did not meet setting parameters or deemed ineffective are excluded.

4 Net weight (head-off, dressed, washed). May not sum to correct total due to rounding.

5 Ex-vessel price.

Table 1c. Effort and landing summary by FISS charter region and vessel for all 2023 stations and sampled U32 Pacific halibut.

IPHC Regulatory Area	Charter Region	Vessel	Vessel Number[1]	Charter Days[2]	Planned Stations	Effective Stations[3]	Pacific halibut Sold (t)[4]	Pacific halibut Sold (lb)[4]	Average Price USD/kg[5]	Average Price USD/lb[5]
2A	Washington	*Pacific Surveyor*	947061	12	24	24	1	3,245	$8.18	$3.71
2B	Charlotte	*Pender Isle*	27282	42	89	86	1	1,436	$15.41	$6.99
2B	Goose Island	*Star Wars II*	175688	32	57	48	0	762	$14.96	$6.78
2B	St. James	*Star Wars II*	175688	33	60	57	0	812	$14.69	$6.66
2B	Vancouver	*Vanisle*	80000	33	57	56	0	536	$15.90	$7.21
2C	Ketchikan	*Vanisle*	80000	26	43	42	0	607	$13.76	$6.24
2C	Ommaney	*Bold Pursuit*	383527	30	52	49	0	298	$10.67	$4.84
2C	Sitka	*Star Wars II*	175688	30	52	49	0	651	$11.93	$5.41
3A	Albatross	*Kema Sue*	41033	25	49	48	0	998	$9.92	$4.50
3A	Fairweather	*Bold Pursuit*	383527	25	51	51	0	420	$11.96	$5.42
3A	Gore Point	*Dangerous Cape*	77199	27	51	48	0	1,051	$12.89	$5.85
3A	Prince William Sound	*Dangerous Cape*	77199	39	51	64	1	1,821	$9.60	$4.35
3B	Chignik	*Kema Sue*	41033	23	51	46	1	2,481	$9.19	$4.17
3B	Sanak	*Kema Sue*	41033	20	51	35	0	409	$8.82	$4.00
3B	Semidi	*Devotion*	42892	34	51	56	0	525	$8.19	$3.72
3B	Shumagin	*Kema Sue*	41033	32	51	53	1	1,139	$10.17	$4.61
3B	Trinity	*Devotion*	42892	34	51	52	1	1,685	$9.83	$4.46
Total		**8 Vessels**		**497**	**899**	**864**	**9**	**18,876**	**$10.84**	**$4.92**

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 Stations that did not meet setting parameters or deemed ineffective are excluded.

4 Net weight (head-off, dressed, washed). May not sum to correct total due to rounding.

5 Ex-vessel price.

Vessels chartered by the IPHC delivered fish to 15 different ports (Tables 2). Fish sales were awarded based on obtaining a fair market price. 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. Individual sales were evaluated after each event to ensure that the buyer was meeting IPHC standards. Average prices decreased from $17.01/kg in 2022 to $13.31/kg in 2023 (Tables 3). This represents a 21.8% decrease in price.

Table 2a. FISS Pacific halibut landings by port for all Pacific halibut (sampled U32 and all O32), 2023[1,2].

Offload Port	Trips	Tonnes	Pounds	Total USD	Average Price (USD/kg)	Average Price (USD/lb)
Cordova	1	4	7,788	$37,885.00	$10.72	$4.86
Homer	1	4	7,967	$53,388.00	$14.77	$6.70
Juneau	2	6	14,173	$84,372.30	$13.12	$5.95
Ketchikan	2	6	13,043	$78,128.40	$13.21	$5.99
King Cove	1	9	20,647	$106,332.05	$11.35	$5.15
Kodiak	7	40	88,220	$439,456.00	$10.98	$4.98
Port Angeles	1	2	5,418	$23,073.50	$9.39	$4.26
Port Hardy	9	38	84,369	$643,706.63	$16.82	$7.63
Prince Rupert	9	39	85,936	$658,515.90	$16.89	$7.66
Sand Point	5	29	63,999	$292,250.37	$10.07	$4.57
Seward	4	10	21,046	$118,998.80	$12.47	$5.65
Sitka	4	39	86,885	$478,175.71	$12.13	$5.50
Vancouver	1	1	3,228	$26,732.59	$18.26	$8.28
Westport	1	3	6,248	$33,028.51	$11.65	$5.29
Yakutat	1	2	3,524	$19,965.75	$12.49	$5.67
Grand Total	**49**	**232**	**512,491**	**$3,094,009.51**	**$13.31**	**$6.04**

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

Table 2b. FISS Pacific halibut landings by port for O32 Pacific halibut, 2023[1,2].

Offload Port	Trips	Tonnes	Pounds	Total USD	Average Price (USD/kg)	Average Price (USD/lb)
Cordova	1	3	6,676	$32,603.00	$10.77	$4.88
Homer	1	3	7,358	$49,429.50	$14.81	$6.72
Juneau	2	6	13,756	$82,024.80	$13.15	$5.96
Ketchikan	2	6	12,817	$76,772.40	$13.21	$5.99
King Cove	1	9	20,039	$103,200.85	$11.35	$5.15
Kodiak	7	38	84,648	$423,627.10	$11.03	$5.00
Port Angeles	1	2	3,709	$17,946.50	$10.67	$4.84
Port Hardy	9	37	82,406	$630,435.83	$16.87	$7.65
Prince Rupert	9	38	84,039	$645,564.80	$16.94	$7.68
Sand Point	5	28	60,942	$280,022.21	$10.13	$4.59
Seward	4	9	19,895	$114,165.40	$12.65	$5.74
Sitka	4	39	86,246	$475,027.54	$12.14	$5.51
Vancouver	1	1	3,022	$25,205.31	$18.39	$8.34
Westport	1	2	4,712	$26,118.31	$12.22	$5.54
Yakutat	1	2	3,350	$19,052.25	$12.54	$5.69
Grand Total	**49**	**224**	**49,3615**	**$3,001,195.80**	**$13.40**	**$6.08**

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

Table 2c. FISS Pacific halibut landings by port for sampled U32 Pacific halibut, 2023[1,2].

Offload Port	Trips	Tonnes	Pounds	Total USD	Average Price (USD/kg)	Average Price (USD/lb)
Cordova	1	1	1,112	$5,282.00	$10.47	$4.75
Homer	1	0	609	$3,958.50	$14.33	$6.50
Juneau	2	0	417	$2,347.50	$12.41	$5.63
Ketchikan	2	0	226	$1,356.00	$13.23	$6.00
King Cove	1	0	608	$3,131.20	$11.35	$5.15
Kodiak	7	2	3,572	$15,828.90	$9.77	$4.43
Port Angeles	1	1	1,709	$5,127.00	$6.61	$3.00
Port Hardy	9	1	1,963	$13,270.80	$14.90	$6.76
Prince Rupert	9	1	1,897	$12,951.10	$15.05	$6.83
Sand Point	5	1	3,057	$12,228.16	$8.82	$4.00
Seward	4	1	1,151	$4,833.40	$9.26	$4.20
Sitka	4	0	639	$3,148.17	$10.86	$4.93
Vancouver	1	0	206	$1,527.28	$16.35	$7.41
Westport	1	1	1,536	$6,910.20	$9.92	$4.50
Yakutat	1	0	174	$913.50	$11.57	$5.25
Grand Total	**49**	**9**	**18,876**	**$92,813.71**	**$10.84**	**$4.92**

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

Table 3a. FISS landings (total pounds and price) of all Pacific halibut (sampled U32 and all O32) by IPHC Regulatory Area in 2023[1].

IPHC Regulatory Area	2A	2B	2C	3A	3B	Total Weight and Average Price
Tonnes	5	58	69	34	67	232
Pounds	11,666	127,789	152,394	73,957	146,685	512,491
Price USD/kg	$10.60	$17.27	$13.37	$12.11	$10.62	$13.31
Price USD/lb	$4.81	$7.83	$6.07	$5.49	$4.82	$6.04

1 Net weight (head-off, dressed, washed)

Table 3b. FISS landings (total pounds and price) of O32 Pacific halibut by IPHC Regulatory Area in 2023[1].

IPHC Regulatory Area	2A	2B	2C	3A	3B	Total Weight and Average Price
Tonnes	4	56	68	32	64	224
Pounds	8421	124,243	150,838	69,667	140,446	493,615
Price USD/kg	$11.54	$17.32	$13.38	$12.20	$10.67	$13.40
Price USD/lb	$5.23	$7.86	$6.07	$5.53	$4.84	$6.08

1 Net weight (head-off, dressed, washed)

Table 3c. FISS landings (total pounds and price) of sampled U32 Pacific halibut by IPHC Regulatory Area in 2023[1].

IPHC Regulatory Area	2A	2B	2C	3A	3B	Total Weight and Average Price
Tonnes	1	2	1	2	3	9
Pounds	3245	3,546	1,556	4,290	6,239	18,876
Price USD/kg	$8.18	$15.22	$12.40	$10.71	$9.43	$10.84
Price USD/lb	$3.71	$6.90	$5.63	$4.86	$4.28	$4.92

1 Net weight (head-off, dressed, washed)

FISS timing

Each year, the months of June, July, and August are targeted for FISS fishing. In 2023, this activity took place from 27 May through 1 September. 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 4). All FISS activity was completed by early September.

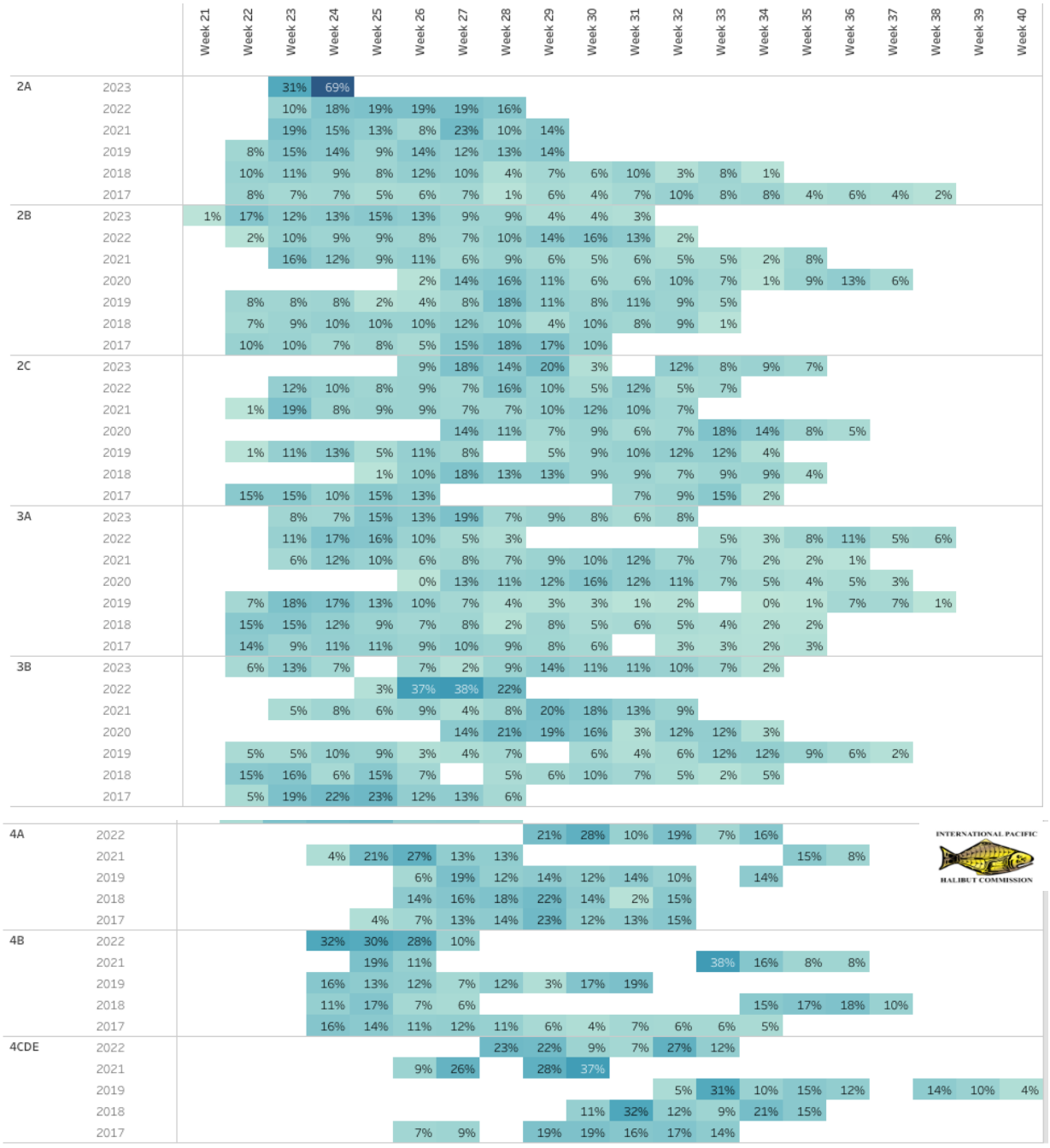


Figure 4. Percent of the total FISS stations completed by IPHC Regulatory Area during each week of the year (2017-2023). Week 21 begins in late May or early June depending on the year.

RECOMMENDATION/S

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-08 Rev_1 which provides a summary of the IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2023.

APPENDICES

Nil.

Space-time modelling of survey data

PREPARED BY: IPHC SECRETARIAT (R. A. WEBSTER; 12 DECEMBER 2023)

PURPOSE

To provide results of the space time modelling of Pacific halibut survey data for the period 1993-2023.

INTRODUCTION

Since 2016 space-time modelling has been used by the IPHC to produce estimates of mean O32 WPUE (weight per unit effort), all sizes WPUE and all sizes NPUE (numbers per unit effort) indices of Pacific halibut density and abundance. The modelling depends primarily on data from the IPHC's Fishery-Independent Setline Survey (FISS, Ualesi et al, 2023), but in the Bering Sea also integrates data from the National Oceanic and Atmospheric Administration - Fisheries annual trawl survey and the Alaska Department of Fish and Game's annual Norton Sound trawl survey. Both surveys are fishery-independent data sources.

Since 2019, weighing of Pacific halibut onboard FISS charter vessels has meant that the weight data used to compute WPUE now comes almost entirely from observed weights of fish rather than estimates from a length-net weight relationship. For fish without directly measured weights, weights are predicted from a year- and IPHC Regulatory Area-specific length-net weight relationship estimated from the FISS length and weight data. For U32 fish with round weight recorded, net weights are estimated from a round-net weight relationship estimated from coastwide sample data from the 2019 FISS.

RESULTS OF SPACE-TIME MODELLING IN 2023

Figures 1-3 show the time series estimates of O32 WPUE (most comparable to fishery catch-rates), all sizes WPUE and all sizes NPUE by IPHC Biological Region over the 1993-2023 period included in the 2023 space-time modelling. Coastwide, we estimate small declines in the indices since 2022 of 2-4%, largely due to 6-8% declines in IPHC Biological Region 3.

Estimated 1993-23 time series by IPHC Regulatory Area are in Appendix A. We note the high uncertainty for estimates in IPHC Regulatory Areas 2A, 4A and 4B in 2023 (Figures A.1 to A.3). Little sampling (minimal 2A FISS, Bering Sea trawl on 4A edge only) or no sampling (4B) took place in these areas in 2023, and caution should be taken when interpreting estimates of change from 2022, as these are not well informed by data.

In 2023, bids for FISS charter regions were opened to vessels fishing snap gear and one vessel fished snap gear in two charter regions in IPHC Regulatory 3A. In 2021, a snap-fixed gear comparison study was conducted in a single charter region in this area, but the limited scope of the study made it impossible to distinguish gear differences from differences in catch rates due to vessel and temporal effects (Webster 2021). The additional 2023 data from snap gear in IPHC Regulatory Area 3A means the space-time modelling now includes snap data from two vessels that fished in three charter regions, leading to revised estimates of gear differences that are likely to be more representative of gear differences in general (Table 1).

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 the 2021 study, and the 2023 modelling/

Variable	Ratio of snap to fixed catch rate			
	2021 study		2023 modelling	
	Posterior mean	95% credible interval	Posterior mean	95% credible interval
O32 WPUE	1.28	0.96 – 1.72	0.97	0.81 – 1.17
All sizes WPUE	1.18	0.89 – 1.56	1.08	0.90 – 1.30
All sizes NPUE	1.43	1.08 – 1.89	1.15	0.95 – 1.39

While data from snap gear are included in the space-time modelling, model predictions at each station (from which the time series estimates are computed) are based on fixed gear to ensure consistency across space and time.

Tables of model output (time series, stock distribution estimates) are updated annually on the IPHC website at https://www.iphc.int/data/time-series-datasets.

FISS space-time model output may also be explored interactively using the link on this page of the IPHC website: https://www.iphc.int/data/datatest/fishery-independent-setline-survey-fiss.

RECOMMENDATION

That the Commission **NOTE** paper IPHC-2024-AM100-09 which provides results of the space-time modelling of Pacific halibut survey data for 1993-2023.

REFERENCE

Ualesi, K., Rillera, R., Jack, T. and Coll, K. (2023) IPHC Fishery-independent setline survey (FISS) design and implementation in 2023. IPHC-2023-IM099-08.

Webster, R. A. (2021). Space-time modelling of survey data. IPHC-2021-IM097-08 Rev_1.

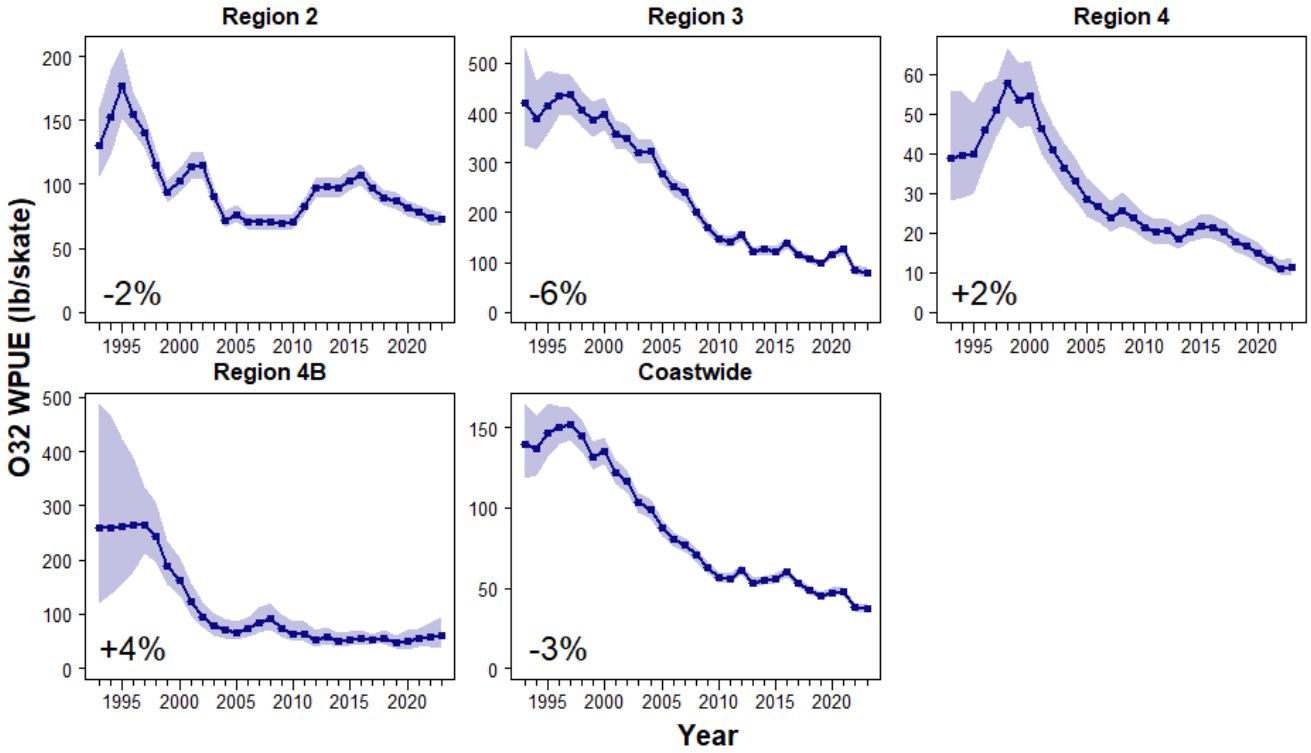


Figure 1. Space-time model output for O32 WPUE for 1993-2023 for Biological Regions. Filled circles denote the posterior means of O32 WPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean O32 WPUE from 2022 to 2023.

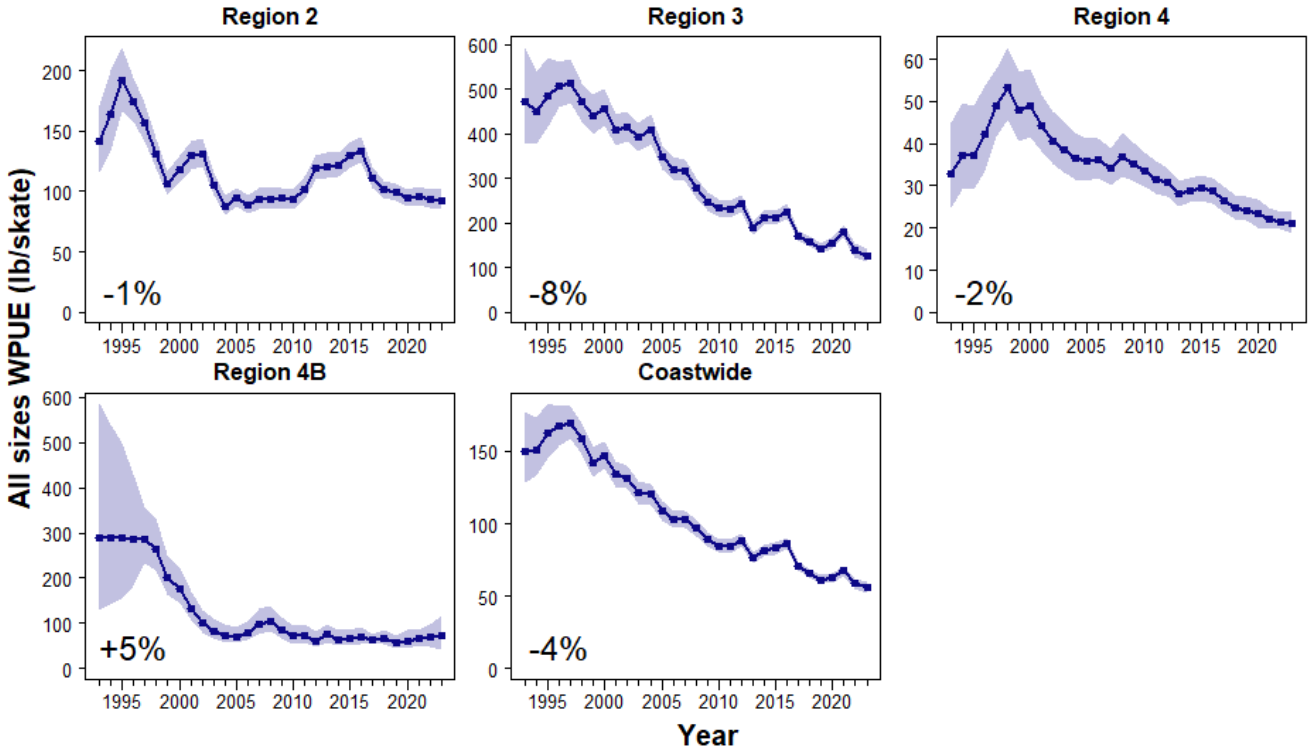


Figure 2. Space-time model output for all sizes WPUE for 1993-2023 for Biological Regions. Filled circles denote the posterior means of all sizes WPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean all sizes WPUE from 2022 to 2023.

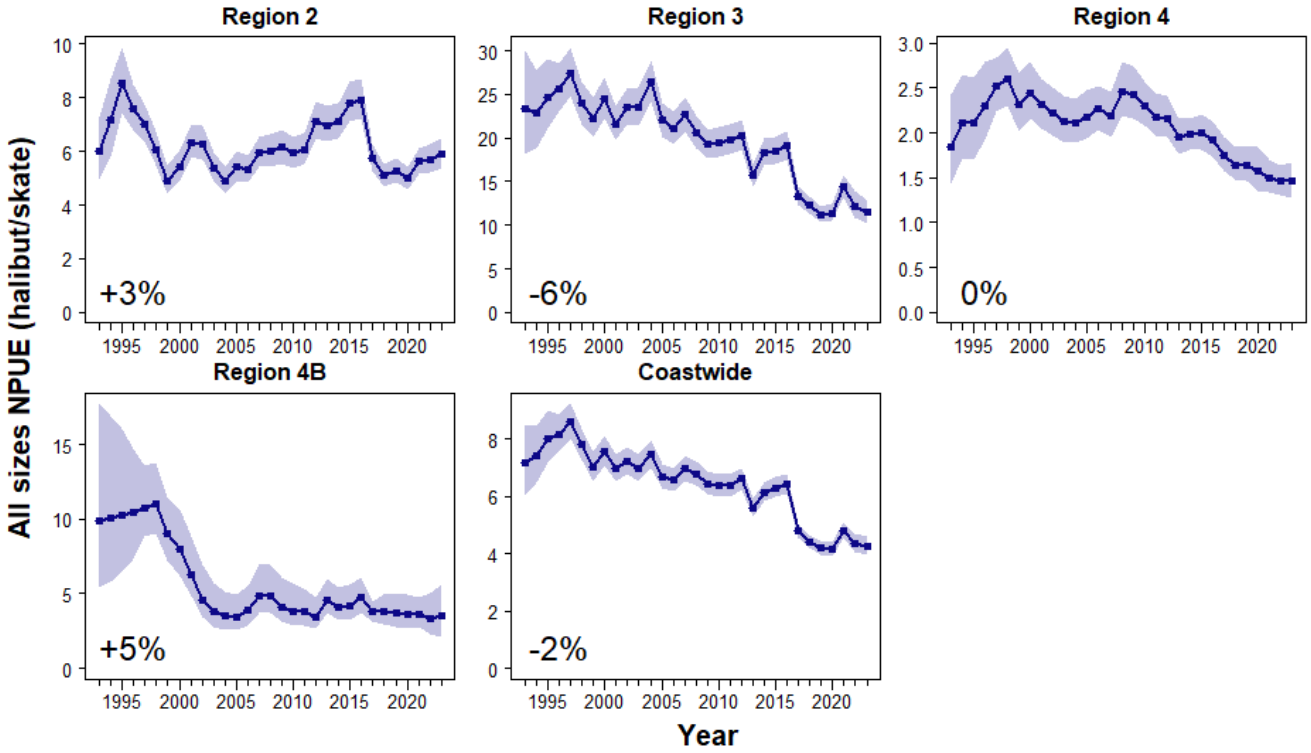


Figure 3. Space-time model output for all sizes NPUE for 1993-2023 for Biological Regions. Filled circles denote the posterior means of all sizes NPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean all sizes NPUE from 2022 to 2023.

APPENDIX A

Space-time modelling results by IPHC Regulatory Area

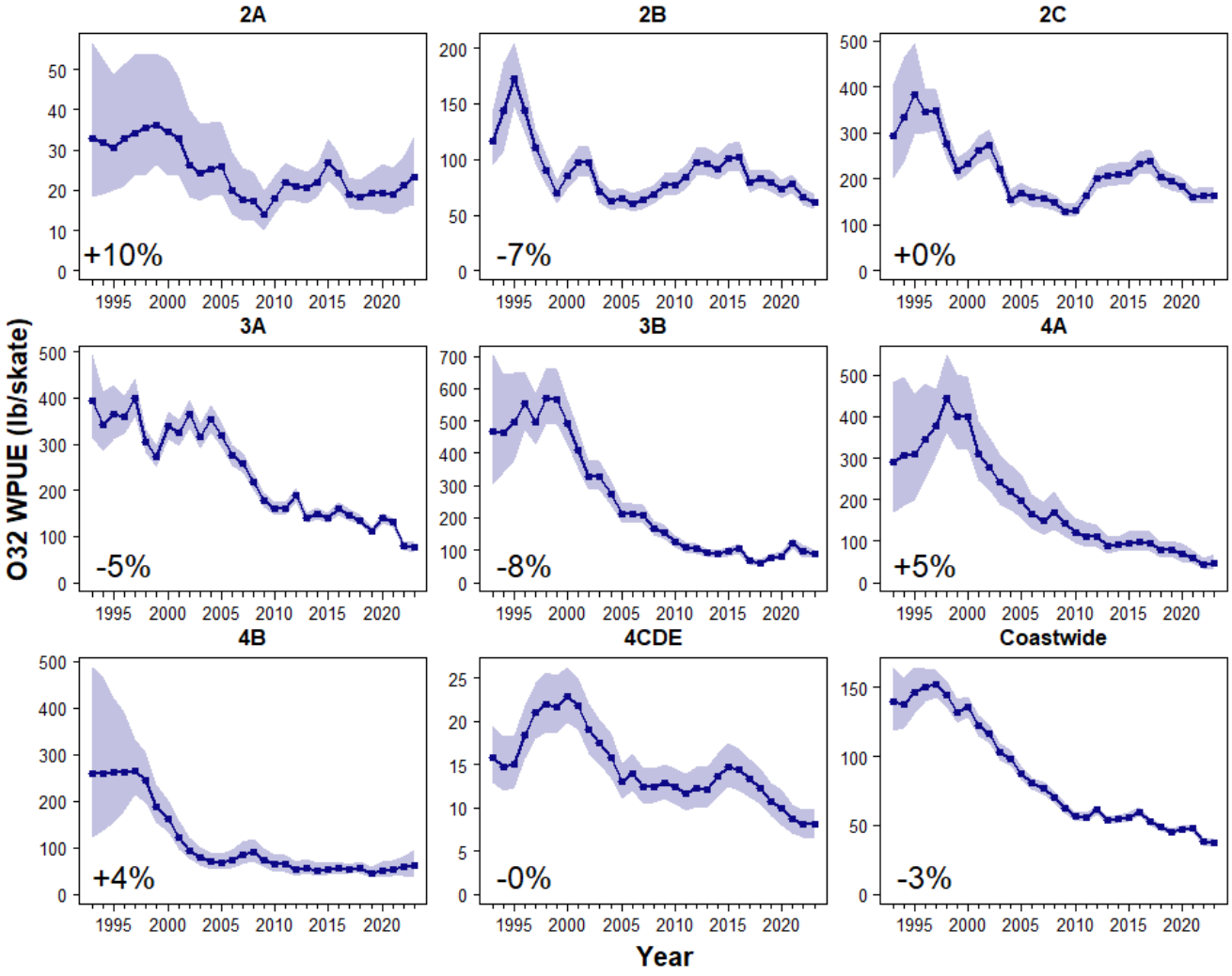


Figure A.1. Space-time model output for O32 WPUE for 1993-2023. Filled circles denote the posterior means of O32 WPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean O32 WPUE from 2022 to 2023.

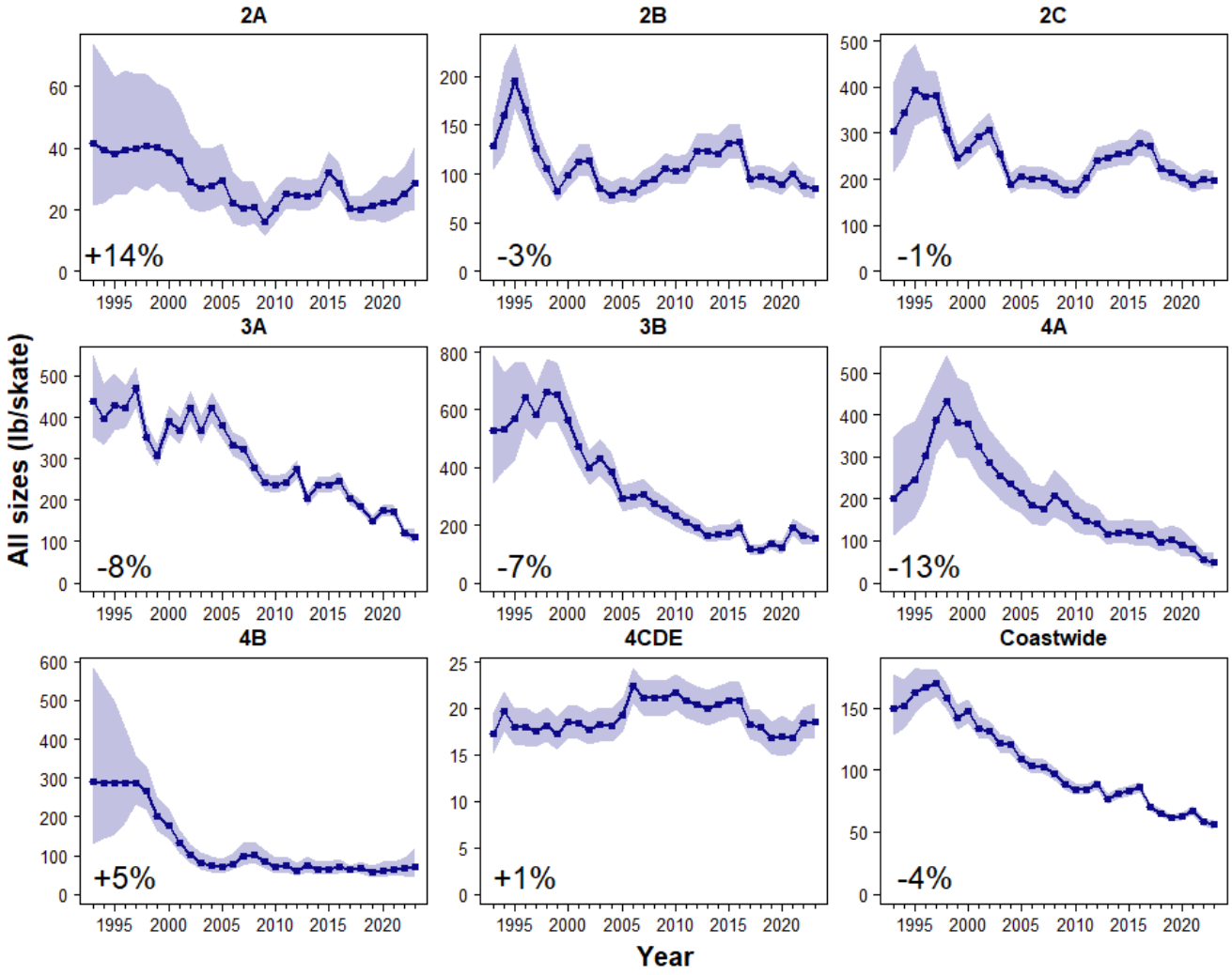


Figure A.2. Space-time model output for all sizes WPUE for 1993-2023. Filled circles denote the posterior means of all sizes WPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean all sizes WPUE from 2022 to 2023.

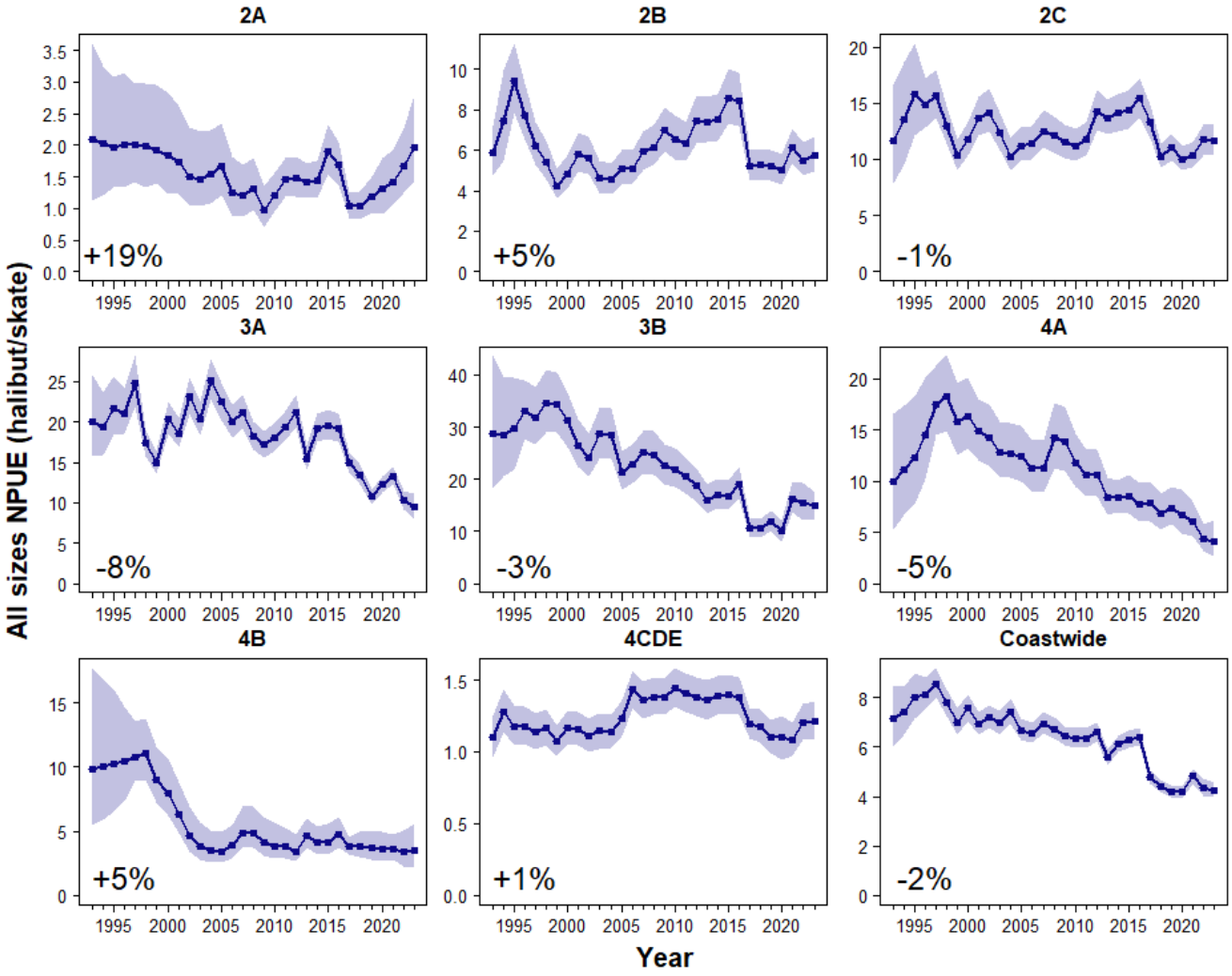


Figure A.3. Space-time model output for all sizes NPUE for 1993-2023. Filled circles denote the posterior means of all sizes NPUE for each year. Shaded regions show posterior 95% credible intervals, which provide a measure of uncertainty: the wider the shaded interval, the greater the uncertainty in the estimate. Numeric values in the lower left-hand corners are estimates of the change in mean all sizes NPUE from 2022 to 2023.

Data overview and stock assessment for Pacific halibut (*Hippoglossus stenolepis*) at the end of 2023

PREPARED BY: IPHC SECRETARIAT (I. STEWART, A. HICKS, R. WEBSTER, AND D. WILSON; 18 DECEMBER 2023)

PURPOSE

To provide the Commission with a summary of the data, stock assessment at the end of 2023.

INTRODUCTION

In 2023 the International Pacific Halibut Commission (IPHC) undertook its annual coastwide stock assessment of Pacific halibut (*Hippoglossus stenolepis*). This stock assessment represents an update, following the full assessment conducted in 2022. There are no structural changes to the assessment methods for 2023. Supporting analyses were reviewed by the IPHC's Scientific Review Board (SRB) in June (SRB022; IPHC-2023-SRB022-08, IPHC-2023-SRB022-R) and September 2023 (SRB023; IPHC-2023-SRB023-06, IPHC-2023-SRB023-R).

This document provides an overview of the data sources available for the 2023 Pacific halibut stock assessment including the population trends and distribution among IPHC Regulatory Areas based on the modelled IPHC fishery-independent setline survey (FISS), directed commercial fishery data, and results of the stock assessment. All standard data sources have been updated with new information available from 2023 for this analysis, which includes updates to data collected in previous years.

Overall, spawning biomass (SB) estimates are slightly lower than those in last year's stock assessment, but the recent estimated trend is nearly flat. Year-classes estimated for 2012 and 2014 are both larger than those occurring from 2006-2011, but well below the average observed over the last 30 years. Stock distribution trends continue to show an increasing proportion of the stock in Biological Region 2 and a decreasing proportion in Biological Region 3.

STOCK AND MANAGEMENT

The stock assessment reports the status of the Pacific halibut (*Hippoglossus stenolepis*) 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).

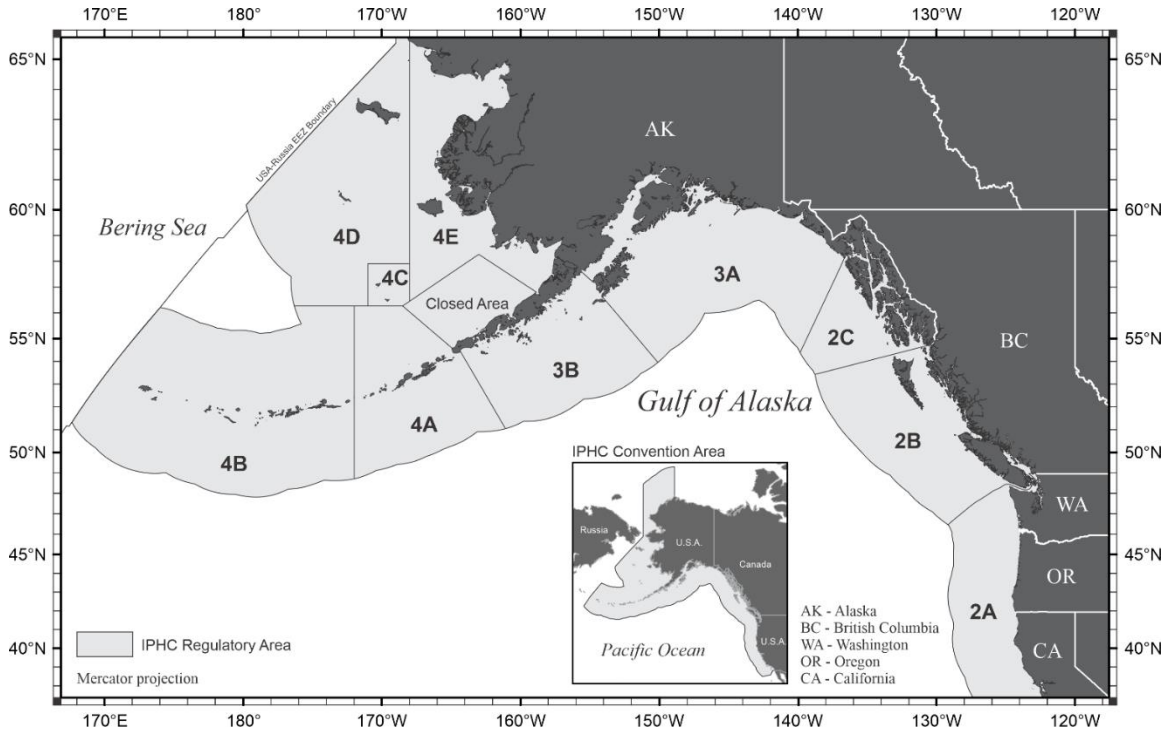


Figure 1. IPHC Convention Area (insert) and IPHC Regulatory Areas.

The Pacific halibut fishery has been managed by the IPHC since 1924. Catch 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. Short-term projections and the harvest decision table for 2024 are reported in a separate document (IPHC-2024-AM100-12).

DATA

Historical mortality

Known Pacific halibut mortality consists of directed 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 1888-2023, mortality from all sources has totaled 7.4 billion pounds (~3.3 million metric tons, t). Since 1923, the fishery has ranged annually from 34 to 100 million pounds (16,000-45,000 t) with an annual average of 63 million pounds (~28,000 t; Figure 2). Annual mortality was above this 100-year average from 1985 through 2010 and has averaged 37.4 million pounds (~17,000 t) from 2019-23.

2023 Fishery and IPHC FISS statistics

Data for stock assessment use are 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). The assessment data from both fishery-dependent and fishery-independent sources, as well as auxiliary biological information, are mostly spatially complete since the late-1990s. Primary sources of information for this assessment include mortality estimates from all sources (IPHC-2024-AM100-07), modelled indices of abundance (IPHC-2024-AM100-09) based on the IPHC's FISS (in numbers and

[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.

weight) and other surveys, commercial Catch-Per-Unit-Effort (in weight), and biological summaries from both sources (length-, weight-, and age-composition data).

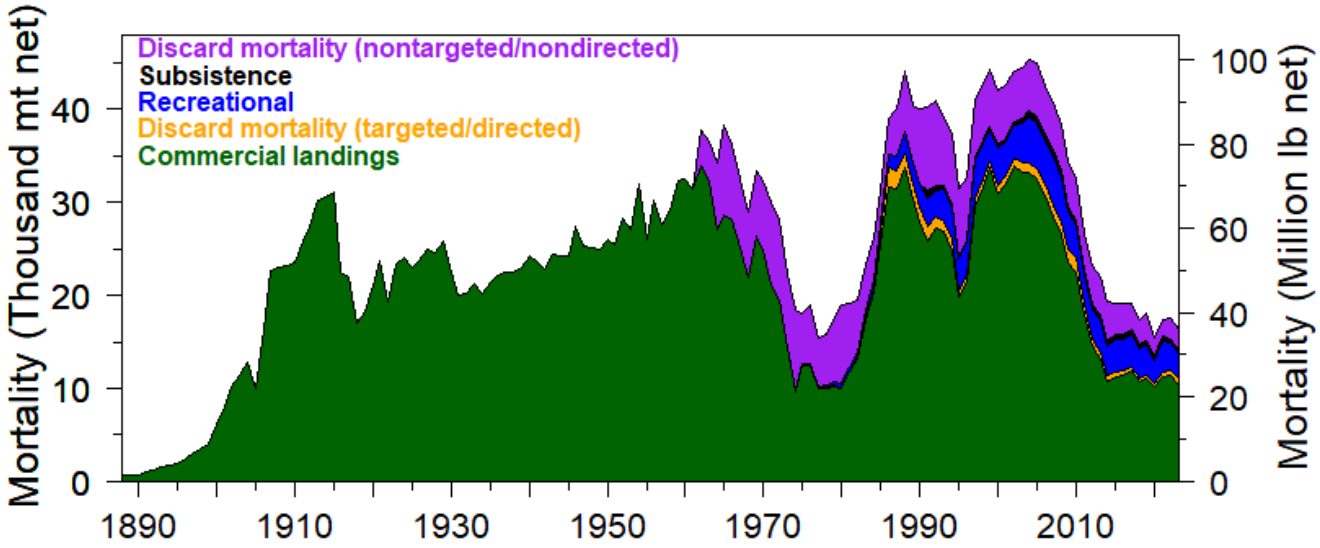


Figure 2. Summary of estimated historical mortality by source (colors), 1888-2023.

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. Routine updates of logbook records from the 2023 and earlier directed commercial fishery, as well as age-frequency observations and individual weights from the commercial fishery were also included. Directed commercial fishery sex-ratios at age from the 2022 fishery were genetically analyzed and made available for this assessment. Mortality estimates (including changes to the existing time-series where new estimates have become available) from all sources were extended to include 2023. Available information was finalized on 6 November 2023 in order to provide adequate time for analysis and modeling. As has been the case in all years, some data remain incomplete (commercial fishery logbook and age information) or include projections for the remainder of the year (mortality estimates for ongoing fisheries or for fisheries where final estimation is still pending).

Coastwide commercial Pacific halibut fishery landings (including research landings) in 2023 were approximately 23.0 million pounds (~10,400 t), down 8% from 2022[2]. Discard mortality in non-directed fisheries was estimated to be 4.8 million pounds in 2023 (~2,200 t)[3], down 6% from 2022 and remaining below all recent estimates prior to 2019. The total recreational mortality (including estimates of discard mortality) was estimated to be 6.0 million pounds (~2,700 t) down 4% from 2022. Mortality from all sources decreased by 7% to an estimated 35.9 million pounds (~16,300 t) in 2023 based on preliminary information available for this assessment.

The 2023 modelled FISS results detailed an estimated coastwide aggregate Numbers-Per-Unit-Effort (NPUE) which decreased by 2% from 2022 to 2023, remaining at a level similar to those

[2] The mortality estimates reported in this document are those available on 6 November 2023 and used in the assessment analysis; they include projections through the end of the fishing season.

[3] The IPHC receives preliminary estimates of the current year's non-directed commercial discard mortality 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 from ongoing fisheries through the end of the calendar year. Further updates are anticipated in January 2024.

observed in 2018-2020 (Figure 3). Biological Region 3 decreased by 6%, while Biological Region 2 increased by 3% and Biological Region 4 remained unchanged. Biological Region 4B is estimated to have increased by 5%; however, this area was not sampled in 2023 and credible intervals are appreciably wider than in recent years, reflecting a wide plausible range of potential trends, both increasing and decreasing, from 2022 to 2023. The 2023 modelled coastwide Weight-Per-Unit-Effort (WPUE) of legal (O32) Pacific halibut, the most comparable metric to observed commercial fishery catch rates, decreased by 3% from 2022 to 2023. Individual IPHC Regulatory Areas varied from an estimated 10% increase (Regulatory Area 2A) to an 8% decrease (Regulatory Area 3B) in O32 WPUE (Figure 4).

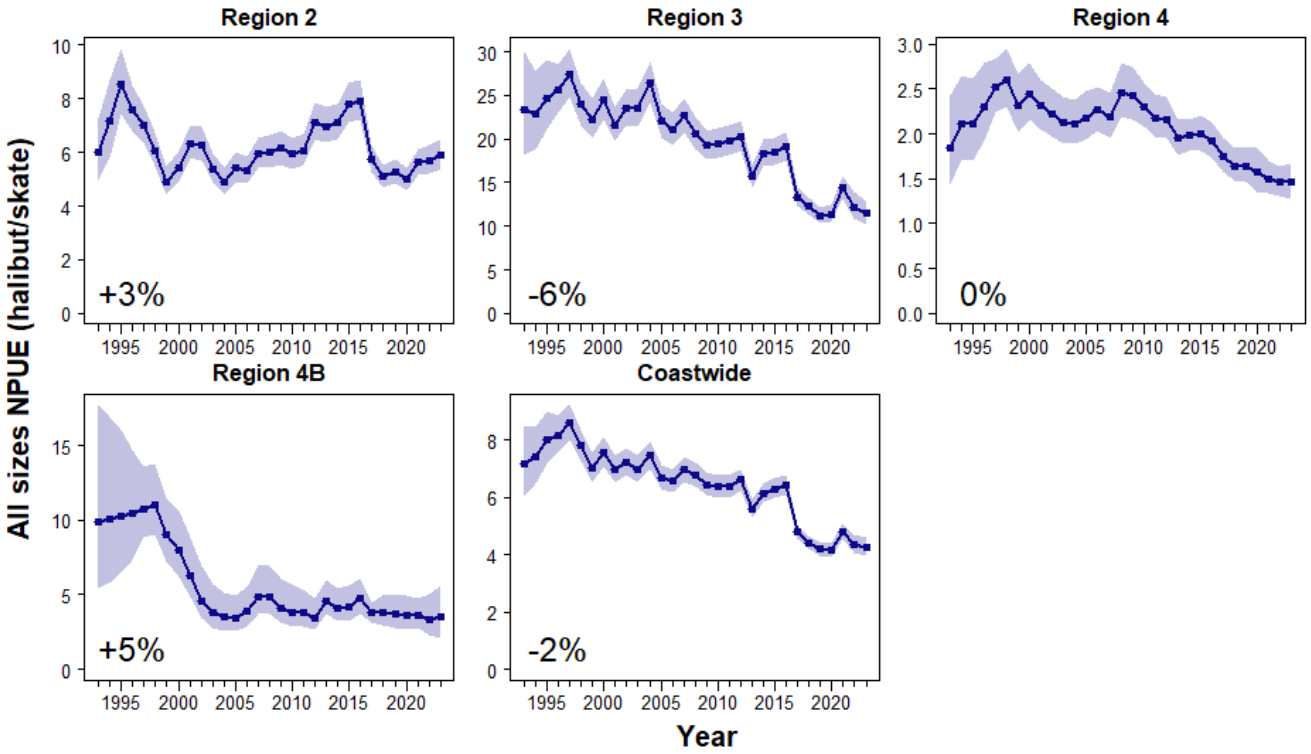


Figure 3. Trends in modelled FISS NPUE by Biological Region, 1993-2023. Percentages indicate the change from 2022 to 2023. Shaded zones indicate 95% credible intervals.

Preliminary commercial fishery WPUE estimates from 2023 logbooks showed a 10% decrease from 2022 to 2023 at the coastwide level larger than the FISS index (Figure 5). The bias correction to account for additional logbooks compiled after the fishing season further increased this drop to 12%. Trends varied among IPHC Regulatory Areas, fisheries, and gears; however, all areas showed decreased CPUE in one or more index.

Biological information (ages and lengths) from the commercial fishery landings showed that in 2023 the 2012 year-class (now 11 years old) was again the largest coastwide contributor (in number) to the fish landed. This follows the same pattern observed in 2022, when the fishery transitioned from the previously most-abundant 2005 year-class. The FISS also observed the 2012 year-class at the largest proportion of the total catch of any age class. There is no clear indication of younger year-classes than 2012 in large abundance in the 2023 data. Recent trawl surveys suggest the potential for one or more strong year-classes in 2017-2018; however, it will be several years before these fish can be confirmed in the FISS and directed fisheries. Individual size-at-age appears to be increasing for younger ages (<14) and was relatively stable for older fish in most IPHC Regulatory Areas and coastwide.

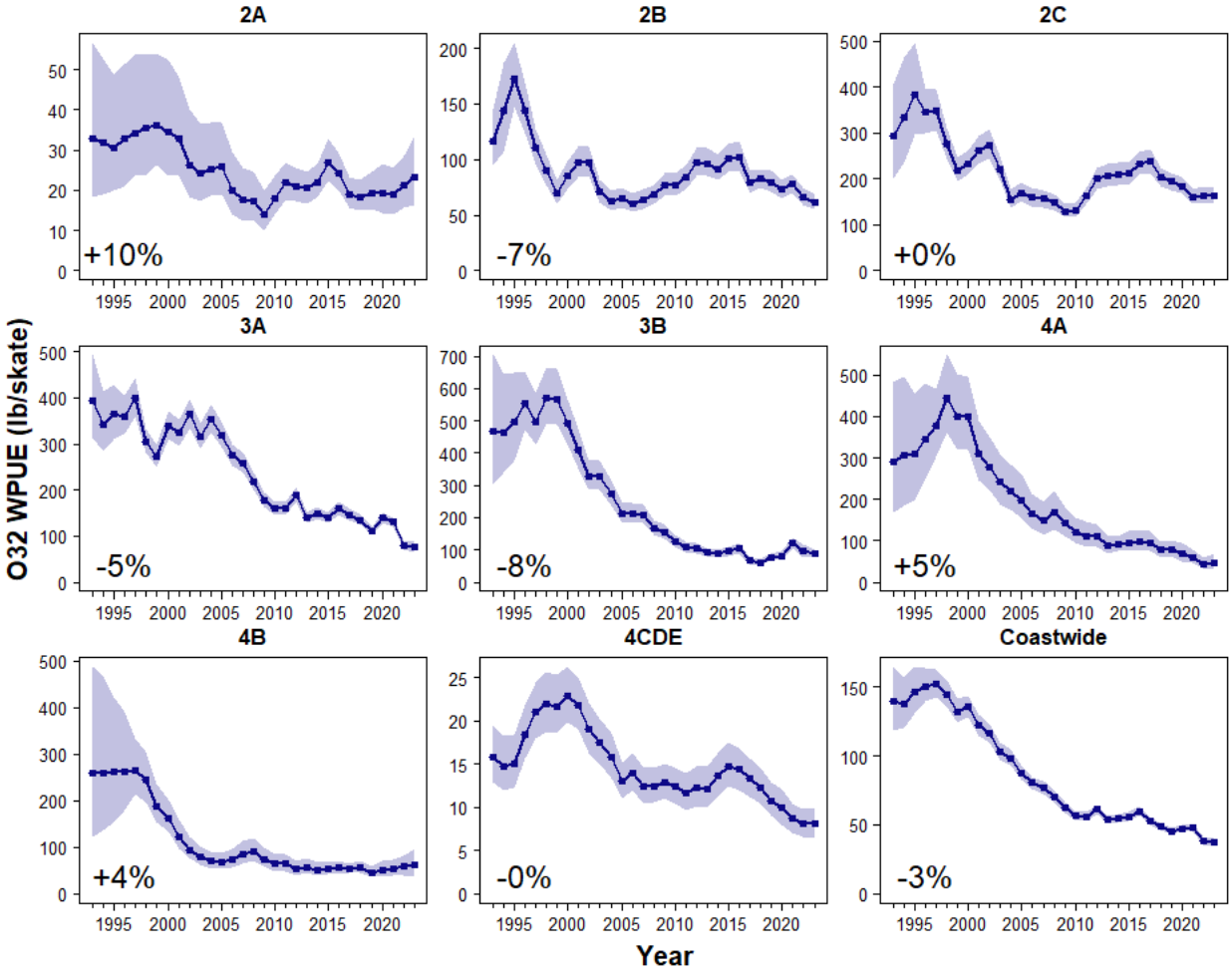


Figure 4. Trends in modelled FISS legal (O32) WPUE by IPHC Regulatory Area, 1993-2023. Percentages indicate the change from 2022 to 2023. Shaded zones indicate 95% credible intervals.

Biological stock distribution

The population distribution (measured via the modelled FISS catch in weight of all Pacific halibut) showed a continued decrease in Biological Region 3 to the lowest proportion of the coastwide stock in the time-series (Figure 6; recent years in Table 1). Biological Region 2 increased to the highest proportion observed. As there was no FISS sampling in Biological Region 4B, the credible intervals were very wide, consistent with either a decrease or increase in the proportion in this Region. Survey data are insufficient to estimate stock distribution prior to 1993. It is therefore unknown how historical distributions may compare with recent observations.

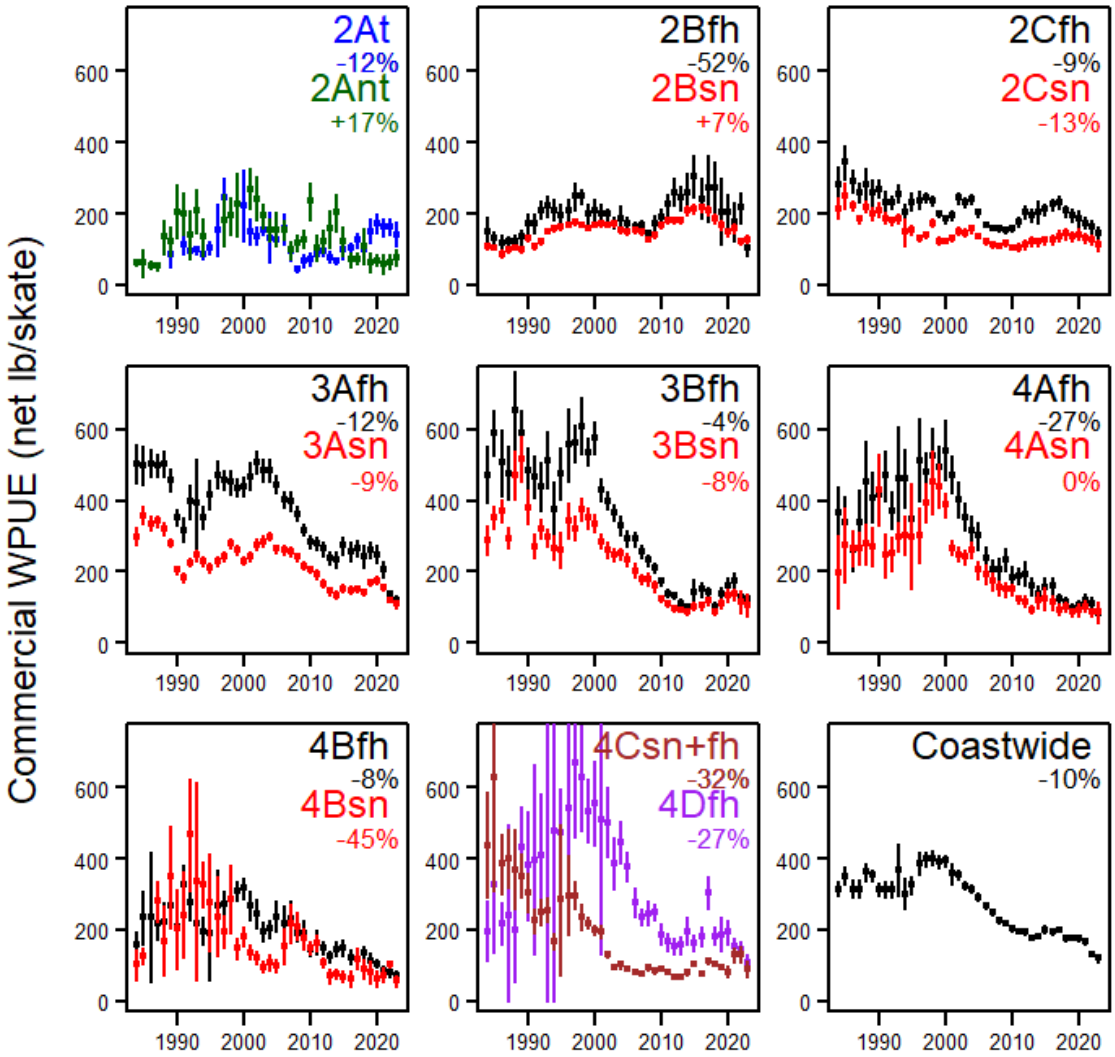


Figure 5. Trends in commercial fishery WPUE by IPHC Regulatory Area and fishery or gear, 1984-2023. The tribal fishery in 2A is denoted by "2At", non-tribal by "2Ant", fixed hook catch rates by "fh" and snap gear catch rates by "sn" for IPHC Regulatory Areas 2B-4D. Percentages indicate the change from 2022 to 2023 uncorrected for bias due to incomplete logbooks (see text above). Vertical lines indicate approximate 95% confidence intervals.

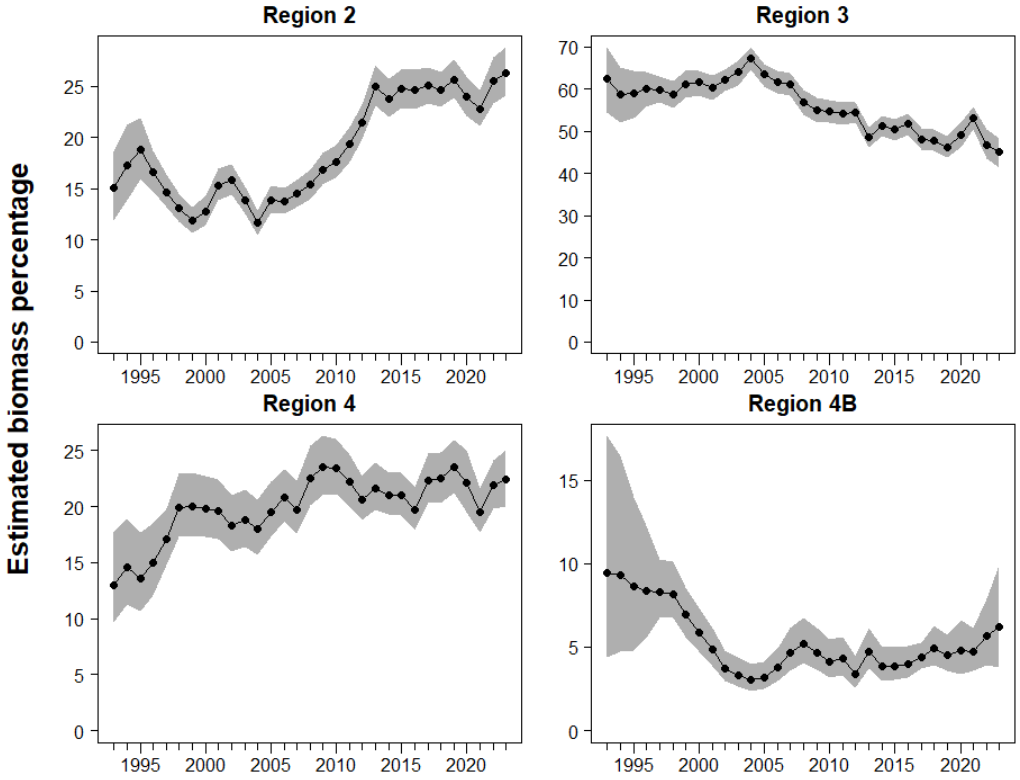


Figure 6. Estimated stock distribution (1993-2023) based on modelled survey catch weight per unit effort of all sizes of Pacific halibut. Shaded zones indicate 95% credible intervals.

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
2019	25.7%	46.3%	23.5%	4.5%
2020	24.0%	49.1%	22.2%	4.8%
2021	22.7%	53.0%	19.5%	4.7%
2022	25.5%	46.8%	22.0%	5.7%
2023	26.3%	45.0%	22.5%	6.2%

STOCK ASSESSMENT

This stock assessment continues to be implemented using the generalized stock synthesis software (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 fisheries (1888), 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 for all regions are available. For each time-series length, there are two models: one fitting to coastwide aggregate data, and one fitting to data disaggregated into the four Biological 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 three of the four models), environmental effects on recruitment (estimated in the long time-series models), and other model parameters.

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 uncertainty provides a basis for risk assessment and reduces the potential for abrupt changes in management quantities as improvements and additional data are added to individual models. The four models continue to be equally weighted. Within-model uncertainty was propagated through to the ensemble results via the maximum likelihood estimates and an asymptotic approximation to individual model variance estimates. 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.

This stock assessment represents an update, following the full assessment conducted in 2022 (IPHC-2023-SA01). There are no structural changes to the assessment methods for 2023. Supporting analyses were reviewed by the IPHC's Scientific Review Board (SRB) in June (SRB022; IPHC-2023-SRB022-08, IPHC-2023-SRB022-R) and September 2023 (SRB023; IPHC-2023-SRB023-06, IPHC-2023-SRB023-R).

The most influential source of new information in this assessment was the directed commercial fishery logbook trend, including the 2023 estimate as well as an updated (and lower) estimate of the catch-rate in 2022. The addition of just this information resulted in an 11% decrease in the 2023 spawning biomass estimate, compared to that in the 2022 stock assessment. Although differences in trend between the FISS and commercial fishery are not uncommon in the historical time-series, the sensitivity of this year's assessment results highlights the importance of both time-series in estimating the stock size and trend.

BIOMASS, RECRUITMENT, AND FISHING INTENSITY TRENDS

The results of the 2023 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 lower recruitment than observed during the 1980s. The spawning biomass increased gradually to 2016, and then decreased to an estimated 171 million pounds (~77,500 t) at the beginning of 2023. At the beginning of 2024 the spawning biomass is estimated to have increased slightly (largely due to the rapidly maturing 2012 year-class) to 174 million pounds (78,900 t), with an approximate 95% credible interval ranging from 111 to 258 million pounds (~50,400-116,900 t; Figure 8). The recent spawning biomass estimates from the 2022 stock assessment are very consistent with previous analyses up 2021, and slightly below most recent estimates (Figure 9).

The IPHC's interim management procedure uses a relative spawning biomass of 30% as a trigger, below which the reference fishing intensity is reduced. At a relative spawning biomass limit of 20%, directed fishing is halted due to the critically low biomass condition. This calculation is based on recent biological conditions: weight-at-age and estimated recruitments currently influencing the stock. Thus, the 'dynamic' calculation measures only the effect of fishing on the spawning biomass, and not natural fluctuations due to recruitment variability and weight-at-age. The relative spawning biomass in 2024 was estimated to be 42% (credible interval: 20-56%) slightly higher than the estimate for 2023 (41%). The probability that the stock is below the $SB_{30\%}$ level is estimated to be 26% at the beginning of 2023, with 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 well below those levels (44%), and the coastwide model above (168%). The relative differences among models reflect both the uncertainty in historical dynamics (there was very little data available from IPHC Regulatory Areas 4A-4CDE prior to the 1970s) as well as the importance of spatial patterns in the data and population processes, for which all of the models represent only simple approximations.

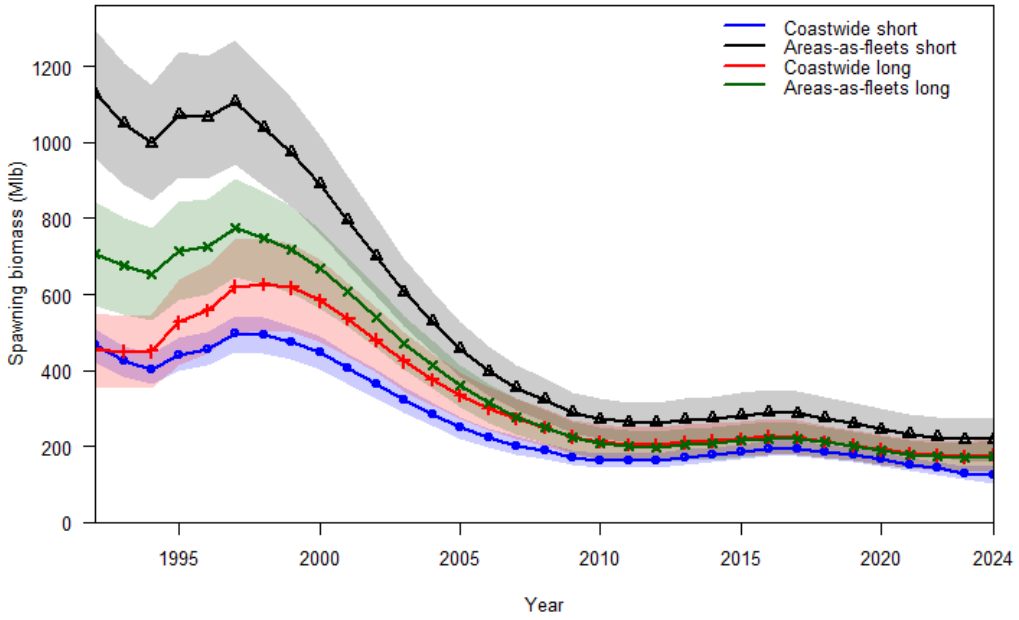


Figure 7. Estimated spawning biomass trends (1992-2024) based on the four individual models included in the 2023 stock assessment ensemble. Series indicate the maximum likelihood estimates; shaded intervals indicate approximate 95% credible intervals.

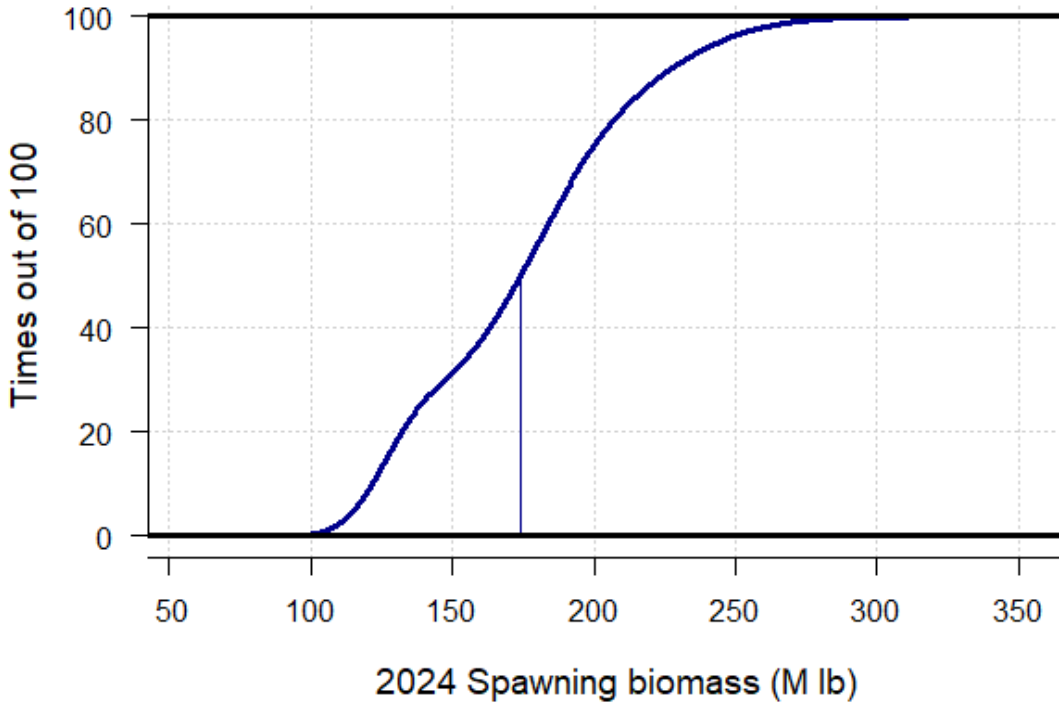


Figure 8. Cumulative distribution of the estimated spawning biomass at the beginning of 2024. Curve represents the estimated probability that the biomass is less than or equal to the value on the x-axis; vertical line represents the median (174 million pounds, ~78,900 t).

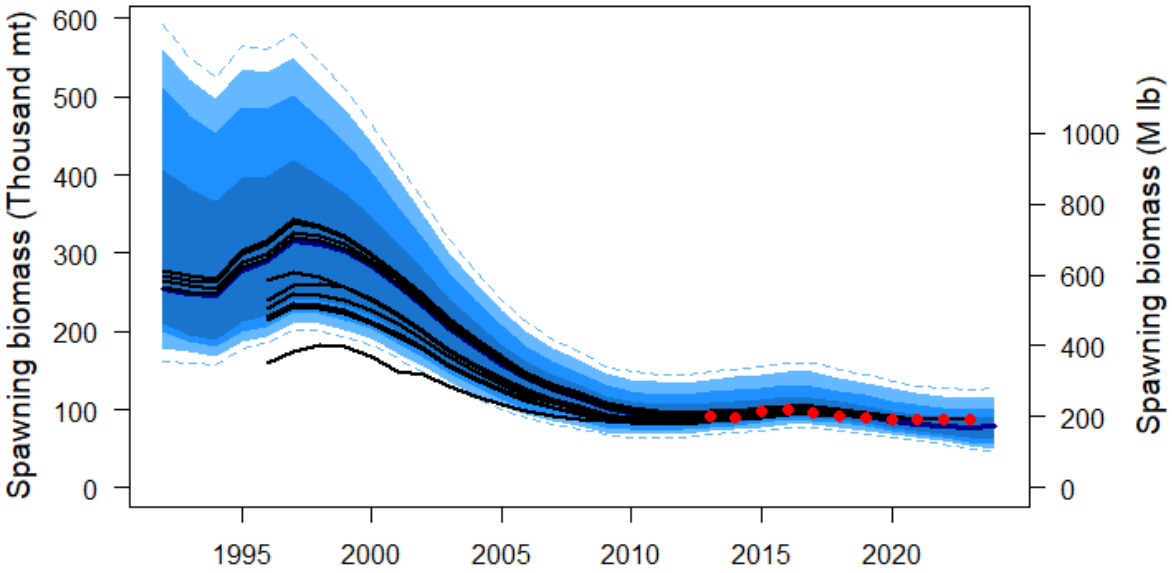


Figure 9. Retrospective comparison of female spawning biomass among recent IPHC stock assessments. Black lines indicate estimates from assessments conducted in 2012-2022 with the terminal estimate shown as a red point. The shaded distribution denotes the 2023 ensemble: the dark blue line indicates the median (or "50:50 line") with an equal probability of the estimate falling above or below that level; and 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 (50 and 53% for the coastwide and AAF models respectively) during favorable Pacific Decadal Oscillation (PDO) regimes, a widely recognized indicator of ecosystem productivity in the north Pacific (primarily the Gulf of Alaska). Historically, these regimes included positive conditions prior to 1947, from 1976-2006 and from 2014-2019, with poor conditions from 1947-1975, 2007-2013 and after 2020 (through September 2023). Although strongly correlated with historical recruitments, it is unclear whether recent conditions are comparable to those observed in previous decades.

Pacific halibut recruitment estimates show the recent large cohorts in 1999 and 2005 (Figure 10). Cohorts from 2006 through 2011 are estimated to be much smaller than those from 1999-2005, which has resulted in a decline in both the stock and fishery yield as these low recruitments have moved into the spawning biomass. Based on age data through 2023, individual models in this assessment produced estimates of the 2012 year-classes that were similar to the average level observed over 1994-2005. The 2012 year-class is estimated to be 42% mature in 2023 and the maturation of this cohort has a strong effect on the short-term projections. The 2023 data indicate that the 2014 year-class is larger than those observed from 2006-2011, but smaller than 2012. Estimates of year-classes after 2014 remain very uncertain.

The historical time-series of fishing intensity is estimated to be considerably lower in the 2022 and 2023 stock assessments than in previous analyses until around 2015 (Figure 11). Several recent stock assessments (2016-2016 and 2018) produced terminal estimates of fishing intensity very similar to this year's results; in contrast, the 2017, and 2019-2021 stock assessments all estimated a higher level of fishing intensity in the terminal years. All of these models estimated the highest fishing intensity between 2005 and 2010.

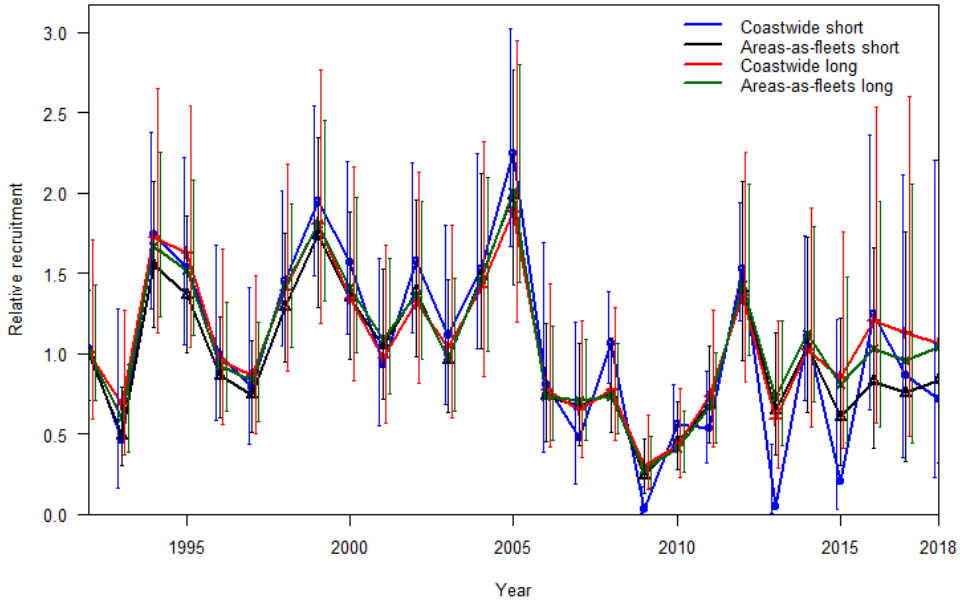


Figure 10. Estimated trends in age-0 relative recruitment (standardized to the mean for each model) from 1992-2018, based on the four individual models included in the 2023 stock assessment ensemble. Series indicate the maximum likelihood estimates; vertical lines indicate approximate 95% credible intervals.

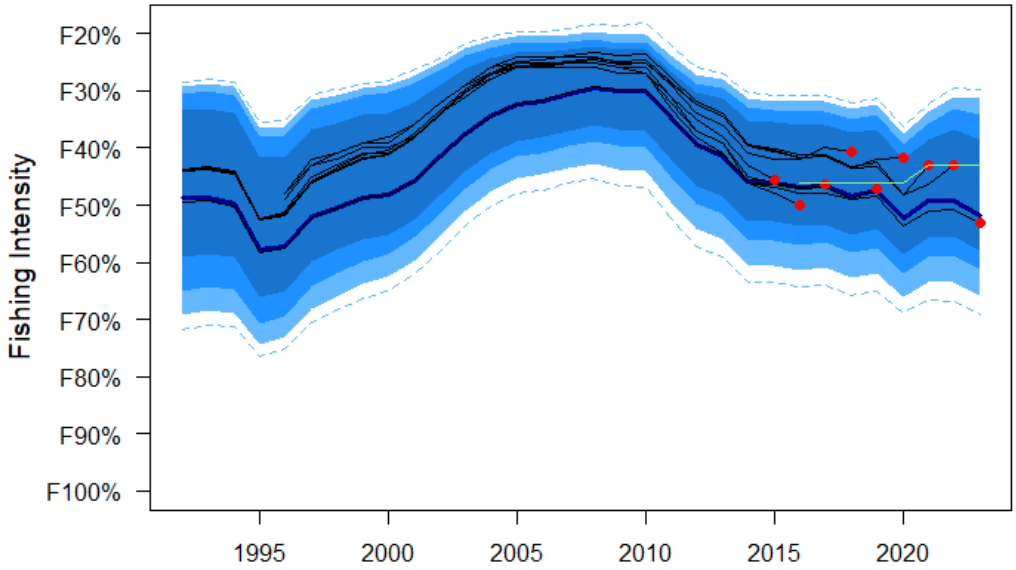


Figure 11. Retrospective comparison of fishing intensity (measured as $F_{xx\%}$, where xx% indicates the Spawning Potential Ratio (SPR) or the reduction in the lifetime reproductive output due to fishing) among recent IPHC stock assessments. Black lines indicate estimates of fishing intensity from assessments conducted in 2014-2022 with the projection for the mortality limit adopted based on that assessment shown as a red point. The shaded distribution denotes the 2023 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; and 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. The green line indicates the reference level of fishing intensity used by the Commission in each year it has been specified ($F_{46\%}$ during 2016-2020 and $F_{43\%}$ thereafter).

The IPHC's interim management procedure specifies a reference level of fishing intensity of $F_{43\%}$ (SPR=43%); this equates to the level of fishing that would reduce the lifetime spawning output per recruit to 43% of the unfished level given current biology, fishery characteristics and demographics. The 2023 fishing intensity is estimated to correspond to $F_{52\%}$ (credible interval: 31-66%; Table 2). The most recent four years (2020-2023) are estimated to correspond to the lowest levels of fishing intensity since the mid-1990s. Comparing the relative spawning biomass and fishing intensity over the recent historical period shows that the relative spawning biomass decreased as fishing intensity increased through 2010, then subsequently increased (Figure 12).

Table 2. Status summary of the Pacific halibut stock and fishery in the IPHC Convention Area at beginning of 2024.

Indicators	Values	Trends	Status
BIOLOGICAL			
SPR_{2023}: P(SPR<43%): P(SPR<limit):	52% (31-66%)[2] 27% LIMIT NOT SPECIFIED	FISHING INTENSITY REDUCED FROM 2022 TO 2023	**FISHING INTENSITY BELOW REFERENCE LEVEL**[3]
SB_{2024} (MLBS): SB_{2024}/SB_0: $P(SB_{2024}<SB_{30})$: $P(SB_{2024}<SB_{20})$:	174 (111–258) Mlbs 42% (20-56%) 26% 1%	SB INCREASED 2% FROM 2023 TO 2024	**NOT OVERFISHED**[4]
Biological stock distribution:	SEE TABLES AND FIGURES	REGION 3 DECREASED, REGION 2 INCREASED FROM 2022 TO 2023	**REGION 3 AT THE LOWEST OBSERVED PROPORTION**
FISHERY CONTEXT			
Total mortality 2023: Percent retained 2023: Average mortality 2019–23:	35.87 Mlbs, 16,270 t[1] 83% 37.37 Mlbs, 16,951 t	MORTALITY DECREASED FROM 2022 TO 2023	**2023 MORTALITY NEAR 100-YEAR LOW**

[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 43%.
[4] Status determined relative to the IPHC's interim management procedure biomass limit of $SB_{20\%}$.

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 assessment utilized six years (2017-22) of sex-ratio information from the directed commercial fishery landings. However, uncertainty in historical ratios remains unknown. Additional years of data are likely to further inform selectivity parameters and cumulatively reduce uncertainty in future stock size estimates. 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. This assessment also does not include mortality, trends, or explicit demographic linkages in 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.

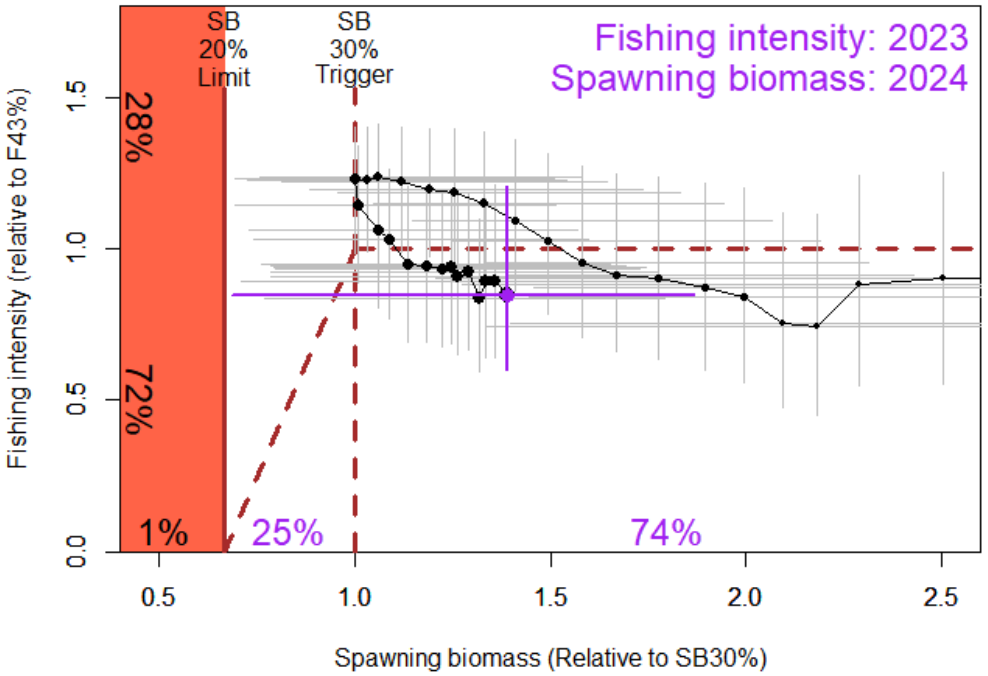


Figure 12. Phase plot showing the estimated time-series (1992-2024) of spawning biomass and fishing intensity relative to the reference points specified in the IPHC's interim management procedure. Dashed lines indicate the current $F_{43\%}$ (horizontal) reference fishing intensity, with linear reduction 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 2023 and spawning biomass at the beginning of 2024 shown as the largest point (purple). Percentages along the y-axis indicate the probability of being above and below $F_{43\%}$ in 2023; 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 2024.

Additional important contributors to assessment uncertainty (and potential bias) include the lag in estimation of incoming recruitment between birth year and direct observation in the fishery and survey data (6-10 years). Like most stock assessments, there is no direct information on natural mortality, and increased uncertainty for some estimated components of the fishery mortality. Fishery mortality estimates are assumed to be accurate; therefore, uncertainty due to discard mortality estimation (observer sampling and representativeness), discard mortality rates, and any other documented mortality in either directed or non-directed fisheries (e.g., whale depredation) could create bias in this assessment. Maturation schedules and fecundity are currently under renewed investigation by the IPHC. 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 trends in these biological processes at the scale of the entire population. Projections beyond three years are avoided due to the lack of mechanistic understanding of the factors influencing size-at-age and relative recruitment strength, the two most important factors in historical population trends.

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. Results of the IPHC's ongoing Management Strategy Evaluation (MSE) process can inform the development of management procedures that are robust to estimation uncertainty via the stock assessment, and to a wide range of hypotheses describing population dynamics.

SCIENTIFIC ADVICE

Sources of mortality: In 2023, total Pacific mortality due to fishing decreased to 35.87 million pounds (16,270 t), slightly below the 5-year average of 37.37 million pounds (16,951 t). Of that total, 83% comprised the retained catch (Table 2), equal to the percent utilized in 2022 and down from 87% in 2021.

Fishing intensity: The 2023 fishing mortality corresponded to a point estimate of SPR = 52%; there is a 27% chance that fishing intensity exceeded the IPHC's current reference level of $F_{43\%}$ (Table 2). The Commission does not currently have a coastwide fishing intensity limit reference point.

Stock status (spawning biomass): Current (beginning of 2024) female spawning biomass is estimated to be 174 million pounds (78,900 t), which corresponds to an 26% chance of being below the IPHC trigger reference point of $SB_{30\%}$, and a 1% chance of being below the IPHC limit reference point of $SB_{20\%}$. The stock is estimated to have declined 23% from 2016 to 2023, then increased by 2% to the beginning of 2024. The relative spawning biomass (compared to the biomass projected to be present at the beginning of 2024 in the absence of any fishing) is currently estimated to be 42%, after reaching the lowest point in the recent time series (30%) in 2011. Therefore, the stock is considered to be '**not overfished**'.

Stock distribution: After increases in 2020-2021, the proportion of the coastwide stock represented by Biological Region 3 has decreased in both 2022 and 2023 to the lowest estimate in the time-series, (Figure 6, Table 1). This trend occurs in tandem with increases in Biological Region 2. The lack of FISS sampling in Biological Region 4B in 2023 has resulted in increased uncertainty in both the trend and scale of the stock distribution in this Region.

Additional risks not included in this analysis: Directed commercial fishery catch rates coastwide, and in nearly all IPHC Regulatory Areas were at or near the lowest observed in the last 40 years. The absolute level of spawning biomass is also estimated to be near the lowest observed since the 1970s. The directed commercial fishery transitioned from the 2005 year-class to the 2012 year-class in 2022, with the 2012 year-class again the most numerous in the landed catch in 2023. This shift from older to younger (and smaller fish) has contributed to observed reduced catch rates. This year-class is estimated to be only 42% mature in 2023; the

current spawning stock is heavily reliant on this single year-class. Environmental conditions continue to be unpredictable, with important deviations from historical patterns in both oceanographic and biological processes observed across the stock range in the last decade.

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 and are included in the IPHC's 5-year research plan (IPHC-2024-AM100-06).

OUTLOOK

Short-term projections and the harvest decision table for 2024-2026 are reported in a separate document (IPHC-2024-AM100-12).

ADDITIONAL INFORMATION

A more detailed description of the stock assessment (IPHC-2024-SA-01) and the data sources (IPHC-2024-SA-02), will be published directly to the stock assessment page on the IPHC's website. That page also includes recent peer review documents and previous stock assessment documents. Further, the IPHC's website contains many interactive tools for both FISS and commercial fishery information, as well as historical data series providing detailed tables of data and other information.

RECOMMENDATION/S

That the Commission:

a) **NOTE** paper IPHC-2024-AM100-10 which provides a summary of data and the results of the 2023 stock assessment.

REFERENCES

IPHC. 2023a. Report of the 22nd session of the IPHC scientific review board (SRB022). Meeting held in Seattle, WA, USA, 20-22 June 2023. IPHC-2023-SRB022-R. 23 p.

IPHC. 2023b. Report of the 23rd session of the IPHC scientific review board (SRB023). IPHC-2023-SRB023-R. 26 p.

Methot, R.D., and Wetzel, C.R. 2013. Stock synthesis: A biological and statistical framework for fish stock assessment and fishery management. Fisheries Research **142**(0): 86-99. doi:http://dx.doi.org/10.1016/j.fishres.2012.10.012.

Stewart, I., and Hicks, A. 2023a. Development of the 2023 Pacific halibut (*Hippoglossus stenolepis*) stock assessment. IPHC-2023-SRB022-08. 18 p.

Stewart, I., and Hicks, A. 2023b. Development of the 2023 Pacific halibut (*Hippoglossus stenolepis*) stock assessment. IPHC-2023-SRB023-06. 8 p.

Stewart, I., and Hicks, A. 2023c. Assessment of the Pacific halibut (*Hippoglossus stenolepis*) stock at the end of 2022. IPHC-2023-SA-01. 37 p.

IPHC Management Strategy Evaluation and Harvest Strategy Policy Updates

PREPARED BY: IPHC SECRETARIAT (A. HICKS, I. STEWART & D. WILSON; 19 DECEMBER 2023)

PURPOSE

To provide the Commission with an update of the Management Strategy Evaluation (MSE) process and the Harvest Strategy Policy, and to seek guidance on the MSE Program of Work.

INTRODUCTION

The Management Strategy Evaluation (MSE) Program of Work for 2021–2023 (IPHC-2021-MSE-02) was completed in early 2023 and presented at the 99th Session of the IPHC Annual Meeting (AM099).

MSE is used to evaluate management procedures with the ultimate goal of identifying a harvest strategy, as part of a harvest strategy policy (HSP), that meets management objectives and is robust to uncertainty and variability. An HSP provides a framework for applying a science-based approach to setting harvest levels. At IPHC, this would be specific to the TCEY for each IPHC Regulatory Area throughout the Convention Area. Currently, IPHC has not formally adopted a harvest strategy policy, but has set harvest levels under an SPR-based framework with elements adopted at multiple Annual Meetings of the IPHC since 2017. To formally define and subsequently adopt an IPHC harvest strategy, a few tasks remain. This includes evaluating multi-year Management Procedures (MPs) and determining if the current reference fishing intensity (SPR=43%) still meets IPHC objectives. Additions and edits to the current draft harvest strategy policy document are also necessary for the adoption of a formal harvest strategy policy.

This summary document describes various tasks related to ongoing MSE work that would assist in adopting a harvest strategy policy. These tasks include:

1) updates to the operating model (OM);
2) considering new objectives and performance metrics;
3) evaluating various elements of MPs;
4) defining exceptional circumstances; and
5) updating the Harvest Strategy Policy document.

Potential decision points are listed at the end of each section and summarized in the final Recommendation/s section. Additional details are available in document IPHC-2024-MSE-01 on the MSE Research Page.

OUTCOMES OF THE 18TH SESSION OF THE IPHC MANAGEMENT STRATEGY ADVISORY BOARD

The 18th Session of the IPHC Management Strategy Advisory Board (MSAB018) occurred in May 2023 and members discussed membership, past evaluations, and a Program of Work.

The MSAB discussed MSAB member succession planning and the potential for the designation of alternate members. Some members expressed interest in having alternates available in case the member is unable to attend a meeting or ends their term. The MSAB requested that domestic agency staff consider providing text to update the IPHC Rules of Procedure.

> **IPHC-2023-MSAB018-R, para. 10:** ***NOTING*** *the extensive discussion surrounding MSAB member succession planning and how the appointment of alternates may be useful, the MSAB* ***REQUESTED*** *that domestic agency staff from the Contracting Parties consider drafting text to amend the IPHC Rules of Procedure to allow alternates to be designated for MSAB members, for Commission consideration in the future.*

A major outcome of MSAB018 was the request that the evaluation of annual and multi-year assessments be done subsequent to an agreement on a distribution procedure and include elements such as multi-year management procedures, constraints on the coastwide TCEY, smoothing elements on the calculation of stock distribution, and various SPR values.

> **IPHC-2023-MSAB018-R, para. 29:** *The MSAB* ***REQUESTED*** *that subsequent to an agreement on a distribution procedure by the Commission, the evaluation of annual and multi-year assessments include, but not limited to, the following concepts.*
>
> *a) Annual changes in the TCEY driven by FISS observations in non-assessment years of a multi-year MP;*
>
> *b) A constraint on the coastwide TCEY to reduce inter-annual variability and the potential for large changes in assessment years of a multi-year [MP]. This may be a 10% or 15% constraint, a slow-up fast-down approach, or similar approach;*
>
> *c) A smoothing element in the distribution procedure to account for uncertainty in the estimates of stock distribution and reduce the variability in area-specific TCEYs. For example, this may include a 3-year rolling average of stock distribution estimates;*
>
> *d) SPR values ranging from 30% to 56% and alternate trigger reference points in the harvest control rule.*

This is consistent with an agreement by the Commission at AM099.

> **IPHC-2023-AM099-R, para. 87:** The Commission **AGREED** that following agreement about a distribution procedure, the IPHC Secretariat and MSAB should reassess multi-year stock assessment management procedures, as well as coastwide elements of a management procedure such as the SPR value.

The MSAB also discussed exceptional circumstances and gained a better understanding of what an exceptional circumstance is and what details need to be defined.

> **IPHC-2023-MSAB018-R, para. 42:** *The MSAB **AGREED** that FISS observations (coastwide or by area/region) are useful to define the limits defining an exceptional circumstance and that individual years may be used as well as observed trends over time.*
>
> **IPHC-2023-MSAB018-R, para. 43:** *The MSAB **NOTED** that the defined responses to an exceptional circumstance may include: a) reviewing the MSE framework including the operating model; IPHC-2023-MSAB018-R Page 12 of 19 b) examining objectives; c) evaluating additional MPs; d) completing a stock assessment at the next appropriate time.*
>
> **IPHC-2023-MSAB018-R, para. 44:** *The MSAB **AGREED** that there are other circumstances within the acceptable range simulated by the MSE when one may deviate from an adopted MP because of an unexpected event. For example, a high probability of predicted declines in the spawning biomass under the interim management procedure may have been contributing factors in the decision to depart from the interim management procedure in 2023, even though these declines were within the simulated range of MSE results.*

Finally, the MSAB requested that MSAB019 be held in the Spring of 2024.

> **IPHC-2023-MSAB018-R, para. 47:** The *MSAB **REQUESTED** that MSAB019 be held in May 2024, rather than October 2024, as previously noted by the Commission, and that future MSAB meetings occur prior to the June SRB meeting in that same year.*

Decision/Action
None

UPDATED 2023 OPERATING MODEL

The Scientific Review Board (SRB) has reviewed the IPHC's MSE Operating Model (OM) for 2023 at the 22nd Session of the SRB (SRB022) and the 23rd Session of the SRB (SRB023). The IPHC's MSE Operating Model for 2023 has been updated to reflect the 2022 stock assessment ensemble and is performing well for evaluating management procedures, noting that further adjustments may be made, at the request of the Commission. The SRB endorsed the 2023 OM.

Specific details of the OM are presented in the document *Technical Details of the IPHC MSE Framework* (IPHC-2023-MSE-02). Overall, the 2023 OM is ready to be used to investigate elements of MPs that will lead to the adoption of a harvest strategy. This may include, for example, multi-year assessments and fishing intensity. Additionally, the 2023 OM may be used to inform decisions regarding monitoring of the Pacific halibut stock, such as investigating the effects of FISS designs on management outcomes.

The 2023 OM is consistent with the assumptions used in the 2022 assessment (i.e. three of the four models in the stock assessment ensemble estimated female natural mortality at values greater than 0.18). Long-term performance metrics related to spawning biomass and short-term performance metrics for the TCEY from simulations using the 2022 OM and the 2023 OM with the same specifications of an MP (SPR=43%) were similar (Table 1). The short-term median average TCEY was approximately 59 million pounds and the median average annual variability (AAV) for the TCEY changed from 17 to 19%. The probability of the long-term spawning biomass being less than 36% of unfished spawning biomass changed from 0.31 to 0.35. Even though the 2022 stock assessment showed a large increase in the TCEY when compared to 2021 stock assessment outputs, the MSE outputs are very similar due to the inclusion of additional uncertainty on natural mortality in the 2022 and 2023 OMs. Therefore, past MSE results remain relevant.

Decision/Action

Note that the SRB endorsed the 2023 OM for use in MSE evaluations of MPs that would lead to the adoption of a harvest strategy, including assessment frequency, fishing intensity, and data monitoring.

Note that MSE results using the updated 2023 OM are similar to past MSE results, thus past MSE results remain relevant.

Table 1. Performance metrics for the same management procedure simulated with the 2022 OM and the 2023 OM. The MP uses an SPR=43%, a 30:20 control rule, and an annual assessment.

Performance Metric	2022 OM	2023 OM
Long-term		
P(RSB<20%)	PASS	PASS
P(RSB<36%)	0.31	0.35
Short-term		
Median average TCEY	59.0	59.2
Median AAV TCEY	18.8%	17.0%

OBJECTIVES AND PERFORMANCE METRICS

Four priority coastwide objectives are currently endorsed by the Commission for use in the IPHC's MSE process.

a. Maintain the long-term coastwide female spawning stock biomass above a biomass limit reference point ($B_{20\%}$) at least 95% of the time.

b. Maintain the long-term coastwide female spawning stock biomass above a biomass target reference point ($B_{36\%}$) at least 50% of the time.

c. Optimise average coastwide TCEY.

d. Limit annual changes in the coastwide TCEY.

Additional area-specific objectives are listed in Appendix A. The IPHC Secretariat is working with the SRB to develop a region-specific objective to conserve spatial structure that is informative of the changes in biomass within a region. This would be a secondary objective to consider after meeting all priority objectives.

> **IPHC-2023-SRB023-R, para 24.** *The SRB **RECOMMENDED** that an objective to maintain spatial population structure be added or redefined to maintain the spawning biomass in a Biological Region above a defined threshold relative to the dynamic unfished equilibrium spawning biomass in that Biological Region with a pre-defined tolerance. The percentage and tolerance may be defined based on historical patterns and appropriate risk levels recognizing the limited fishery control of biomass distribution.*

The result from the 2022 full stock assessment (IPHC-2023-SA-01) using the current interim management procedure with an SPR of 43% was a TCEY of 52.0 Mlbs. This TCEY was higher than expected from previous assessments largely because natural mortality (*M*) was estimated higher than a previously fixed value in one of four models in the ensemble, thus increasing the perceived productivity of the stock. In contrast to this optimistic advice, the coastwide FISS index of O32 WPUE was at its lowest value observed in the time-series, declining by 8% from the previous year, and a TCEY of 52.0 Mlbs in 2023 would have resulted in a 75% chance of a lower spawning biomass in 2024. The Commission departed from the current interim management procedure at AM099 and chose a TCEY of 36.97 Mlbs for 2023, noting

> **IPHC-2023-AM099-R, para. 94.** *The Commission **NOTED** that the adopted mortality limits for 2023 correspond to a 38% probability of stock decline through 2024, and a 36% probability of stock decline through 2026.*

Although the status of the stock was above the target relative spawning biomass of 36% and had a small chance (25%) of falling below 30% at any TCEY up to 60 Mlbs, the Commission decided to reduce the TCEY from the TCEY consistent with the reference harvest level. This decision may be a precautionary measure given the changes in the stock assessment as well as other identified risks, but even though the reference mortality limit was larger than in previous assessments, the estimates of spawning biomass were similar to past stock assessments.

Related to these concerns at AM099, the SRB made a recommendation to re-evaluate what they called the target objective. This is objective (b): to maintain the relative spawning biomass above $B_{36\%}$.

> **IPHC-2023-SRB023-R, para. 25.** *The SRB **RECOMMENDED** that the Commission re-evaluate the target objective for long-term coastwide female spawning stock biomass given that estimated 2023 female spawning biomass (and associated WPUE), which was well-above the current target B36%, in part triggered harvest rate reductions from the interim harvest policy. Such ad-hoc adjustments limited the value of projections and performance measures from MSE.*

However, instead of updating the $B_{36\%}$ relative spawning biomass objective, it may be prudent to consider an absolute spawning biomass, or catch-rate, threshold in a new objective.

Most fisheries management authorities use an absolute spawning biomass threshold because they do not consider dynamic unfished spawning biomass (dynamic B_0). Instead, reference points are defined as a percentage of a static B_0 that is calculated using a pre-defined productivity regime. This, however, conflates environmental effects with fishing effects. A compromise is to determine status of the stock using a dynamic approach to account for only fishing effects, and to also define an absolute spawning biomass limit to avoid stock levels below a value that may result in unacceptably low catch-rates and the potential for reduced reproduction.

Clark and Hare (2006) noted that "[t]he Commission's paramount management objective is to maintain a healthy level of spawning biomass, meaning a level above the historical minimum that last occurred in the mid1970s." The Commission currently has conservation objectives to maintain the spawning biomass above certain thresholds, measured as relative spawning biomass, but these reference points are relative to dynamic unfished spawning biomass, thus may not indicate when spawning biomass is at a low level resulting from non-fishing effects (e.g. weight-at-age and recruitment). An absolute biomass threshold would ensure that the biomass of fish available is above a desired level.

An objective to maintain the absolute spawning biomass above a threshold may be a useful objective for several reasons. First, the level of spawning biomass likely correlates with catch-rates in the fishery, and a higher spawning biomass would likely result in a more efficient and economically viable fishery. Second, current priority conservation objectives use dynamic relative spawning biomass (accounting for the effects of fishing and not the environment) to determine stock status, and stock conditions may result in a low absolute spawning biomass with a satisfactory stock status. Third, a minimum absolute coastwide spawning biomass may be necessary to ensure successful reproduction. Lastly, an observed reference may have concrete meaning to stakeholders. For example, the recent estimated spawning biomass may be near or below the lowest spawning biomass estimated since the mid-1970's and the Commission noted historically low observed fishery catch rates in 2022.

> **IPHC-2023-AM099-R, para 56.** *The Commission **NOTED** that there are additional risks associated with the stock condition and mortality limit considerations for 2023 that are not quantitatively captured in the decision table, these include:*

a) Historically low observed fishery catch rates corresponding to reduced efficiency/performance in 2022;

The threshold and the tolerance for being below that threshold are not obvious choices. Clark and Hare (2006) used the estimated spawning biomass in 1974, which subsequently produced recruitment resulting in an increase in the stock biomass. However, there is a high uncertainty in the estimates of historical absolute spawning biomass before the 1990's. Recent estimates of spawning biomass may be reasonable as they are relevant to concerns of low catch-rates, but it is unknown how and if the stock will quickly recover from this current state. Setting an absolute spawning biomass to avoid low catch-rates may also *de facto* protect the stock from serious harm (i.e. avoid dropping below the current relative spawning biomass limit of 20%).

An alternative way to think about this is to define a population biomass limit reference point for relative spawning biomass as a threshold for which dropping below would cause serious harm to the stock (the Commission has adopted $SB_{20\%}$), and a fishery biomass limit reference point on some quantity that would result in serious hardships to the fishery. The fishery biomass limit reference point could be defined using absolute spawning biomass, CPUE, FISS WPUE, or some other metric. Note that a fishery biomass limit reference point is a different objective than a fishing intensity limit, where the former is a threshold used to maintain catch-rates and the latter is a threshold used to indicate the potential for overfishing. As mentioned above, a fishery absolute spawning biomass limit may add extra protection for the stock by further reducing the chance of the population dropping below the population biomass limit reference point.

The Secretariat will discuss objectives with the MSAB and SRB and a new one related to absolute spawning biomass may be phrased as

> Maintain the long-term coastwide female spawning stock biomass (or FISS WPUE or fishery catch-rates) above a threshold at least XX% of the time.

The IPHC Secretariat is currently reporting the priority Performance Metrics associated with the priority objectives, which is a subset from the range of metrics presented in Appendix A. The MSAB also requested that a new performance metric be developed to assist with evaluating multi-year MPs.

> **IPHC-2023-MSAB018-R, para. 38:** *The MSAB REQUESTED new performance metrics representing the change in the TCEY in non-assessment years and the change in TCEY in assessment years be developed for the evaluation of multi-year assessment MPs.*

The Secretariat will continue to work with the MSAB regarding how to calculate these new performance metrics, and will then report them in the MSE Explorer.

Decision/Action

Recommend that the Secretariat, working with the MSAB and SRB, develop a new coastwide objective related to absolute spawning biomass or catch-rates, to either replace the current $B_{36\%}$ objective or to be added as a fifth priority objective. The Secretariat supports developing a new objective that optimizes yield via maintaining commercial/FISS catch-rates above a threshold and/or maintaining opportunity for other sectors.

MANAGEMENT PROCEDURES (MPS)

The MSAB and the SRB have provided requests to investigate various MP elements.

> **IPHC-2023-SRB023-R, para. 29:** *The SRB **RECOMMENDED** evaluating fishing intensity and frequency of the stock assessment elements of management procedures and FISS uncertainty scenarios using the MSE framework. MP elements related to constraints on the interannual change in the TCEY and calculation of stock distribution may be evaluated for a subset of the priority management procedures as time allows*.

The following describes these elements of MPs that could be evaluated as part of the future MSE Program of Work.

Priority

- **Annual and multi-year stock assessment MPs:** These are management procedures that conduct a stock assessment annually or every 2nd or 3rd year and use an empirical MP based on the FISS survey trends to determine the TCEY in non-assessment years.
- **Fishing intensity:** A range of SPR values (i.e. fishing intensity, currently 43%) and alternative trigger reference points (currently 30%) in the harvest control rule.
- **FISS reductions:** Investigate scenarios where the FISS effort is reduced or occasionally eliminated in various IPHC Regulatory Areas.

Secondary

- **Constraints:** A constraint on the coastwide TCEY to reduce inter-annual variability. Past examples include a 15% constraint and a slow-up/fast-down approach.

Additional

- **Absolute spawning biomass**: Elements related to maintaining the spawning biomass above an absolute threshold.
- **Stock distribution:** A method to reduce the inter-annual variability in the estimates of stock distribution for use in the MP. This may include using the average of the stock distribution estimates over the past 3 years, for example.
- **TCEY distribution**: Procedures to distribute the TCEY to IPHC Regulatory Areas.

Decision/Action

Recommend the evaluation of multi-year management procedures along with fishing intensity, while incorporating uncertainty in how the TCEY is distributed. These are two MP elements that are necessary to evaluate for the adoption of a coastwide MP in the harvest strategy policy.

Recommend the evaluation of FISS design scenarios using the MSE framework, as recommended by the SRB. This will provide an understanding of how reductions in the FISS design may affect management outcomes.

Recommend evaluating additional management procedures at the request of the MSAB and SRB. This may include constraints on the coastwide TCEY, methods to smooth estimation of stock distribution, and procedures to provide a reference TCEY distribution to inform decision-making. These are additional MP elements that may be beneficial to the harvest strategy policy.

EXCEPTIONAL CIRCUMSTANCES

An exceptional circumstance is an event that is beyond the expected range of the MSE evaluation and triggers specific actions that should be taken to re-examine the harvest strategy. The IPHC interim harvest strategy policy has a decision-making step after the MP, thus the Commission may deviate from an adopted MP as part of the harvest strategy, and this decision-making variability is included in the MSE simulations. Potential exceptional circumstances (i.e. events) and the actions following the declaration of an exceptional circumstance are given below.

The Secretariat, with the assistance of the SRB and MSAB, is defining exceptional circumstances and prescribing the response that would be initiated, as well as identifying potential triggers in a management procedure that would result in a stock assessment being done (if time allows) in a year that would normally not have one scheduled (e.g. in multi-year MPs). Working with the SRB, the following potential exceptional circumstances have been described:

a) The coastwide all-sizes FISS WPUE or NPUE from the space-time model falls above the 97.5th percentile or below the 2.5th percentile of the simulated FISS index for two or more consecutive years.
b) The observed FISS all-sizes stock distribution for any Biological Region is above the 97.5th percentile or below the 2.5th percentile of the simulated FISS index over a period of 2 or more years.
c) Recruitment, weight-at-age, sex ratios, other biological observations, or new research indicating parameters that are outside the 2.5th and 97.5th percentiles of the range used or calculated in the MSE simulations.

Furthermore, the following actions may take place if an exceptional circumstance is declared.

a) A review of the MSE simulations to determine if the OM can be improved and MPs should be reevaluated.
b) If a multi-year MP was implemented and an exceptional circumstance occurred in a year without a stock assessment, a stock assessment would be completed as soon as possible along with the re-examination of the MSE.
c) Consult with the SRB and MSAB to identify why the exceptional circumstance occurred, what can be done to resolve it, and determine a set of MPs to evaluate.
d) Further consult with the SRB and MSAB after simulations are complete to identify whether a new MP is appropriate.

Decision/Action

Recommend that the Secretariat continue to work with the SRB and MSAB to define exceptional circumstances (events) using FISS observations, biological observations, and new research.

Recommend that the Secretariat continue to work with the SRB and MSAB to prescribe the actions to take when an exceptional circumstance is triggered.

Recommend that following discussions with the MSAB and SRB, definitions of and actions for exceptional circumstances be included in the harvest strategy policy.

RESULTS

MSE simulations are currently being conducted, with a priority on multi-year assessments and SRB-requested FISS scenarios. Results will be added to the MSE Explorer website as they become available.

Results of MSE simulations assuming a persistent low or high PDO were presented at the 18th Session of the MSAB (MSAB018), the fifth conference for Effects of Climate Change on the Worlds Oceans (ECCWO5), and the PICES 2023 Annual Meeting (PICES-2023). These results showed that fishing and the environment affect the proportion of spawning biomass in each Biological Region in different ways.

Even though we cannot “manage” the PDO regime, it is useful to understand the effects of the PDO regime on the results, allowing for the separation of the effects of fishing from the effects of the environment. For Pacific halibut, the median relative spawning biomass (RSB) when fishing at an SPR equal to 43% was similar for the high and low PDO scenarios (Table 2). However, even though the median was near 38%, there was a higher probability that the RSB was less than 36% for the low PDO scenario. The long-term median TCEY was 22% less for the low PDO scenario and 26% more for the high PDO scenario when compared to the median TCEY for the base simulations that modelled PDO regime shifts. The TCEY for a persistent high PDO was 1.6 times greater than the TCEY for a persistent low PDO. Inter-annual variability in the TCEY was the same for the persistent low and high PDO scenarios, but less than the AAV when PDO regime shifts were modelled. Without decision-making variability, estimation error,

and observation error, the AAVs are less than when these additional sources of variation are included, as expected.

The environment, in some Biological Regions, may have a larger effect on the distribution of spawning biomass than fishing does (at an SPR of 43%). The percentage of spawning biomass in each Biological Region is affected by fishing under an SPR-based management procedure, and is also affected by the PDO regime because movement, recruitment distribution, and average recruitment are dependent on the PDO regime (Figure 1). Region 2 shows a reduction in the percentage of spawning biomass with fishing, and the low PDO scenario results in a higher percentage than the persistent high PDO scenario. Region 3 shows a similar percentage of spawning biomass with fishing and a higher percentage of spawning biomass with a high PDO. Region 4 shows a higher percentage of spawning biomass with fishing and is largely unaffected by the PDO regime. Region 4B has a higher percentage of spawning biomass with fishing and a higher spawning biomass for the low PDO scenario. These results are dependent upon the harvest strategy, and different fishing intensities or distribution procedures may produce different outcomes.

Decision/Action

None

Table 2. Long-term performance metrics related to primary objectives for scenarios with modeled cycles of PDO (both), always low PDO (Low), and always high PDO (High) with an annual assessment, SPR=43%, 32-inch size-limit, no decision-making variability, no estimation error, and no observation error.

PDO	Both	Low	High
Long-Term Metrics			
Median RSB	38.8%	37.6%	39.2%
P(RSB_y<20%)	<0.001	<0.001	<0.001
P(RSB<36%)	0.238	0.329	0.157
Median TCEY (Mlbs)	65.64	51.42	82.95
Median AAV TCEY	5.2%	4.5%	4.5%
Median TCEY Region 2 (Mlbs)	20.49	19.07	21.20
Median TCEY Region 3 (Mlbs)	33.67	22.98	48.74
Median TCEY Region 4 (Mlbs)	8.13	6.55	9.35
Median TCEY Region 4B (Mlbs)	2.40	2.24	2.63

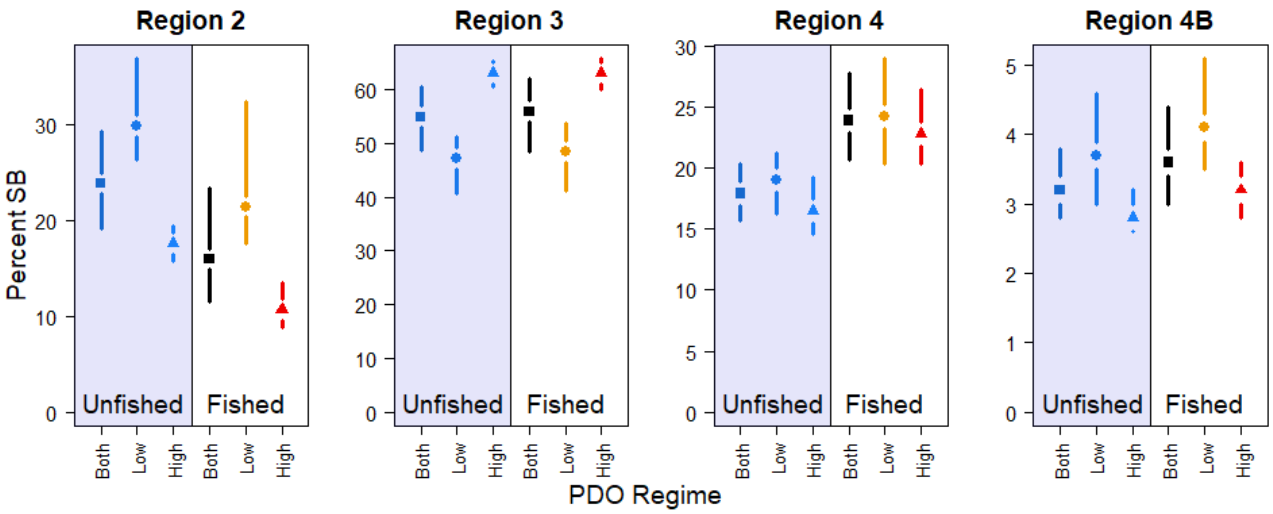


Figure 1. Percentage of spawning biomass in each Biological Region when fished with an SPR of 43% (no estimation error, no observation error, and no implementation error) and when not fished. The PDO is modelled with cyclical low and high periods in "Both", is persistently low in "Low", and is persistently high in "High".

IPHC Harvest Strategy Policy

A Harvest Strategy Policy (HSP) provides a framework for applying a science-based approach to setting harvest levels. At IPHC, this would be specific to the TCEY for each IPHC Regulatory Area throughout the Convention Area. Currently, the IPHC has not formally adopted a harvest strategy policy, but has set harvest levels under an SPR-based framework with elements adopted at multiple Annual Meetings of the IPHC since 2017.

Adopting an HSP is important for any fisheries management authority because it outlines the long-term vision for management and specifies the framework for a consistent and transparent science-based approach to setting mortality limits. An HSP

- identifies an appropriate method to manage natural variability and scientific uncertainty,
- accounts for risk and balances trade-offs,
- reduces the time needed to make management decisions,
- ensures long-term sustainability and profitability,
- increases market stability due to a more predictable management process,
- adheres to the best practices of modern fisheries management that is consistent with other fisheries management authorities and certification agencies, and
- allows for the implementation of the precautionary approach.

Overall, an HSP spells out the management process, which benefits the fish, the stakeholders, and other interested parties.

To move towards formally adopting a harvest strategy policy at the IPHC in the near term, the SRB recommended separating the coastwide TCEY management procedure from the distribution procedure.

> **IPHC-2023-SRB023-R, para. 30:** *The SRB **RECOMMENDED** that the Commission consider revising the harvest policy to (i) determine coastwide TCEY via a formal management procedure and (ii) negotiate distribution independently (e.g. during annual meetings). Such separated processes are used in other jurisdictions (e.g. most tuna RFMOs, Mid Atlantic Fishery Management Council, AK Sablefish, etc.).*

The coastwide TCEY determined from the MP in the harvest strategy would be an input into the allocation decision-making process.

An HSP can be divided into three components: management procedure, harvest strategy, and policy (Figure 2). A management procedure is an agreed upon procedure that determines an output that meets the objectives defined for management. The MP is reproducible and is codified such that it can be consistently calculated. The harvest strategy component contains the MP but is broader and encompasses the objectives as well as additional procedures that produce that final necessary outputs, but may not be procedural and pre-defined. For example, at the IPHC the harvest strategy consists of the procedure to determine the coastwide TCEY as well as the concept of distributing the TCEY to each IPHC Regulatory Area. Currently, the determination of the coastwide TCEY is defined using a harvest control rule and reference fishing intensity, but there is not an agreed upon procedure to distribute the TCEY. However, a reference TCEY distribution may be useful to inform the decision-making process. The policy component is the aspect of decision-making where management may deviate from the outputs of the harvest strategy to account for other objectives not considered in the harvest strategy. This may be to modify the coastwide TCEY and/or the distribution of the TCEY to account for economic factors, for example. At IPHC, the policy component occurs at the Annual Meeting of the IPHC where stakeholder input is considered along with scientific information to determine the mortality limits for each IPHC Regulatory Area.

The IPHC Secretariat is currently in the process of updating the IPHC harvest strategy policy document, which was last edited in 2019, and a draft HSP is available for consideration by the Commission (outline in Appendix B). This draft may be adopted as an interim HSP, but some additional MSE work is necessary for a final HSP, noting that the HSP may be updated at any time following additional MSE-related work. The necessary MSE tasks to complete include investigating multi-year assessments with empirical rules to determine the coastwide TCEY in non-assessment years, and examining additional fishing intensities (i.e. SPR values) for each of those options. The draft HSP includes a description of the decision-making process and the flexibility that the Commission would have when making management decisions. This decision-making uncertainty is included in the MSE analysis of risk.

Decision/Action

Recommend that the Secretariat continue developing an updated Harvest Strategy Policy document, noting that decisions regarding the assessment frequency and potentially a change to the reference fishing intensity are to be made at AM101.

Adopt an interim harvest strategy policy given the current interim management procedure (i.e. annual assessment and a reference SPR=43%).

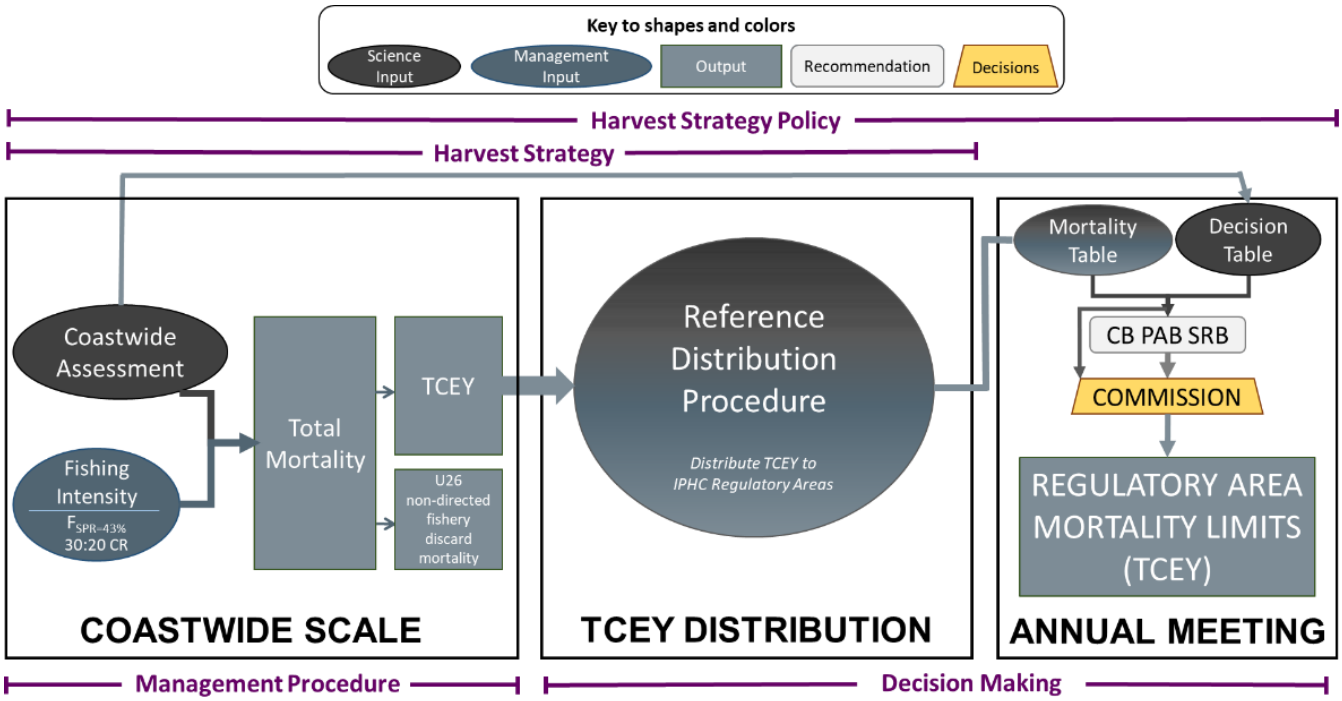


Figure 2. Illustration of the harvest strategy policy for IPHC showing the coastwide scale (management procedure), the TCEY distribution (part of the harvest strategy), and the policy component that mainly occurs at the Annual Meeting.

RECOMMENDATION/S

That the Commission

1) **NOTE** paper IPHC-2024-AM100-11 presenting outcomes of MSAB018 and SRB023, recent MSE progress, potential additions to the MSE Program of Work for 2023–2025, and a draft Harvest Strategy Policy document.
2) **NOTE** that the SRB endorsed the 2023 OM for use in MSE evaluations of MPs that would lead to the adoption of a harvest strategy, including assessment frequency, fishing intensity, and data monitoring.
3) **NOTE** that MSE results using the updated 2023 OM are similar to past MSE results, thus past MSE results remain relevant.
4) **NOTE** the current priority objectives and **RECOMMEND** that the Secretariat, working with the MSAB and SRB, develop a new coastwide objective related to absolute spawning biomass or catch-rates, to either replace the current $B_{36\%}$ objective or to be added as a fifth priority objective. The Secretariat supports developing a new objective that optimizes yield via maintaining commercial/FISS catch-rates above a threshold and/or maintaining opportunity for other sectors.
5) **RECOMMEND** the evaluation of multi-year management procedures along with fishing intensity, while incorporating uncertainty in how the TCEY is distributed. These are two MP elements that are necessary to evaluate for the adoption of a coastwide MP in the harvest strategy policy.
6) **RECOMMEND** the evaluation of FISS design scenarios using the MSE framework, as recommended by the SRB. This will provide an understanding of how reductions in the FISS design may affect management outcomes.
7) **RECOMMEND** evaluating additional management procedures at the request of the MSAB and SRB. This may include constraints on the coastwide TCEY, methods to smooth estimation of stock distribution, and procedures to provide a reference TCEY distribution to inform decision-making. These are additional MP elements that may be beneficial to the harvest strategy policy.
8) **RECOMMEND** that the Secretariat continue to work with the SRB and MSAB to define exceptional circumstances (events) using FISS observations, biological observations, and new research.
9) **RECOMMEND** that the Secretariat continue to work with the SRB and MSAB to prescribe the actions to take when an exceptional circumstance is triggered.
10) **RECOMMEND** definitions of and actions for exceptional circumstances be included in the harvest strategy policy following discussions with the MSAB and SRB.
11) **RECOMMEND** that the Secretariat continue developing an updated Harvest Strategy Policy document, noting that decisions regarding the assessment frequency and potentially a change to the reference fishing intensity are to be made at AM101.

12) **ADOPT** an interim harvest strategy policy given the current interim management procedure (i.e. annual assessment and a reference SPR=43%)

APPENDICES

Appendix A: Objectives used by the Commission for the MSE

Appendix B: Outline of a draft IPHC harvest strategy policy

Appendix C: Supplementary material

APPENDIX A
OBJECTIVES USED BY THE COMMISSION FOR THE MSE

Table A1. Primary objectives, evaluated over a simulated ten-year period, accepted by the Commission at the 7th Special Session of the Commission (SS07). Objective 1.1 is a biological sustainability (conservation) objective and objectives 2.1, 2.2, and 2.3 are fishery objectives. Priority objectives are shown in green text.

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 the long-term coastwide female spawning stock biomass above a biomass limit reference point ($B_{20\%}$) at least 95% of the time	*B* < Spawning Biomass Limit (B_{Lim}) B_{Lim}=20% unfished spawning biomass	Long-term	0.05	$P(SB < SB_{Lim})$ Fail if greater than 0.05
	Maintain a defined minimum proportion of female spawning biomass in each Biological Region	$p_{SB,2} > 5\%$ $p_{SB,3} > 33\%$ $p_{SB,4} > 10\%$ $p_{SB,4B} > 2\%$	Long-term	0.05	$P(p_{SB,R} < p_{SB,R,min})$
2.1 MAINTAIN SPAWNING BIOMASS AT OR ABOVE A LEVEL THAT OPTIMIZES FISHING ACTIVITIES	Maintain the long-term coastwide female spawning stock biomass at or above a biomass reference point ($B_{36\%}$) 50% or more of the time	*B*<Spawning Biomass Reference (B_{Thresh}) B_{Thresh}=$B_{36\%}$ unfished spawning biomass	Long-term	0.50	$P(SB < SB_{Thresh})$ Fail if greater than 0.5
2.2. 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)*
2.3. LIMIT VARIABILITY IN MORTALITY LIMITS	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

APPENDIX B
OUTLINE OF A DRAFT IPHC HARVEST STRATEGY POLICY

Chapter 1 Introduction

1.1 Scope

1.2 What is a Harvest Strategy Policy (HSP)?

1.3 What is a Harvest Strategy?

Chapter 2 Objectives and Key Principles

Chapter 3 Development of the Harvest Strategy

3.1 Accounting for fishing mortality on all sizes and from all sources

3.2 Variability in the environment and biological characteristics

3.3 Monitoring Standards

3.4 Establishing and applying decision rules

3.5 Balancing risk, cost and catch

3.6 Reference points and proxies

3.7 Technical evaluation of the harvest strategy

3.8 Re-evaluating the harvest strategy and management procedure

Chapter 4 Applying the harvest strategy

4.1 Jointly-managed domestic stocks

4.2 Jointly-managed international stocks

4.3 Stock assessment

4.4 Coastwide mortality limit

4.5 Rebuilding if the stock becomes overfished

4.6 Mortality limits for each IPHC Regulatory Area

4.7 Common outputs used for decision-making

4.8 Stakeholder and scientific input

4.9 Annual process

APPENDIX C
SUPPLEMENTARY MATERIAL

The IPHC MSE Research website contains additional documents with more detailed information.

https://www.iphc.int/management/science-and-research/management-strategy-evaluation

This includes a technical description in document (IPHC-2023-MSE-02) and a full description of MSE related activities in 2023 (IPHC-2024-MSE-01).

The MSE Explorer will be updated as additional results are produced. Links to the current MSE Explorer as well as archived results are available at

http://iphcapps.westus2.cloudapp.azure.com/

Stock projections and the harvest decision table for 2024-2026

PREPARED BY: IPHC SECRETARIAT (I. STEWART AND A. HICKS; 18 DECEMBER 2023)

PURPOSE

To provide the Commission with short-term (3 year) stock projections and the harvest decision table for 2024-2026.

METHODS

Short-term tactical stock projections under varying levels of mortality are conducted using the results from the 2023 stock assessment (IPHC-2024-AM100-10). Standard projections are based on existing Catch Sharing Agreements/Plans (CSPs) for directed commercial and recreational fisheries where they exist, as well as summaries of the 2023 and earlier directed and non-directed fisheries.

Specifically, the projected mortality levels are based on the three-year running average non-directed discard mortality[1] through the most recent year (2023), per the decision during AM096 para. 97). Subsistence harvest is assumed to be constant at the most recent year's estimates. The discard mortality for the directed commercial fisheries is assumed to occur at the same rate observed in the most recent year, and to scale up or down with the projected landings.

The harvest decision table provides a comparison of the relative risk (in times out of 100), using stock and fishery metrics (rows), against a range of coastwide alternative harvest levels for 2024 (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) include several levels of mortality intended for evaluation of stock and management procedure dynamics including:

- No fishing mortality (useful to evaluate the stock trend due solely to population processes)
- The mortality consistent with repeating the coastwide TCEY set for 2023 (the *status quo*)
- Bracketing alternatives 5 and 10% above and below the *status quo*

[1] The North Pacific Fishery Management Council is expected to adopt a new method for setting the Prohibited Species Catch (PSC) limit for Pacific halibut mortality in the Amendment 80 (A80) trawl sector in 2024. This approach adjusts PSC limits based on the NOAA Fisheries Eastern Bering Sea trawl survey and the modelled FISS index of abundance for IPHC Regulatory Areas 4A, 4B, and 4CDE. Although this new approach results in a 20% reduction to the A80 sector's PSC limit, the actual halibut mortality has been far below the aggregate PSC limit for all sectors in the Bering Sea and Aleutian Islands (59% in 2023). Therefore, it is unclear whether any future adjustments to the 3-year running average approach might be warranted, as actual mortality could still go up or down from the three year-average under current conditions. Recent actual non-directed discard mortality estimates in both IPHC Regulatory Areas 2A and 2B and in the Gulf of Alaska are similarly far below full regulatory limits.

- The mortality at which there is less than or equal to a 50% chance that the spawning biomass will be smaller in 2025 than in 2024 ("*1-year surplus*")
- The mortality at which there is less than or equal to a 50% chance that the spawning biomass will be smaller in 2027 than in 2024 ("*3-year surplus*")
- The mortality consistent with the current "Reference" SPR ($F_{43\%}$) level of fishing intensity
- The mortality consistent with the Maximum Economic Yield (*MEY*) proxy SPR ($F_{40\%}$) level of fishing intensity
- The mortality consistent with the Maximum Sustainable Yield (*MSY*) proxy SPR ($F_{35\%}$) level of fishing intensity
- Other levels of mortality spaced between the above alternatives to provide for continuous evaluation of the change in risk across alternative yields

For each column of the decision table, the projected total fishing mortality (including all sizes and sources), the coastwide TCEY and the associated level of estimated fishing intensity projected for 2024 (median value with the 95% credible interval below) are reported.

RESULTS

Recent spawning biomass estimates from the 2023 stock assessment are slightly lower (11% in 2023) than those in last year's stock assessment, but the recent estimated trend is nearly flat. Updated estimates of the 2012 and 2014 year-classes (both larger than all those occurring from 2006-2011) show that these two year-classes will be highly important in the short-term stock projections as both will be maturing over the next several years. However, these two year-classes are insufficient to support short-term fishing mortality appreciably higher than the *status quo* without a decrease in spawning biomass. Risks tend to decrease slightly over the three-year period as both year-classes approach full maturity.

Projections indicate that the spawning biomass would increase relatively rapidly in the absence of any fishing mortality, with risks of stock decline over one and three years both less than 1/100 (Table 1, Figure 1). At the *status quo* coastwide TCEY (36.97 million pounds; Table 2), risks of stock decrease over one and three years are 45/100. For all harvest levels that exceed the three-year surplus (39.1 million pounds) risks of stock decline are larger than 50/100, and reaching 94/100 for the coastwide TCEY that is projected to correspond to the $F_{35\%}$ *MSY* proxy harvest level in 2024. Alternative harvest levels around the *status quo* (+/- 5 and 10%) are projected to result in levels of fishing intensity ranging from $F_{54\%}$ to $F_{48\%}$, similar to those estimated for 2020-2023. At the reference level of fishing mortality ($F_{43\%}$) the 2024 coastwide TCEY is projected to be 48.9 million pounds (50.5 million pounds of mortality including U26 non-directed discard mortality). Stock decline over the next three years is projected to be very likely (72/100) at this level of fishing intensity. The probability of a reduction in the coastwide TCEY in order to maintain a fishing intensity no greater than $F_{43\%}$ over the next three years is projected to be 52/100.

All projections result in a low probability of the relative spawning biomass dropping below the $SB_{30\%}$ threshold over the next three years (8-26/100) and an even lower probability of dropping below the $SB_{20\%}$ limit (<1-19%).

Table 1. Harvest decision table for 2024-2026 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.

2024 Alternative					*Status quo -10%*	*Status quo -5%*	*Status quo*	*Status quo +5%*	3-Year Surplus	*Status quo +10%*		*Reference $F_{43\%}$*	*MEY proxy*	*MSY proxy*	
Total mortality (M lb)			0.0	21.6	34.9	36.7	38.6	40.4	40.7	42.3	46.6	50.5	56.1	67.3	
TCEY (M lb)			0.0	20.0	33.3	35.1	37.0	38.8	39.1	40.7	45.0	48.9	54.5	65.7	
2024 fishing intensity			$F_{100\%}$	$F_{68\%}$	$F_{54\%}$	$F_{52\%}$	$F_{51\%}$	$F_{50\%}$	$F_{49\%}$	$F_{48\%}$	$F_{45\%}$	$F_{43\%}$	$F_{40\%}$	$F_{35\%}$	
Fishing intensity interval			--	46-79%	32-68%	31-67%	29-65%	28-64%	28-64%	27-63%	25-60%	23-58%	20-55%	17-50%	
Stock Trend (spawning biomass)	In 2024	Is less than 2023	<1	7	35	40	45	50	51	55	66	74	85	96	a
		Is 5% less than 2023	<1	<1	7	9	12	15	15	18	26	33	44	69	b
	In 2025	Is less than 2023	<1	8	35	40	45	50	50	54	65	74	84	95	c
		Is 5% less than 2023	<1	2	17	20	24	28	29	32	42	51	64	85	d
	In 2026	Is less than 2023	<1	10	36	40	45	49	50	54	64	72	82	94	e
		Is 5% less than 2023	<1	4	23	26	30	34	35	39	49	57	69	87	f
Stock Status (Spawning biomass)	In 2024	Is less than 30%	25	25	25	25	25	25	25	25	26	26	26	26	g
		Is less than 20%	<1	<1	1	2	2	2	2	2	3	4	5	9	h
	In 2025	Is less than 30%	21	24	25	25	25	25	25	25	25	25	26	26	i
		Is less than 20%	<1	<1	2	2	2	3	3	3	5	7	9	16	j
	In 2026	Is less than 30%	8	21	24	25	25	25	25	25	25	25	26	26	k
		Is less than 20%	<1	<1	2	2	3	3	3	4	6	8	12	19	l
Fishery Trend (TCEY)	In 2024	Is less than 2023	0	<1	25	27	28	30	31	33	41	50	63	85	m
		Is 10% less than 2023	0	<1	23	25	26	27	27	29	34	41	52	75	n
	In 2025	Is less than 2023	0	1	25	26	28	30	31	33	42	51	65	87	o
		Is 10% less than 2023	0	<1	22	24	26	27	27	29	35	42	55	78	p
	In 2026	Is less than 2023	0	1	24	26	28	30	31	33	42	52	67	88	q
		Is 10% less than 2023	0	<1	21	23	25	27	27	29	35	43	57	81	r
Fishery Status (Fishing intensity)	In 2023	Is above $F_{43\%}$	0	<1	26	27	29	31	32	34	42	50	62	82	s

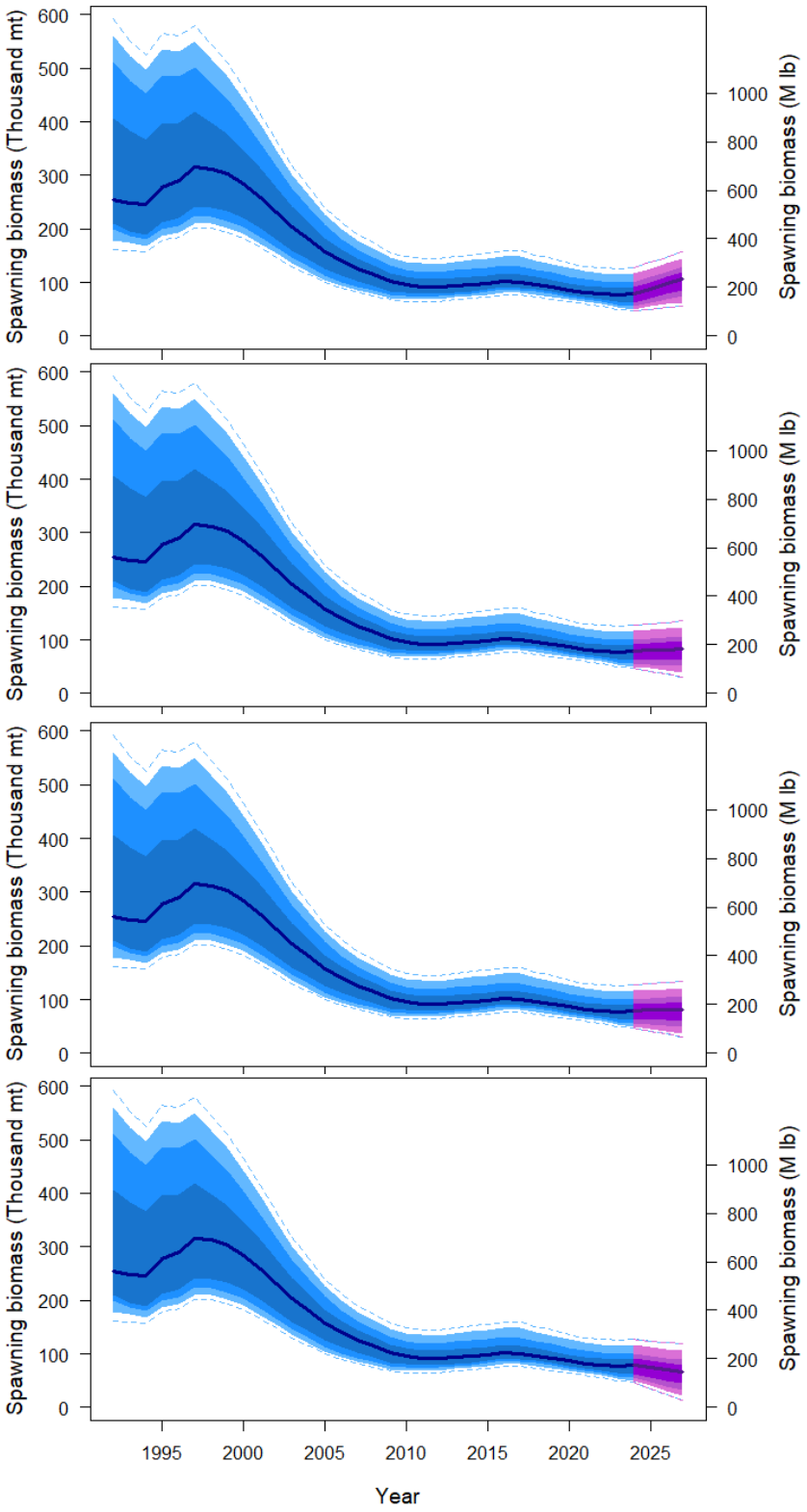


Figure 1. Three-year projections of stock trend under alternative levels of mortality: no fishing mortality (upper panel), the *status quo* coastwide TCEY set in 2023 (36.97 million pounds; second panel), the 3-year surplus (39.1 million pounds; third panel), and the TCEY projected for the $F_{43\%}$ reference level of fishing intensity (48.9 million pounds, fourth panel) and the TCEY projected for the $F_{35\%}$ MSY proxy level of fishing intensity (65.7 million pounds, bottom panel).

Table 2. Recent adopted TCEYs by IPHC Regulatory Area and coastwide (M lbs net).

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
2013	1.11	7.78	5.02	17.07	5.87	2.43	1.93	4.28	45.48
2014	1.11	7.64	5.47	12.05	3.73	1.56	1.49	3.58	36.65
2015	1.06	7.91	6.20	13.00	3.72	1.96	1.53	4.27	39.63
2016	1.26	8.24	6.54	12.75	3.41	1.95	1.37	4.07	39.59
2017	1.47	8.32	7.04	12.96	3.98	1.80	1.34	3.84	40.74
2018	1.32	7.10	6.34	12.54	3.27	1.74	1.28	3.62	37.21
2019	1.65	6.83	6.34	13.50	2.90	1.94	1.45	4.00	38.61
2020	1.65	6.83	5.85	12.20	3.12	1.75	1.31	3.90	36.60
2021	1.65	7.00	5.80	14.00	3.12	2.05	1.40	3.98	39.00
2022	1.65	7.56	5.91	14.55	3.90	2.10	1.45	4.10	41.22
2023	1.65	6.78	5.85	12.08	3.67	1.73	1.36	3.85	36.97

RISKS NOT INCLUDED IN THE HARVEST DECISION TABLE

The IPHC's current management procedure uses threshold and limit reference points in relative spawning biomass (current estimate compared to the spawning biomass estimated to have occurred in that year in the absence of any fishing mortality). This calculation measures the effects of fishing on the stock. Other factors affecting the spawning biomass (i.e., trends in recruitment and weight-at-age) have resulted in the absolute spawning biomass in 2023 estimated to be lower than at any time in the last 31 years. Although this does not represent a conservation concern at this time, low stock size results in additional risks to the IPHC's Fishery Independent Setline Survey (FISS) design objective of revenue neutrality and to fishery efficiency and economic viability. Further, the modelled FISS index in 2023 suggests that the stock distribution now shows the lowest proportion of the coastwide biomass in Biological Region 3 observed in the modern time-period (1992+). Finally, increased environmental/climate-related variability in the marine ecosystems comprising the Pacific halibut species range in Convention waters lead to little expectation that historical productivity patterns may be relevant for future planning. Specifically, it is unclear whether long-term productivity levels are likely to occur under continued climate change, or whether increases or decreases may be likely for critical life-history stages of Pacific halibut.

ADDITIONAL INFORMATION

Detailed mortality projections, including allocation to individual IPHC Regulatory Areas and fishery sectors will be produced, as needed, for AM100 and will include end-of-year 2023 non-directed discard mortality estimates that will be available in early January.

Detailed stock assessment (IPHC-2024-SA-01) and data overview (IPHC-2024-SA-02) documents will be published directly to the stock assessment page on the IPHC's website.

RECOMMENDATION/S

That the Commission:

a) **NOTE** paper IPHC-2024-AM100-12, which provides a summary of projections and the harvest decision table for 2024-2026.
b) **REQUEST** any detailed mortality projections[2] for 2024 (by IPHC Regulatory Area and fishery sector) for evaluation.

REFERENCES

IPHC. 2020. Report of the 96th Session of the IPHC Annual Meeting (AM096). Anchorage, Alaska, USA, 3-7 February 2020. IPHC-2020-AM096-R. 51 p.

[2] Detailed projections will include revised non-directed discard estimates through the end of 2023, available in early January 2024.

2024 and 2025-28 FISS design evaluation

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PURPOSE

To present potential design options for the IPHC's Fishery-Independent Setline Survey (FISS) for the 2024-28 period and cost projections for 2024 design options considered during 2023.

BACKGROUND

The IPHC's Fishery-Independent Setline Survey (FISS) provides data used to compute indices of Pacific halibut density for use in monitoring stock trends, estimating stock distribution, and as an important input in the stock assessment. Stock distribution estimates are based on the annual mean weight per unit effort (WPUE) for each IPHC Regulatory Area, computed as the average of WPUE of all Pacific halibut and for O32 (greater than or equal to 32" or 81.3cm in length) Pacific halibut estimated at each station in an area. Mean numbers per unit effort (NPUE) is used to index the trend in Pacific halibut density for use in the stock assessment models. Annual FISS designs are developed by selecting a subset of stations for sampling from the full 1890-station FISS footprint (Figure 1).

FISS DESIGN OBJECTIVES (Table 1)

Primary objective: *To sample Pacific halibut for stock assessment and stock distribution estimation.*

The primary purpose of the annual FISS is to sample Pacific halibut to provide data for the stock assessment (abundance indices, biological data) and estimates of stock distribution for use in the IPHC's management procedure. The priority of the current rationalized FISS is therefore to maintain or enhance data quality (precision and bias) by establishing baseline sampling requirements in terms of station count, station distribution and skates per station.

Secondary objective: *Long-term revenue neutrality.*

The FISS is intended to have long-term revenue neutrality, and therefore any implemented design must consider both logistical and cost considerations.

Tertiary objective: *Minimize removals and assist others where feasible on a cost-recovery basis.*

Consideration is also given to the total expected FISS removals (impact on the stock), data collection assistance for other agencies, and IPHC policies.

Table 1.1 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

Annual design review, endorsement, and finalisation process

Since completion of the FISS expansions in 2019, a review process has been developed for annual FISS designs created according to the above objectives:

- Step 1: The Secretariat presents preliminary design options based on the primary objective (Table 1) to the SRB for three subsequent years at the June meeting based on analysis of prior years' data. Commencing in 2024, this will include prior year fiscal details (revenue) and current year vessel contract cost updates;
- Step 2: Design options for the following year that account for both primary and secondary objectives (Table 1) are reviewed by Commissioners at the September work meeting, recognising that revenue and cost data from the current year's FISS are still preliminary at this time;
- Step 3: At their September meeting, the SRB reviews design options accounting for both primary and secondary objectives (Table 1) for comment and advice to the Commission (recommendation);
- Step 4: Designs are further modified to account for updates based on secondary and tertiary objectives before being finalized during the Interim and Annual meetings and the period prior to implementation:
    - Presentation of FISS designs for 'endorsement' by the Commission occurs at the November Interim Meeting;
    - Ad-hoc modifications to the design for the current year (due to unforeseen issues arising) are possible at the Annual Meeting of the Commission;
    - The endorsed design for current year is then modified (if necessary) to account for any additional tertiary objectives or revision to inputs into evaluation of secondary objectives prior (i.e., updated cost estimates) prior to summer implementation (February-April).

Consultation with industry and stakeholders occurs throughout the FISS planning process, at the Research Advisory Board meeting (late November) and particularly in finalizing design details as part of the FISS charter bid process, when stations can be added and other

adjustments made to provide for improved logistical efficiency. We also note the opportunities for stakeholder input during public meetings (Interim and Annual Meetings).

Note that while the review process examines designs for the next three years, revisions to designs for the second and third years are expected during subsequent review periods as additional data are collected. Having design proposals available for three years instead of the next year only assists the Secretariat with medium-term planning of the FISS, and allows reviewers (SRB, Commissioners) and stakeholders to see more clearly the planning process for sampling the entire FISS footprint over multiple years.

POTENTIAL DESIGNS FOR 2024-26

IPHC Secretariat began the design process in early 2023 with the development of design options based on the Primary Objective (Table 1) for 2024-26 (Figures 2 to 4). These designs were presented to the Scientific Review board at their June meeting (IPHC-2023-SRB022-06).

During the operation of the 2023 FISS, it became apparent that low prices for Pacific halibut and lower than expected catches in some charter regions were likely to result in a substantial net operating loss for the FISS in 2023. Preliminary estimates of net revenue for the 2024 design in Figure 2 projected a net operating loss of over $3 million. Optimizing the design for revenue by adding stations in revenue-positive charter regions and adjusting the number of skates still led to a projected loss of almost $3 million. For this reason, neither version of the design was considered feasible (IPHC-2023-SRB023-09).

Projected revenue-positive design for 2024

The IPHC Secretariat developed a series of designs that improved revenue and reduced cost to different degrees. These were presented to the SRB in September 2023 (IPHC-2023-SRB023-09) as well as at the Commissioner Work Meeting that same month. Included in these potential designs was a design that was projected to be slightly revenue-positive. This design has since been revised based on improved cost projections, and includes sampling only in IPHC Regulatory Areas 2B, 2C and one charter region in IPHC Regulatory 3A (Figure 5).

In order to achieve a revenue-positive design, several aspects of the standard FISS procedures were removed:

- No oceanographic monitoring will take place;
- NOAA Fisheries trawl surveys are not staffed by IPHC;
- All FISS training will be conducted virtually;
- Reduce field staff on each vessel from two to one in two charter regions; only basic biological information (length, weight and sex) would be collected.

Additional changes were required to the standard FISS design in sampled areas:

- Allow for “Vessel captain stations”, in which vessel captains can choose to fish up to one third of their sets at a location that is optimal in terms of catch rates or revenue. It is assumed pending further evaluation these stations will achieve 120% of the average catch rate of the usual fixed-station design stations

Further, the following assumptions regarding FISS bait were made:

- That the price of chum salmon is projected to be US$2.00/lb in 2024 and pink salmon US$1.30/lb.

With these modifications and assumptions, this design (Figure 5) has **a projected net operating profit of $3,000**.

Base HQ staff costs (incurred even if no FISS is conducted) are projected to be US$490,000 for 2024. These costs are fully offset, along with all variable costs, in the revenue-positive design (Table 2 and Figure 5).

Variable FISS costs

Due to concerns about the implications of the reduced sampling in the revenue-positive design (see below), IPHC Secretariat also projected costs of additional sampling and monitoring effort should supplementary funding become available. These are presented as a series of modular options that can be added to the revenue positive design (Table 2). All modular options (Table 2, options 2-6, 9) were designed to include an entire charter region or comprise at least 60 stations to increase the likelihood of obtaining one or more competitive bids.

Individual charter regions were added to the revenue neutral design one at a time, selecting the charter region that was closest to net revenue neutrality for each IPHC Regulatory Area (Table 2). The exceptions to this were:

- IPHC Regulatory Area 2A, where 60 stations were selected to encompass higher catch-rate areas in both Washington and Oregon
- IPHC Regulatory Areas 4A/4B where 60 adjacent stations were clustered around the boundary between these areas. The choice of 60 stations was motivated by the lack of bids for the 32 stations proposed in 2023 and intended to provide sufficient work to make the travel required for most vessels to reach 4A/4B worthwhile.

The net cost projected for each of these additional charter regions ranged from $47,000 for IPHC Regulatory Area 3A (Shelikof), to $245,000 for the 60 stations IPHC Regulatory Areas 4A/4B.

Staffing of the NOAA Fisheries trawl survey allows for much more extensive biological sampling (age, length, and weight) of Pacific halibut than is possible otherwise, and also provides a platform for wire-tagging of juvenile halibut in this area to provide long-term monitoring of migratory pathways. These data are used in the annual stock assessment to inform weight-at-age for young Pacific halibut (up to approximately age 6) that are not captured in large numbers by the FISS. As there is not considerable variability in weight-at-age, missing a year of this sampling (as was the case when the NOAA Fisheries trawl survey was cancelled in 2020) would not be a critical problem for subsequent analyses.

Oceanographic monitoring during FISS operations provides a valuable long-term monitoring data set that is used by both IPHC and external fisheries scientists. In some years (e.g., 2017) it has provided valuable supporting information for better interpreting anomalous catch-rates due to hypoxic events (observed periodically, primarily off the coasts of Oregon and Washington). Missing a single year of this time series, although unfortunate for long-term monitoring, would not be problematic for standard stock assessment and management supporting analyses provided for the Commission unless unexpected oceanographic conditions were encountered.

Regarding oceanographic monitoring and trawl survey staffing, we note the following paragraphs from the 2023 reports of the Research Advisory Board (RAB) meeting and IM099:

> IPHC-2023-RAB024-R, para. 32: *The RAB **RECOMMENDED** maintaining the oceanographic sampling program to provide a continuous source of data on environmental conditions experienced by Pacific halibut.*

IPHC-2023-IM099-R, para. 54: *The Commission **AGREED** to consider whether to maintain the oceanographic sampling program to provide a continuous source of data on environmental conditions experienced by Pacific halibut, and whether to staff the NOAA trawl surveys, in January 2024.*

Table 2. Comparison of design alternative costs for the 2024 FISS; see text for additional details on each design. Each of Options 2-9 can be added in any combination by summing the additional costs for each option selected.

Option	Design	IPHC Regulatory Areas sampled (charter regions)	Additional net cost (approximate)
1	Revenue positive with efficiencies	2B (2), 2C (3), 3A (1)	--
2	Add additional 3A to Option 1	2B (2), 2C (3), 3A (**2**)	($47,000)
3	Add 3B to Option 1	2B (2), 2C (3), 3A (1), **3B (1)**	($62,000)
4	Add 4A/4B to Option 1	2B (2), 2C (3), 3A (1), **4A+4B (1)**	($245,000)
5	Add 2A to Option 1	2B (2), 2C (3), 3A (1), **2A (1)**	($134,000)
6	Add additional 2B to Option 1	2B (**3**), 2C (3), 3A (1)	($68,000)
7	Add oceanographic monitoring to Option 1	2B (2), 2C (3), 3A (1)	($55,000)[1]
8	Add trawl survey staffing to Option 1	2B (2), 2C (3), 3A (1)	($120,000)
9	Add 4CDE to Option 1	2B (2), 2C (3), 3A (1), **4CDE (1)**	($205,000)

[1] The estimated expense for adding oceanographic monitoring would scale according to the number of regions included in the design. It is projected that with each additional region, expenses would increase by approximately $10,000.

At IM099, the Commission agreed on an optimized version of the revenue positive design:

IPHC-2023-IM099-R, para. 51: *The Commission **AGREED** on an optimized design for the 2024 FISS as provided at Appendix IV, that balances the Commission's primary and secondary objectives for the FISS. Specifically, the 2024 design shall include Options 1, 2, and 3 from Table 2. In addition, Option 4 shall be included in the RFT process but is not yet endorsed. Once bids are received and evaluated in February 2024, the Commission will make a final decision on whether to proceed or not with Option 4, based on bids and logistical constraints at that time and potentially a new option* [Option 9] *for IPHC Regulatory Area 4CDE.*

The design that adds Options 2-4 and Option 9 from Table 2 to the revenue positive design is shown in Figure 6.

Implications of the optimized revenue neutral design in 2024

In IPHC-2023-IM099-13 Rev_1 we discussed the implications of the reduced sampling in the revenue positive design (Figure 5) for data quality that affect estimates of stock trends and distribution together with biological inputs into the stock assessment. The optimized design in Figure 6 offers a significant improvement over the revenue positive design, with sampling over

a greater spatial extent leading to data from all IPHC Biological Regions and all IPHC Regulatory Areas except 2A.

The proposed sampling in IPHC Regulatory Areas 3A and 3B should lead to coefficients of variation for WPUE and NPUE indices in the range of 10-20%. Sampling some stations in the highest density parts of IPHC Regulatory Areas 4A and 4B (Option 4) should be sufficient to maintain CVs around 20% for these areas. In all four areas there remains a risk of bias due to stock trends in unsampled habitat differing from those in sampled charter regions, but this risk is reduced relative to Option 1 alone.

With a NOAA Fisheries trawl survey expected to take place in the Bering Sea in 2024, the CV for IPHC Regulatory Area 4CDE is not expected to increase much above 10% even without Option 9, but the additional sampling from Option 9 will reduce the risk of bias in estimates calculated for that area.

We anticipate the coastwide WPUE and NPUE indices to have CVs that remain in the target range of ≤10%. Estimates of stock distribution will have higher levels of uncertainty and bias risk than in past years for the optimized design (Figure 6), but with samples from all IPHC Biological Regions, the risks are lower than for the revenue positive design.

This 2024 spatial design will result in less information available for the annual stock assessment and management supporting calculations such as stock distribution than in recent years. The increased uncertainty in the index of abundance is likely to cause the assessment model to rely more heavily on the commercial fishery catch-per-unit-effort index. Given current spatial variability and uncertainty in the magnitude of younger year classes (2012 and younger), the limited biological information from the core of the stock distribution (Biological Region 3) makes it unclear whether the stock assessment will detect a major change in year class abundance, either up or down. Although the basic stock assessment methods can remain unchanged, a greater portion of the actual uncertainty in stock trend and demographics will not be able to be quantified due to missing FISS data from a large fraction of the Pacific halibut stock's geographic range.

FUTURE FISS DESIGNS

At IM099, Secretariat staff also presented options for 2024 and subsequent years based on rotational block designs (IPHC-2023-IM099-13 Rev_1, Part 2). For these designs, the random selection of FISS stations in IPHC Regulatory Areas 2B, 2C, 3A and 3B would be replaced with sampling complete charter regions in each area, with sampled regions rotated over a two-three year period depending on area. This type of design was first proposed in 2019 (IPHC-2019-IM095-07 Rev_1, Figure 4) to complement the similar subarea design proposed and adopted for areas at the ends of the stock (2A, 4A and 4B).

Block designs are potentially more efficient from an operational perspective than a randomized design, as they involve less running time between stations, possibly leading to cost reductions on a per station basis.

The block designs shown in Figures 7 to 11 for 2024-28 (called the "base block design") were presented to Commissioners at IM099. These designs ensure that all charter regions in the core areas are sampled over a three-year period, while prioritizing coverage in other areas based on minimizing the potential for bias and maintaining CVs below 25% for each IPHC Regulatory Area. We note that paragraph 52 of the IM099 report (IPHC-2023-IM099-R) states:

> *The Commission **AGREED** that the base block design (Figs. 2.1 to 2.5 of paper IPHC-2023-IM099-13 Rev_1) or a block design with similar sampling effort looks promising for*

implementation as an alternative to FISS designs based on random sampling in the core of the stock.

For the core areas, projected CVs were generally higher than in recent years (IPHC-2023-IM099-13 Rev_1, Part 2) for the base block design, but remain below 15% for IPHC Regulatory Areas 2B, 2C and 3A while reaching 16% for IPHC Regulatory Area 3B. Even with reduced spatial coverage, sampling all stations in the core over a three-year period is projected to provide sufficient information to the space-time model to ensure precise estimates of the O32 WPUE index. At the ends of the stock, CVs for IPHC Regulatory Areas 2A, 4A and 4B were projected to be between 15 and 20%, similar to recent years in which not all planned sampling was able to be undertaken. Biological Region CVs are projected to be 5-9% (with 4B at 16%), with a 5% CV for the coastwide mean.

The base block design maintains good spatial coverage each year and complete spatial coverage in the core of the stock over a three-year period. While CVs are generally higher than recent values, estimates of O32 WPUE indices remain precise in the core and have acceptable precision elsewhere. Estimates of stock distribution computed from these indices would be expected to have similar levels of precision, sufficient for management decision making. Biological data used as input to the IPHC stock assessment will come from throughout the stock's range over a relatively short time frame, reducing the likelihood that the relative strength of important cohorts is estimated imprecisely or inaccurately. The indices of abundance by Biological Region and coastwide that are used in the stock assessment would continue to provide a reliable estimate of stock trend.

Revenue projections beyond one year are highly speculative. Therefore, base block design cost projections have been made as if each design were to be applied in 2024. Even modest changes in costs, price, or catch-rates can have a large effect on the net revenue of future FISS activity, as observed in the rapid changes from 2021 to 2023. The base block designs reported here reduce sampling in some high-cost areas, but also in some revenue positive areas. Therefore, **the Secretariat recommends that consistent supplementary funding of approximately $1.5 million per year would be needed to allow implementation of the base block designs reported here over 2024-2028.**

RECOMMENDATIONS

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-13 that presents potential design options for the IPHC's Fishery-Independent Setline Survey (FISS) for the 2024-28 period and cost projections for 2024 design options considered during 2023;
2) **ENDORSE** proceeding with the revenue neutral design for 2024 proposed here in order to cover all fixed headquarters costs, and to provide data for basic trend estimation and biological data for use in the 2024 stock assessment. Specifically, the Secretariat recommends fishing two charter regions in IPHC Regulatory Area 2B, three regions in IPHC Regulatory Area 2C and one region in IPHC Regulatory Area 3A (Option 1, Table 2; Figure 5), with added efficiencies as described above.
3) **ENDORSE** sampling additional charter regions in IPHC Regulatory Areas 3A (1) and 3B (1) (Options 2 and 3, Table 2) as agreed by the Commission at IM099, and prioritize the addition of Option 4 to the 2024 FISS design so that data are obtained from all four biological regions and the potential for bias in trend estimates is further reduced.

4) **ENDORSE** the use of the base block design (Figures 7 to 11) for future planning or a block design with similar sampling effort as an alternative to FISS designs based on random sampling in the core of the stock;

5) **ENDORSE** maintaining sufficient FISS sampling to ensure a maximum annual CV of 25% in each IPHC Regulatory Area, decreasing to 15% as financial considerations allow, and including FISS biological sampling in all Biological Regions each year;

6) **NOTE** that stock assessment and MSE simulation analyses will be conducted in 2024 to further explore the effect on annual tactical and strategic decision-making of reduced FISS designs in the future.

REFERENCES

IPHC 2019. Report of the 95th Session of the IPHC Interim Meeting (IM095) IPHC-2019-IM095-R. 30 p. 15 p.

IPHC 2023. Report of the 24th Session of the IPHC Research Advisory Board (RAB024) IPHC-2023-RAB024-R.

IPHC 2023. Report of the 99th Session of the IPHC Interim Meeting (IM099) IPHC-2023-IM099-R. 29 p.

Webster, R. A. 2022. 2023-25 FISS design evaluation. IPHC-2022-SRB021-06. 12 p.

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Webster, R., Stewart, I., Ualesi, K. and Wilson, D. 2023. 2024-26 FISS design evaluation. IPHC-2023-SRB023-09. 24 p.

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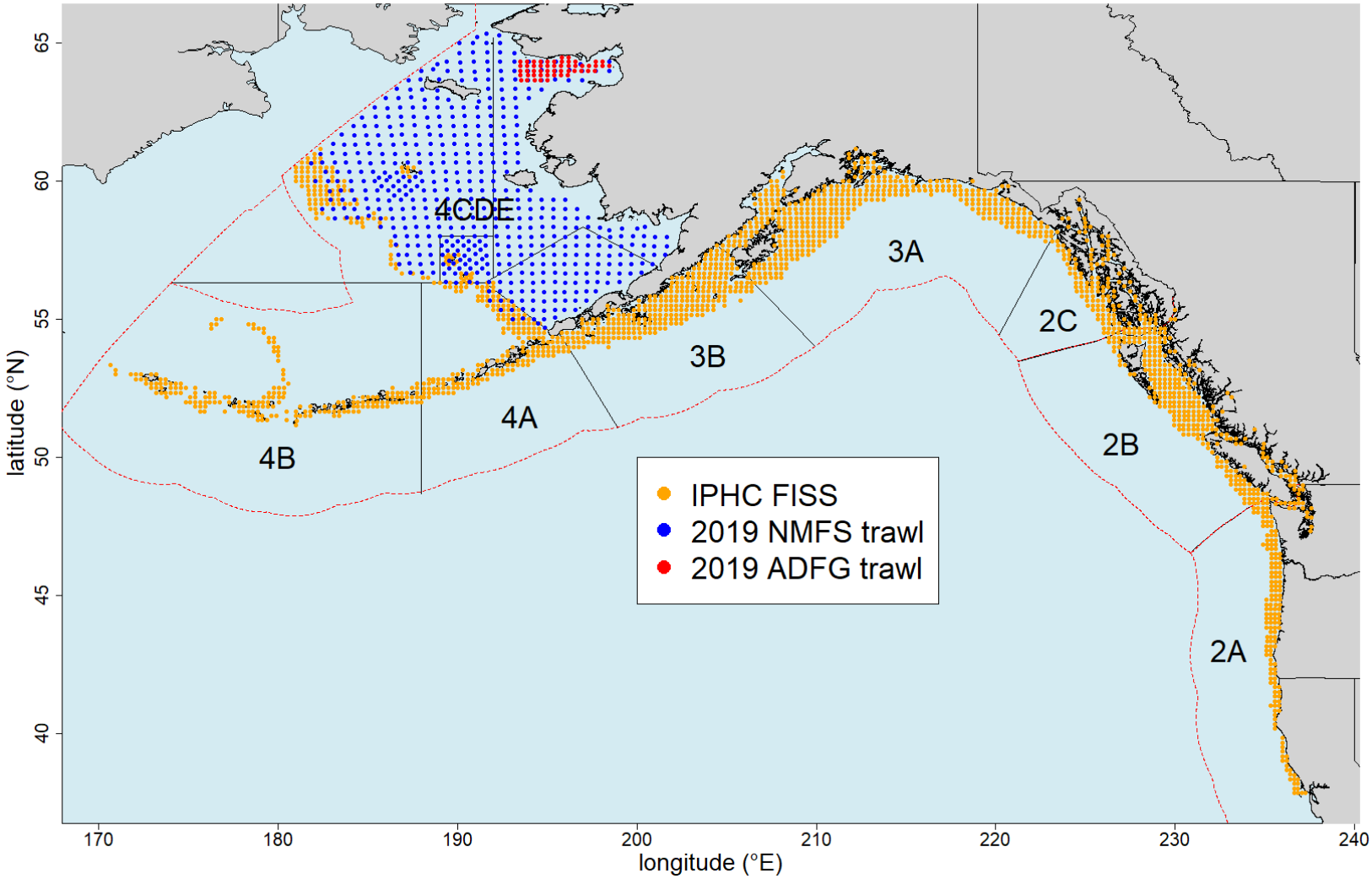


Figure 1. Map of the full 1890 station FISS design, with orange circles representing stations available for inclusion in annual sampling designs, and other colours representing trawl stations from 2019 NOAA and ADFG surveys used to provide complementary data for Bering Sea modelling.

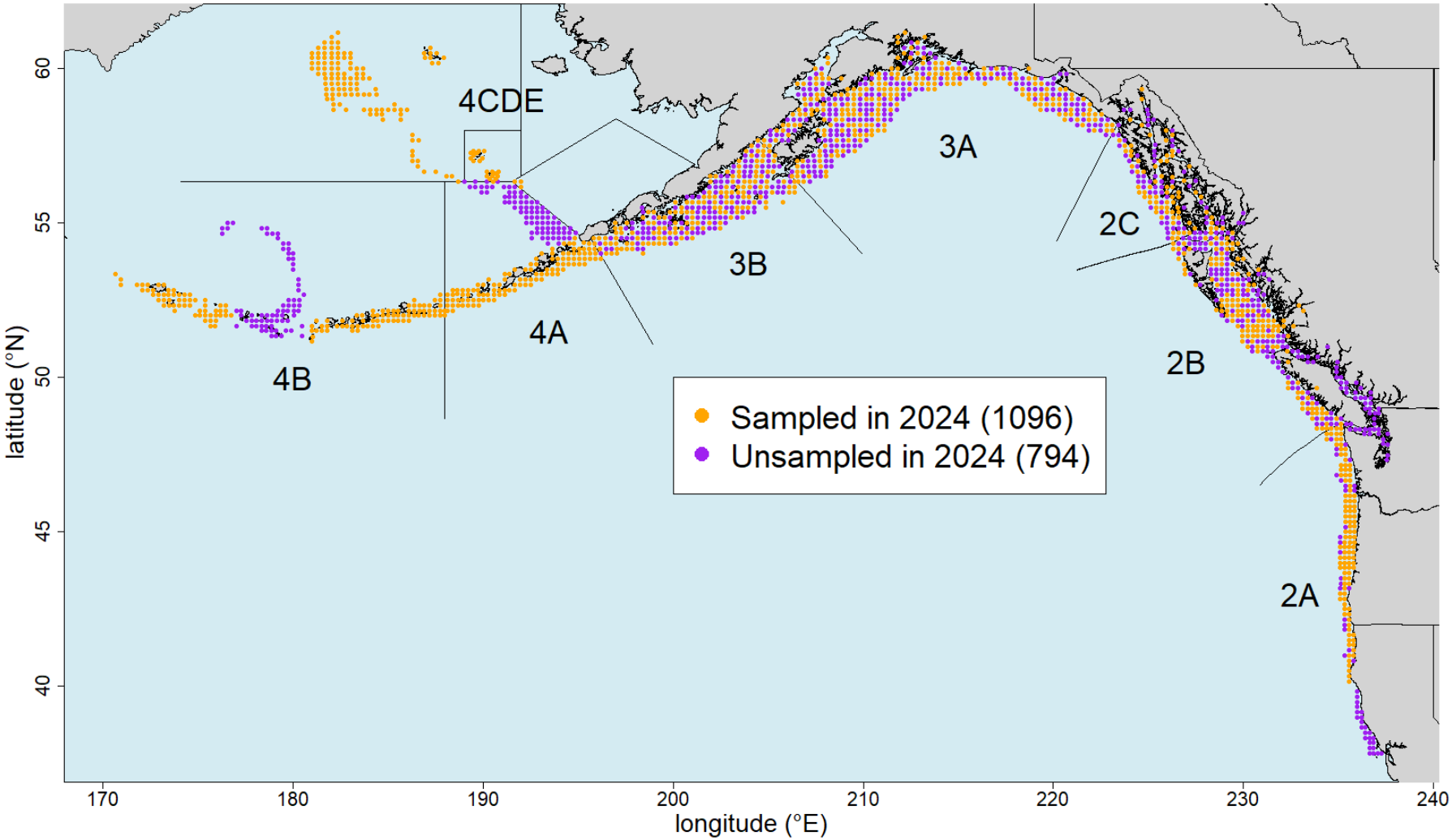


Figure 2. Potential FISS Design 1 in 2024 (orange circles) based on prioritization of the Primary Objective in Table 1. The design relies on randomized sampling in 2B-3B, and a subarea design elsewhere. Purple circles are optional for meeting data quality criteria.

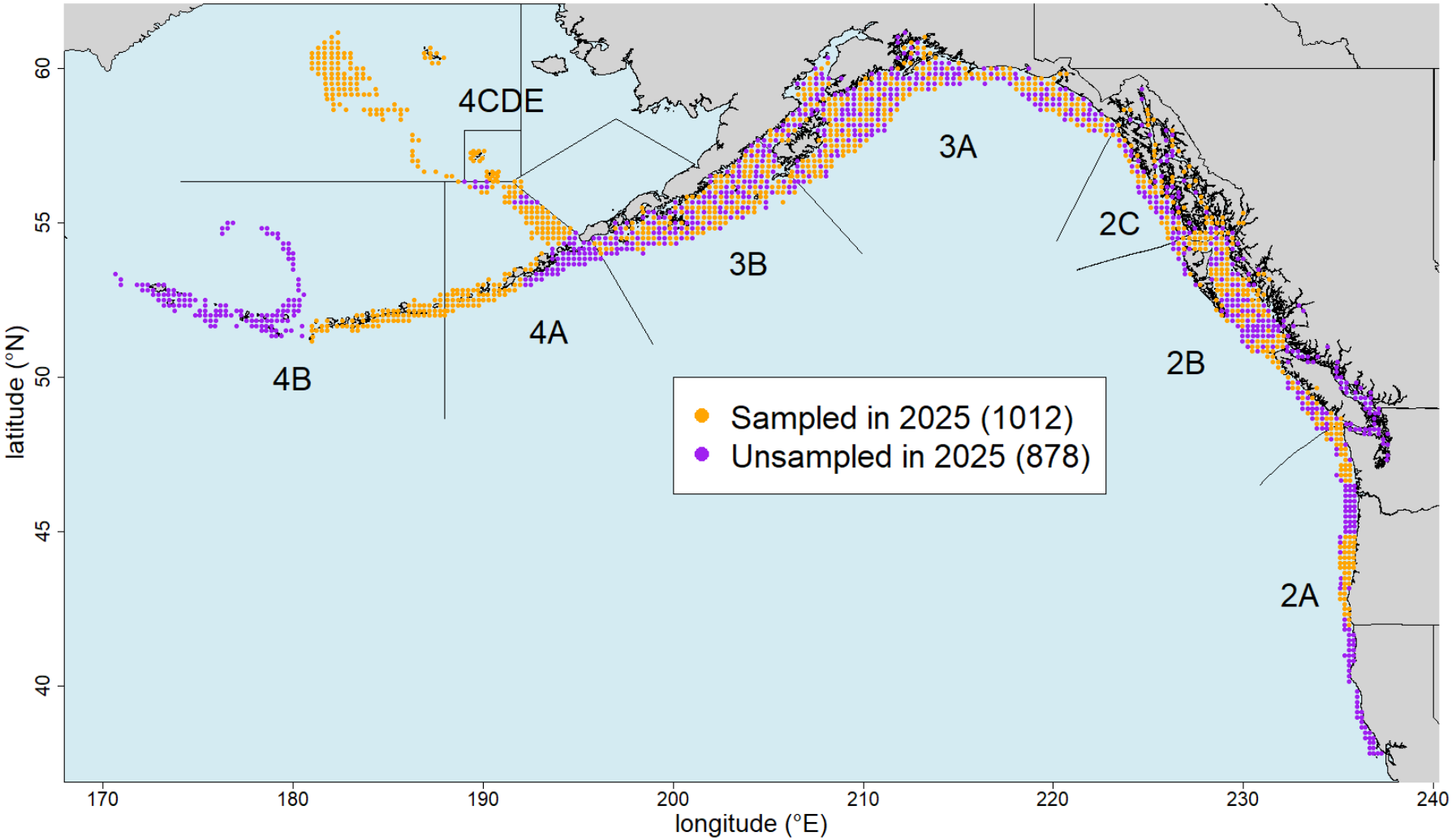


Figure 3. Potential FISS design in 2025 (orange circles) based on prioritization of the Primary Objective in Table 1. The design relies on randomized sampling in 2B-3B, and a subarea design elsewhere. Purple circles are optional for meeting data quality criteria.

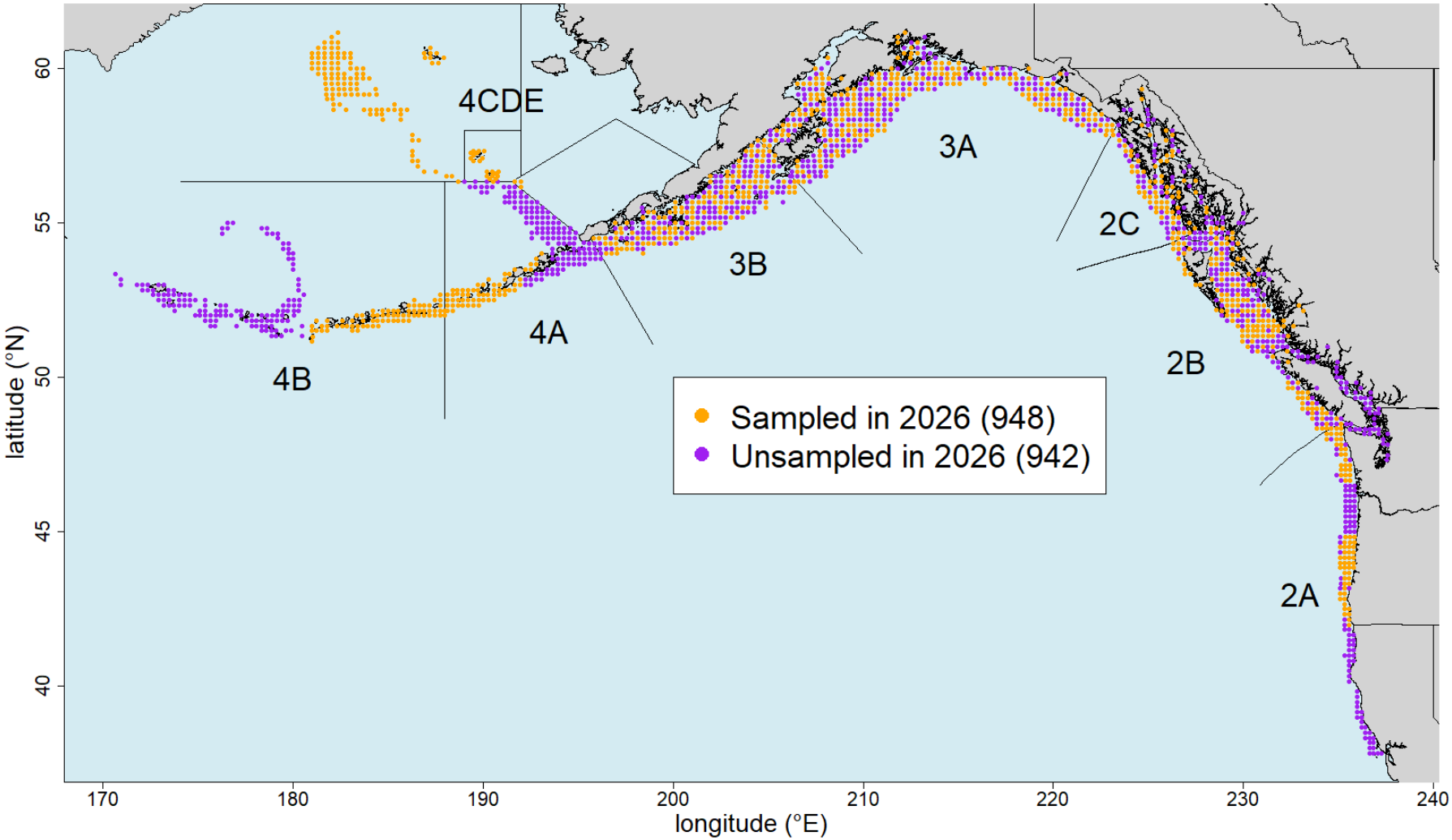


Figure 4. Potential FISS design in 2026 (orange circles) based on prioritization of the Primary Objective in Table 1. The design relies on randomized sampling in 2B-3B, and a subarea design elsewhere. Purple circles are optional for meeting data quality criteria.

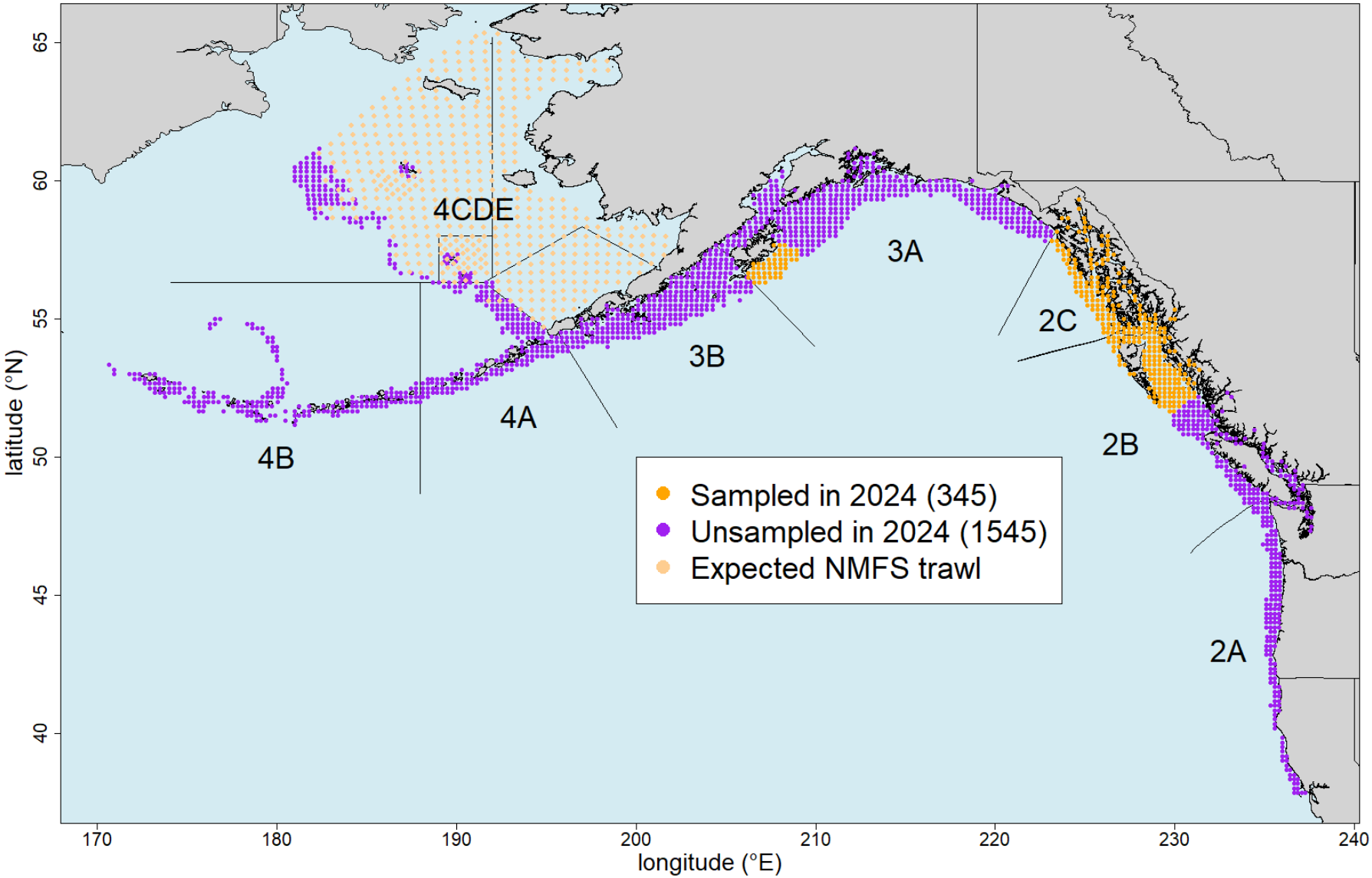


Figure 5. FISS design in 2024 (orange circles) based on prioritization of the Secondary Objective in Table 1. See text for more information.

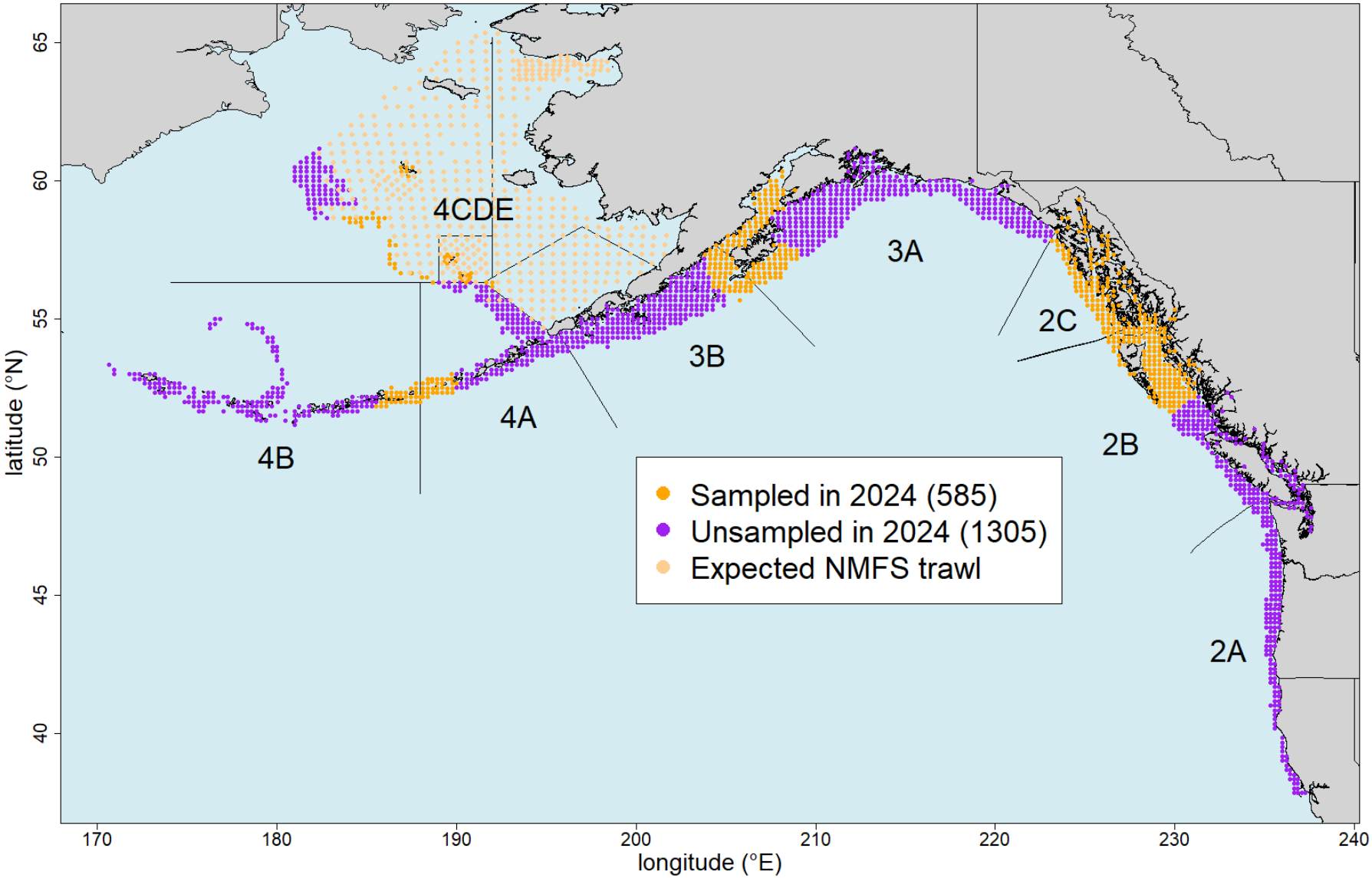


Figure 6. FISS design in 2024 (orange circles) based on the revenue positive design (Figure 5) plus options 2-4 and option 9 from Table 2. See text for more information.

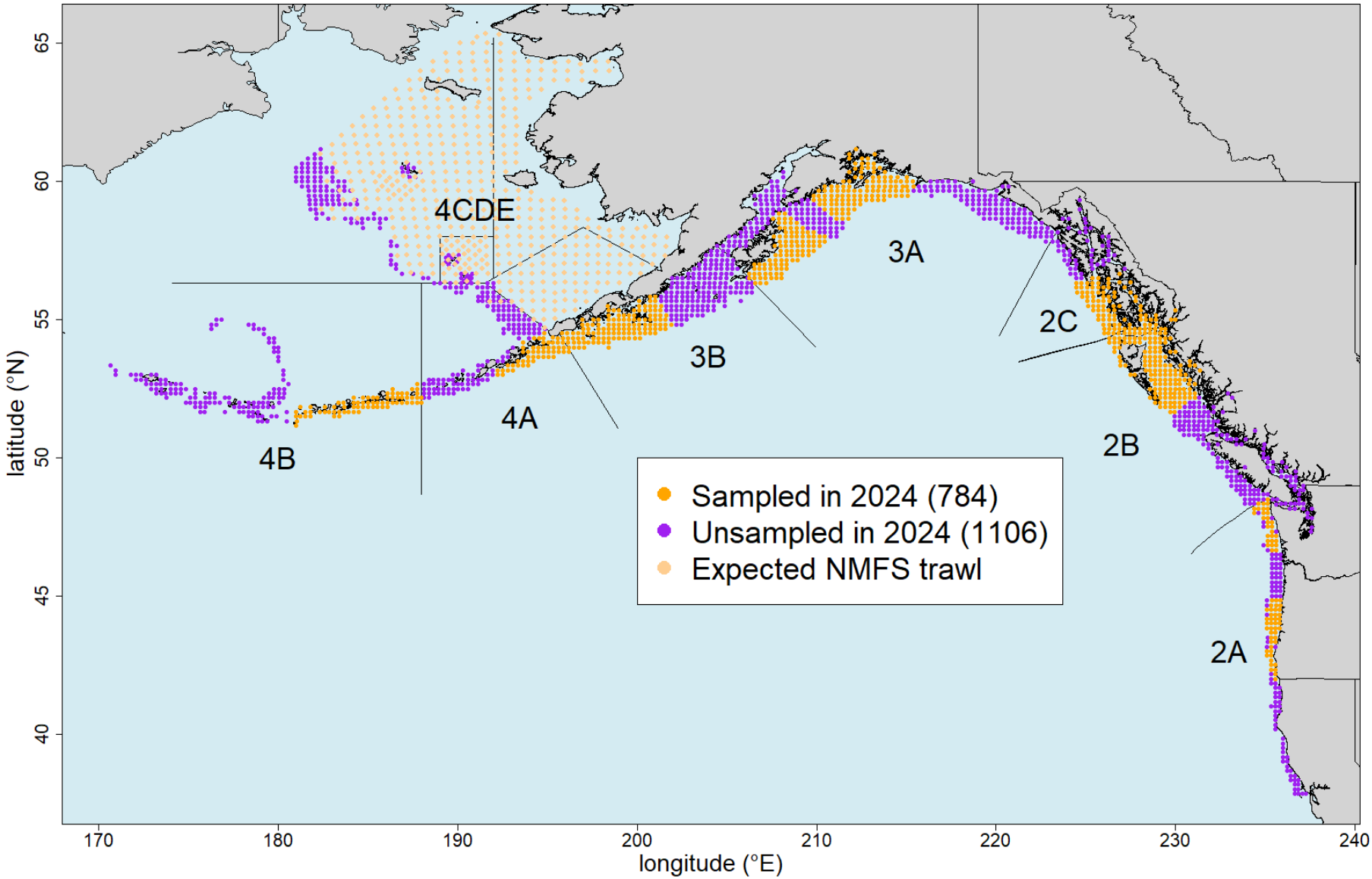


Figure 7. Base block design in 2024 (orange circles). Design is based on fishing 2-4 complete blocks of stations (charter regions) in the core areas (2B, 2C, 3A and 3B) and previously implemented subareas elsewhere.

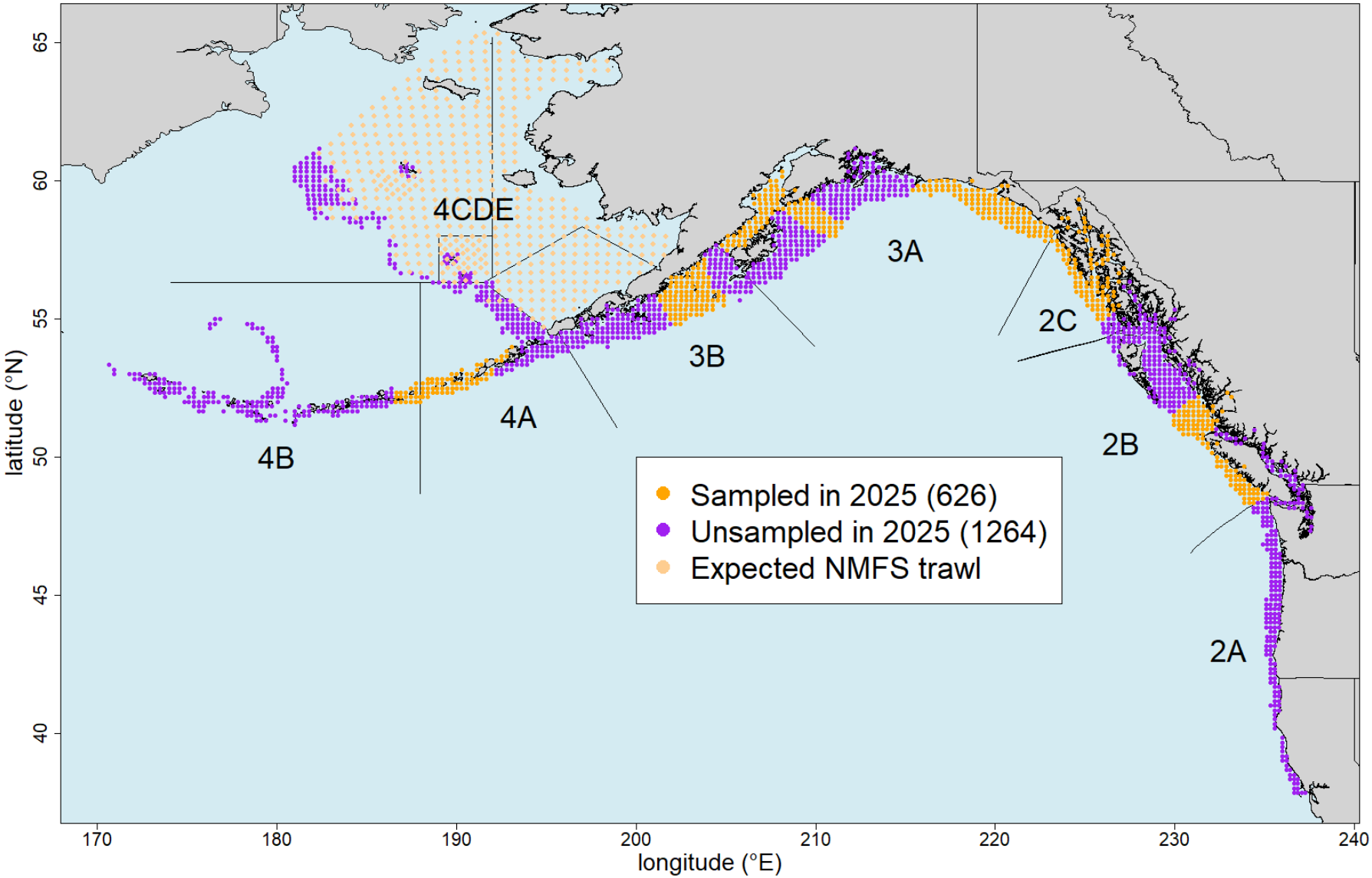


Figure 8. Base block design in 2025 (orange circles). Design is based on fishing 2-4 complete blocks of stations (charter regions) in the core areas (2B, 2C, 3A and 3B) and previously implemented subareas elsewhere.

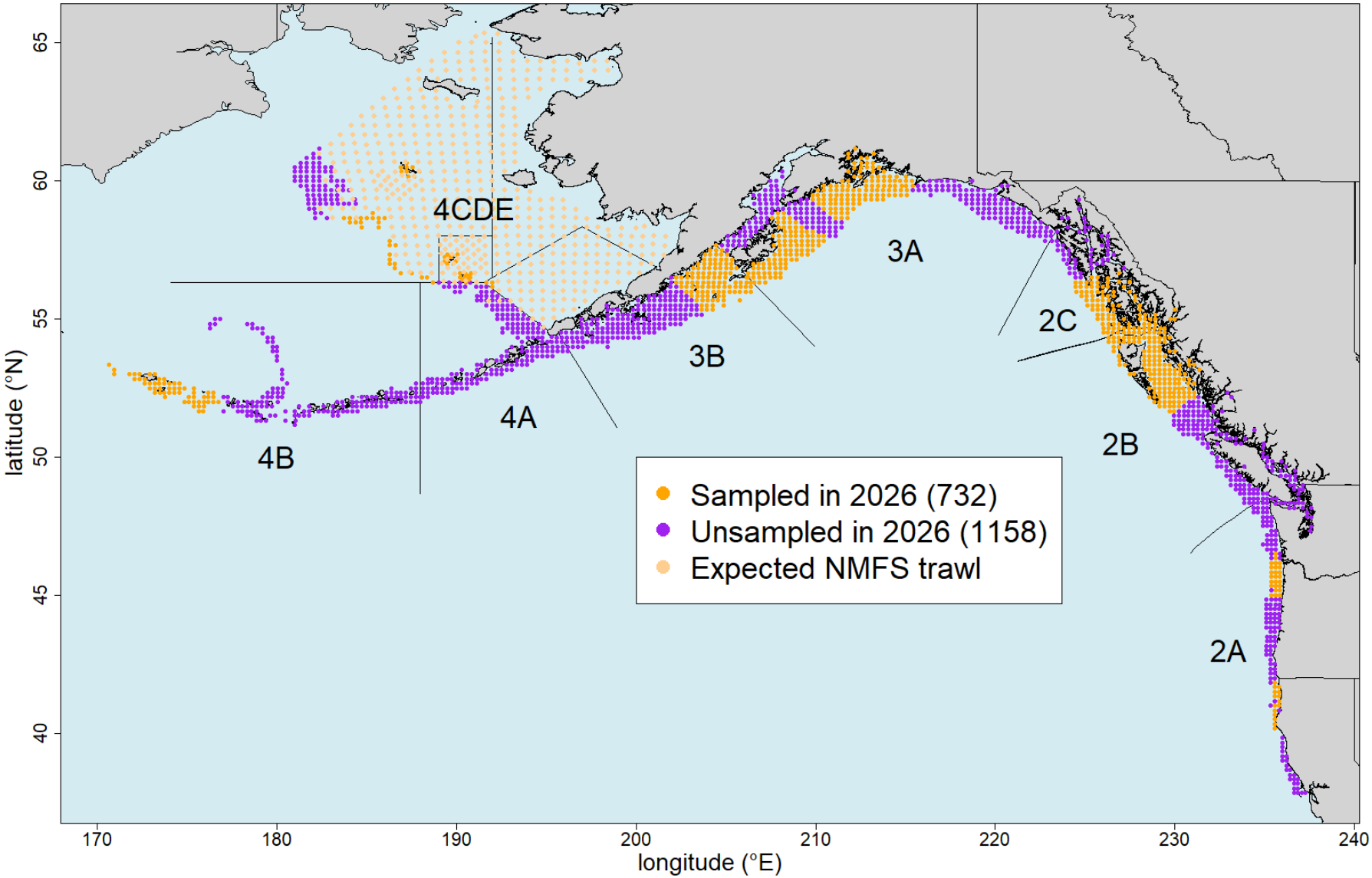


Figure 9. Base block design in 2026 (orange circles). Design is based on fishing 2-4 complete blocks of stations (charter regions) in the core areas (2B, 2C, 3A and 3B) and previously implemented subareas elsewhere.

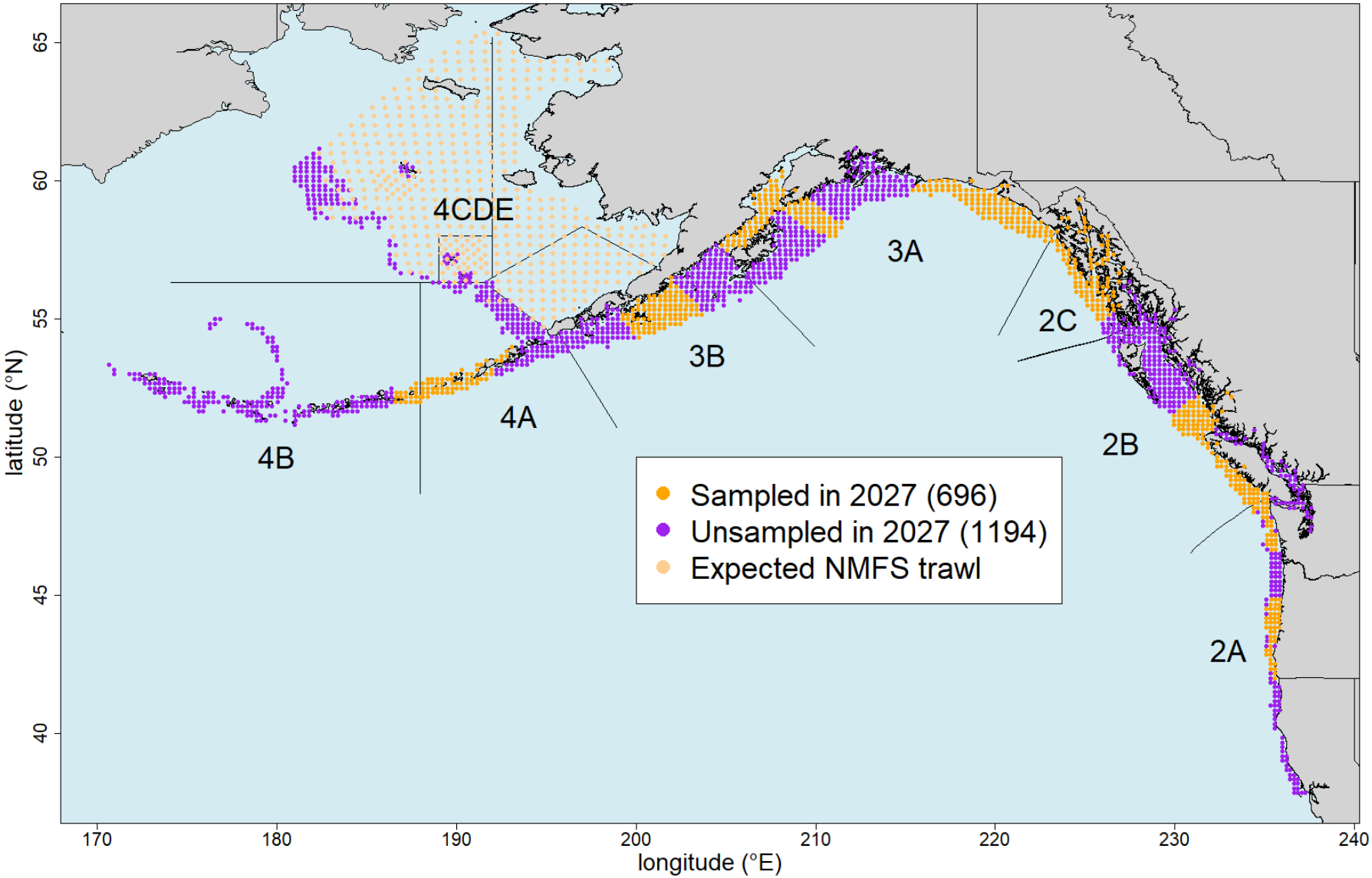


Figure 10. Base block design in 2027 (orange circles). Design is based on fishing 2-4 complete blocks of stations (charter regions) in the core areas (2B, 2C, 3A and 3B) and previously implemented subareas elsewhere.

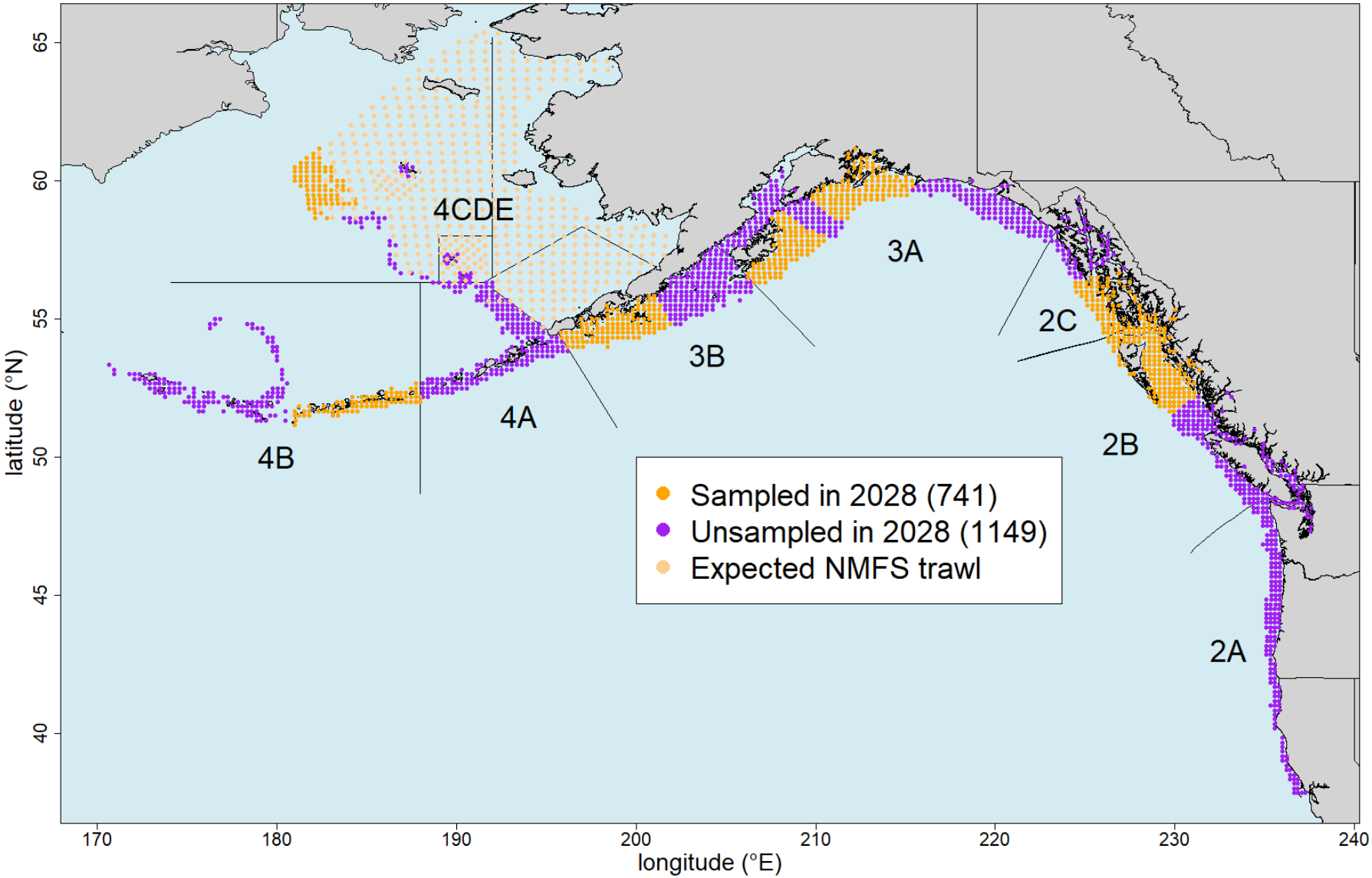


Figure 11. Base block design in 2028 (orange circles). Design is based on fishing 2-4 complete blocks of stations (charter regions) in the core areas (2B, 2C, 3A and 3B) and previously implemented subareas elsewhere.

Report on Current and Future Biological and Ecosystem Science Research Activities

PREPARED BY: IPHC SECRETARIAT (J. PLANAS, 18 DECEMBER 2023)

PURPOSE

To provide the Commission with a description of the biological and ecosystem science research projects conducted and planned by the IPHC Secretariat and contemplated within the Five-year Program of Integrated Research and Monitoring (2022-2026).

BACKGROUND

The main objectives of the Biological and Ecosystem Science Research at the 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 IPHC Five-Year Program of Integrated Research and Monitoring (2022-2026). 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 and Population Dynamics. Studies are aimed at improving current knowledge of Pacific halibut migration and population dynamics throughout all life stages in order to achieve a complete understanding of stock structure and distribution across the entire distribution range of Pacific halibut in the North Pacific Ocean and the biotic and abiotic factors that influence it.
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. Studies are aimed at describing the role of factors responsible for the observed changes in size-at-age and at evaluating growth and physiological condition in Pacific halibut.
4) Mortality and Survival Assessment. Studies are aimed at providing updated estimates of discard mortality rates in the guided recreational fisheries and at evaluating methods for reducing mortality of Pacific halibut.
5) Fishing Technology. Studies are aimed at developing methods that involve modifications of fishing gear with the purpose of reducing Pacific halibut mortality due to depredation and bycatch.

DISCUSSION ON THE MAIN RESEARCH ACTIVITIES

1. Migration and Population Dynamics.

   The IPHC Secretariat is currently conducting studies on Pacific halibut juvenile habitat and movement through conventional wire tagging, as well as studies that incorporate genomics approaches in order to produce useful information on population structure and distribution

and connectivity of Pacific halibut. The relevance of research outcomes from these activities for stock assessment (SA) resides (1) in the introduction of possible changes in the structure of future stock assessments, as separate assessments may be constructed if functionally isolated components of the population are found (e.g. IPHC Regulatory Area 4B), and (2) in the improvement of productivity estimates, as this information may be used to define management targets for minimum spawning biomass by Biological Region. These research outcomes provide the second and third top ranked biological inputs into SA (Appendix II). Furthermore, the relevance of these research outcomes for the management strategy evaluation process is in biological parametization and validation of movement estimates, on one hand, and of recruitment distribution, on the other hand (Appendix III).

1.1. Estimation of Pacific halibut juvenile habitat. The IPHC Secretariat recently completed a study to investigate the connectivity between spawning grounds and possible settlement areas based on a biophysical larval transport model (Sadorus et al., 2021). Although it is known that Pacific halibut, following the pelagic larval phase, begin their demersal stage as roughly 6-month-old juveniles, settling in shallow nursery (settlement) areas, near or outside the mouths of bays (Carpi et al., 2021), very little information is available on the geographic location and physical characteristics of these areas. In order to fill this knowledge gap, the IPHC Secretariat has initiated studies to identify potential settlement areas for juvenile Pacific halibut throughout IPHC Convention Waters. A first objective of this study is to create a map of suitable settlement habitat by combining available bathymetry information (e.g., benthic sediment composition and shoreline morphological data) and information on recorded presence of age-0, age-1 and age-2 Pacific halibut juveniles as well as absence of young Pacific halibut noted by various nursery habitat projects focused on other flatfish species. Data sources are currently being analyzed.

1.2. Wire tagging of U32 Pacific halibut. The patterns of movement of Pacific halibut among IPHC Regulatory Areas have important implications for management of the Pacific halibut fishery. The IPHC Secretariat has undertaken a long-term study of the migratory behavior of Pacific halibut through the use of externally visible tags (wire tags) on captured and released fish that must be retrieved and returned by workers in the fishing industry. In 2015, with the goal of gaining additional insight into movement and growth of young Pacific halibut (less than 32 inches [82 cm]; U32), the IPHC began wire-tagging small Pacific halibut encountered on the National Marine Fisheries Service (NMFS) groundfish trawl survey and, beginning in 2016, on the IPHC fishery-independent setline survey (FISS). A total of 1,678 Pacific halibut were tagged and released on the 2023 IPHC FISS. Therefore, a total of 11,149 U32 Pacific halibut have been wire tagged and released on the IPHC FISS and 261 of those have been recovered to date (these totals include a subset of U32 releases that were part of a tail pattern project). In the NMFS groundfish trawl surveys through 2019, a total of 6,421 tags have been released and, to date, 86 tags have been recovered.

1.3. Population genomics. 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 (pre-2010) analyses of genetic population structure that failed to

demonstrate significant differentiation in the eastern Pacific Ocean. However, more recent studies have reported significant genetic population structure suggesting that Pacific halibut residing in the Aleutian Islands may be genetically distinct from other regions. Advances in genomic technology now enable researchers to examine entire genomes at unprecedented resolution. While genetic techniques previously employed in fisheries management have generally used a small number of markers (i.e. microsatellites, ~10-100), whole-genome scale approaches can now be conducted with lower cost and provide orders of magnitude more data (millions of markers). Using low-coverage whole genome resequencing we have the capability to examine genetic structure of Pacific halibut in IPHC Convention Waters with unprecedented resolution. By studying the genomic structure of spawning populations, genetic signatures of geographic origin can be established and, consequently, could be used to identify the geographic origin of individual Pacific halibut and, therefore, inform on the movement and distribution of Pacific halibut.

The main purpose of the present study is to conduct an analysis of Pacific halibut population structure in IPHC Convention waters using modern high-resolution genomic techniques. Recent studies have reported significant genetic population structure that suggest Pacific halibut residing in the Aleutian Islands may be genetically distinct from other regions. Genetic differentiation of the population on either side of Amchitka Pass was indicated, suggesting a possible basis for separating IPHC Regulatory Area 4B into two management subareas. However, these results were confounded by (1) the use of a small number of genetic markers and (2) the use of samples collected outside of the spawning season (i.e., winter) in some areas. These analyses employed summer-collected (i.e., non-spawning season) samples west of Amchitka Pass which may not be representative of the local spawning population, but rather a mixture of spawning groups on the feeding grounds. Therefore, it is advisable to re-assess those conclusions using samples collected during the spawning season and modern, high-resolution genomic techniques.

In January and February of 2020, the IPHC Secretariat conducted genetic sample collections on either side of Amchitka Pass (IPHC Regulatory Area 4B) during the spawning season to address the limitations of previous studies. These samples, in combination with previous samples collected during the spawning season (i.e., Bering Sea, Central Gulf of Alaska and waters off British Columbia) (Figure 1) are being used to re-evaluate stock structure of Pacific halibut in IPHC Convention waters. The temporal replicates at many of these locations will enable the IPHC Secretariat to evaluate the stability of genetic structure over time, ensuring confidence in the results. The IPHC Secretariat has recently produced a high-quality reference genome and has generated genomic sequences from 570 individual Pacific halibut collected from five geographic areas (Figure 1) using low-coverage whole-genome resequencing (lcWGR). Using the lcWGR approach, we have identified approximately 10.2 million single nucleotide polymorphisms (SNPs) that are currently being used to evaluate population structure at the highest resolution possible. Despite the very high resolution genomic data, preliminary data on population structure using a genome-wide subset of 4.7 million SNPs suggest that there may be very little spatial structure among the spawning groups sampled in IPHC convention waters (Figure 1). Since evolutionary processes may not

act uniformly across the genome, current work is aimed at identifying regions of the genome that contain outlier SNPs which may increase our power to characterize population structure and determine the source population for samples collected outside of the spawning season. This study is partially funded by a research grant from the North Pacific Research Board (NPRB #2110; Appendix IV).

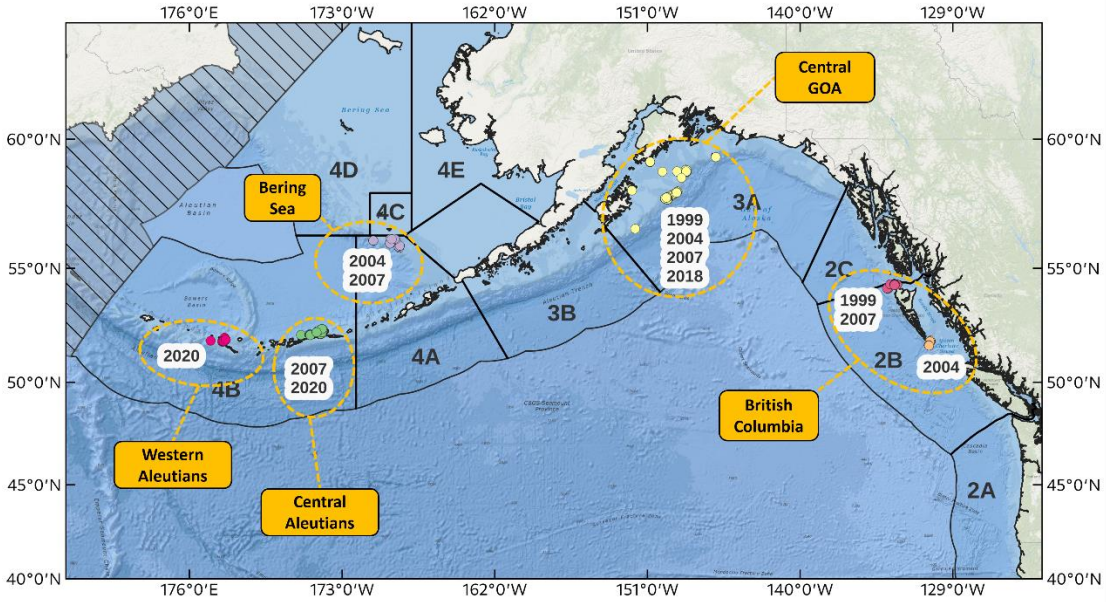


Figure 1. Map of sample collections made during the spawning season used for genomic analysis of population structure in Pacific halibut in the northeast Pacific Ocean.

2. Reproduction.

Research activities in this Research Area aim at providing information on key biological processes related to reproduction in Pacific halibut (maturity and fecundity) and to provide sex ratio information of Pacific halibut commercial landings. The relevance of research outcomes from these activities for stock assessment (SA) is in the scaling of Pacific halibut biomass and in the estimation of reference points and fishing intensity. These research outputs will result in a revision of current maturity schedules and will be included as inputs into the SA (Appendix II) as they represent the most important biological inputs for SA. The relevance of these research outcomes for the management strategy evaluation process is in the improvement of the simulation of spawning biomass in the Operating Model (Appendix III).

2.1. Maturity estimates. Each year, the fishery-independent setline survey (FISS) collects biological data on the maturity of female Pacific halibut that are used in the stock assessment to estimate spawning stock biomass. Currently used estimates of maturity at age using macroscopic visual criteria collected in the FISS indicate that the age at which 50% of female Pacific halibut are sexually mature is 11.6 years on average. However, female maturity schedules have not been revised in recent years and may be outdated. In addition, the currently used macroscopic visual criteria used to score

female maturity in the field have an undetermined level of uncertainty and need to be contrasted with more accurate microscopic (i.e., histological) criteria.

In order to address these issues, the IPHC Secretariat has conducted for the first time a thorough histological investigation of the temporal progression of female developmental stages and reproductive phases throughout an entire reproductive cycle (Fish et al. 2020; 2022). Results from these studies indicate that female Pacific halibut follow an annual reproductive cycle involving a clear progression of female developmental stages towards spawning within a single year. These results have provided foundational information for ongoing studies aimed at updating maturity ogives by histological assessment in Pacific halibut. One of the most important results obtained show that the period of time when gonad samples can be collected in the FISS (June-August) is an appropriate temporal window during which we can identify Pacific halibut females that are developing towards the spawning capable reproductive phase and, therefore, considered mature for stock assessment purposes.

The IPHC Secretariat is currently conducting studies to revise maturity schedules in all four biological regions through histological (i.e., microscopic) characterization of maturity. For this purpose, the IPHC Secretariat collected a total of 1,023 ovarian samples for histology during the 2022 FISS: 440 samples from Biological Region 2, 351 samples from Biological Region 3, 181 from Biological Region 4, and 51 samples from Biological Region 4B (Figure 2, left panel). Ovarian samples from the 2022 FISS collections have been processed for histology and the IPHC Secretariat has completed maturity scoring of all ovarian samples using histological maturity criteria previously defined, leading to immature or mature classification. Current efforts are devoted to the analysis of various methods for best describing the proportion of mature females by age and by length at coastwide and biological region scales.

To investigate interannual and intercohort variability of maturity schedules, the IPHC Secretariat continued collecting ovarian samples in 2023 on the FISS. Unfortunately, due to the reduction in FISS design for 2023, sampling efforts only took place in IPHC Biological Regions 2 and 3. A total of 1,110 ovarian samples were collected for histological analysis: 403 samples from Biological Region 2, and 707 samples from Biological Region 3 (Figure 2, right panel).

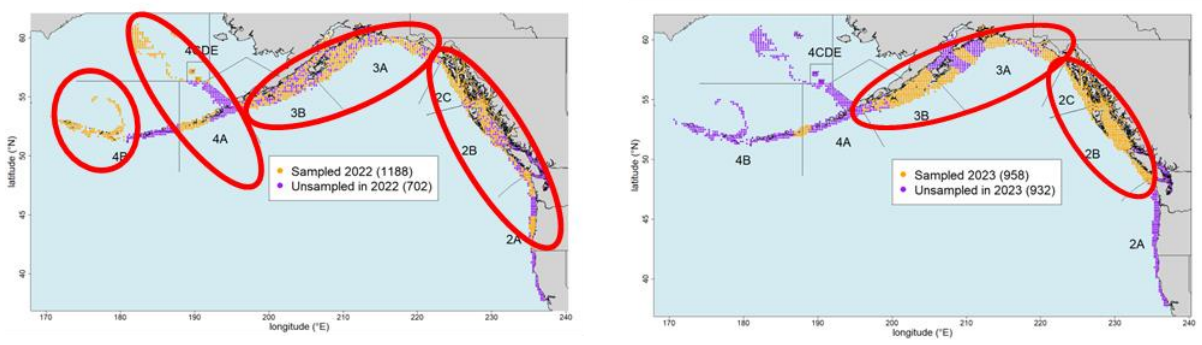


Figure 2. Maps of maturity sample collections made during the 2022 (left) and 2023 (right) FISS seasons.

The completed analysis of percent maturity by age and percent maturity by length using the 2022 and 2023 data will be presented to the Scientific Review Board in June of 2024 for an initial review and again in September of 2024 for a final review prior to the incorporation of the revised maturity estimates into the 2024 stock assessment.

2.2. Fecundity estimates. An important existing knowledge gap regarding the reproductive biology of Pacific halibut is the current lack of understanding of fecundity-at-age and fecundity-at-size. Information on these two parameters could be used to replace spawning biomass with egg output as the metric of reproductive capability in the stock assessment and management reference points. Recent studies conducted by the IPHC Secretariat on histological examination of female developmental stages have demonstrated that female Pacific halibut have determinate fecundity (Fish et al. 2020), allowing for the estimation of fecundity at any given time after the onset of vitellogenesis in the spring (Fish et al. 2022). Therefore, ovarian samples can be collected during the FISS (summer months) for fecundity estimations. For this purpose, the IPHC Secretariat collected gonad samples for fecundity estimations during the 2023 FISS. IPHC Secretariat targeted Biological Region 3 for this collection, with a total of 456 gonad samples collected. During 2024, the IPHC Secretariat will begin testing the auto-diametric method (Witthames et al. 2009. *Fish. Bul*. 107:148-164) as a viable approach to estimate fecundity in female Pacific halibut.

3. Growth.

Research activities conducted in this research area aim at providing information on somatic growth processes driving size-at-age in Pacific halibut. The relevance of research outcomes from these activities for stock assessment resides, first, in their ability to inform yield-per-recruit and other spatial evaluations for productivity that support mortality limit-setting, and, second, in that they may provide covariates for projecting short-term size-at-age and may help delineate between fishery and environmental effects, thereby informing appropriate management responses (Appendix II). The relevance of these research outcomes for the management strategy evaluation process is in the improvement of the simulation of variability and to allow for scenarios investigating climate change (Appendix III).

The IPHC Secretariat recently completed a study funded by the North Pacific Research Board (NPRB Project No. 1704; 2017-2020) to identify relevant physiological markers for somatic growth. This study resulted in the identification of 23 markers in skeletal muscle that were indicative of temperature-induced growth suppression and 10 markers in skeletal muscle that were indicative of temperature-induced growth stimulation. These markers represented genes and proteins that changed both their mRNA expression levels and abundance levels in skeletal muscle, respectively, in parallel with changes in the growth rate of Pacific halibut. A manuscript describing the results of this study is currently in preparation (Planas et al., in preparation).

In addition to temperature-induced growth manipulations, the IPHC Secretariat has conducted similar studies as part of NPRB Project No. 1704 to identify physiological growth markers that respond to density- and stress-induced growth manipulations. The respective justifications for these studies are that (1) population dynamics of the Pacific halibut stock

could be affected by fish density, and (2) stress responses associated with capture and release of discarded Pacific halibut may affect subsequent feeding behavior and growth. Investigations related to the effects of density and stress exposure are still underway.

4. Mortality and Survival Assessment.

Information on all Pacific halibut removals is integrated by the IPHC Secretariat, providing annual estimates of total mortality from all sources for its stock assessment (SA). Bycatch and wastage of Pacific halibut, as defined by the incidental catch of fish in non-target fisheries and by the mortality that occurs in the directed fishery (i.e., fish discarded for sublegal size or for regulatory reasons), respectively, represent important sources of mortality that can result in significant reductions in exploitable yield in the directed fishery. Given that the incidental mortality from the commercial Pacific halibut fisheries and bycatch fisheries is included as part of the total removals that are accounted for in the SA, changes in the estimates of incidental mortality will influence the output of the SA and, consequently, the catch levels of the directed fishery. Research activities conducted in this Research Area aim at providing information on discard mortality rates and producing guidelines for reducing discard mortality in Pacific halibut in the longline and recreational fisheries. The relevance of research outcomes from these activities for SA resides in their ability to improve trends in unobserved mortality in order to improve estimates of stock productivity and represent the most important inputs in fishery yield for SA (Appendix II). The relevance of these research outcomes for the management strategy evaluation process is in fishery parametization (Appendix III).

For this reason, the IPHC Secretariat is conducting two research projects to investigate the effects of capture and release on survival and to improve estimates of DMRs in the directed longline and guided recreational Pacific halibut fisheries:

4.1. Evaluation of the effects of hook release techniques on injury levels and association with the physiological condition of captured Pacific halibut and estimation of discard mortality using remote-sensing techniques in the directed longline fishery. After having reported on experimentally-derived estimates of discard mortality rate in the directed longline fishery (Loher et al., 2022), the second component of this study investigated the relationships among hook release techniques (e.g., gentle shake, gangion cutting, and hook stripping), injury levels, viability categories, stress levels and physiological condition of released fish, as well as the environmental conditions that the fish experienced during capture. Gentle shake and gangion cutting resulted in the same injury and viability outcomes with 75% of sublegal fish classified in the Excellent viability category, while the hook stripper produced the poorest outcomes (only 9% in the Excellent viability category). Hook stripping also resulted in more severe injuries, particularly with respect to tearing injuries, whereas gentle shake and gangion cutting predominantly resulted in a torn cheek, effectively the injury incurred by the hooking event. Physiological stress indicators (plasma levels of glucose, lactate, and cortisol) did not significant change with viability outcomes, except for higher lactate plasma levels in fish in the Dead viability category. Hematocrit was significantly lower in fish that were classified in the Dead viability category. Furthermore, 89% of fish classified as Dead were infiltrated by sand fleas, present in several sets in deeper and colder waters. Our

results indicated that avoiding the use of hook strippers and minimizing soak times in areas known to have high sand flea activity result in better survival outcomes. These results have been summarized in a manuscript that has been submitted for publication in a peer-reviewed journal and that is currently under review.

4.2. Discard mortality rates of Pacific halibut in the charter recreational fishery. Results from a recent study conducted in fish captured using guided recreational fishery practices yielded an estimated discard mortality rate of 1.35% (95% CI 0.00-3.95%) for Pacific halibut released in Excellent viability category that were captured and released using circle hooks. These results represent the first report of experimentally derived estimates of mortality of Pacific halibut captured and discarded in the recreational fishery. As with the study on the directed commercial fishery (Section 4.1), work is currently being conducted to investigate the relationship of injury types, viability categories and survival of discarded fish with capture (e.g., environmental parameters, time on deck, hooking time, etc.) and physiological (e.g., stress) conditions.

5. Fishing Technology.

The IPHC Secretariat is conducting studies aimed at developing methods that involve modifications of fishing gear with the purpose of reducing Pacific halibut depredation and bycatch. Specific objectives in this area include 1) investigate new methods for whale avoidance and/or deterrence for the reduction of Pacific halibut depredation by whales (e.g., catch protection methods), and 2) investigate behavioral and physiological responses of Pacific halibut to fishing gear in order to reduce bycatch. Important management implications of these studies reside in improving estimations of mortality of Pacific halibut in the directed commercial fishery that will lead to improved estimates of stock productivity (Appendix II). Depending on the estimated magnitude of whale depredation, this may be included as another explicit source of mortality in the SA and mortality limit setting process.

5.1. Gear-based approaches to catch protection to minimize whale depredation in longline fisheries. The IPHC Secretariat has conducted investigations on gear-based approaches to catch protection as a means for minimizing whale depredation in the Pacific halibut longline fisheries with funding from NOAA's Bycatch Research and Engineering Program (BREP) (NOAA Award NA21NMF4720534; Appendix IV). The objectives of this study have been to 1) work with fishermen and gear manufacturers, via direct communication and through an international workshop, to identify effective methods for protecting hook-captured flatfish from depredation; and 2) develop and pilot test simple, low-cost catch-protection designs that can be deployed effectively using current longline fishing techniques and on vessels currently operating in Convention waters.

From the outcomes of the first part of the study, two different types of catch protection devices were selected for field testing: one based on a modification of a commercial catch protection device (i.e., shuttle system), and one based on a modification of a slinky pot (i.e., shroud system) deployed on branchline gear.

- Shuttle system. Manufactured in Norway by Sago, two aluminum shuttle devices were modeled after the Sago Extreme device but 80% smaller in size (Figure 3). Their dimensions are 2.60 m (8.5 ft) long by 0.80 m (2.6 ft) in diameter, each weighing approximately 100 kg (220 lb.) when empty. Typically, these devices are set with the gear; however, for this study the units were deployed from the surface, during the haulback event. The device encounters the hooks and catch near the seabed, mechanically unhooks fish and entrains them in the storage area (Figure 3). After securing the catch, the device encounters a stopper and is hauled to the surface with fish inside (Figure 3).

A)  B)  C) 

Figure 3. Images of the prototype shuttle devices used in this study in profile view (A), frontal view (B) and being hoisted onto the vessel during retrieval (C).

- Shroud system. Several shroud systems were constructed consisting of a modified 'slinky pot' with an opening on one end and a closed end cap on the other that is designed to slide down the branch covering the catch during hauling (Figure 4).

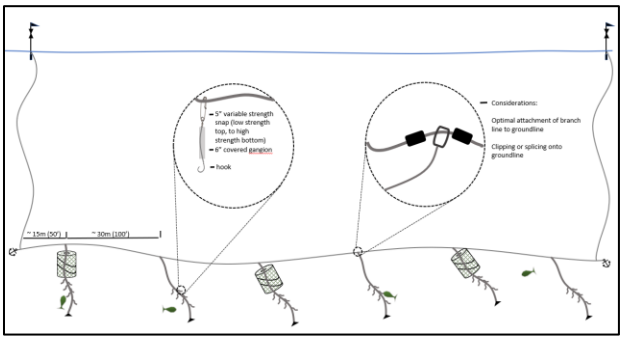
A)  B) 

Figure 4. Schematic of shrouded branchline actively fishing on the seabed (A) and a shroud consisting of a modified 'slinky pot' showing end cap and openings (B).

The two different devices were tested off Newport, OR in May of 2023 on a 56' (17m) chartered fishing vessel with an open deck design and typical boom and winch capacity. The focus of the testing was to investigate (1) the logistics of setting, fishing, and hauling of the two pilot catch protection designs, and (2) the basic performance of the gear on catch rates and fish size compared to non-protected gear in the absence of whales.

Pilot testing with the shuttle device consisted of ten sets, each with two 100 hook skates, one acting as a control, and the other equipped with the shuttle. For the shroud system, pilot testing consisted of single sets with six branch lines of 48' affixed on 100' spacing along the groundline. Ten gangions and hooks were snapped to the branch lines on 4' spacing. Three branch lines had a shroud attached and three branch lines acted as controls. Data collected during the pilot testing of the two types of catch protection devices are currently being analyzed.

The IPHC Secretariat recently received funding (BREP, NOAA Award NA23NMF4720414; Appendix IV) for further testing of the shuttle concept in the presence of depredating Orcas in Alaskan waters. This work is planned for 2024 and will allow for further refinements (e.g., attachment protocols, gangion/hook strength), statistical testing of catch rates, and catch composition (e.g., size ranges, species, catch volume) when using the devices, as well as allow for quantification of removals of fish from non-shuttle treatments by depredating whales.

5.2. Investigations on behavioral and physiological responses to fishing gear to reduce bycatch. The IPHC Secretariat has participated in studies led by Pacific States Fisheries Management Commission and in collaboration with NOAA Fisheries and fishing industry partners on bycatch reduction measures through the use of fishing gear modifications. Studies conducted include investigating the use of artificial illumination on bottom trawl gear to reduce Pacific halibut bycatch, and the results showed a decrease in the number of Pacific halibut caught in trawl gear when LED lights are present (Lomeli et al. 2021). Other studies investigated the introduction of modifications to circle hooks as a means to reduce yelloweye rockfish bycatch in the Pacific halibut longline fishery, and showed that hook appendages can significantly reduce yelloweye rockfish bycatch without affecting Pacific halibut catch rates (Lomeli et al. 2023). On this same topic, studies were also conducted to investigate the potential effectiveness of semi-demersal longlines in reducing yelloweye rockfish bycatch in the Pacific halibut longline fishery, and the resulting data are currently being analyzed.

RECOMMENDATION/S

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-14, which provides a report on current and planned biological and ecosystem science and research activities contemplated in the IPHC's Five-Year Program of Integrated Research and Monitoring (2022-2026).

APPENDICES

Appendix I: Biological research areas in the 5-Year Program of Integrated Research and Monitoring (2022-2026) and ranked relevance for stock assessment and management strategy evaluation (MSE).

Appendix II: List of ranked research priorities for stock assessment

Appendix III: List of ranked research priorities for management strategy evaluation (MSE)

Appendix IV: Summary of awarded research grants current in 2024

APPENDIX I

Biological research areas in the 5-Year Program of Integrated Research and Monitoring (2022-2026) and ranked relevance for stock assessment and management strategy evaluation (MSE)

Research areas	Research activities	Research outcomes	Relevance for stock assessment	Relevance for MSE	Specific analysis input	SA Rank	MSE Rank	Research priorization
Migration and population dynamics	Population structure	Population structure in the Convention Area	Altered structure of future stock assessments	Improve parametization of the Operating Model	If 4B is found to be functionally isolated, a separate assessment may be constructed for that IPHC Regulatory Area	2. Biological input	1. Biological parameterization and validation of movement estimates and recruitment distribution	2
	Distribution	Assignment of individuals to source populations and assessment of distribution changes	Improve estimates of productivity		Will be used to define management targets for minimum spawning biomass by Biological Region	3. Biological input		2
	Larval and juvenile connectivity studies	Improved understanding of larval and juvenile distribution	Improve estimates of productivity		Will be used to generate potential recruitment covariates and to inform minimum spawning biomass targets by Biological Region	3. Biological input	1. Biological parameterization and validation of movement estimates	2
Reproduction	Histological maturity assessment	Updated maturity schedule	Scale biomass and reference point estimates	Improve simulation of spawning biomass in the Operating Model	Will be included in the stock assessment, replacing the current schedule last updated in 2006	1. Biological input		1
	Examination of potential skip spawning	Incidence of skip spawning			Will be used to adjust the asymptote of the maturity schedule, if/when a time-series is available this will be used as a direct input to the stock assessment			1
	Fecundity assessment	Fecundity-at-age and -size information			Will be used to move from spawning biomass to egg-output as the metric of reproductive capability in the stock assessment and management reference points			1
	Examination of accuracy of current field macroscopic maturity classification	Revised field maturity classification			Revised time-series of historical (and future) maturity for input to the stock assessment			1
Growth	Evaluation of somatic growth variation as a driver for changes in size-at-age	Identification and application of markers for growth pattern evaluation	Scale stock productivity and reference point estimates	Improve simulation of variability and allow for scenarios investigating climate change	May inform yield-per-recruit and other spatial evaluations of productivity that support mortality limit-setting		3. Biological parameterization and validation for growth projections	5
		Environmental influences on growth patterns			May provide covariates for projecting short-term size-at-age. May help to delineate between effects due to fishing and those due to environment, thereby informing appropriate management response			5
		Dietary influences on growth patterns and physiological condition			May provide covariates for projecting short-term size-at-age. May help to deleineate between effects due to fishing and those due to environment, thereby informing appropriate management response			5
Mortality and survival assessment	Discard mortality rate estimate: longline fishery	Experimentally-derived DMR	Improve trends in unobserved mortality	Improve estimates of stock productivity	Will improve estimates of discard mortality, reducing potential bias in stock assessment results and management of mortality limits	1. Fishery yield	1. Fishery parameterization	4
	Discard mortality rate estimate: recreational fishery				Will improve estimates of discard mortality, reducing potential bias in stock assessment results and management of mortality limits			4
	Best handling and release practices	Guidelines for reducing discard mortality			May reduce discard mortality, thereby increasing available yield for directed fisheries	2. Fishery yield		4
Fishing technology	Whale depredation accounting and tools for avoidance	New tools for fishery avoidance/deterence; improved estimation of depredation mortality	Improve mortality accounting	Improve estimates of stock productivity	May reduce depredation mortality, thereby increasing available yield for directed fisheries. May also be included as another explicit source of mortality in the stock assessment and mortality limit setting process depending on the estimated magnitude	1. Assessment data collection and processing		3

APPENDIX II

List of ranked research priorities for stock assessment

SA Rank	Research outcomes	Relevance for stock assessment	Specific analysis input	Research Area	Research activities
1. Biological input	Updated maturity schedule	Scale biomass and reference point estimates	Will be included in the stock assessment, replacing the current schedule last updated in 2006	Reproduction	Histological maturity assessment
	Incidence of skip spawning		Will be used to adjust the asymptote of the maturity schedule, if/when a time-series is available this will be used as a direct input to the stock assessment		Examination of potential skip spawning
	Fecundity-at-age and -size information		Will be used to move from spawning biomass to egg-output as the metric of reproductive capability in the stock assessment and management reference points		Fecundity assessment
	Revised field maturity classification		Revised time-series of historical (and future) maturity for input to the stock assessment		Examination of accuracy of current field macroscopic maturity classification
2. Biological input	Stock structure of IPHC Regulatory Area 4B relative to the rest of the Convention Area	Altered structure of future stock assessments	If 4B is found to be functionally isolated, a separate assessment may be constructed for that IPHC Regulatory Area	Migration and population dynamics	Population structure
3. Biological input	Assignment of individuals to source populations and assessment of distribution changes	Improve estimates of productivity	Will be used to define management targets for minimum spawning biomass by Biological Region		Distribution
	Improved understanding of larval and juvenile distribution		Will be used to generate potential recruitment covariates and to inform minimum spawning biomass targets by Biological Region		Larval and juvenile connectivity studies
1. Assessment data collection and processing	Sex ratio-at-age	Scale biomass and fishing intensity	Annual sex-ratio at age for the commercial fishery fit by the stock assessment	Reproduction	Sex ratio of current commercial landings
	Historical sex ratio-at-age		Annual sex-ratio at age for the commercial fishery fit by the stock assessment		Historical sex ratios based on archived otolith DNA analyses
2. Assessment data collection and processing	New tools for fishery avoidance/deterence; improved estimation of depredation mortality	Improve mortality accounting	May reduce depredation mortality, thereby increasing available yield for directed fisheries. May also be included as another explicit source of mortality in the stock assessment and mortality limit setting process depending on the estimated magnitude	Fishing technology	Whale depredation accounting and tools for avoidance
1. Fishery yield	Physiological and behavioral responses to fishing gear	Reduce incidental mortality	May increase yield available to directed fisheries	Fishing technology	Biological interactions with fishing gear
2. Fishery yield	Guidelines for reducing discard mortality	Improve estimates of unobserved mortality	May reduce discard mortality, thereby increasing available yield for directed fisheries	Mortality and survival assessment	Best handling practices: recreational fishery

APPENDIX III

List of ranked research priorities for management strategy evaluation (MSE)

MSE Rank	Research outcomes	Relevance for MSE	Research Area	Research activities
1. Biological parameterization and validation of movement estimates	Improved understanding of larval and juvenile distribution	Improve parametization of the Operating Model	Migration and population dynamics	Larval and juvenile connectivity studies
	Stock structure of IPHC Regulatory Area 4B relative to the rest of the Convention Area			Population structure
2. Biological parameterization and validation of recruitment variability and distribution	Assignment of individuals to source populations and assessment of distribution changes	Improve simulation of recruitment variability and parametization of recruitment distribution in the Operating Model		Distribution
	Establishment of temporal and spatial maturity and spawning patterns	Improve simulation of recruitment variability and parametization of recruitment distribution in the Operating Model	Reproduction	Recruitment strength and variability
3. Biological parameterization and validation for growth projections	Identification and application of markers for growth pattern evaluation	Improve simulation of variability and allow for scenarios investigating climate change	Growth	Evaluation of somatic growth variation as a driver for changes in size-at-age
	Environmental influences on growth patterns			
	Dietary influences on growth patterns and physiological condition			
1. Fishery parameterization	Experimentally-derived DMRs	Improve estimates of stock productivity	Mortality and survival assessment	Discard mortality rate estimate: recreational fishery

APPENDIX IV

Summary of awarded research grants to IPHC current in 2024

Project #	Grant agency	Project name	PI	Partners	IPHC Budget ($US)	Grant period	Research area	Management implications	Research prioritization
1	**North Pacific Research Board**	Pacific halibut population genomics (NPRB Award No. 2110)	IPHC	Alaska Fisheries Science Center-NOAA	$193,685	February 2022 – February 2024	Migration and population dynamics	Stock structure	2
2	**Bycatch Reduction Engineering Program-NOAA**	Full scale testing of devices to minimize whale depredation in longline fisheries (NOAA Award Number NA23NMF4720414)	IPHC	Alaska Fisheries Science Center-NOAA	$199,870	November 2023 – April 2025	Fishing technology	Mortality estimations due to whale depredation	3
Total awarded ($)					**$393,555**				

IPHC Fishery Regulations: Proposals for the 2023-24 process

PREPARED BY: IPHC SECRETARIAT (B. HUTNICZAK; 21 DECEMBER & 23 DECEMBER 2023)

PURPOSE

To provide the Commission with an overview of the IPHC Fishery Regulations proposals that the IPHC Secretariat, Contracting Parties, and other stakeholders have submitted for consideration by the Commission at the 100th Session of the IPHC Annual Meeting (AM100).

BACKGROUND

Recalling the IPHC Fishery Regulations proposals submission and review process instituted in 2017, this paper is intended to provide an indication of the fishery regulations proposals being submitted to the Commission in the 2023-24 process.

The Commission had an opportunity for a preliminary review of the majority of the proposals during the 99th Session of the IPHC Interim Meeting (IM099). The deadline for submission of regulatory proposals for consideration by the Commission at the 100th Session of the IPHC Annual Meeting (AM100) is 23rd December 2023.

DISCUSSION

A list of titles, subjects, and sponsors for IPHC Fishery Regulations proposals submitted as part of the 2023-24 process is provided in **Appendix I**.

RECOMMENDATION

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-15 Rev_1, which provides the Commission with an overview of the IPHC Fishery Regulations proposals that the IPHC Secretariat, Contracting Parties, and other stakeholders have submitted for consideration by the Commission at the 100th Session of the IPHC Annual Meeting (AM100).

APPENDICES

Appendix I: Titles, subjects, and sponsors for IPHC Fishery Regulations proposals submitted for consideration in the 2023-24 process.

APPENDIX I

Titles, subjects, and sponsors for IPHC Fishery Regulations proposals submitted for consideration in the 2023-24 process.

Ref. No.	Title	Brief description
IPHC Secretariat		
IPHC-2024-AM100-PropA1	IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5)	To provide clear documentation of mortality and fishery limits within the IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5). *Mortality and fishery limits tables will be filled when the Commission adopts TCEYs for the individual IPHC Regulatory Areas.*
IPHC-2024-AM100-PropA2	IPHC Fishery Regulations: Commercial Fishing Periods (Sect. 9)	To specify fishing periods for the directed commercial Pacific halibut fisheries within the IPHC Fishery Regulations: Commercial Fishing Periods (Sect. 9).
IPHC-2024-AM100-PropA3	IPHC Fishery Regulations: Logs (Sect 19) – Update and alignment of log requirements	To update and align log requirements for Contracting Parties in the IPHC Fishery Regulations.
Contracting Parties		
IPHC-2024-AM100-PropB1	IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut – IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E (Sect. 29) - Charter Management Measures in IPHC Regulatory Areas 2C and 3A	**Proponent**: USA (NOAA Fisheries) To propose charter management measures in IPHC Regulatory Areas 2C and 3A reflective of mortality limits adopted by the IPHC and resulting allocations under the North Pacific Fishery Management Council (NPFMC) Pacific halibut Catch Sharing Plan.
IPHC-2024-AM100-PropB2	IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5) and In-Season Actions (Sect. 6) – In-season reallocation of recreational limits in IPHC Regulatory Area 2A	**Proponent**: USA (NOAA Fisheries) To make a clarifying modification to IPHC Fishery Regulations, Section 5 (Mortality and Fishery Limits) and Section 6 (In-Season Actions) reflective of changes to the Catch Sharing Plan (CSP) that allocates the IPHC Regulatory Area 2A Pacific halibut catch limit.

Stakeholders		
IPHC-2024-AM100-PropC1	IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5) (Regulatory Area 2A	**Proponent**: Timothy Greene (Makah Tribe) To propose a minimum TCEY for IPHC Regulatory Area 2A of 1.65 Mlb.
IPHC-2024-AM100-PropC2	IPHC Fishery Regulations: IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E (Sect. 28) – Onboard consumption	**Proponent**: Paul Olson (The Boat Company) To propose increased flexibility for the onboard consumption of recreationally-caught Pacific halibut in Alaska.

IPHC 3-year meetings calendar (2024-26)

PREPARED BY: IPHC SECRETARIAT (08 DECEMBER 2023, 24 JANUARY 2024)

PURPOSE

To provide the Commission with an opportunity to consider the tentative IPHC 3-year meetings calendar (2024-26) (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) has historically met twice during the course of the year. The Management Strategy Advisory Board (MSAB) will meet in the first half of the year. The Research Advisory Board (RAB) meets in November, prior to the Interim Meeting (IM), when its members are best able to convene and consider the IPHC's research activities. The RAB has requested a 1.5-day meeting immediately prior to the Fish Expo in Seattle moving forward.

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 101st Session of the IPHC Annual Meeting (AM101) is scheduled for late January 2025 in Canada.

RECOMMENDATIONS

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-16 Rev_1, which provides the Commission with an opportunity to consider the IPHC 3-year meetings calendar (2024-26).
2) **APPROVE** the IPHC 3-year meetings calendar (2024-26), while also noting date and venue changes may occur based on the individual circumstances of each subsidiary body.
3) **NOTE** Canada's host city selection for the 101st Session of the IPHC Annual Meeting (AM101), to be held in January 2025.

APPENDICES

Appendix I: IPHC 3-year meetings calendar (2024-26)

APPENDIX I

IPHC 3-year meetings calendar (2024-26)

	2024			2025			2026		
Meeting	**No.**	**Dates**	**Location**	**No.**	**Proposed Dates**	**Location**	**No.**	**Proposed Dates**	**Location**
Annual Meeting (AM)	**100th**	**22-26 Jan**	Anchorage, **USA**	**101st**	**27-31 Jan**	TBD, **Canada**	**102nd**	**26-30 Jan**	TBD, **USA**
Finance and Administration Committee (FAC)	**100th**	22 Jan	Anchorage, USA	**101st**	27 Jan	TBD, Canada	**102nd**	26 Jan	TBD, USA
Conference Board (CB)	94th	23-24 Jan	Anchorage, USA	95th	28-29 Jan	TBD, Canada	96th	27-28 Jan	TBD, USA
Processor Advisory Board (PAB)	29th	23-24 Jan	Anchorage, USA	30th	28-29 Jan	TBD, Canada	31st	27-28 Jan	TBD, USA
Management Strategy Advisory Board (MSAB)	19th	1-3 May	Seattle, USA	20th	TBD May	Seattle, USA	21st	TBD May	Seattle, USA
Scientific Review Board (SRB)	24th	18-20 June	Seattle, USA	26th	TBD June	Seattle, USA	28th	TBD June	Seattle, USA
	25th	TBD Sept	Seattle, USA	27th	TBD Sept	Seattle, USA	29th	TBD Sept	Seattle, USA
Work Meeting (WM)	--	10-12 Sept	Bellingham, USA	--	16-17 Sept	Bellingham, USA	--	15-16 Sept	Bellingham, USA
Research Advisory Board (RAB)	25th	TBD Nov	Seattle, USA	26th	TBD Nov	Seattle, USA	27th	TBD Nov	Seattle, USA
Interim Meeting (IM)	**100th**	**25-26 Nov**	**Online**	**101st**	**24-25 Nov**	**Online**	**102nd**	**23-24 Nov**	**Online**

National Report: Canada

PREPARED BY: FISHERIES AND OCEANS CANADA (20 DECEMBER 2023 AND 3 JANUARY 2024)

PURPOSE

To provide an overview of the Pacific halibut fisheries in 2023 in the IPHC Convention waters and the national waters of Regulatory Area 2B (Canada, British Columbia).

Contracting party: Canada

Reporting agency: Fisheries and Oceans Canada

Contact person: Gwyn Mason, Halibut Coordinator, Gwynhyfar.Mason@dfo-mpo.gc.ca

SUMMARY

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 analyse 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 223 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.

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

COMMERCIAL FISHERIES OVERVIEW

Summary

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 2023, the CTAC was 6,320,000 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 2023 Commercial and Recreational catch limit for allocation purposes was 6,135,000 net pounds (table 1).

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 respective “O26” wastage mortality is removed from the commercial and recreational TACs (table 1). The domestic research allocation (use of fish) is also removed from the commercial sector’s allocation prior to establishing the 2023 commercial TAC. As of December 18, 2023, the combined commercial and recreational halibut catch (including XRQ landed catch, commercial landed catch and mortality associated with all released fish in the commercial groundfish fisheries) was 6,167,846 net pounds (table 1).

In 2023, the Canadian commercial Halibut catch totalled 4,862,321 net pounds (table 1). 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 2023 Halibut catch until February 20, 2024, after which released at-sea mortality will be attributed to the 2024 TAC. As such the 2023 commercial catch is current as of December 18, 2023.

The 2024/2025 commercial groundfish fishing season will commence February 21, 2024, 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

Monitoring

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 (via at-sea observers, or electronic monitoring) and 100% dockside monitoring for all groundfish vessels.

Groundfish hook and line fisheries have almost exclusively utilized electronic monitoring (EM) systems for at-sea monitoring for nearly two decades. In April 2020, electronic monitoring was formally launched on groundfish trawl vessels, when at-sea observers were removed due to the Covid-19 pandemic. EM systems were configured on a vessel-by-vessel basis to ensure that groundfish fish trawls vessels met the 100% at-sea monitoring requirements that were previously completed by at-sea observers. Details regarding the trawl EM system requirements can be found in section 14 of appendix 8 in the Groundfish Integrated Fisheries Management Plan.

During the 2023/24 groundfish fishing season, a pilot program for collecting Halibut length samples in the trawl sector using EM technology was developed in collaboration with industry representatives and Archipelago Marine Research (AMR) in the Option A groundfish trawl fishery. While the pilot is still being tested on select trawl vessels, it shows promise to produce length estimates sufficient for stock assessment purposes and scientific research, a role previously completed by at-sea observers. It is anticipated that fleetwide implementation of the program will occur in early/mid 2024.

Fishery statistics

Table 1. Halibut allocations in Canada as of December 18, 2023. All values in net pounds.

Commercial / recreational TAC for allocation [A]		6,135,000
Commercial allocation	x 85%	
O26 wastage	- 180,000	
Research (use of fish)	- 60,000	
Commercial TAC for allocation purposes		4,974,750
Recreational allocation		X 15%
O26 wastage	- 40,000	
Recreational TAC	880,250	
Total commercial catch [B]	4,862,321	
2B commercial and recreational catch [C]	6,167,846	

A Value does not include underage/overage carried forward from 2022/23 fishing season.

B Catch includes all landed fish from the commercial hook and line sector, as well as the mortality associated with legal-sized released fish in the hook and line sector.

C Catch includes all landed fish from both the commercial and recreational sectors, as well as the mortality associated with legal-sized released fish in the commercial trawl fishery.

Compliance with regulations and enforcement

Please see appendix 1 for a detailed enforcement report for the Canadian Halibut fishery in 2023.

Notable Management Updates

The commercial groundfish fisheries, including the Halibut sector, saw several notable management changes for the 2023 season. These changes include:

- The consultation of updated science advice for the Outside Yelloweye rockfish stock, which is a key non-directed species in the Halibut fishery. Science advice included an updated management procedure (MP), alternative target reference points (TRPs) and a candidate rebuilding target for implementation in the 2024/25 season. The Groundfish Management Unit (GMU) is recommending that Outside Yelloweye are considered to be rebuilt, and are no longer in need of a rebuilding plan, and to implement the transition of it to management through the IFMP in accordance with legislative, regulatory and policy requirements.
- A rollover of the seasonal expansion (November 1, 2023 – April 30, 2024) to the existing 800-line pilot bottom trawl closure was first implemented in 2020. The existing and expanded seasonal closures are at a fishing location in the Queen Charlotte Sound known as the Circle Tow by the groundfish trawl fleet and the 800-line by the Halibut fleet. This expanded seasonal closure is an interim management measure that is intended to limit harvest of spawning aggregations of Arrowtooth Flounder and Halibut. The year-round pilot bottom trawl closure that was implemented in March 2019 continues to be in effect. This expanded seasonal closure will be re-evaluated during the 2024/2025 fishing season.
- The endorsement of the Marine Protected Area (MPA) Network Action Plan (NAP) for the Northern Shelf Bioregion (NSB) by the trilateral partnership of the Government of Canada, the Province of BC and 17 First Nations. Trilateral partners are focused on network coordination and implementation, including establishing governance and development of a network workplan that will focus on monitoring, cumulative impacts, reporting and engagement on Network implementation.

RECREATIONAL FISHERIES OVERVIEW

Summary

The 2023 recreational halibut fishery, with a TAC of 880,250 net pounds (table 2) opened on February 1, 2023, with a daily limit of 2 fish per day. The fishery operated under the 2022 recreational licence until March 31. On April 1, the 2023 licence and management measures entered into effect, with a daily limit of 1 fish per day. Current regulations – including daily catch and possession limits, open and closed areas, size limits and gear restrictions – are available online in the BC Sport Fishing Guide: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html. The 2023 measures included:

- A maximum length of 126 cm head-on length
- A daily limit that is set in regulation, is defined in the conditions of licence and can be varied in-season as required. The possession limit is contingent on the daily limit as defined by the *BC Sports Fishing Regulations*, up to maximum of three per day:
    - If the Daily Limit is one (1) or two (2):
        - the Possession Limit is EITHER of: one (1) halibut measuring from 90 cm to 126 cm head-on length - OR - two (2) halibut measuring under 90 cm head-on length.
    - If the Daily Limit is three (3):

        - the Possession Limit is EITHER of: one (1) halibut measuring from 90 cm to 126 cm head-on length – OR - three (3) halibut measuring under 90 cm 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 ten (10) in aggregate, from April 1, 2023 to March 31, 2024
- 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 San Juan River Mouth (portion of Area 20-2). Anglers were not permitted to fish for nor retain halibut in this area.

The DFO and Sport Fishing Advisory Board (SFAB) Halibut Committee met monthly throughout the fishing season to review estimated catches. By June of 2023, it was determined that the recreational sector would be unlikely to reach their TAC under the existing management conditions. Resultantly, DFO, in consultation with SFAB, proceeded with a change to the daily limit of Halibut measuring under 90cm in length – varying the daily limit from one (1) daily to two (2) daily. As the season progressed catch estimates for summer months showed higher than forecasted catch. Catch information indicated that the recreational share of the Total Allowable Catch for halibut was going to be achieved by end of September 2023. The committee voted to close the recreational fishing for halibut under the BC Tidal Waters Sport Fishing Licence at 23:59 hours on September 30, 2023.

Experimental Recreational Halibut 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 from the commercial fishery 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. Licence holders are permitted to carry forward uncaught quota (up to 10% or 200 net pounds, whichever is greater) to the subsequent season upon licence issuance, if they are in good standing. Additional details about the XRQ program are available online: https://www.pac.dfo-mpo.gc.ca/fm-gp/groundfish-poissons-fond/halibut-fletan/index-eng.html.

In 2023, 225 XRQ licences were issued and 8,256 net lbs of uncaught quota was carried forward from the previous season. As of December 18, 2023, estimated catch from the XRQ program was 15,790 net lbs (table 2).

Monitoring

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 (TWSFL) 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 2020, DFO began using IPHC's estimate of Area 2B recreational release mortality. This resulted in an estimate of 40,000 lbs of release mortality for the 2023 season. 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 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 2023 recreational halibut fishery, DFO used estimates from three sources; the iREC survey, logbook and lodge manifest program, and creel surveys.

DFO uses data from traditional catch monitoring (e.g. creel, lodge logbooks and manifests) where available, in priority of iREC survey data. 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 2023, DFO used in-season iREC survey catch estimates. In 2023, approximately 88% of the catch estimate was derived from traditional catch monitoring sources, and 12% from iREC survey estimates.

Biological data received as length is converted to net weight using the following formula developed by the IPHC, approved by the Commission at AM098, and adopted for use in the Canadian fishery beginning in the 2023 season:

Net weight = $(7.031*10^{-6}) * \text{length (cm)})^{3.231}$

Biological data received as round weight is converted to net weight, head off and dressed, using a 75% conversion factor. The conversion to net weight via length instead of round weight is prioritized when both biological metrics are provided.

Final estimates are anticipated to be available by the spring of 2024. Estimated harvest in pieces and net weight by regional areas are noted below.

Fishery statistics

Table 2. Halibut for 2B recreational and the Halibut Experimental Recreational pilot program (XRQ) fisheries as of as of December 18, 2023. All values in net pounds.

Recreational TAC	880,250
Recreational catch [A]	889,881
XRQ TAC[B]	25,241
XRQ catch	15,790 [C]
Recreational and XRQ TAC [D]	905,491
Recreational and XRQ catch [E]	905,671

A This is an in-season catch estimate. The final estimate is anticipated to be available by Spring 2024.

B 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.

C Effective December 18, 2023.

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.

Table 3. Summary of the 2023 Recreational Halibut Catch by Pacific Fishery Management Area (PFMA)

Regional Area	PFMA	Piece Count	Total Net Wt. (net lbs)
Haida Gwaii	1	14,754	150,153
	2	2,912	40,505
North Coast	3	5,743	77,566
	4	9,609	125,180
	5/6	2,604	36,193
Central Coast	7/8/9	3,816	35,156
South Coast	10/11/111	1,365	16,555
	12	1,240	20,483
	13/14	26	384
	15-18/28/29	128	1,592
	19	1,682	30,921
	20	322	4,443
	21/121	4,670	77,760
	23/123	8,483	105,912
	24/124	2,297	36,196
	25/125	1,362	18,523
	26/126	3,971	61,804
	27/127	3,453	50,553
Total Landed in Canada		68,434	889,881[A]
2023 Recreational TAC			880,250
Estimated Remaining Balance (end of September)			-9,631[A]
			-1.09%

A This is an in-season catch estimate. The final estimate is anticipated to be available by Spring 2024**.**

Table 4. Recreational Halibut Monthly Catch Estimates (net weight, lbs) for 2019, 2020, 2021, 2022 and 2023.

	Net Weight (net lbs)					Cumulative Net Weight (net lbs)				
	2019	**2020**	**2021**	**2022**	**2023**	**2019**	**2020**	**2021**	**2022**	**2023**
Feb	0	0	0	1,448	2,067	0	0	0	1,448	2,067
March	8,172	3,814	13,466	5,371	4,980	8,172	3,814	13,466	6,818	7,047
April	10,259	7,111	10,923	12,057	14,695	18,432	10,926	24,389	18,876	21,742
May	40,988	26,356	55,931	62,298	35,688	59,420	37,282	80,320	81,174	57,430
June	152,282	74,348	153,858	196,453	172,590	211,702	111,630	234,179	277,627	230,020
July	336,520	182,655	289,479	314,871	347,899	548,221	294,284	523,657	592,499	577,919
Aug	207,866	148,422	202,856	275,558	266,064	756,088	442,707	726,513	868,057	843,983
Sept	53,956	69,419	45,733	53,776	45,898	810,044	512,125	772,246	921,833	889,881
Oct	834	4,236	1,021	3,654	0	810,878	516,361	773,267	925,486	889,881
Nov	0	398	2,041	1,009	0	810,878	516,758	775,307	926,496	889,881
Dec	5,761	2,216	40	2,348	0	816,639	518,974	775,347	928,844	889,881
Total	816,639	518,974	775,347	928,844	889,881	816,639	518,974	775,347	928,844	889,881

2023 Recreational TAC	880,250
Estimated Total Catch	889,881[A]
Estimated Remaining Balance (end of September)	-9,631
	-1.09%

A This is an in-season catch estimate. The final estimate is anticipated to be available by Spring 2024.

Compliance with regulations and enforcement

Please see appendix 1 for a detailed enforcement report for the Canadian Halibut fishery in 2023.

INDIGENOUS FISHERIES OVERVIEW

Summary

The estimated Food, Social, and Ceremonial (FSC) halibut catch in area 2B is 405,000 net pounds. Since 2009, 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 2023, approximately 34,431 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, an activity known as dual fishing. 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 net pounds of FSC Halibut (part of the 405,000 net pounds described above) plus 0.39% of the total CTAC to the Maa-nulth First Nations for FSC purposes (equivalent to 50,648 net pounds in 2023). 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.

In order to advance reconciliation efforts, consultations with Indigenous Peoples and the implementation of Reconciliation Framework Agreements, Treaties and rights-based fisheries as they pertain to groundfish have occurred throughout 2023 and will be ongoing throughout the 2024/25 fishing season.

RECOMMENDATIONS

That the Commission:

1) **NOTE** paper IPHC-2023-AM100-NR01 Rev_1 which provides the Commission with an overview from Fisheries and Oceans Canada of the Pacific halibut fisheries in 2023 in the IPHC Convention waters and the national waters of Canada.

APPENDICES

Appendix I

Fisheries and Oceans Canada 2023 Enforcement Report

Appendix II

Province of British Columbia 2023 Annual Report

FISHERIES AND OCEANS CANADA 2023 IPHC ANNUAL REPORT

PREPARED BY: Fisheries and Oceans Canada (19 December 2023)

APPENDIX 1

Canadian Enforcement Report for IPHC Regulatory Area 2B

(Canada: British Columbia)

2023

CONTACT

Trevor Ruelle

Fishery Officer

Area 2B Senior Compliance Groundfish Officer

Trevor.Ruelle@dfo-mpo.gc.ca

COMPLIANCE AND ENFORCEMENT PRIORITIES

Groundfish, including commercial Halibut, enforcement priorities for 2023 are identified in the Groundfish Integrated Fisheries Management Plan. The priorities are identified by the Groundfish Enforcement Coordinator and are as follows:

- Closed area fishing in rockfish conservation areas, sponge reef marine protection areas, marine conservation areas, interim sanctuary zones and other permanent and in-season fishing closures.
- Retention of groundfish caught, retained or possessed without licence authority. Priority will be placed on occurrences where retention for the purpose of sale is indicated;
- Unauthorized commercial/FSC (dual) fishing;
- Non-compliance with 100% at-sea and dockside monitoring programs including hails, electronic monitoring systems, incomplete and inaccurate fishing logs, offloading catch without a dockside observer, removing some catch before dockside observer arrives and preventing dockside observer from checking hold, freezers and any other fish storage areas on vessel.
- False and misleading statements to DFO designated observers
- Vessel Masters not providing all reasonable assistance to DFO designated observers.
- Owner or person in charge or in control of a fishing landing station not providing the dockside observer with such assistance as is reasonably necessary to enable observer to perform their duties. This includes safe access to vessel, fish holds/freezers/other fish storage areas and adequate lighting.
- Releasing rockfish at sea, no rockfish shall be released to sea.
- Persons being on board a commercial fishing vessel without being registered. No person who is sixteen years of age or older shall engage in commercial fishing or be on board a vessel that is being used in commercial fishing unless that person is registered. Registration information can be found on the website.
- Retention of prohibited species.
- Non-deployment of seabird avoidance gear
- Fish Slips. The vessel master shall ensure that fish slips are submitted not later than thirty days after landing.

Link to Pacific Region Groundfish Integrated Fisheries Management Plan – 2023/2024: Groundfish 2023 Integrated Fisheries Management Plan summary | Pacific Region | Fisheries and Oceans Canada (dfo-mpo.gc.ca)

SUMMARY OF THE HALIBUT FISHERY BY USER GROUPS

Commercial

The 2023 commercial halibut fishery opened at 12:00 hours local time on March 7, 2023 and closed at 12:00 hours local time on December 10, 2023. A total of **139** vessels and **535** fishing trips were recorded during the 2023 commercial halibut fishing season.

Table 1. Commercial Halibut Fishing Trips – Trip Type, Number of Fishing Trips, Number of Vessels and Licence Type – March 7, 2023 to December 10, 2023 [Source: DFO Fishery Operations System (FOS)].

Fishing Trip Type	Number of Fishing Trips	Number of Licences	Licence Type
Commercial	268	94	L
Communal Commercial	88	31	FL
Combo (Halibut/Sablefish)	127	12	K/L
Combo (Halibut/Sablefish)	11	5	FK/FL & L/FK
IPHC	21	3	XL
Experimental	9	3	XL

Table 2: ***Commercial Halibut Fishery*** *Occurrences – March 7, 2023 to December 15, 2023*[1]

Occurrence Type (not all are found to be violations)	Number of Occurrences
Fishing in Closed Area	8
Dual Fishing Issues	103 (*not included in total*)
Time Gaps	8
Scale Related Incidents	1
Regulatory Issues	4
Catch Related Issues	13
Monitoring Equipment Issues	33
Documentation Related Issues	10
Piece Count Issues	3
No Halibut Licence	1
Offload Related Incidents	3
Hold Check Not Completed	4
Undersize Fish	4
Prohibited Species	3
No Seabird Avoidance Gear	5
Vessel/Personal Licences issues	2
Fail to comply with COL	6
Total	108

[1]Source: DFO *National Enforcement Tracking System (NETS) and Archipelago Marine Research Ltd.(AMR) Portal for Clients*

RECREATIONAL

The 2023 recreational halibut fishery opened coast-wide at 00:01 hours February 1, 2023 and closed at 23:59 hours September 30, 2023. Recreational Licences are issued for a fiscal year (April 1 – March 31). A total of **350,548** recreational licences have been issued to date.

Table 3: ***Recreational Halibut Fishery*** *Occurrences - February 1, 2023 to December 16, 2023*[2]

Number of Occurrences	Action Taken	
31	Investigation Initiated	29
	No Action Warranted	1
	Unable to respond	1

[2]Source: DFO *National Enforcement Tracking System (NETS). Occurrence type unavailable.*

Experimental

For halibut, in addition to the regular tidal water sport fishing licence, recreational harvesters may obtain an experimental licence, on a voluntary basis, that will allow the licence holder to lease halibut quota from the commercial sector for use in the recreational fishery. For more information: ***Pacific Region Halibut Experimental Recreational Fishery Program Details***

The halibut experimental recreational fishery (XRQ) is open from April 1, 2023 to December 31, 2023. There were **225 XRQ** licences issued with 197 of the licences purchasing the minimum 20 pounds of quota. There were 28 XRQ licences issued where fishers did not purchase the minimum required 20 pounds of quota, therefore their licences were not valid.

Commercial, Food, Social and Ceremonial (FSC) and Treaty Fisheries

For all dual fishing (commercial and FSC) halibut trips the vessel master is responsible for following the halibut commercial and/or communal commercial conditions of licence including those specific to dual fishing. All of the fish require 100% monitoring at-sea and 100% monitoring at the dock. In 2023, **49** commercial or communal commercial halibut vessels hailed out for **128** dual fishing trips.

FSC halibut fishing does not have electronic monitoring or the dockside validation requirements.

Table 4: ***Aboriginal Halibut Fishery*** *Occurrences - January 1, 2023 to December 15, 2023*[3]

Number Of Occurrences	Action Taken	
12	Investigation Initiated	8
	Unable to respond	4

[3]Source: DFO *National Enforcement Tracking System (NETS) Occurrence type unavailable.*

FISHERY OFFICER ENFORCEMENT EFFORT SUMMARY

Commercial Halibut

61 vessels checked
82 people checked
49.99 hours patrolled by FASE
17 hours patrolled by MPP
98 hours patrolled by vehicle

Recreational Halibut

147 vessels checked
470 people checked
72.83 hours patrolled by program vessel (local detachment RHIBS)
44.5 hours patrolled by vehicle

Aboriginal Halibut

11 vessels checked
18 persons checked
2 hours patrolled by FASE
71 hours patrolled by vehicle
0.75 hours patrolled by program vessel

XRQ Halibut

1 vessel checked
5 people checked
0.25 hours patrolled be vehicle

AERIAL SURVEILLANCE PATROL SUMMARY

The Fishery Aerial Surveillance Enforcement (FASE) Detachment patrols Canada's EEZ with a Dash 8 Aircraft. Flight reports, photographs, videos and other data collected from the surveillance flights are readily available to departmental managers and fishery officers through an internet-based flight information system. All vessels encountered via radar are visually identified and documented.

Table 5: 2023, 2022, 2021, *2020*, *C&P Aerial Surveillance Patrols – number of missions, total hours spent flying, and number of halibut vessels viewed during missions*[4]

AERIAL SURVEILLANCE PROGRAM (ASP) ACTIVITY			
Air Patrols	***Missions***	***Hours***	***Total Halibut Vessels Recorded Per Year***
January 1, 2023 – December 15, 2023	101	757.77	455 (426 L, 29 FL)
January 1, 2022 – December 15, 2022	128	833.7	168 (126 L, 42 FL)
January 1, 2021 – December 31, 2021	136	806.7	225 (214 L, 11 FL)
January 1, 2020 – November 30,2020	184	1107.3	259 (245 L, 14 FL)

[4]Source: Provincial Aerospace Limited - Surveillance Information System (SIS)
L = commercial halibut licence FL= communal commercial halibut licence

VIOLATION SUMMARIES

Table 6: *2019, 2020, 2021, 2022 & 2023 Violations for Aboriginal, Commercial, Recreational Halibut and Experimental Halibut – Charges Laid, Charges Pending/Under Review, and Tickets/Warnings Issue*[5]. ***Note:*** *Not all information is in yet.*

VIOLATIONS	2019	2020	2021	2022	2023
ABORIGINAL GROUNDFISH – HALIBUT	**14**	**4**	**4**	**7**	**10**
CHARGES LAID					
CHARGES PENDING/UNDER REVIEW	12	2	4		3
TICKET ISSUED	1				
WARNING ISSUED		1			7
DIVERTED (ALTERNATIVE MEASURES)	1	1			
OPTIONS UNDER CONSIDERATION				7	
COMMERCIAL GROUNDFISH - HALIBUT	**4**	**13**	**Information not available**	**23**	**19**
CHARGES LAID	2			0	3

CHARGES PENDING/UNDER REVIEW	2	9		15	
TICKET ISSUED		1		3	9
WARNING ISSUED		3		5	7
RECREATIONAL GROUNDFISH - HALIBUT	**85**	**55**	**52**	**42**	**51**
CHARGES LAID	6				
CHARGES PENDING/UNDER REVIEW	38	8	8		
TICKET ISSUED	25	22	21	11	29
WARNING ISSUED	16	25	23	31	22
EXPERIMENTAL GROUNDFISH - HALIBUT				**14**	**2**
CHARGES LAID					
CHARGES PENDING/UNDER REVIEW				1	
TICKETS ISSUED					
WARNING ISSUED				13	2
TOTAL FOR ALL HALIBUT FISHERIES	**103**	**72**	**56**	**86**	**82**

[5]Source: DFO Departmental Violations System (DVS) and National Enforcement Tracking System (NETS).

APPENDIX 2: PROVINCE OF BRITISH COLUMBIA 2023 ANNUAL REPORT

PREPARED BY: British Columbia Ministry Water, Land, and Resource Stewardship

DATE: 19/DEC/2023

CONTRACTING PARTY: CANADA

AGENCY:

The Province of British Columbia represented by the Ministry of Water, Land, and Resource Stewardship.

CONTACT:

Mike Turner, Director, Policy; Fisheries, Aquaculture and Wild Salmon Branch Michael.R.Turner@gov.bc.ca

Kevin Romanin, Senior Policy Analyst, Kevin.Romanin@gov.bc.ca

FISHERY SECTORS:

All sectors within British Columbia.

IPHC REGULATORY AREA

IPHC Regulatory Area 2B (Canada: British Columbia)

DISCUSSION

The Province of British Columbia (BC) has a long history of involvement with the Pacific halibut fishery and the International Pacific Halibut Commission (IPHC). BC 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 century of mutual benefit to both countries, as of this year, serves as a tremendous example in global fisheries management. BC commends the efforts made by the Commission to reach agreement again during the 99th session of the IPHC Annual Meetings in 2023. Thousands of jobs rely on this continued cooperation, and it is critical that this history of collaboration continues.

The BC Ministry of Agriculture and Food 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. BC commercially harvests and reports on over 25 wild fisheries including Pacific halibut which is

among BC's top three 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 Canada's west coast. The Province licences seafood processors and annually collects data on the volumes and values of the various seafood products. In 2022, the survey showed the processing of 3,440 tonnes (7.58M lbs) of Pacific halibut, which includes some imported halibut processed in BC. The survey also showed landed and wholesale values of $61.45M and $97.84M, respectively. In 2022 Pacific halibut accounted for 8% of the wholesale value of all BC's wild fisheries including all groundfish, salmon, and shellfish. In 2022, BC exported $58.1M worth of halibut products[1]. The Province historically conducts a seafood sector employment survey every three years which provides data on jobs, wages, and seafood processing activities. The most recent available data from 2020 show 65 processing facilities that reported processing halibut and generated 210 jobs with an estimated $11.9M paid in wages[2].

In addition, the recreational halibut fishery supports the hundreds of fishing lodges, charter companies, and individuals that contribute tremendously to the economies of coastal communities. Beginning in 2019, there were severe restrictions on salmon fishing in BC which will continue in future years. Recent restrictions on salmon fisheries amplifies the importance of the recreational halibut fishery to the recreational sector. BC will continue to provide available data to the IPHC from provincially licensed seafood processors to advance the IPHC economic report which will help highlight the benefits that Pacific halibut provide. As BC's lead agency responsible for fisheries policy, the Ministry of Water, Land and Natural Resources recognizes the importance of understanding the broader socioeconomic impacts and downstream effects of the Pacific halibut fishery and looks forward to continuing to work together.

First Nations are entitled to a Food, Social and Ceremonial (FSC) allocation of the total allowable catch (TAC), and many jobs within the halibut fishery and halibut processing facilities are held by members of First Nations across BC. In the commercial halibut fishery, approximately 23% of licenses are held by BC First Nations. In 2019, BC became the first province in Canada to introduce legislation aimed at adopting the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). *The Declaration on the Rights of Indigenous Peoples Act* (known as 'DRIPA') mandates that government bring its laws and policies into harmony with the aims of the declaration. The BC 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 BC fisheries.

The decisions made annually by the IPHC commissioners greatly impact the livelihood of many coastal BC residents and local economies. With the extensive and costly efforts of fisheries monitoring in place to account for all halibut bycatch, BC expects that all fishers who share access to the Pacific halibut stocks should be held to similar standards of catch accounting. BC fishers need to be assured that the decisions made by IPHC commissioners 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.

BC's halibut fishery is part of the Integrated Groundfish Fishery which effectively manages all groundfish species by coordinating the quotas and bycatch allocations between the various groundfish fisheries including trawl, halibut, sablefish, and rockfish. The Integrated Groundfish Fishery operates with 100 percent monitoring and 100 percent bycatch accountability. This includes 100 percent monitoring while on the fishing grounds, and 100 percent dockside monitoring, with auditing programs in place to compare validated landed catch with at-sea catch records. BC's groundfish fisheries monitoring programs are well established with components of

at-sea observers and electronic monitoring and is regarded as one of the most well-monitored fisheries in the world. These extensive fisheries monitoring programs come at a direct cost to fishermen and license holders as they are entirely funded by industry. BC fishers respect that monitoring programs level the playing field by keeping all fishery participants compliant with the rules which help to ensure sustainable stocks and the future of their industry. The BC Pacific halibut fishery has held Marine Stewardship Council certification since 2009 for being a sustainable, well-managed fishery.

BC remains concerned that bycatch of halibut in Alaska Area 3 remains poorly understood and unaccounted for. The IPHC relies on information supplied by observer programs run by Contracting Party agencies for non-directed commercial discard mortality estimates in most fisheries. In BC, these estimates are reliably provided by the well-established data systems as part of monitoring programs. The Fisheries Data Overview provided by the IPHC for the past several years repeatedly stated that Regulatory Area 3 remains the area where non-directed commercial discard mortality is estimated most poorly, and that the lowest coverage rates are realized for the non-pelagic trawl fishery, which also has the highest likelihood of encountering Pacific halibut. The report outlines several factors contributing to the poor estimation including low coverage, 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.)[4]. Low observer coverage in IPHC Regulatory Area 3 leads to increased uncertainty in these non-directed commercial discard mortality estimates and to potential for bias. This section of the IPHC Fisheries Data Overview report has remained consistent despite that as part of the 2019 interim agreement, the Commission agreed to continue the development of a workplan to explore methods for improvement of monitoring requirements in directed and non-directed fisheries, and to examine options in each IPHC Regulatory Area for mitigating the impact of bycatch in one IPHC Regulatory Area on available harvest in other IPHC Regulatory Areas. The lack of confidence in the total number of halibut removals in some regulatory areas continues to create issues in the management of this shared resource.

The large trawl fisheries in Alaska experience high volumes of bycatch that impact many species that move between Canadian and US waters. This includes over 157,500 salmon caught as bycatch in Alaskan fleets in 2023, of which over 35,500 were vulnerable chinook salmon[4]. 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. These trawl fisheries pose significant threat to mortality of juvenile halibut that might otherwise grow and become available to the fishery and other regulatory areas. While the estimated amount of halibut bycatch in area 3 has decreased with the decrease in trawl fisheries activity, the estimates of bycatch mortality remain very poor and the impacts on halibut remain relatively unknown.

The Province of BC supports the development of monitoring standards to ensure accountability of halibut bycatch, and the development of a robust method of accountability for all halibut mortality within each regulatory area including non-directed commercial discard. BC regulatory area 2B maintains an excellent understanding of total halibut removals across its integrated commercial fishery structure through robust monitoring programs that come at a direct cost to fishers. If US regulatory areas will not commit to developing monitoring standards or believe that monitoring is a domestic matter that should not be regulated by the IPHC, then the commission should at least establish minimum data requirements for obtaining accurate estimates of non-directed commercial discard mortality in all areas. The scale and impacts of non-directed commercial discard mortality in area 3 remain unknown due to poor data and

represent a large gap in knowledge within the management of the halibut resource. Canada should receive mitigation for the loss of halibut that would migrate into B.C. waters through an established system of U26 mitigation.

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. **establishing minimum data requirements for accurate estimates of non-directed commercial discard mortality which would inform monitoring standards; and**
2. **establishing a robust method of accountability for U26 bycatch mortality.**

REFERENCES

1. *BC Seafood Production data, 2019 - 2021. British Columbia Ministry of Agriculture and Food.* https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/agriculture-and-seafood-statistics-publications#sectortables
2. *2019-2020 British Columbia Seafood Processing Employment Survey Report. British Columbia Ministry of Agriculture and Food.*
3. *NOAA Fisheries Catch and Landings Reports in Alaska (2022). https://www.fisheries.noaa.gov/alaska/commercial-fishing/fisheries-catch-and-landings-reports-alaska*
4. *Fisheries data overview (2023): Preliminary statistics (B. Hutniczak, H. Tran, T. Kong, K. Sawyer van Vleck, & K. Magrane). IPHC-2023-IM099-07 Rev_2*

National Report: United States of America

PREPARED BY: NOAA FISHERIES (19 DECEMBER 2023, 11, 16 & 21 JANUARY 2024)

PURPOSE

To provide an overview of the fisheries and removals of Pacific halibut during 2023 from the IPHC Convention waters and the national waters of the United States of America.

This document has been updated to provide final estimates of halibut mortality in Alaska groundfish fisheries.

Contracting party: United States of America

Reporting agency: NOAA Fisheries; Alaska and West Coast Regions

Contact person: Kurt Iverson, Fishery Management Specialist; kurt.iverson@noaa.gov

RECOMMENDATIONS

That the Commission:

1) **NOTE** paper IPHC-2024-AM100-NR02 Rev_3 which provides the Commission with an overview from the NOAA Fisheries of the Pacific halibut fisheries in 2023 in the IPHC Convention waters and the national waters of the United States of America.

U.S. WEST COAST (OREGON, WASHINGTON, AND CALIFORNIA) – IPHC REGULATORY AREA 2A

Summary

The 2023 Area 2A Pacific halibut (halibut) catch limit of 1,520,000 pounds was divided among sectors according to the 2023 Catch Sharing Plan (CSP) for Area 2A (Table 1). Best estimates of halibut catch for Area 2A indicate a preliminary harvest estimate of 1,350,422 pounds. The non-tribal harvest was 855,489 pounds and the tribal harvest was 494,933 pounds (not including the tribal customary and subsistence (C&S) fishery).

All weights in this report are net weight (gutted, head-off, and without ice and slime), unless otherwise noted.

Table 1. Area 2A allocations and harvest by sector, 2023.

			Allocation	Harvest	Percent Harvested
Tribal 35%	C&S		29,500	--	0.0%
	Commercial		502,500	495,161	98.50%
	Tribal Total		**532,000**	**495,161**	**93.10%**
Non-Tribal 65%	**Commercial**	Directed	257,819	259,226	100.50%
		Incidental to salmon troll	45,497	24,255	53.30%
		Total	**303,316**	**283,481**	**93.50%**
		Incidental to sablefish*	70,000	45,595	65.10%
		Total (with incid. sablefish)	**373,316**	**329,075**	**88.10%**
	Recreational	Washington	281,728	260,023	92.30%
		Oregon	293,436	228,266	77.80%
		California	39,520	36,840	93.20%
		Total	614,684	525,129	85.40%
	Non-Tribal Total		**988,000**	**854,204**	**86.50%**
Total			**1,520,000**	**1,349,365**	**88.80%**

*The incidental commercial sablefish allocation comes from the Washington recreational allocation. The incidental sablefish allocation is not included with the Washington recreational fishery and is shown under the other commercial fisheries.

Enforcement Overview

NOAA's Office of Law Enforcement (OLE) protects marine wildlife and habitat by enforcing domestic laws and international treaty requirements implemented to ensure these global resources are available for future generations. The 2023 IPHC Area 2A Enforcement Report summarizes the collective activities of the IPHC Area 2A cooperating federal and state entities. Tribal reports are not provided here.

Enforcement of the commercial, tribal, and recreational Pacific halibut fisheries in International Pacific Halibut Commission Area 2A is an ongoing multi-agency effort performed cooperatively by NOAA Fisheries Office of Law Enforcement (OLE) West Coast Division (WCD), the U.S. Coast Guard (USCG), Washington Department of Fish and Wildlife Police (WDFW), Oregon State Patrol Fish and Wildlife Division (OSP), California Department of Fish and Wildlife Enforcement Division (CDFW), and Tribal Enforcement.

Tables 3 through 5 present a consolidated summary of IPHC Area 2A Commercial-Directed, Commercial-Incidental and Recreational enforcement statistics for 2023 using available data elements provided by OLE, USCG, WDFW, OSP, and CDFW enforcement partners. Table 3 (page 7) summarizes Effort, Actions and Results data for the directed commercial Pacific halibut fishery south of Point Chehalis, Washington (46°53’30” N). Tables 4 and 5 (pages 8 and 10, respectively) summarize general Magnuson-Stevens Act (MSA) fisheries enforcement that broadly include the two other fishing sectors that catch Pacific halibut: Commercial-Incidental, and Recreational. Effort data provides a measure of fisheries-related enforcement coverage and capacity. The Actions and Results sections provide an overview of regulatory compliance and enforcement issues of concern associated with the fishing sectors.

AREA 2A TRIBAL FISHERIES OVERVIEW

Regulatory framework

The tribal allocation was set at 35% of the Area 2A FCEY. There were two components of the tribal fishery:

1) a commercial fishery, which was managed as an unrestricted fishery, a restricted fishery, and a late season fishery; and
2) a ceremonial and subsistence (C&S) fishery

The tribal commercial fishery allocation was set by subtracting the projected C&S fishery projection, which was based on the prior year C&S harvest, from the total tribal allocation.

Fishery statistics

The tribal allocation was 532,000 pounds. The preseason projected C&S harvest was 29,500 pounds and the remaining 502,500 pounds were available to the commercial fishery.

- The unrestricted fishery was open 55 hours for each tribe between March 10 and June 15 and landed 244,933 pounds.

- For tribes that completed their unrestricted fishery by May 31 there were two extra 24-hour openings with a 500 lb trip limit, to be completed between June 1 and July 31. A total of 932 pounds were landed during the extra openings.

- The restricted fishery was open between March 10 and May 31 and landed 84,964 pounds. Each tribe had 122 hours not to be prosecuted over more than 6 calendar days, and fishermen were allowed to land up to 500 lb per day with no more than 1 landing per day.

- The late fishery was open 20 hours for each tribe between June 17 and July 31, with an additional two 24-hour openings between September 1 and October 15, and landed 164,332 pounds. The second opening was limited to 500 pounds per day.

- The total landings for all tribal fisheries was 495,161 pounds, which is 99 percent of the tribal commercial allocation.

- The C&S fishery will continue through December 31 and the tribes will report catch estimates in January 2023.

AREA 2A NON-TRIBAL COMMERCIAL FISHERIES OVERVIEW

Regulatory framework

There were three components of the non-tribal commercial fishery:

1) a directed longline fishery targeting halibut south of Point Chehalis, WA (46°53.30' N. lat.); and
2) an incidental catch fishery during the salmon troll fisheries off Washington, Oregon, and California; and
3) an incidental catch fishery during the primary sablefish fishery north of Point Chehalis, WA.

The allocations for the directed longline commercial fishery and the incidental catch fishery during salmon troll fisheries were set at 85 percent and 15 percent, respectively, of the non-tribal commercial fishery allocation (30.7% of the non-tribal share). The allocation for the incidental catch fishery during the primary sablefish fishery north of Point Chehalis, WA came from the portion of the Washington recreational allocation over 214,110 pounds, with a 10,000-pound minimum and 70,000-pound maximum allocation.

Vessels permitted in the directed commercial fishery were prohibited from landing halibut as incidental catch in the salmon troll fishery and from participating as a charter vessel in the recreational fishery.

Closed Areas

Fishing with salmon troll gear was prohibited in the Salmon Troll Yelloweye Rockfish Conservation Area (YRCA) off Washington, and an additional “C-shaped” North Coast Recreational YRCA was designated as an area to avoid by salmon troll fishermen (a voluntary closure). Waters south of Cape Falcon, OR (45°46.00 N. lat.) were closed to salmon fishing.

Sablefish fishing north of Point Chehalis, WA was confined to an area seaward of a boundary line approximating the 100-fm depth contour. Fishing was also prohibited in the Washington North Coast Commercial YRCA. The “C-shaped” North Coast Recreational YRCA was designated as an area to avoid by commercial longline sablefish fishermen (a voluntary closure).

The directed commercial fishery was limited to waters south of Point Chehalis, WA (46°53.30' N. lat.) and incidental retention of halibut during the primary sablefish fishery was allowed only in waters north of Point Chehalis, WA.

Changes for 2023

The transition of the directed commercial fishery management from IPHC to NMFS occurred in time for the 2023 fishing season. This was the first year that NMFS issued permits, set fishing periods and fishing period limits, and provided inseason monitoring based on data reported from state agencies.

Fishery statistics

Directed Fishery Targeting Halibut

- The allocation was 257,819 pounds.
- The estimated harvest was 259,226 pounds.
- The fishery was open for three 58-hour fishing periods: June 27-29, July 11-13, and August 1-3.
- Catch limits by fishing period, based on vessel length / size class are in Table 2.

Table 2. 2023 fishing period limits (dressed weight, head-on with ice and slime, in pounds per vessel) by vessel size class.

Vessel Length	Size Class	Jun 27–29	Jul 11–13	Aug 1–3
0–25	A	2,716	2,716	1,000
26–30	B	2,716	2,716	1,000
31–35	C	2,716	2,716	1,000
36–40	D	4,092	4,092	1,000
41–45	E	4,092	4,092	1,000
46–50	F	5,454	5,454	1,000
51–55	G	5,454	5,454	1,000
56+	H	6,136	6,136	1,000

Incidental Catch during the Salmon Troll Fishery

- The allocation was 45,497 pounds.
- The estimated harvest was 24,255 pounds.
- Halibut retention was allowed during salmon troll fisheries, which started on April 1 and was extended on July 1. In waters north of Cape Falcon (45°46.00' N. lat.), halibut retention was allowed until the end of the salmon season on September 30. For waters between Cape Falcon and Humbug Mountain (42°40.50' N. lat.), halibut retention was allowed until the salmon season closure on October 31. Waters south of Humbug Mountain were closed to salmon fishing in 2023.
- The landing limit was one halibut per two Chinook salmon, except that one halibut could be possessed or landed without meeting the ratio requirement, and no more than 35 halibut could be possessed or landed per trip.

Incidental Catch during the Primary Sablefish Fishery

- The estimated harvest was 45,595 pounds.
- Halibut retention was allowed during the primary sablefish fishery from the primary sablefish season opening on April 1, until the commercial halibut season closure on December 7.
- The landing limit was 150 pounds of halibut (in dressed weight, meaning eviscerated, head on) for every 1,000 pounds of sablefish (dressed weight), plus up to two additional halibut.

Commercial Fisheries Compliance with Regulations and Enforcement

Table 3. 2023 IPHC Area 2A Enforcement Statistics – Directed Commercial Fisheries.

2023 IPHC AREA 2A ENFORCEMENT STATISTICS							
COMMERCIAL - DIRECTED							
	USCG D-13	USCG D-11	NOAA OLE	WDFW	OSP	CDFW	
EFFORT							**CONSOLIDATED EFFORT**
AIR PATROLS							
Number of Air Patrols	11	6					17
Air Patrol Hours	16	12					28
VESSEL PATROLS							
Number of USCG Cutter Patrols	2	2					4
USCG Cutter Patrol Hours	210	115					325
Number of Shore-Based Vessel Patrols	5	2	7	2	1	11	28
Shore-Based Vessel Patrol Hours	15	3	49	17	13	38	135
At-Sea Personnel Hours			97	33	13	52	195
Number of Boardings	17		9	11	12	78	127
SHORESIDE PATROLS							
Number of Shoreside Patrols			27		16		43
Shoreside Personnel Hours			245		78		323
Number of Boardings/Contacts			64		92		156
OFFICERS/AGENTS/WARDENS							
Number of Assigned Personnel	73	33	7	8	4	8	133
ACTIONS							**CONSOLIDATED ACTIONS**
Compliance Assistance			2				2
Written Warnings			13		2		15
Summary Settlements			2				2
Other (list below)							
Verbal Warnings				2			2
Referral to Other Agency/State			3				3
RESULTS (Violations)							**CONSOLIDATED RESULTS**
Seabird Avoidance Gear			7				7
Overage			5		1		6
Gear Violation			3	1			4
Vessel Marking/Boarding Ladder Issue			3				3
Gear Marking			2				2
Closed Area			1				1
VMS			1				1
Permit/License				1			1

Table 4. 2023 IPHC Area 2A Enforcement Statistics – Commercial-Incidental.

2023 IPHC AREA 2A ENFORCEMENT STATISTICS							
COMMERCIAL - INCIDENTAL							
	USCG D-13	USCG D-11	NOAA OLE	WDFW	OSP*	CDFW	
EFFORT							**CONSOLIDATED EFFORT**
AIR PATROLS							
Number of Air Patrols	173	183					356
Air Patrol Hours	346	415					761
VESSEL PATROLS							
Number of USCG Cutter Patrols	103	46					149
USCG Cutter Patrol Hours	3192	2458					5650
Number of Shore-Based Vessel Patrols	129	54				11	194
Shore-Based Vessel Patrol Hours	349	110				38	497
At-Sea Personnel Hours						52	52
Number of Boardings	49	0				78	127
SHORESIDE PATROLS							
Number of Shoreside Patrols			1	2			3
Shoreside Personnel Hours			3	10			13
Number of Contacts			1	4			5
OFFICERS/AGENTS/WARDENS							
Number of Assigned Personnel	73	33	6	14		8	134
ACTIONS							**CONSOLIDATED ACTIONS**
Verbal Warning				1			1

*OSP does not collect commercial incidental statistics.

AREA 2A RECREATIONAL FISHERIES OVERVIEW

Recreational Fishery Regulatory Framework

The recreational fishery allocation was divided among the three states: Washington, Oregon, and California.

1) Washington receives 35.6 percent of the non-tribal allocation, minus the allocation made available for incidental harvest in the primary sablefish fishery;
2) Oregon receives 29.7 percent of the non-tribal allocation;
3) and California receives four percent of the non-tribal allocation.

State allocations were further divided into subareas and season dates were established preseason for each subarea, with additional dates added inseason for some subareas. Oregon and Washington allocations both contributed to the Columbia River subarea allocation.

Closed Areas

The "C-shaped" North Coast Recreational YRCA, southwest of Cape Flattery, is closed to recreational halibut fishing.

Recreational Fishery Statistics

Washington

- The allocation was 281,782 pounds (not including the allocation for the commercial fishery incidental to the primary sablefish fishery).
- The estimated harvest was 261,308 pounds.
- Discard mortality was estimated to be 28 pounds.
- The bag limit was one halibut per person per day.
- Season dates varied by subarea. The earliest open date was April 4 and the last open date was September 30.
- Includes the Washington portion of the Columbia River subarea.

Oregon

- The allocation was 293,436 pounds.
- The estimated harvest was 228,211 pounds; however, this estimate is preliminary and will be updated when the final value is available.
- Discard mortality will be reported when available.
- The fishery opened with a bag limit of one halibut per person per day, then was increased to two halibut in the Central Coast and Southern Oregon subareas on June 12. The Columbia River subarea bag limit remained at one halibut.
- Season dates varied by subarea. The earliest open date was May 1 and the last open date was October 31.
- Includes the Oregon portion of the Columbia River subarea.

California

- The allocation was 39,520 pounds.
- The estimated harvest was 36,840 pounds.
- Discard mortality was estimated to be 238 pounds.
- The bag limit was one halibut per person per day.
- There were no subareas and the season opened on May 1 and closed on August 4.

Recreational Fisheries Compliance with Regulations and Enforcement

Table 5. 2023 IPHC Area 2A Enforcement Statistics – Recreational.

2023 IPHC AREA 2A ENFORCEMENT STATISTICS							
RECREATIONAL							
	USCG D-13	USCG D-11	NOAA OLE	WDFW	OSP	CDFW	
EFFORT							**CONSOLIDATED EFFORT**
AIR PATROLS							
Number of Air Patrols	148	82					230
Air Patrol Hours	279	183					462
VESSEL PATROLS							
Number of USCG Cutter Patrols	86	20					106
USCG Cutter Patrol Hours	2859	1038					3897
Number of Shore-Based Vessel Patrols	107	19	1	16	7	11	161
Shore-Based Vessel Patrol Hours	297	41	4	97	35	38	512
At-Sea Personnel Hours			8	194	35	52	289
Number of Boardings/Contacts	163	4	5	63	124	78	437
SHORESIDE PATROLS							
Number of Shoreside Patrols			1	33	9	38	81
Shoreside Personnel Hours			2	161	20	81	264
Number of Contacts			1*	1156	68	113	1337
OFFICERS/AGENTS/WARDENS							
Number of Assigned Personnel	73	33	6	14	7	8	141
ACTIONS							**CONSOLIDATED ACTIONS**
Written Warnings					9		9
Citations				227	9		236
Other (list below)							
Verbal Warnings				65		3	68
RESULTS (Violations)							**CONSOLIDATED RESULTS**
Overage				18	1		19
Gear Violation				13	1		14
Permit/License				7	4	3	14
Fail to Validate Tag				6	6		12
No Tag					4		4
Closed Season (early/late fishing)				3			3
Logbook/Record Keeping				2			2
Non-Designated Vessel - Charter				2			2
Illegal Harvest					1		1
Possess Groundfish w/Halibut On Board					1		1
Other State Violations - Halibut Fishery Related				242			242

*Charter - Recreational Halibut

NON-DIRECTED COMMERCIAL DISCARD MORTALITY OVERVIEW

Pacific Halibut Bycatch in U.S. West Coast Groundfish Fisheries, 2002 – 2022, is available in a report to the Pacific Fishery Management Council in November 2023 and can be accessed online at: https://www.pcouncil.org/documents/2023/10/e-1-b-nwfsc-report-1-pacific-halibut-bycatch-for-2002-2022.pdf/.

Alaska – IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4CDE

DIRECTED HALIBUT FISHERIES OVERVIEW

The Pacific Halibut and Sablefish Individual Fishing Quota (IFQ) Program is the largest catch share program in the U.S., and was implemented for the 1995 fishing season. Participation in the IFQ Program is limited to persons (natural persons or non-individual entities) that hold Quota Share (QS), although there are several very limited provisions for "leasing" of annual IFQ. QS is a transferable permit that was initially issued to persons who owned or leased vessels that made legal commercial fixed-gear landings of Pacific halibut or sablefish in the waters off Alaska during 1988-1990.

Annually, NOAA Fisheries issues eligible QS holders an IFQ fishing permit that authorizes participation in the IFQ fisheries. Persons with IFQ permits may harvest their annual allocation at any time during the eight plus-month IFQ halibut and sablefish seasons. QS are assigned to a specific species (either halibut or sablefish), management area, and vessel class. For halibut, IFQ management areas correspond to the IPHC regulatory areas. Vessel classes assigned to QS are based upon the overall length of the vessel that the qualifying person used for harvesting during the qualifying years. A catch sharing plan allocates the fishery limits among Areas 4C, 4D, and 4E.

Table 6 provides a summary of the 2023 halibut IFQ catch in the respective management areas and vessel classes. Note the table does not include the portion of the catch that was allocated to the Western Alaska Community Development (CDQ) Program.

The CDQ Program was established in 1992 for the purpose of developing the economy in western Alaska. Some 65 coastal communities in western Alaska are organized into six CDQ groups and are allocated shares of allowable harvests in the major Bering Sea and Aleutian Islands (BSAI) groundfish and crab fisheries. Among other things, the program provides the opportunity for the CDQ communities to participate and invest in the BSAI fisheries and to support economic and social benefits to the region. CDQ groups are allocated the following percentages of the halibut fishery limits: 20% in Area 4B, 50% in Area 4C, 30% in Area 4D, and 100% in Area 4E.

Table 6. 2023 Alaska Halibut IFQ and CDQ Catch and Allocations by Area

IFQ Area	Vessel Class	Vessel Count	Landing Count	Total Catch in Net (H&G) Weight (lb)	IFQ Allocation
2C	A C/P	21	40	67,676	
2C	B > 60'	28	57	131,550	
2C	C 35 – 60'	281	846	2,454,180	
2C	D <= 35'	89	324	364,405	
	Total	**351**	**1,170**	**3,017,811**	**3,410,000**
3A	A C/P	28	55	188,078	
3A	B > 60'	178	608	2,742,662	
3A	C 35 – 60'	297	1,067	3,786,904	
3A	D <= 35'	79	268	441,178	
	Total	**384**	**1,737**	**7,158,822**	**7,840,000**
3B	A C/P	17	25	80,604	
3B	B > 60'	105	203	1,582,825	
3B	C 35 – 60'	110	193	1,065,028	
3B	D <= 35'	23	28	75,582	
	Total	**159**	**335**	**2,804,039**	**3,090,000**
4A	A C/P	10	16	54,330	
4A	B > 60'	42	98	541,690	
4A	C 35 – 60'	31	66	282,611	
4A	D <= 35'	6	20	45,379	
	Total	**51**	**159**	**924,010**	**1,410,000**
4B	A C/P	1	**	**	
4B	B > 60'	14	24	335,103	
4B	C 35 – 60'	3	6	42,081	
4B	D <= 35'	1	**	**	
	Total	**14**	**24**	**395,213**	**976,000**
4C/4D	A C/P	3	4	33,985	
4C/4D	B > 60'	19	36	555,883	
4C/4D	C 35 – 60'	7	12	98,208	
4C/4D	D <= 35'	5	9	137,616	
	Total	**21**	**44**	**825,692**	**1,080,000**
Total		**690**	**3,384**	**15,125,587**	**17,706,000**

CDQ Area	Total Catch in Net (H&G) Weight (lb)	CDQ Allocation
4B	**	**244,000**
4C	**	**450,000**
4D	247,776	**270,000**
4E	**	**220,000**
Total	**448,675**	**1,184,000**

1) Source: NMFS Alaska Region IFQ System; Data as of 12/20/2023.
2) IFQ from Area 4C may be fished in Area 4D.
3) Total vessel count reflects unique vessels; individual vessels may record IFQ landings from separate vessel categories
4) Summaries flagged as confidential (**) reflect <3 vessels.

ALASKA RECREATIONAL FISHERIES OVERVIEW

In October 2023, the Department provided final estimates of the 2022 sport halibut removals and preliminary estimates of the 2023 removals for Areas 2C, 3A, 3B, and 4, including information on estimation methods (Bowman et al. 2023). Additional details on estimation methods are available in Webster and Buzzee (2020).

2022 Regulations Overview and Final Harvest Estimates; Charter and unguided fishing

The Area 2C charter fishery regulations for 2022 included a one-fish daily bag limit and reverse slot (or "protected slot") limit that allowed harvest of halibut less than or equal to 40 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 of one 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 all Wednesdays, and two closed Tuesdays. Charter fishery regulations in the remainder of the state and unguided fishery regulations statewide included a daily bag limit of two fish of any size.

The 2022 Area 2C estimated sport harvest (excluding release mortality) was 150,446 fish, for a yield of 2.000 Mlb (million pounds). The Area 3A estimated sport harvest was 245,503 fish, for a yield of 2.621 Mlb. The final harvest estimates for western Areas were 503 halibut in Area 3B and 281 halibut in Area 4. Applying the Kodiak unguided average weight of 11.04 lb resulted in yield estimates of 0.006 Mlb in Area 3B and 0.003 Mlb in Area 4 (Table 1).

Area 2C charter removals (including release mortality) were estimated to be 0.848 Mlb, approximately 3.4% over the allocation. Area 3A charter removals were estimated to be 1.741 Mlb, approximately 17.5% under the allocation. Areas 3B and 4 do not have separate charter allocations.

Unguided harvest and removal estimates in Area 2C were 67,310 fish and 1.214 Mlb. Unguided harvest and removal estimates in Area 3A were 75,911 fish and 0.907 Mlb.

Additional detail on numbers of fish harvested and released, releases by size category, average weights, and confidence intervals are included in Bowman et al. (2023).

Table 7. Final estimates of the 2022 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	83,136	9.74	0.810	0.770-0.849
	Unguided	67,310	17.69	1.191	1.029-1.352
	Total	150,446	13.29	2.000	1.834-2.166
Area 3A	Charter	169,592	10.18	1.727	1.619-1.835
	Unguided	75,911	11.78	0.894	0.785-1.003
	Total	245,503	10.68	2.621	2.467-2.774
Area 3B	Total	503	11.04[a]	0.006	NA
Area 4	Total	281	11.04[a]	0.003	NA

[a] – No size data were available from Areas 3B and 4, so the unguided average weight from Kodiak was substituted.

2023 Regulations Overview and Preliminary Harvest Estimates: Charter and unguided fishing

The Area 2C charter fishery allocation for 2023 was 0.80 Mlb. Regulations included a one-fish bag limit, a reverse slot limit of less than or equal to 40 inches or greater than or equal to 80 inches, and Monday closures beginning July 24. The Area 3A charter allocation was 1.89 Mlb. 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, and a closure to halibut retention on all Wednesdays and nine Tuesdays. Charter fishery regulations in the remainder of the state included a bag limit of two fish of any size. Unguided fishery regulations statewide were a bag limit of two fish of any size.

The preliminary estimates for charter harvest and removal in Area 2C were 83,605 halibut and 0.812 Mlb, respectively, approximately 1.6% over the 2023 allocation. The preliminary estimates of charter harvest and removal in Area 3A were 153,337 fish and 1.556 Mlb, respectively, approximately 17.7% under the allocation. The preliminary harvest estimates for 2023 were 554 halibut in Area 3B and 432 halibut in Area 4. Applying the unguided average weight from Kodiak of 11.36 lb resulted in removal estimates of 0.006 Mlb in Area 3B and 0.005 Mlb in Area 4 (Table 2).

Unguided harvest and removal estimates in Area 2C were 66,373 fish and 1.065 Mlb. Unguided harvest and removal estimates in Area 3A were 86,921 fish and 0.988 Mlb.

Additional detail on numbers of fish harvested and released, releases by size category, average weights, and confidence intervals are included in Bowman et al. (2023).

Table 8. Preliminary estimates of the 2023 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	83,605	9.41	0.786	0.763-0.809
	Unguided	66,373	15.83	1.050	0.906-1.195
	Total	149,978	12.25	1.837	1.691-1.983
Area 3A	Charter	153,337	10.09	1.546	1.384-1.709
	Unguided	86,921	11.14	0.968	0.805-1.131
	Total	240,258	10.47	2.515	2.311-2.718
Area 3B	Total	554	11.36[a]	0.006	NA
Area 4	Total	432	11.36[a]	0.005	NA

[a] – No size data were available from Areas 3B and 4, so the unguided average weight from Kodiak was substituted.

Areas 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. This analysis is a key component of the Area 2C and 3A Halibut Catch Sharing Plan, which was implemented in 2014 and is used to determine the allowable charter halibut harvest in those areas. The Catch Sharing Plan also endorses a process through which the North Pacific Fishery Management Council (NPFMC) recommends annual

management measures to the IPHC that are likely to limit charter harvests to their annual catch limits.

Analyses were requested by the North Pacific Fisheries Management Council's Charter Halibut Management Committee on 20 October 2023. Results were presented at the North Pacific Fisheries Management Council meeting in December. Projected removals in 2024 under status quo regulations are 0.865 Mlb in Area 2C and 1.695 Mlb in Area 3A. Under the suite of management measures recommended by the Council at the December 2023 meeting, removal projections range from 0.669 to 1.868 Mlb for Area 2C and from 1.460 ton 2.045 for Area 3A (Bowman, Webster, Carr, and Jevons 2022).

Updates to Data Collection and Estimation Methods for Alaska's Recreational Fisheries

Electronic logbooks became mandatory for charter operators in Southeast Alaska in 2021. Beginning in 2021, harvest reported through mid-October was used for the preliminary charter estimates in Area 2C, noting that in recent years there was no charter harvest reported in Area 2C after October 15. There is no mandate to use eLogbook in most of 3A and most operators still use paper logbooks. Preliminary logbook data are available for trips taken through July 31 in Area 3A and used to project harvest for the year in Area 3A. Starting in 2025, electronic logbooks will be mandatory for all businesses and vessels operating in salt water in Alaskan waters.

Starting in 2022, ADF&G began collecting additional biological data from recreationally caught Pacific halibut in 2C, including age (otoliths) and sex data. In 2023, halibut were sampled for age and sex information in 2C from the ports of Elfin Cove, Ketchikan, and Sitka. Otoliths were shipped to the IPHC at the completion of the season, so age data are not yet available. ADF&G is currently working on methods to estimate the age and sex structure of Pacific halibut caught in recreational fisheries in 2C for 2022 and 2023. Age and sex data continued to be collected in 3A and estimates are provided to the IPHC for the stock assessment.

Other Updates

In March, NOAA approved the Marine Recreational Information Program Alaska Regional Implementation Plan. The plan informs the recreational fishing data collection efforts in Alaska and was developed by members of the Regional Implementation Team with members from ADF&G, IPHC, NPFMC, NMFS, and AKFIN. The plan includes an assessment of regional data collection programs and a list of regional implementation priorities to meet recreational data needs. Regional priorities include support for current data collection programs, statewide harvest survey modernization, development of data storage and assimilation structure and policy, saltwater guide electronic logbook support and outreach, expansion of dockside sampling programs, and improved recreational release mortality data for Pacific halibut and rockfishes.

Guided Angler Fish Program- 2023 Summary

In 2014, NMFS implemented the guided angler fish (GAF) program to authorize limited annual transfers of commercial halibut Individual Fishing Quota (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 operators an opportunity for their client anglers to retain up to two halibut of any size per day, and to retain GAF halibut on days that are closed to halibut retention.

Table 6 summarizes IFQ to GAF transfers for 2018 through 2023. From the outset of the program, GAF has been used much more frequently in Area 2C than 3A, and its use in Area 2C has generally increased each year. For example, in Area 2C in 2023, 143,520 pounds of IFQ was transferred as GAF to the charter fishery; this translated into 2,208 harvestable halibut, which is the highest over the 2014-2023 period. Of the number of harvestable fish in 2023, 1,794 (81%) of the Area 2C GAF was taken. This contrasts with Area 3A, where 11,475 pounds of IFQ was

transferred as GAF in 2023, resulting in 743 harvestable fish. However, only 50% (364 fish) of the Area 3A GAF was taken.[1]

Table 9. Summary of IFQ to GAF transfers 2019-2023

Year	IPHC Regulatory Area	Number of GAF transferred	Number of GAF Harvested (% of amount transferred)	Actual Net Pounds of IFQ Harvested as GAF	Average Length in Inches (range)	Number of GAF Permits Issued	Number of GAF Permit Holders
2019	2C	1,601	1,237 (77%)	75,039	53 (22-83)	341	56
	3A	338	266 (79%)	10,652	46 (25-66)	29	13
	Total	1,939	1,503 (78%)	85,691		370	69
2020	2C	801	764 (95%)	55,061	56 (23-85)	235	48
	3A	92	38 (41%)	2,147	52 (34-64)	15	7
	Total	893	802 (90%)	57,208		250	55
2021	2C	1,312	1,031 (79%)	76,529	57 (29-75)	407	59
	3A	441	128 (29%)	3,446	39 (19-65)	24	8
	Total	1,753	1,159 (66%)	79,976		431	67
2022	2C	1,971	1,548 (79%)	99,962	55 (24-81)	459	67
	3A	499	277 (56%)	6,487	39 (25-70)	29	12
	Total	2,470	1,825 (74%)	106,449		488	79
2023	2C	2,208	1,794 (81%)	109,952	54 (17-83)	560	77
	3A	743	364 (50%)	8,430	39 (22-76)	40	19
	Total	2,951	2,158 (73%)	118,382		600	96

[1] GAF Program Annual reports are available at: https://www.fisheries.noaa.gov/resource/document/guided-angler-fish-gaf-program-annual-reports.

NON-DIRECTED COMMERCIAL FISHERIES OVERVIEW

Current Halibut Non-Directed Catch 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 NPFMC 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 (i.e. non-trawl) groundfish fisheries. The NPFMC 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 total estimated halibut PSC use for 2022 and 2023 is shown in Table 10.

Halibut Bycatch Management Actions in Progress

BSAI Pacific Cod Trawl Catcher Vessel Cooperative Program

On August 8, 2023, NMFS issued a final rule to implement a new limited access program for the harvest of Pacific cod in the Bering Sea and Aleutian Islands (BSAI). The Pacific Cod Trawl Catcher Vessel Cooperative (PCTC) Program allocates Pacific cod harvest quota shares to qualifying groundfish trawl license holders and to qualifying processors. It requires participants to form cooperatives to harvest the quota in two of the three regulatory Pacific cod trawl seasons. The third trawl season (C season) remains a limited access fishery without assigned quota or mandatory cooperatives, and is open to all trawl catcher vessels with BSAI license endorsements to harvest Pacific cod.

Some benefits of the PCTC program include more efficient coordination of fishing operations, potential to reduce operational expenses, and increased quality and revenue from the product. Cooperatives are responsible for tracking the cooperative quota and prohibited species catch among their vessels. Catch is monitored through required recordkeeping, reporting, and observer monitoring. Participating vessels are required to have 100% fishery observer coverage. The PCTC program also reduces the halibut prohibited species catch limit by 25 percent; there is a 12.5 percent reduction in the halibut PSC limit in each of the first two years of the program.

Fishing under the PCTC Program started on January 20, 2024. More information may be found at: **Amendment 122, PCTC Program**

Table 10: Final Estimates of Non-directed Commercial Fishing Halibut Mortality in the Gulf of Alaska and Bering Sea/Aleutian Islands (nearest metric ton) by Area and Gear (Target). Data generated Jan 2, 2024.

Area	2022 Total		2023 Predicted, 9/27	2023 Actual	Difference, Actual - Predicted
2C	Hook-and-line (non-sablefish)	1	1	0	-1
	Hook-and-Line (sablefish)	17	12	2	-10
	Pot	4	4	2	-2
	Total	**22**	**17**	**4**	**-13**
3A	Trawl	231	221	185	-36
	Hook-and-line (non-sablefish)	21	25	19	-6
	Hook-and-Line (sablefish)	1	1	1	0
	Pot	19	18	8	-10
	Total	**272**	**265**	**213**	**-52**
3B	Trawl	116	129	100	-29
	Hook-and-line (non-sablefish)	10	11	12	1
	Hook-and-Line (sablefish)	2	2	1	-1
	Pot	7	6	3	-3
	Total	**135**	**148**	**116**	**-32**
4A	Trawl	230	229	205	-24
	Hook-and-line (non-sablefish)	14	14	25	11
	Hook-and-Line (sablefish)	0	0	0	0
	Pot	15	13	6	-7
	Total	**259**	**256**	**236**	**-20**
4B	Trawl	78	91	94	3
	Hook-and-line (non-sablefish)	8	10	0	-10
	Hook-and-Line (sablefish)	0	0	0	0
	Pot	7	7	1	-6
	Total	**93**	**108**	**95**	**-13**
4CDE	Trawl	1,006	842	862	20
	Hook-and-line (non-sablefish)	100	76	90	14
	Hook-and-Line (sablefish)	0	0	0	0
	Pot	1	1	1	0
	Total	**1,107**	**919**	**953**	**34**
4 – closed	Trawl	751	731	562	-169
	Hook-and-line (non-sablefish)	42	29	38	9
	Hook-and-Line (sablefish)	0	0	0	0
	Pot	6	7	2	-5
	Total	**799**	**767**	**602**	**-165**
All Areas	Trawl	2,412	2,243	2,008	-235
	Hook-and-line (non-sablefish)	196	166	184	18
	Hook-and-Line (sablefish)	20	15	4	-11
	Pot	59	56	23	-33
	Total	**2,687**	**2,480**	**2,219**	**-261**

Note: Prepared by NMFS Alaska Region.
Table 10 includes estimates of halibut mortality from Federally managed groundfish fisheries and also for the groundfish fisheries managed by the State of Alaska. Halibut mortality is estimated for each gear type and is apportioned by IPHC area..

Halibut Bycatch Management Actions in Progress, (cont.)

Halibut Abundance Based Management

In November 2023, NMFS published a final rule to implement regulations that links the Pacific halibut prohibited species catch (PSC) allowance of the BSAI Amendment 80 commercial groundfish trawl fleet to indices of halibut abundance. The Amendment 80 sector is a fleet of nearly 20 trawl catcher-processor vessels in the Bering Sea that target Pacific cod, Pacific Ocean perch, Atka mackerel, and rock, yellowfin, and flathead sole. This fleet is accountable for the majority of the annual halibut prohibited species catch mortality in these fisheries. In recent years, catch limits for the commercial halibut fishery have declined in response to changing halibut stock conditions. Over the same timeframe, limits on the maximum amount of halibut prohibited species catch allowed in the groundfish fisheries have remained constant. The core concept of the action links the Amendment 80 halibut PSC limits to estimated halibut abundance. Each year, halibut biomass estimates derived from results of the most recent IPHC setline survey and the Alaska Fishery Science Center (AFSC) Eastern Bering Sea shelf trawl survey will be applied to a specified set of indexed halibut abundance ranges for each survey. These two indices of halibut abundance form the basis of a two-dimensional lookup table, where each index is placed into breakpoint categories. The intersection of the abundance categories determines the annual halibut PSC limit for the Amendment 80 sector. The range of PSC limits extends from the current limit of 1,745 metric tons (mt) to 35% below the current limit (1,134 mt). The 2024 halibut PSC limit is 1,309 mt.

More information on the halibut abundance based PSC rule is available at: **Amendment 123; BSAI halibut abundance based PSC management**

Additional Information on Non-directed Commercial Halibut Mortalities

For additional information on halibut PSC mortality in the Alaska groundfish fisheries, please see the December 2023 NMFS inseason management reports to the North Pacific Fishery Management Council; specifically: slides 46 – 49 of the Bering Sea / Aleutian Islands report[2] and slides 45 – 50 of the Gulf of Alaska report.[3]

For additional information on observer coverage and electronic monitoring of the Federal fisheries off Alaska, please reference The 2024 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska [4].

[2] Available at: NMFS 2023 Inseason Management Report: Bering Sea / Aleutian Islands

[3] Available at: NMFS 2023 Inseason Management Report: Gulf of Alaska

[4] The 2024 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska is available at: https://www.fisheries.noaa.gov/resource/document/2024-annual-deployment-plan-observers-and-electronic-monitoring-groundfish-and.

ALASKA SUBSISTENCE HALIBUT FISHERY OVERVIEW

Subsistence Harvests of Pacific Halibut in Alaska, 2022

Through a grant from the National Marine Fisheries Service (NMFS) (NA22NMF4370240), the Alaska Department of Fish and Game (ADF&G) Subsistence Section conducted a study to estimate the subsistence harvests of Pacific halibut in Alaska in 2022. The full results will appear in a forthcoming technical paper with a planned publication date of October 2024.

To estimate the 2022 harvests, a one-page survey form was mailed to holders of NMFS Subsistence Halibut Registration Certificates (SHARC) in early 2023. ADF&G staff and local contractors also administered surveys in person in three communities: Nightmute and Tununak in western Alaska and Ketchikan in Southeast Alaska. Comprehensive household harvest surveys were conducted in Port Lions, Ouzinkie, Kake, and Unalaska for the 2022 study year; for each community, federal subsistence halibut harvest questions were asked of responding households. After three mailings and community visits, 3,727 of 6,712 potential subsistence halibut fishers (56%) responded. Participation in the survey was voluntary.

An estimated 2,968 individuals subsistence fished for halibut in Alaska in 2022, about 21% lower than the 2020 fishing year and 41% lower than the long-term average since 2003. The estimated subsistence harvest was 20,896 halibut or 401,603 pounds net weight. This harvest estimate continues a generally decreasing trend in estimated harvests and was the lowest harvest estimate since the federal regulations were adopted in 2003 and, as expressed in pounds net weight, was 24% below 2020 harvests and 54% below the previous 14-year average It remains unclear whether this decrease is due to actual harvest declining or a decrease in participation in the SHARC program or reporting, or some other factor.

Of the 2022 total subsistence halibut harvest, 73% was harvested with setline (stationary) gear (longline or skate) and 27% was harvested with hand-operated gear (handline or rod and reel). A total of 30 hooks was the most common number of hooks set by halibut fishers who used setline gear (43% of fishers). This pattern was similar to other study years.

Also similar to all other years, in 2022, the largest subsistence harvests of halibut occurred in Southeast Alaska (Halibut Regulatory Area 2C), with 63% of the total, followed by Southcentral Alaska (Area 3A) at 30%, and East Bering Sea Coast (Area 4E) and Alaska Peninsula (Area 3B) each at 3%. The remaining areas combined accounted for less than 1% of the state total. The majority harvest in Southeast Alaska (63%) in 2022 was an increase from 2020 estimates of 55% of the statewide total.

Based on data from the International Pacific Halibut Commission and the 2022 study year, subsistence harvests accounted for 1% of the 2022 total Alaska halibut removals.

This study was the third year of inclusion of a new question about whether survey respondents had met their needs for halibut; in 2022, there was nearly an even split between those that reported meeting their needs and those that did not, with 49% and 51% respectively. Lack of effort, lack of equipment, and family or personal reasons were the most-cited reasons for not meeting needs.

The 2022 data collection effort was a success, with acceptable response rates and a reliable estimate of subsistence halibut harvests in Alaska for 2022. However, additional outreach and in-person surveys could not be conducted in Sitka, which has historically been one of the communities with the largest population of SHARC holders and highest subsistence halibut harvests. The lack of outreach in the community is evident in the reduced response rate in 2022 (56% compared to >70% in prior study years). Outreach continues to be necessary to maximize enrollment of fishers in the SHARC program and participation in the voluntary harvest survey. Additional research continues to be needed to understand trends in the fishery. Budget constraints dictate that a survey to estimate subsistence halibut harvests in Alaska in 2023 will not take place.

NOAA FISHERIES LAW ENFORCEMENT - ALASKA

NOAA Fisheries Office of Law Enforcement -

Alaska Enforcement Division

The NOAA Office of Law Enforcement (OLE), Alaska Enforcement Division (AKD) utilizes enforcement officers, special agents, and partnerships with the State of Alaska Wildlife Troopers and the U.S. Coast Guard to enforce federal fishing regulations in Alaska, covering over 1.4 million square miles of ocean, 66,000 miles of Arctic and Subarctic coastline, and 2,690 named islands. Compliance is achieved by providing outreach and education, conducting patrols, monitoring offloads, and investigating violations of civil and criminal marine resource laws, including the Northern Pacific Halibut Act.

In 2023, there were 3,300 Individual Fishing Quota (IFQ) halibut permits issued in Alaska and 31 IFQ landing ports. There were 955 charter halibut permits issued, in addition to 104 charter halibut permits issued to Community Quota Entities (CQE), 7 charter halibut permits issued to the Military Welfare/Recreational (MRE) Programs, and 9,500 subsistence halibut permits issued.

Patrol and Boardings

In 2023, AKD personnel spent over 4,535 hours conducting patrols to deter potential violations, monitor fishing and other marine activities, detect violations, provide compliance assistance, and provide outreach and education to halibut fishery participants. AKD boarded 741 vessels with 606 of those boardings being related to halibut.

Table 11. Results of NOAA OLE AKD Vessel Boardings

	2021	2022	2023
	Vessel Boardings	Vessel Boardings	Vessel Boardings
Subsistence Halibut	14	11	14
Commercial Halibut	334	306	361
Charter Halibut	149	108	169
Sport Halibut	195	97	62
Total	**692**	**522**	**606**

Compliance Assistance

In 2023, AKD personnel spent over 713 hours providing outreach and education to marine resource users. The goal of OLE outreach efforts is to ensure the most current and accurate regulatory information is widely distributed and understood.

Incidents

In 2023, AKD opened 1,526 halibut-related incidents, including outreach, vessel boardings, dockside monitoring, and compliance assistance. Of those incidents, agents and officers identified 227 halibut-related violations, which were resolved by Compliance Assistance, Summary Settlement, Notice of Volition Assessment, or a Written Warning.

Table 12. NOAA Fisheries OLE Alaska Halibut Violations

	2021	2022	2023
Subsistence Halibut	18	6	4
Commercial Halibut	123	287	129
Charter Halibut	133	38	65
Sport Halibut	54	26	10
Commercial Groundfish Involving Halibut	52	22	19
Total	**380**	**354**	**303** [5]

***Not all violations resulted in an enforcement action.**

2023 Halibut-Related Violations documented by NOAA in Alaska:

Four Subsistence halibut fishing violations; most common violations included:

- Unqualified person applied for a SHARC
- Subsistence halibut with sport-caught halibut
- Subsistence halibut fishing without a SHARC
- Subsistence halibut offered for sale

129 Commercial IFQ/CDQ halibut violations; most common violations included:

- IFQ halibut overages greater than 10%
- Record keeping or reporting violations (Prior Notice of Landing, Landing Report, Logbook, Product Transfer Report, Production Reports)
- Gear marking violations
- Failure to release undersized halibut with a minimum of injury by allowing fish to hit the crucifier, remain on deck for a prolonged period of time, and other mishandling issues (e.g. lifting fish solely by caudal peduncle)
- Hired master and permit holder violations
- Vessel cap overages
- Misreporting IFQ area fished or fishing in an area with no IFQ available

[5] 76 cases are pending an outcome of investigation.

2023 Halibut-Related Violations documented by NOAA in Alaska (cont.):

- Fishing without an FFP
- Unreported halibut found after offloads.
- Class D vessel size limit violations (vessels over 36 ft. LOA fishing D class quota).

19 Commercial groundfish violations involving halibut; most common violations included:

- Failure to carefully release halibut or allow halibut to contact a crucifier or hook stripper
- Puncture halibut with a gaff or other device

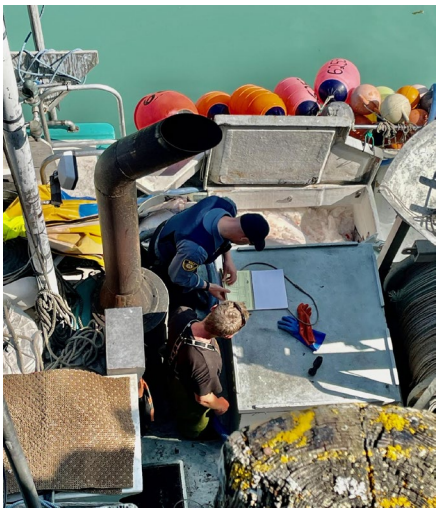
10 Sport halibut violations; most common violations included:

- Sale or attempted sale of sport-caught halibut
- Exceeding bag and/or possession limits
- Filleting, mutilating or skinning halibut onboard a vessel, other than 2 ventral pieces, 2 dorsal pieces, and 2 cheek pieces, with a patch of skin on each piece, naturally attached
- Sport-caught halibut onboard with commercially caught salmon

65 Charter halibut fishing violations; most common violations included:

- Failure to report GAF in the required time period or submitting inaccurate information
- Logbook violations
- Fishing on closed days
- Unreported halibut
- Illegal guiding - no Charter Halibut Permit
- Filleting, mutilating or skinning halibut onboard a vessel, other than 2 ventral pieces, 2 dorsal pieces, and 2 cheek pieces, with a patch of skin on each piece, naturally attached
- Exceeding bag limit, possession limit, size limits, or annual limits
- Charter fish without a Charter Halibut Permit
- Could not produce the original Charter Halibut Permit

2023 Partnerships & Patrols Highlights



The Office of Law Enforcement (OLE), Alaska Division (AKD) conducts extensive patrols for the purposes of enforcement and education. In addition to daily dockside and vessel patrols, AKD conducted several multi-day patrols. Patrols were often coordinated with partners including U.S. Customs and Border Protection (CBP), U.S. Fish and Wildlife Service (USFWS), U.S. Coast Guard (USCG), Alaska Wildlife Troopers (AWT), and National Park Service (NPS). Partnering with multiple agencies broadens enforcement and outreach opportunities and allows for shared knowledge across agencies.

In March, two Enforcement Officers conducted a 19-day patrol aboard the Alaska Wildlife Trooper large patrol vessel Stimson. The joint patrol covered over 1,570 nautical miles in the Western Gulf of Alaska and Bering Sea. Twenty-six commercial fishing vessels were boarded, three processing plants taking halibut deliveries were inspected, and contact was made with multiple deployed observers. The patrol resulted in 57 investigations, with 13 summary settlement offers, and three incidents referred to GCES for civil prosecution.

In April, Enforcement Officers with an Investigative Support Technician conducted an at-sea and remote port operation targeting IFQ vessels between Seward and Cordova. The team conducted one at-sea IFQ boarding with no violations, and three IFQ offloads were monitored; multiple violations were discovered and addressed during the boardings of IFQ vessels in port.

Enforcement Officers participated in a multi-day operation in Southcentral Alaska. The operation was a joint effort between Alaska State Parks, Alaska Wildlife Troopers, the United States Coast Guard, and the National Marine Fisheries Service. Nearly 150 boardings were performed, uncovering 26 violations.

In April, Enforcement Officers with an Investigative Support Technician conducted an at-sea and remote port operation targeting IFQ vessels between Seward and Cordova. The team conducted one at-sea IFQ boarding with no violations, and three IFQ offloads were monitored; multiple violations were discovered and addressed during the boardings of IFQ vessels in port.

In June, an Enforcement Officer conducted a Southeast Alaska Patrol with U.S. Coast Guard Cutter Douglas Denman. They conducted nine at-sea boardings of IFQ vessels, Charter Halibut vessels, multiple dockside boardings of IFQ vessels, and fish processing facility inspections.

In July, multiple Enforcement Officers conducted a patrol in Cordova, AK. During this operation, nine vessels were boarded at sea, and 13 vessels were boarded at the dock while offloading, resulting in 22 violations documented. Nine salmon tender vessels were boarded with nine violations discovered. Four vessels had sport-caught halibut with commercial products destined for sale, and all halibut were mutilated. The team seized all illegal halibut from the tender vessels.

In August, an Enforcement Officer conducted numerous patrols on St. Lawrence Island and held meetings with Yupik, Civic, IRA, NSCDC, and AEWC members on SHARC card, Marine Mammal handicraft, Whaling, and CDQ halibut rules supporting Yupik rights and traditions.

UNITED STATES COAST GUARD ENFORCEMENT REPORT – ALASKA REGION

I. Coast Guard Resources in Alaska

The U.S. Coast Guard (USCG) 17th District (D17) covers the U.S. waters of 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, boats from coastal stations, and remote sensing platforms.

Cutters:

- 418-foot National Security Cutters (NSCs) homeported in California and Hawaii are assigned to patrol D17 waters throughout the year.
- The 282-foot Medium Endurance Cutter USCGC ALEX HALEY homeported in Kodiak regularly patrols the Bering Sea and Aleutian Islands.
- Four 225-foot Buoy Tenders conduct law enforcement throughout Alaska and are homeported in Sitka, Cordova, Kodiak, and Homer.
- Three 154-foot Fast Response Cutters (FRCs) homeported in Ketchikan conduct routine law enforcement throughout Southeast and South-Central Alaska.
- Three 110-foot patrol boats conduct routine law enforcement in South-Central Alaska and are homeported in Valdez, Seward, and Homer.
- Two 87-foot Coastal Patrol Boats conduct routine law enforcement patrols in Southeast Alaska and are homeported in Juneau and Petersburg. Additionally, 87-foot Coastal Patrol Boats homeported in Washington make occasional patrols in Southeast Alaska.

Aircraft:

- Fixed wing and rotary wing aircraft are based out of Air Stations in Kodiak and Sitka. Both conduct routine law enforcement patrols throughout Alaska.
    - Five C-130 fixed wing aircraft
    - Nine MH-60 rotary wing aircraft
    - Four MH-65 rotary wing aircraft

Stations:

- The three coastal small boat stations operating 29-foot and 45-foot boats are located in Ketchikan, Juneau, and Valdez.
- D17 routinely deploys Maritime Safety and Security Teams (MSSTs) to specific locations for safety and law enforcement during periods of high commercial, charter, and recreational fishing activity.

The primary at-sea fisheries enforcement assets are our cutters, ranging in size from the 87-foot patrol boats up to 418-foot NSCs. Patrol boats are limited in sea keeping abilities, and conduct the majority of enforcement inside of 50 nautical miles from shore and along the 100-fathom curve. This role is filled by 154-foot FRCs, 110-foot patrol boats, and 87-foot patrol boats. Patrol boats provide regular law enforcement presence in the commercial, charter, subsistence, and recreational fishing fleets closer to shore. By 2025, D17 anticipates the addition of three more 154-foot FRCs to greatly enhance boarding capabilities.

Beyond 50 nautical miles, we rely on our larger cutters to enforce federal fisheries regulations, with USCGC ALEX HALEY and NSCs from throughout the west coast assigned to patrol Alaskan waters. Additionally, 225-foot Buoy Tenders effectively patrol both offshore and inshore waters.

Small boat stations primarily focus on recreational, subsistence, and charter halibut activity in their local regions. This does not preclude them from boarding larger commercial vessels operating closer to shore.

The USCG routinely conducts fisheries law enforcement flights from Air Stations in Kodiak and Sitka using a variety of fixed wing C-130 aircraft and rotary wing MH60 and MH65 helicopters.

These flights provide sightings of vessels while fishing and in transit. Additionally, queries by the aircraft record target species, permits, and status of catch onboard.

All units involved in fisheries enforcement receive training from the Coast Guard's North Pacific Regional Fisheries Training Center in Kodiak prior to patrolling the region. NOAA's Office of Law Enforcement (OLE) agents and state fisheries enforcement officers routinely participate in the training. 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 landing sites.

II. Halibut Enforcement

In Calendar Year 2023, the USCG distributed its enforcement assets throughout the Alaska IPHC Areas, with boarding numbers listed in Table 2. The USCG's enforcement focus is to protect the resource in accordance with the Fishery Management Plan, to ensure equal economic opportunity for all participants, and to ensure safety of life at sea.

Table 2. 2021, 2022 & 2023 Geographic Distribution of Boardings on Vessels Targeting Halibut

IPHC Area	2021 Boardings	2022 Boardings	2023 Boardings
2C	203	413	307
3A	250	112	68
3B	0	0	0
4A	12	1	6
4B	2	1	0
4C	0	0	7
4D	1	0	0
4E	0	0	0
Total	468	527	388

III. Commercial Halibut Enforcement

D17 law enforcement assets routinely patrolled the fishing grounds, often conducting joint boardings in collaboration with NOAA OLE throughout the season from the Bering Sea to Southeast Alaska. These operations included at-sea boardings, aircraft patrols, and dockside inspections. 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 ensure compliance with federal regulations while also providing the most accurate and complete picture of fishing activity on the fishing grounds and at catch landing sites.

The lack of a universal requirement for fishing vessels targeting halibut to be equipped with VMS onboard 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.

During boardings of the commercial 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.

IV. Recreational and Charter Halibut Enforcement

Recreational activity most often occurs in Areas 2C, 3A, and 3B in the form of individual sport and charter fishing. Recreational fishing activity 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. Recreational and charter vessels comprised 75% of the halibut boardings in D17.

During recreational and charter boardings, the USCG places emphasis on (1) compliance with licensing and charter operation requirements, (2) size limits, (3) daily catch and trip limits, and (4) at-sea processing of halibut.

V. Violations and Enforcement Summary

In 2023, USCG assets boarded a total of 388 vessels and detected 15 violations on 12 vessels. The USCG documented these violations and referred them to NOAA OLE or Alaska Wildlife Troopers for final action as appropriate. Table 3 compares at-sea boardings and violations between 2022 and 2023.

Table 3. 2022 & 2023 Boarding and Violation Summaries by Industry Sector

2022 Boardings/Violations	2023 Boardings/Violations
Total At-Sea Boardings.....527	Total At-Sea Boardings.....388
Commercial 75	Commercial 97
Charter 110	Charter 64
Recreational/Subsistence 342	Recreational/Subsistence 227
Fisheries Violations.....13	Fisheries Violations.....15
Commercial 8	Commercial 12
Charter ..... 3 (1 vessel)	Charter 3
Recreational/Subsistence 2	Recreational/Subsistence 0
Fisheries Compliance Rates 97.9%	Fisheries Compliance Rates.....96.9%
Commercial 89.3%	Commercial 89.7%
Charter 99.1%	Charter 96.9%
Recreational/Subsistence 99.4%	Recreational/Subsistence 100%

In Area 2C:

- One commercial vessel was cited for failing to have an IFQ permit onboard.
- One commercial vessel was cited for not having a valid Federal Fisheries Permit.
- One charter vessel was cited for not having a guided operating license or master's license.

In Area 3A:

- One commercial vessel was cited for having six packages of illegally retained recreational halibut onboard that was not logged, and the halibut was mutilated so that the number of fish retained could not be determined. The catch was seized and transferred to NOAA OLE.
- Two commercial vessels were cited for improper logbook recordkeeping.
- One commercial vessel was cited for biodegradable panel thread opening being undersized and improper logbook recordkeeping.
- One commercial tender vessel was cited for having 11 packages of illegally retained recreational halibut onboard that was not logged, and the halibut was mutilated so that the number of fish retained could not be determined. The catch was seized and transferred to NOAA OLE.

In Area 4A:

- One commercial vessel was cited for biodegradable panel thread opening being under-sized, not retaining rockfish bycatch that was required to be retained, and improper logbook recordkeeping.

In Area 4C:

- Two commercial vessels were cited for improper logbook recordkeeping.

The USCG transferred detected violations to NOAA OLE for disposition, and outcomes included compliance assistance, summary settlements, or catch seizures.

In addition to the IPHC violations summarized in Table 2, USCG assets documented 48 safety violations on 30 vessels including insufficient fire extinguishers, expired visual distress signals, and expired hydrostatic releases for survival craft and/or EPIRB. Two recreational vessels' voyages were terminated for safety.

VI. Enforcement Plans for 2024

The USCG continues to pursue increased at-sea boarding opportunities to promote compliance with both safety and fisheries regulations in all IPHC Areas and across all fishery sectors.

The USCG will continue joint pulse operations with NOAA and state partners to focus enforcement efforts across the commercial, charter, subsistence, and sport sectors of the halibut fishery. Additionally, the USCG will continue to examine the practice of unguided/bareboat charters and their effect on boating safety.

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 efforts to monitor and patrol 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 a consistent and targeted enforcement presence applied fairly across all commercial, charter, subsistence, and recreational fleets. This will encourage compliance across fishing fleets to help management efforts sustain the fisheries.

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IPHC Fishery Regulations:

Mortality and Fishery Limits (Sect. 5)

PREPARED BY: IPHC SECRETARIAT (11 DECEMBER 2023)

PURPOSE

To provide clear documentation of mortality and fishery limits within the IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5).

BACKGROUND

The Commission considers new and revised IPHC Fishery Regulations, including proposed changes to mortality and 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 is to amend IPHC Fishery Regulations Section 5, '*Mortality and Fishery Limits,'* to reflect Total Constant Exploitation Yield (TCEY) values adopted by the Commission and the applicable fishery sector limits resulting from those TCEY values according to existing Contracting Party domestic catch sharing arrangements.

DISCUSSION

Changes to IPHC Fishery Regulations Section 5, '*Mortality and Fishery Limits,'* provide clear documentation of the limits for fishery sectors within defined Contracting Party domestic catch sharing arrangements, which are themselves tied to the mortality distribution (TCEY) decisions of the Commission. This section includes 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 100th Session of the IPHC Annual Meeting (AM100) in January 2024.

Benefits/Drawbacks: The benefit is a 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. The intention is 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.

Appendix A provides details on the suggested regulatory language.

RECOMMENDATIONS

That the Commission:

1) **NOTE** regulatory proposal IPHC-2024-AM100-PropA1, which provides the Commission with an opportunity to recall the format of the IPHC Fishery Regulations: *Mortality and Fishery Limits* (Sect. 5), to be populated at the 100th Session of the IPHC Annual Meeting (AM100) in January 2024.

APPENDICES

Appendix A: Suggested regulatory language

APPENDIX A

SUGGESTED REGULATORY LANGUAGE

5. Mortality and Fishery Limits

(1) The Commission has adopted the following distributed mortality (TCEY) values:

IPHC Regulatory Area	Distributed mortality limits (TCEY) (net weight)	
	Tonnes (t)	Million Pounds (Mlb)
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 and western Aleutians)		
Areas 4CDE (Bering Sea)		
Total		

(2) The fishery limits resulting from the IPHC-adopted distributed mortality (TCEY) limits and the existing Contracting Party catch sharing arrangements are as follows, recognising that each Contracting Party may implement more restrictive limits:

IPHC Regulatory Area	Fishery limits (net weight)	
	Tonnes (t)	Million Pounds (Mlb)*
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 and recreational)		
Commercial fishery		
Recreational fishery		
Area 2C (southeastern Alaska) (combined commercial and guided recreational)		

Commercial fishery (includes XX Mlb landings and XX Mlb discard mortality)		
Guided recreational fishery (includes landings and discard mortality)		
Area 3A (central Gulf of Alaska) (combined commercial and guided recreational)		
Commercial fishery (includes XX Mlb landings and XX Mlb discard mortality)		
Guided recreational fishery (includes landings and discard mortality)		
Area 3B (western Gulf of Alaska)		
Area 4A (eastern Aleutians)		
Area 4B (central and western Aleutians)		
Areas 4CDE (Bering Sea)		
Area 4C (Pribilof Islands)		
Area 4D (northwestern Bering Sea)		
Area 4E (Bering Sea flats)		
Total		

* Allocations resulting from the IPHC Regulatory Area 2A Catch Share Plan are listed in *pounds*.

IPHC Fishery Regulations:

Commercial Fishing Periods (Sect. 9)

PREPARED BY: IPHC SECRETARIAT (11 DECEMBER 2023)

PURPOSE

To specify fishing periods for the directed commercial Pacific halibut fisheries within the IPHC Fishery Regulations: Commercial Fishing Periods (Sect. 9).

BACKGROUND

Each year, the International Pacific Halibut Commission (IPHC) selects fishing period dates for the directed 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.

These dates have varied from year to year, and in recent years have allowed directed commercial fishing to begin sometime in March and end sometime in November or December for all IPHC Regulatory Areas with the exception of the IPHC Regulatory Area 2A.

DISCUSSION

The IPHC Secretariat proposes that the commercial fishing periods for all IPHC Regulatory Areas be set at AM100 following stakeholder input.

Moreover, with the transition of management authority of the IPHC Regulatory Area 2A non-tribal directed commercial Pacific halibut fishery from the IPHC to the Pacific Fishery Management Council (PFMC) and NOAA Fisheries (per final rule 87 FR 74322 published on 5 December 2022), the Commission no longer needs to consider setting dates for the 2A non-tribal directed commercial fishery and the dates will be set by the Contracting Party within the overall commercial fishing period dates.This is consistent with the IPHC Convention[1], which states that the Contracting Parties may implement fishery regulations that are more restrictive than those adopted by the IPHC.

Benefits/Drawbacks: This proposal clearly indicates that the decision on commercial fishing periods is within the Commission's mandate and the season dates can be changed annually. Moreover, it clarifies that more strict fishing periods can be implemented by the Contracting Parties.

Sectors Affected: Commercial Pacific halibut fisheries in each IPHC Regulatory Area.

Appendix A provides details on the suggested regulatory language.

[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.

RECOMMENDATIONS

That the Commission:

1) **NOTE** regulatory proposal IPHC-2024-AM100-PropA2, which provides the Commission with an opportunity to recall the format of the IPHC Pacific Halibut Fishery Regulations: *Commercial Fishing Periods* (Sect. 9), to be filled at the 100th Session of the IPHC Annual Meeting (AM100) in January 2024.

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 fishery limits specified in section 5 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 1200 local time on ~~10 March~~DD MMMM.

(3) All commercial fishing for Pacific halibut in all IPHC Regulatory Areas shall cease for the year at 1200 local time on ~~7 December~~DD MMMM.

(4) Regulations pertaining to the non-tribal directed commercial fishing[2] periods in the IPHC Regulatory Area 2A will be promulgated by NOAA Fisheries and published in the Federal Register. This fishery will occur between the dates and times listed in paragraphs (2) and (3) of this Section.

(5) Notwithstanding paragraph (4) of this Section, an incidental catch fishery[3] 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 (4) of this Section, 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.

[2] The non-tribal directed fishery is restricted to waters that are south of Point Chehalis, Washington, (46°53.30′ N. latitude) under regulations promulgated by NOAA Fisheries and published in the Federal Register.

[3] The incidental fishery during the directed, fixed gear sablefish season is restricted to waters that are north of Point Chehalis, Washington, (46°53.30′ N. latitude) under regulations promulgated by NOAA Fisheries at 50 CFR 300.63. Landing restrictions for Pacific halibut retention in the fixed gear sablefish fishery can be found at 50 CFR 660.231.

IPHC Fishery Regulations:

Logs (Sect 19) – Update and alignment of log requirements

PREPARED BY: IPHC SECRETARIAT (11 DECEMBER 2023 & 25 JANUARY 2024)

PURPOSE

To update and align logs requirements for Contracting Parties in the IPHC Fishery Regulations.

BACKGROUND

IPHC Fishery Regulations stipulate that operators of Canadian and U.S.A.[1] vessels fishing for Pacific halibut must maintain an accurate log of Pacific halibut fishing operations. These operations are recorded in one of the approved logbooks and collected to support the Commission's objectives.

Detailed log requirements for date, location, amount of gear used, and amount of Pacific halibut taken daily appeared in the Pacific halibut regulations[2] as early as 1934, and later as a part of the section on *Statistical Return by Vessels* (since 1938) or *Licensing of Vessels* (since 1974). A detailed section on logs was introduced to the IPHC Fishery Regulations for the first time in 1984.

DISCUSSION

This proposal combines six components for Commission's consideration. Components can be adopted individually, offering the flexibility to adopt either the entire set or select specific elements as needed.

Component 1: Submission of missing logs

Differentiation in log requirements between Contracting Parties was introduced in 1998, when the log requirements were imposed on all Canadian vessels engaging in Pacific halibut fishing, regardless of the vessel size. The requirement for U.S.A. vessels remains applicable to vessels that have an overall length of 26 feet (7.9 meters) or greater. At the same time, an additional requirement was imposed on Canadian vessels that read as follows:

> "*The log referred to in paragraph (4)* [applicable to Canadian vessels fishing for Pacific halibut] *shall be* […]
> (f) *mailed to the Department of Fisheries and Oceans (yellow copy) and IPHC (white copy) within seven days of offloading*." (Section 16, par. 5)

[1] Applicable to U.S.A. vessels that have an overall length of 26 feet (7.9 meters) or greater. See IPHC Fishery Regulations 2023, Sect. 19(1).
[2] At the time, titled International Fisheries Commission Pacific Halibut Fishery Regulations.

A version of this requirement with minor wording modification[3] remains in the current (2023) regulations at Section 19, par. 7:

> "*The log referred to in paragraph (5)* [applicable to Canadian vessels fishing for Pacific halibut] *shall be* […]
> (f) *submitted to the Commission within seven days of the final offload if not previously collected by a Commission employee*." (Section 19, par. 7)

In contrast to the requirements for Canadian vessels, under the current regulations, the submission of missing logbook data is not required from U.S.A. vessel operators, unless it is specifically requested by the Commission. Currently, logs are collected by authorized representatives of the IPHC at the time of landing. If there is no Commission representative present at the offload site, and the logs were not collected or voluntarily submitted by the operators by the end of the season, the Commission issues "missing log letters" to vessel operators to collect the missing data.[4] The letters request missing information under the authority of Section 19, par. 3(d), which stipulates that logs shall be "open to inspection by any authorized officer or any authorized representative of the Commission upon demand."

The proposed change to regulations will clarify that logs not previously collected by the Commission must be submitted to the Commission within a specific number of days following the end of the season. The intention of this added clarity and specificity is to prevent data gaps in the information used for various IPHC products, for example, the Pacific halibut stock assessment.

Should the proposed change be adopted, the IPHC will develop an information webpage that will clarify how information recorded in each eligible logbook (see Section 19, par. 1) shall be transmitted to the Commission if it is not collected by an authorized representative of the Commission upon offload. The proposed change will also address situations where logbook data is already transmitted to the Commission in an alternative way, for example, per formal agreement with an agency that is collecting information reported in a non-IPHC issued eligible logbook (see, for example, a recently signed Data Sharing Agreement with NOAA West Coast Region).

Component 2: Consistent reporting requirements

The IPHC Secretariat proposes consistent requirements with respect to reporting fishing location (using latitude and longitude coordinates) and daily activity (reporting by set instead of by day). The proposed changes to Section 19, par. 2(c) and 2(e) will ensure consistency of the submitted data, rendering it more usable for IPHC products. Alternative reporting permitted by the existing regulations relies on an outdated approach and does not align with the fields in the logbook forms approved by the IPHC and listed in Section 19, par. 1.

[3] Since 2000, IPHC was requiring the yellow copy of the logbook instead of the white copy. In 2001, a clarification was added that yellow copy was to be sent to the Commission only "*if not collected by an International Pacific Halibut Commission employee*" (Section 16, par. 7(g)). In 2017, the wording "*mailed*" was replaced with a more flexible "*submitted*" provision (Section 16, par. 7(g)).

[4] Outstanding logs may be collected by the representative of the Commission during the proceeding offload. Number of logs are also sent to the Commission throughout the year, although this is not formally required by the IPHC Fishery Regulations. It is a common practice to send missing logs ahead of the Secretariat's prompt at the end of the fishing season.

Component 3: List of eligible logbooks

The IPHC Secretariat reviewed the list of eligible logbooks for U.S.A. vessels fishing for Pacific halibut (see Section 19, par. 1 and Appendix B) and confirmed that the Alaska hook-and-line logbook provided by Petersburg Vessel Owners Association is out of print.[5] The proposed change includes removal of a legacy provision that is no longer in use. The revised regulatory language also uses the updated name of the logbook provided by IPHC (IPHC Pacific halibut logbook), updated name of the NOAA Daily Fishing Logbook (aligning it with the name provided on NOAA Fisheries website and in line with 50 CFR 679.5(c)(3)(i)(B)), adds equivalent applicable to catcher/processors (Catcher/Processor Longline and Pot Gear Daily Cumulative Production Logbook), reorders the list, moves the most applicable logbooks to the top, and splits Area 2A-specific provisions for consistent use of lists in paragraphs for easier referencing.

Component 4: Writing in the logs

The IPHC Secretariat proposes adding a paragraph to Section 19 that highlights the importance of writing that is clear and legible for data entry. While electronic monitoring is becoming more prevalent, it is important to note that vessel operators who opt for traditional paper logbooks are responsible for providing information that can be efficiently transferred to the IPHC database for use in IPHC products.

Component 5: Electronic logbooks approved by NOAA Fisheries

NOAA Fisheries have a third-party vendor beta testing an electronic logbook in Alaska serving as a replacement for Catcher Vessel Longline and Pot Gear Daily Fishing Logbook (DFL). This logbook may be approved for full use for the 2024 fishing season. One of the requirements for approval is the integration with eLandings. The suggested language will provide clarity that equivalent of approved logbook (in this case, DFL) in electronic format approved by NOAA Fisheries, but not necessarily provided by NOAA Fisheries, is eligible for reporting Pacific halibut. This component is conditional on cooperation between the IPHC and the vendor (Deckhand electronic logbook) on the integration of the tested system into the IPHC process, in particular with respect to convenient access to data by the Commission representatives present at the offload site. Discussions are ongoing and feasibility update will be provided to the Commission before the Annual Meeting.

Component 6: Electronic logbooks approved by IPHC

The IPHC is discussing with the same vendor (Component 5) introducing the electronic equivalent of IPHC Pacific halibut logbook. Should the discussion be successful and the data-sharing process vetted, the suggested regulatory language would offer the flexibility of approving electronic logbook for users of the IPHC paper-based logbooks. Approval of any electronic equivalent of IPHC logbook will be conditional on the vender accommodating IPHC data verification process, including convenient access to data by the Commission representatives present at the offload site and post-season data upload option.

Benefits/Drawbacks: The benefit of the suggested regulatory change (Component 1) is a clear indication that data not collected by the IPHC at the time of landing must still be submitted to the Commission. A clear process is expected to reduce the need for missing logs letters over time. Furthermore, this regulatory proposal would lead to more standardization in IPHC data reporting (Component 2), remove legacy provisions (Component 3), and make explicit that data provided

[5] Confirmed by Megan O'Neil, Petersburg Vessel Owner's Association Executive Director.

in logbooks must be usable (Component 4). Lastly, adding flexibility to allow the use of the electronic logbooks approved by NOAA Fisheries (Component 5) or IPHC (Component 6) will prevent the need for duplicative effort when reporting Pacific halibut for operators who intend to utilize third-party vendor electronic logbooks. Potential drawbacks include any burden imposed on vessel operators who are accustomed to reporting their Pacific halibut operations by day or using direction and distance from a point of land for location, although this has been identified as minimal (Component 2).

Sectors Affected: This proposal directly affects mainly commercial Pacific halibut fishery in all U.S.A. IPHC Regulatory Areas (only component 4 would be applicable to all vessels). However, all sectors and regions stand to benefit from better informed IPHC products, for example, the Pacific halibut stock assessment.

Appendix A provides details on the suggested regulatory language.

Appendix B provides details on logbooks approved by the IPHC for U.S.A. vessels.

RECOMMENDATIONS

That the Commission:

1) **NOTE** draft of the regulatory proposal IPHC-2024-AM100-PropA3 Rev_1, which updates and aligns log requirements for Contracting Parties in the IPHC Fishery Regulations.

APPENDICES

Appendix A: Suggested regulatory language.

Appendix B: Logbooks approved by the IPHC for U.S.A. vessels.

APPENDIX A

SUGGESTED REGULATORY LANGUAGE

19. Logs

(1) The operator of any U.S. vessel fishing for Pacific halibut that has an overall length of 26 feet (7.9 meters) or greater shall maintain an accurate log of Pacific halibut fishing operations.

(2) The operator of a vessel fishing in waters in and off Alaska must use one of the following logbooks: [Component 3]

(a) IPHC Pacific halibut logbook (or logbook previously provided by IPHC) or IPHC-approved electronic equivalent [Component 6];

(b) ~~the Groundfish/Individual Fishing Quota(IFQ)~~ Catcher Vessel Longline and Pot Gear Daily Fishing Logbook or Catcher/Processor Longline and Pot Gear Daily Cumulative Production Logbook, in electronic or paper form, provided or approved by NOAA Fisheries [Component 5];

(c) ~~the Alaska~~ hook-and-line logbook provided by ~~Petersburg Vessel Owners Association or~~ Alaska Longline Fishermen's Association; or

(d) ~~the~~ Alaska Department of Fish and Game (ADFG) longline-pot logbook.

(3) The operator of a vessel fishing in IPHC Regulatory Area 2A must use either: [Component 3]

(a) IPHC Pacific halibut logbook (or logbook previously provided by IPHC) or IPHC-approved electronic equivalent [Component 6];

(b) ~~the~~ Oregon Department of Fish and Wildlife (ODFW) Fixed Gear Logbook; or

(c) Pacific Coast Groundfish non-trawl logbook provided by NOAA Fisheries.

(~~2~~4) The logbooks referred to in paragraphs (~~1~~2) and (3) must include the following information:

(a) the name of the vessel and the State (ADFG, WDFW, ODFW, or CDFW) or Tribal ID number;

(b) the date(s) upon which the fishing gear is set or retrieved;

(c) the latitude and longitude coordinates [Component 2] ~~or a direction and distance from a point of land~~ for each set ~~or day~~;

(d) the number of skates deployed or retrieved, and number of skates lost; and

(e) the total weight or number of Pacific halibut retained for each set [Component 2] ~~or day~~.

(~~3~~5) The logbooks referred to in paragraphs (~~1~~2) and (3) shall be:

(a) maintained on board the vessel;

(b) updated not later than 24 hours after 0000 (midnight) local time for each day fished and prior to the offloading or sale of Pacific halibut taken during that fishing trip;

(c) retained for a period of two years by the owner or operator of the vessel;

(d) open to inspection by an authorized officer or any authorized representative of the Commission upon demand; and

(e) kept on board the vessel when engaged in Pacific halibut fishing, during transits to port of landing, and until the offloading of all Pacific halibut is completed.

(6) The logbooks referred to in paragraphs (2) and (3) should be submitted to the Commission within 30 days of the season closing date if not previously collected by an authorized representative of the Commission or otherwise made available to the Commission. [Component 1]

[…]

(12) [Component 4] Writing in a log referred to in this Section shall be clear and legible.

APPENDIX B

LOGBOOKS APPROVED BY THE IPHC FOR U.S.A. VESSELS

No	Logbook	Approved since	Notes
1.	IPHC Pacific halibut logbook (or logbook previously provided by IPHC)[1]	1998	
2.	Groundfish/Individual Fishing Quota (IFQ) Longline and Pot Gear Daily Fishing Logbook provided by NOAA Fisheries (DFL logbook)[2]	1998	Accepted for reporting in 1997[3] Electronic format allowed since 2016
3.	Alaska hook-and-line logbook provided by Petersburg Vessel Owners Association	1998	Out of print (confirmed by PVOA)
4.	Alaska hook-and-line logbook provided by Alaska Longline Fishermen's Association	1998	
5.	Alaska Department of Fish and Game (ADFG) longline-pot logbook	2001	
6.	Oregon Department of Fish and Wildlife (ODFW) Fixed Gear Logbook	2012	
7.	Pacific Coast Groundfish non-trawl logbook provided by NOAA Fisheries	2023	
8.	WDFW Voluntary Sablefish Logbook	2008	Discontinued in 2023

(1) Printed with various headings since 1998; *IPHC Pacific halibut logbook* heading since 2019.
(2) Initially written into the regulations as "groundfish daily fishing logbook provided by NMFS."
(3) Until 1996, the regulations required accurate log of all Pacific halibut fishing operations, but did not specify the format. In 1997, regulations stipulated that "log can be recorded in the groundfish daily fishing logbooks provided by NMFS," but specific logbooks became a requirement only in 1998.

IPHC Fishery Regulations:

Recreational (Sport) Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E (Sect. 28)

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

SUBMITTED BY: UNITED STATES OF AMERICA (NOAA-FISHERIES) (13 DECEMBER 2023 & 21 JANUARY 2024)

Directed Commercial ☐ Recreational ☒ Subsistence ☐ Non-directed commercial ☐ All ☐

All Regulatory Areas ☐ All Alaska Regulatory Areas ☐ All U.S. Regulatory Areas ☐

2A ☐ 2B ☐ 2C ☒ 3A ☒ 3B ☐ 4A ☐ 4B ☐ 4C ☐ 4D ☐ 4E ☐

PURPOSE

To propose charter management measures in IPHC Regulatory Areas 2C and 3A reflective of mortality limits adopted by the IPHC and resulting allocations under the North Pacific Fishery Management Council (NPFMC) Pacific halibut Catch Sharing Plan.

EXPLANATORY MEMORANDUM

The NPFMC recommended management measures for guided recreational (sport) Pacific halibut fisheries in IPHC Regulatory Areas 2C and 3A for application in 2024. The purpose of the management measures is to achieve the Pacific halibut charter allocation under the NPFMC Halibut Catch Sharing Plan. NPFMC selected these management measures at its December 2023 meeting, following a review of the Alaska Department of Fish and Game (ADF&G) **Analysis of Management Options for the Area 2C and 3A Charter Halibut Fisheries for 2024** (ADF&G analysis) and after receiving input from the NPFMC Charter Halibut Management Committee, which is comprised of stakeholder representatives from both IPHC Regulatory Areas 2C and 3A.

The proposed annual management measures for 2024 are as follows:

IPHC Area 2C

Management measures for all allocations shown below include a daily bag limit of one Pacific halibut, and a reverse slot size limit where the upper limit is fixed at O80 (*i.e.*, Pacific halibut 80 inches or over in length may be retained).

1) If the allocation is equal to or greater than 0.943 Mlb:

   - Begin with a lower size limit of U40 (*i.e.*, retained Pacific halibut must be under or equal to 40 inches in length) and increase this limit until the allocation is reached, as indicated in **Table 2C.4 (page 20)** of the ADF&G analysis.

2) If the allocation is less than 0.943 Mlb but greater than or equal to 0.863 Mlb:

- To remain within the allocation, implement a lower size limit of U40 and close consecutive Fridays as needed from the end of the season, but extending no earlier than July 12th, as indicated in **Table 2C.4 (page 20)** in combination with **Table 2C.5f (page 26)** of the ADF&G analysis.

3) If the allocation is less than 0.863 Mlb but greater than or equal to 0.798 Mlb:

- Change from a U40 lower size limit to a U36 lower size limit on July 15, and close consecutive Fridays as needed from the end of the season to remain within allocation, but extending no earlier than July 12th, as indicated in **Table 2C.6 (page 28)** in combination with **Table 2C.5f (page 26)** of the ADF&G analysis.

4) If the allocation is less than 0.798 Mlb but greater than or equal to 0.766 Mlb:

- The lower size limit is U37, and close consecutive Fridays as needed from the end of the season, to remain within allocation but extending no earlier than July 12th, as indicated in **Table 2C.5f (page 26)** of the ADF&G analysis.

5) If the allocation is less than .766 Mlb but greater than or equal to .738 Mlb:

- The lower size limit is U36, and close consecutive Fridays as needed from the end of the season, to remain within allocation but extending no earlier than July 12th, as indicated in **Table 2C.5f (page 26)** of the ADF&G analysis.

6) If the allocation is less than .738 Mlb but greater than or equal to .697 Mlb:

- The lower size limit is U35, and close consecutive Fridays as needed from the end of the season, to remain within allocation but extending no earlier than July 12th, as indicated in **Table 2C.5f (page 26)** of the ADF&G analysis.

7) If the allocation is less than .697 Mlb but greater than or equal to .669 Mlb:

- The lower size limit is U34, and close consecutive Fridays as needed from the end of the season, to remain within allocation but extending no earlier than July 12th, as indicated in **Table 2C.5f (page 26)** of the ADF&G analysis.

IPHC Area 3A

Management measures for all allocations shown below include, unless otherwise specified, a daily bag limit of two halibut; one fish of any size and one fish with a maximum size limit; one trip per charter vessel per day with retention of Pacific halibut; one trip per charter halibut permit (CHP) per day; and all Wednesdays closed to halibut retention.

1) If the allocation is greater than or equal to 1.880Mlb:

- The size of the second fish shall range from 28 inches up to 32 inches, until the projected charter harvest removals meet the allocation, as indicated in **Table 3A.11 (page 33)** of the ADF&G analysis

2) If the allocation is less than 1.880 Mlb, but greater than or equal to 1.590 Mlb:

- In addition to all closed Wednesdays and a second halibut 28 inches or less, close as many Tuesdays as needed to keep the charter harvest removals within the Area 3A allocation, as indicated in **Table 3A.10 (page 32**) of the ADF&G analysis.

3) If the allocation is less than 1.590 Mlb but greater than or equal to 1.513 Mlb:

- In addition to closing all Tuesdays and Wednesdays, lower the size of the second fish to as low as 26 inches, until the projected charter harvest removals meet the allocation, as indicated in **Table 3A.11.(page 33)** of the ADF&G analysis.

4) If the allocation is less than 1.513 Mlb:

- In addition to the Wednesday closures and 26-inch size limit, implement a 4-fish annual limit of Pacific halibut, and implement the number of closed Tuesdays necessary to achieve the allocation, as indicated in **Table 3A.14 (page 36)** of the ADF&G analysis.

Revision includes a minor clarifying modifications to footnote 9 in the same Section of IPHC Fishery Regulations (Sect. 28). The suggested text is provided in Appendix A.

Supporting information

The December 2023 NPFMC final motion for Charter Halibut Management Measures, the minutes of the December 2023 NPFMC Charter Halibut Management Committee, and the ADF&G analysis are available on the NPFMC website at: https://meetings.npfmc.org/Meeting/Details/3019 (see Agenda Item C7, 2024 Charter Halibut Management Measures – Final Action).

RECOMMENDATIONS

That the Commission:

1) **NOTE** regulatory proposal IPHC-2024-AM100-PropB1 Rev_1, which proposes charter management measures in IPHC Regulatory Areas 2C and 3A reflective of mortality limits adopted by the IPHC and resulting allocations under the North Pacific Fishery Management Council (NPFMC) Pacific halibut Catch Sharing Plan.

APPENDICES

Appendix A: Suggested Regulatory Language.

APPENDIX A

SUGGESTED REGULATORY LANGUAGE

28. Recreational (Sport) Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E

(1) In Convention waters in and off Alaska:[8, 9]

[…]

(2) For guided recreational (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; and [omit this "and" if paragraph 2(c) is added to this Section as described below]

(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 40 inches (101.6 cm) and less than 80 inches (203.2 cm) [as described above, the lower size limit may be adjusted to meet the 2024 Area 2C charter harvest allocation] 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; and [omit this "and" and end this paragraph with a period (rather than a semicolon) unless a paragraph 2(c) is added to this Section as described below]

(c) [as described above, this section 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 Fridays: [a list of dates of 2024 Fridays would follow].

(3) For guided recreational (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 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 described above, the size limit may be adjusted to meet the 2024 harvest allocation in Area 3A] 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;

(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; and [omit this "and" if a section 3(f) is added as described below]

(e) no person on board a charter vessel may catch and retain Pacific halibut on any Wednesday, or on the following Tuesdays in 2024: [as described above, if Tuesday closures are also necessary to meet the 2024 harvest allocation in Area 3A, a list of dates of Tuesday closures to Pacific halibut retention would follow]; and [omit this "and" and end this paragraph with a period (rather than a semicolon) unless a paragraph 3(f) is added to this Section as described below]

(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. This annual limit triggers paragraph 1(h) of this Section. 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 [as described above, an annual limit of 4 fish may be added if it is necessary to meet the 2024 harvest allocation in Area 3A].

[8] NOAA Fisheries could implement more restrictive regulations for the recreational (sport) fishery or components of it, therefore, anglers are advised to check the current Federal or State regulations prior to fishing.

[9] ~~Charter vessels are prohibited from harvesting Pacific halibut in IPHC Regulatory Areas 2C and 3A during one charter vessel fishing trip under regulations promulgated by NOAA Fisheries at 50 CFR 300.66.~~ Under regulations promulgated by NOAA Fisheries at 50 CFR 300.66(u), it is unlawful for any person to be a charter vessel guide of a charter vessel on which one or more charter vessel anglers are catching and retaining halibut in both IPHC Regulatory Areas 2C and 3A during one charter vessel fishing trip.

IPHC Fishery Regulations:

Mortality and Fishery Limits (Sect. 5), and In-Season Actions (Sect. 6)

(In-season reallocation of recreational limits in IPHC Regulatory Area 2A)

PREPARED BY: UNITED STATES OF AMERICA (NOAA-FISHERIES) (18 DECEMBER 2023)

Directed Commercial ☐ Recreational ☒ Subsistence ☐ Non-directed commercial ☐ All ☐

All Regulatory Areas ☐ All Alaska Regulatory Areas ☐ All U.S. Regulatory Areas ☐

2A ☒ 2B ☐ 2C ☐ 3A ☐ 3B ☐ 4A ☐ 4B ☐ 4C ☐ 4D ☐ 4E ☐

PURPOSE

To make a clarifying modification to IPHC Fishery Regulations, Section 5 (Mortality and Fishery Limits) and Section 6 (In-Season Actions) reflective of changes to the Catch Sharing Plan (CSP) that allocates the IPHC Regulatory Area 2A Pacific halibut catch limit.

EXPLANATORY MEMORANDUM

At its November 2023 meeting, the Pacific Fishery Management Council adopted changes to the CSP that allocates the IPHC Regulatory Area 2A Pacific halibut catch limit. The changes include in-season process to provide more sharing the IPHC Regulatory Area 2A non-treaty sport allocation between states (California, Oregon, and Washington). The proposed regulatory language provides clarification reflective of the changes to the CSP.

Appendix A provides details on the suggested regulatory language.

RECOMMENDATIONS

That the Commission:

1) **NOTE** regulatory proposal IPHC-2024-AM100-PropB2, which makes a clarifying modification to IPHC Fishery Regulations, Section 5 (Mortality and Fishery Limits) and Section 6 (In-Season Actions) reflective of changes to the Catch Sharing Plan that allocates the IPHC Regulatory Area 2A Pacific halibut catch limit.

APPENDICES

Appendix A: Suggested regulatory language.

APPENDIX A
SUGGESTED REGULATORY LANGUAGE

5. Mortality and Fishery Limits

(1) The Commission has adopted the following distributed mortality (TCEY) limits:

IPHC Regulatory Area	Distributed mortality limits (TCEY) (net weight)	
	Tonnes (t)	Million Pounds (Mlb)
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 and western Aleutians)		
Areas 4CDE (Bering Sea)		
Total		

(2) The fishery limits resulting from the IPHC-adopted distributed mortality (TCEY) limits 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)	
	Tonnes (t)	Million Pounds (Mlb)*
Area 2A (California, Oregon, and Washington)		
Non-treaty directed commercial (south of Pt. Chehalis)		
Non-treaty incidental catch in salmon troll fishery		
Non-treaty 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 and recreational)		
Commercial fishery		
Recreational fishery		

IPHC Regulatory Area	Fishery limits (net weight)	
	Tonnes (t)	Million Pounds (Mlb)*
Area 2C (southeastern Alaska) (combined commercial and guided recreational)		
Commercial fishery (includes 3.41 Mlb landings and 0.15 Mlb discard mortality)		
Guided recreational fishery (includes landings and discard mortality)		
Area 3A (central Gulf of Alaska) (combined commercial and guided recreational)		
Commercial fishery (includes 7.84 Mlb landings and 0.58 Mlb discard mortality)		
Guided recreational fishery (includes landings and discard mortality)		
Area 3B (western Gulf of Alaska)		
Area 4A (eastern Aleutians)		
Area 4B (central and western Aleutians)		
Areas 4CDE		
Area 4C (Pribilof Islands)		
Area 4D (northwestern Bering Sea)		
Area 4E (Bering Sea flats)		
Total		

* Allocations resulting from the IPHC Regulatory Area 2A Catch Share Plan are listed in *pounds*.

** In IPHC Regulatory Area 2A, the USA (NOAA Fisheries) may take in-season action to reallocate the recreational fishery limits between Washington, Oregon, and California after determining that such action will not result in exceeding the overall IPHC Regulatory Area 2A recreational fishery limit and that such action is consistent with any domestic catch sharing plan. Any such reallocation will be announced by the USA (NOAA Fisheries) and published in their Federal Register.

6. In-Season Actions

(1) The Commission is authorized to establish or modify regulations during the season after determining that such action:

(a) will not result in exceeding the fishery limit established preseason for each IPHC Regulatory Area;

(b) is consistent with the Convention between Canada and the United States of America for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea, and applicable domestic law of either Canada or the United States of America; and

(c) is consistent, to the maximum extent practicable, with any domestic catch sharing plans or other domestic allocation programs developed by the governments of Canada or the United States of America.

(2) In-season actions may include, but are not limited to, establishment or modification of the following:

(a) closed areas;

(b) fishing periods;

(c) fishing period limits;

(d) gear restrictions;

(e) recreational (sport) bag limits;

(f) size limits; or

(g) vessel clearances.

(3) In-season changes will be effective at the time and date specified by the Commission.

(4) The Commission will announce in-season actions under this Section by providing notice to major Pacific halibut processors; Federal, State, United States of America treaty Indian, and Provincial fishery officials; and the media.

(5) Notwithstanding paragraph (3) and (4) of this Section, in IPHC Regulatory Area 2A the USA (NOAA Fisheries) may take in-season action to reallocate the recreational fishery limits between Washington, Oregon, and California after determining that such action will not result in exceeding the overall IPHC Regulatory Area 2A recreational fishery limit and that such action is consistent with any domestic catch sharing plan. Any such reallocation will be announced by the USA (NOAA Fisheries) and published in their Federal Register.

IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5) (Regulatory Area 2A)

PREPARED BY: TIMOTHY GREENE, SR. (MAKAH TRIBE) (21 DECEMBER 2023)

Directed Commercial ☐ Recreational ☐ Subsistence ☐ Non-directed commercial ☐ All ☒

All Regulatory Areas ☐ All Alaska Regulatory Areas ☐ All U.S. Regulatory Areas ☐

2A ☒ 2B ☐ 2C ☐ 3A ☐ 3B ☐ 4A ☐ 4B ☐ 4C ☐ 4D ☐ 4E ☐

PURPOSE

To propose a TCEY for IPHC Regulatory Area 2A of 1.65Mlb for 2024.

EXPLANATORY MEMORANDUM

Recalling Rule 8, para 6 of the IPHC Rules of Procedure (2023) that states:

> "*6. New regulatory proposals or amendments to existing regulations (including catch limit proposals) shall be submitted to the Executive Director no less than 30 days before the date fixed for the opening of the Session at which they are to be considered. The Executive Director shall make the proposals available on the public access area of the IPHC website no later than two (2) business day after receipt.*"

From 2019 to 2023, Regulatory Area 2A has received a constant TCEY allocation of 1.65Mlb. This allocation, initially put in place in 2019, has provided a consistent and biologically justified TCEY for Area 2A which has minimal impact on the coastwide Pacific halibut biomass, as acknowledged by the Secretariat at each Commission meeting since. The Makah Tribe is submitting this proposal for the 2024 annual IPHC process in support of a constant TCEY of 1.65 Mlb.

Makah Tribe would like to highlight the following language from the 2023 Annual Meeting Report (IPHC-2023-AM099-R):

> *Para. 107. The Commission NOTED that the United States Government recognizes its trust responsibility to the 13 treaty tribes in IPHC Regulatory Area 2A that depend upon Pacific halibut, as such, the U.S.A. Commissioners have consistently supported a TCEY of 1.65Mlb for Regulatory Area 2A since 2019.*
>
> *Para. 108. The Commission NOTED the USA Commissioners view that this allocation reflects the needs of IPHC Regulatory Area 2A Pacific halibut users, with minimal impact on the larger Pacific halibut biomass that is distributed to the north, and it remains a small fraction of the IPHC Region 2 allocation.*

Additionally, the Makah Tribe is submitting this proposal to ensure that the IPHC Secretariat speaks to the constant TCEY allocation of 1.65 Mlb for Area 2A, in terms of whether there are any conservation concerns with this proposal, and the impacts this has had on the stock from 2019-2023.

Appendix A provides details on the suggested regulatory language.

RECOMMENDATIONS

That the Commission:

1) **NOTE** regulatory proposal IPHC-2024-AM100-PropC1, that proposes a TCEY for IPHC Regulatory Area 2A of not lower than 1.65Mlb for 2024.

APPENDICES

Appendix A: Suggested regulatory language

APPENDIX A
SUGGESTED REGULATORY LANGUAGE (*AT A MINIMUM)

5. Mortality and Fishery Limits

(1) The Commission has adopted the following distributed mortality (TCEY) values:

IPHC Regulatory Area	Distributed mortality limits (TCEY) (net weight)	
	Tonnes (t)	Million Pounds (Mlb)
Area 2A (California, Oregon, and Washington)	748*	1.65*

IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut – IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E (Sect. 28) – Onboard consumption

PREPARED BY: PAUL OLSON (THE BOAT COMPANY) (23 DECEMBER 2023)

Directed Commercial ☐ Recreational ☒ Subsistence ☐ Non-directed commercial ☐ All ☐

All Regulatory Areas ☐ All Alaska Regulatory Areas ☒ All U.S. Regulatory Areas ☐

2A ☐ 2B ☐ 2C ☐ 3A ☐ 3B ☐ 4A ☐ 4B ☐ 4C ☐ 4D ☐ 4E ☐

PURPOSE

To propose increased flexibility for the onboard consumption of recreationally-caught Pacific halibut in Alaska.

EXPLANATORY MEMORANDUM

The Boat Company conducts week-long tours in Southeast Alaska during which between 20 and 24 guests hike, kayak, view wildlife and glaciers and do guided sport fishing for halibut and other fish species. Not every guest fishes for halibut, but for those who do, it is a highlight of their trip. Our guests harvest small numbers of halibut compared to other charter operations, and many guests would prefer to consume halibut onboard prepared by *The Boat Company*'s chefs and transport smaller, if any, fish boxes home.

IPHC Fishery Regulations (2023), Section 28(1)(d) governing sport fishing in Alaska regulatory areas 2C, 3A, 3B, and 4A-E provides that:

> *"no person shall possess on board a vessel, including charter vessels and pleasure craft used for fishing, Pacific halibut that have been filleted, mutilated, or otherwise disfigured in any manner, except that each Pacific halibut may be cut into no more than 2 ventral pieces, 2 dorsal pieces, and 2 cheek pieces, with a patch of skin on each piece, naturally attached. Either one dorsal piece or one ventral piece from one Pacific halibut on board may be consumed."*

The 2023 regulation limits onboard consumption to one piece of halibut. At current size limits unlikely to change in the near future, the regulation makes it difficult to serve meal size portions to all of our guests from just one ventral or one dorsal piece caught by a small number of guided anglers. This dilemma occurs for other recreational anglers on a multi-day trip who have only a small number of Pacific halibut on board his boat at any given time - the regulations do not allow for reasonable on-board consumption during a multi-day trip.

The Boat Company requests that the Commission revise the regulation in a way that will still enable enforcement officials to verify compliance with size and daily bag limits while allowing anglers and their companions who do not return to port each day to enjoy eating more than one small piece of halibut while at sea. The regulation should first harmonize the Alaska regulations

with regulations for recreational anglers in California, Oregon, Washington and British Columbia that neither limit the number of pieces into which a Pacific halibut may be cut nor require that a patch of skin remains naturally attached to each piece. 2023 regulations 27(2) and 26(4) governing sport fishing in British Columbia, Washington, Oregon and California provide that "no person shall fillet, mutilate, or otherwise disfigure a Pacific halibut in any manner that prevents the determination of minimum size or the number of fish caught, possessed, or landed." This change would maintain the same regulations that allow effective enforcement of bag and possession limits in other regulatory areas.

However, additional language will provide clearer direction to recreational fishermen as to how to process halibut for onboard meals and keep records for enforcement purposes. Fishermen or their guides would photograph of the halibut alongside a measuring device in order to allow for compliance with size limits. The carcass would be separately retained onboard, and labeled by date, time, angler's name and total number of halibut retained by the individual angler and there would be a separate log of each consumed fish. Enforcement officers could then inspect the log, carcass, photograph, other packaged fish on board the vessel and determine compliance with size and bag limits.

As a final note, while the suggested regulatory language would enable onboard consumption of six pieces of halibut, language that allows consumption of one ventral and one dorsal piece would be significant improvement over the current situation.

Appendix A provides details on the suggested regulatory language.

RECOMMENDATIONS

That the Commission:

1) **NOTE** regulatory proposal IPHC-2024-AM100-PropC2 that proposes increased flexibility for the onboard consumption of recreationally-caught Pacific halibut in Alaska.

APPENDICES

Appendix A: Suggested regulatory language

APPENDIX A
SUGGESTED REGULATORY LANGUAGE

Amend § 28(1)(d) governing recreational fishing in Alaska to be consistent with 2023 regulations 27(2) and 26(4) governing IPHC Regulatory Area 2A and 2B, and add an exception that allows fishermen on a multiday to process Pacific halibut for onboard consumption, subject to measures to facilitate enforcement of the applicable daily bag limits, as follows:

28. Recreational (Sport) Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E

(1) In Convention waters in and off Alaska:

[…]

(d) No person shall possess on board a vessel, including charter vessels and pleasure craft used for fishing, Pacific halibut that have been filleted, mutilated, or otherwise disfigured in any manner, except that each Pacific halibut may be cut into no more than 2 ventral pieces, 2 dorsal pieces, and 2 cheek pieces, with a patch of skin on each piece, naturally attached. ~~Either one dorsal piece or one ventral piece from one Pacific halibut on board may be consumed;~~ Any person on board a vessel doing multi-day trips, whether private or guided, may further fillet or otherwise process Pacific halibut for immediate consumption or preservation for later consumption if the person does all of the following:

(1) Maintain on board and available for inspection by an authorized officer the carcass and a photograph of each Pacific halibut caught and used for onboard consumption that also shows the measured length of the halibut accompanied by information indicating the date and approximate time at which the Pacific halibut in the photograph was caught.

(2) Maintain on board and available for inspection by an authorized officer a separate log of each Pacific halibut consumed onboard that lists (1) the date and approximate time of catch; (2) the length and (3) indicates the portions of the Pacific halibut packaged for later consumption.

Stakeholder comments on IPHC Fishery Regulations or published regulatory proposals

PREPARED BY: IPHC SECRETARIAT (B. HUTNICZAK; 11 DECEMBER 2023, 12, 16, 19 & 21 JANUARY 2024)

PURPOSE

To provide the Commission with a consolidated document containing comments from stakeholders on IPHC Fishery Regulations or published regulatory proposals submitted to the Commission for its consideration at the 100th Session of the IPHC Annual Meeting (AM100).

BACKGROUND

The IPHC Secretariat has continued to make improvements to the Fishery Regulations portal on the IPHC website, which includes instructions for stakeholders to submit comments to the Commission for its consideration. Specifically:

> "*Informal statements or comments on IPHC Fishery Regulations or published regulatory proposals can be submitted using the form below up until the day before the IPHC Session. Submitted comments will be collated into a single document and provided to the Commissioners at the IPHC Session.*"

Comments may be submitted using the IPHC Stakeholder Comment Form. Attachments may be sent to secretariat@iphc.int.

DISCUSSION

Table 1 provides a list of the stakeholder comments 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 from stakeholders received by 9pm on 21 January 2024.

Appendix No.	Title and author	Date received
Appendix I	Fabian Grutter, commercial fisherman	3 October 2023
Appendix II	Shawn McManus, Deep Sea Fishermen's Union of the Pacific	25 October 2023
Appendix III	Thomas Russell, directed commercial fishery in Canada	24 December 2023
Appendix IV	Tucker Banner, recreational fisherman	12 January 2024
Appendix V	Joel Kawahara, Coastal Trollers Association	15 January 2024
Appendix VI	Darryl Bosshardt, Pybus Point Lodge	18 January 2024
Appendix VII	Joel Steenstra, Alaska Wide Open Charters	18 January 2024

Appendix VIII	Allen Landeen, Taylor Charters	19 January 2024
Appendix IX	Charles McNamee, Angling Unlimited Inc.	19 January 2024
Appendix X	Scott McKelvey, Waterfall Resort	20 January 2024
Appendix XI	Greg Kain, Kain's Fishing Adventures	20 January 2024
Appendix XII	Haley Janttie, Eagle Charters	20 January 2024
Appendix XIII	David Creighton, Shelter Cove Lodge	21 January 2024
Appendix XIV	Jack Stevenson, Alaskan lodge owner 2c	21 January 2024

APPENDICES

As listed in Table 1.

APPENDIX I

Statement by Fabian Grutter, commercial fisherman

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	IPHC Fishery Regulations
Submitted comment	

Fabian Grutter
1302 Sawmill Cr. Rd. #40
Sitka, AK 99835
907-752-0100

9/20/2023

International Pacific Halibut Commission
2320 West Commodore Way, STE 300
Seattle, WA 98199

Dear Halibut Commission,

I am writing to you today because of my concern for the serious decline that I am seeing in the halibut population. Every summer I see more out of state boats, faster charter boats, and more illegal activity associated with the substance Halibut harvest and the excessively high legal catch limits. We need more ADF&G and NOAA enforcement behind this; especially in the outer reach areas such as the back side of Baranoff Island in Sitka.

I am a lifelong resident of Sitka Alaska. My father and I purchased halibut quota in the mid 1990's. I have fished out of a 19' skiff catching 10,000 pounds of halibut every summer. As I slowly purchased more quota in the early 2000's, I grew my boat size to a 34' gillnetter. At one time my quota was 15,000 Lbs., and it is now down to 7,000. This is a serious reduction due to the decline in halibut.

There are a few things I would like to propose to the Halibut commission. First, higher fines for the sport charter fisherman, subsistence, personal use, and sport residents. Second, we need to lower the resident daily quota for halibut from 2 to 1. The subsistence quota should be 3 halibut on a boat at a time with a limit of 5 halibut per person per year.

If something is not done soon, there is not going to be many more halibut left. Halibut is a slow growing fish and does not quickly replenish its population. Now is our time to act.

Thank you for listening to my testimony and proposal. Seeing the declines in halibut since I started fishing in the 1990's is a huge concern and needs to be addressed.

Sincerely,

Fabian Grutter

APPENDIX II

Statement by Shawn McManus, Deep Sea Fishermen's Union of the Pacific

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5 - Mortality and Fishery Limits
Submitted comment	In the event that a FISS is not conducted in an IPHC Regulatory Area(s), the TAC for the un-surveyed Regulatory Area(s) shall not be increased using extrapolated historical FISS data for the following fishing season. For example, in 2021 there were no FISS conducted in any of the Area 4 Regulatory Areas. Yet, despite the lack of current FISS in those Regulatory Areas, the TAC was increased in many of those Areas using extrapolated FISS data for the 2022 fishing season. Those same Regulatory Areas are again lacking FISS for 2023. We are concerned that the lack of annual FISS data does not provide the critical up to date data necessary to increase and effectively manage a Regulatory Area(s) TAC. In fact, from a conservation and sustainability standpoint, without the annual FISS data, we are hardly comfortable with a TAC status quo for the affected Regulatory Area(s). The abovementioned problem is seen as a harvest control rule. "No IPHC Regulatory Area shall see an increase in TAC without an annual FISS which indicates the action of raising the TAC is warranted"

APPENDIX III

Statement by Thomas Russell, directed commercial fishery in Canada

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 9(2) - Commercial Fishing Periods
Submitted comment	I would like to see the directed fishery for Pacific halibut open earlier in the day. The current practice of a noon opening limits what can be accomplished in the first day. Many of the vessels are all ready standing by at daylight, and setting at noon makes for a very long day. Setting earlier would also raise efficiency of time spent opening day, allowing for a more complete soak time on the gear. I feel like 08:00am opening would allow for daylight conditions to set gear, meeting safety and enforcement objectives. I propose: Unless the commission specifies otherwise, commercial fishing for Pacific halibut in all IPHC areas may begin no earlier in the year than 8:00am local time DD-MMMM.

APPENDIX IV

Statement by Tucker Banner, recreational fisherman

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5(2) - Mortality and Fishery Limits - California's Pacific Halibut Quota
Submitted comment	Hello, I am Tucker Banner. I am a California resident, but also stay in Alaska a few months in the summer. I am deeply concerned with California and the direction our fisheries are going. Recently we had a change in the Salmon fishery, which has been completely closed. The rockfish has been changed to the 50 fathom line, which is roughly 300 feet deep and beyond. Sturgeon has been drastically reduced in size limit and fish amount per year. Many anglers can not safely take their boats to the 50 fathom line. People in California, especially in Northern California, in small towns such as Shelter Cove, Trinidad, Eureka, Crescent City, Fort Bragg, and many others rely on the ocean for food, or at least for a portion of their food. Personally I love eating fish, crab, clams, and all the other delicacies our oceans hold. Halibut is a very fun fishery, and it is absolutely delicious. I fish for Halibut out of Deep Creek and Anchor Point in Alaska. I fish for Halibut out of Eureka in California. The main issue I want to discuss is California's Pacific Halibut Quota. Our share is truly ridiculous. I am not trying to be rude or dramatic, but to my knowledge Alaska has no quota. Washington's quota is 291,950 pounds. Oregon's quota is 275,214 pounds, and around 1/10th of those individual quotas is what California is allocated. California's quota is 39,520 pounds. I understand halibut migrate and are more common the farther north you go, but California deserves a larger piece of the pie. I know California is drastically different than Alaska, Washington, and Oregon. I understand California is often hated. I do not like our policies or our politics, but I am concerned about the well being of fishermen. We are all the same. We think the same. When I tell people in Alaska I'm from California they tell me not to bring my friends. Not all Californians are crazy. We just want an opportunity to fish and feed our families. In Trinidad and Eureka there are guides who fish halibut and we have one or two commercial boats that fish halibut. Many people rely on this fishery for food and even their livelihood. The economic benefits to these small cities also rely on people traveling to them to fish. The restrictions on our rockfish depth crushed many of these cities. Please listen to my pleads and give California a fair amount of quota. Washington and Oregon each have 7 times the amount of quota we have. Small Northern California communities rely on this fishery for food. Whoever is reading this, if you have been to Northern California it is very similar to Washington, Oregon, and Alaska. We are the same, and we deserve and want more quota. We respect the fish as much as anyone else. I fillet the halibut even past the belly and then cut the membrane off. I keep the cheeks! The fish are respected and every portion is used! California deserves at least half the quota Oregon and Washington has. I believe it should be divided equally three ways, but I understand Washington and Oregon would not love that idea. Fishing is important for my family and I and millions of other Californians, who are just like you. Our season in California ended in the beginning of August this year, and doesn't open until May. Please let us target these fish longer by allocating more quota to California. An argument would state California waters do not have enough halibut to sustain a larger quota. I disagree. We used to have many

commercial ships who targeted the fish out of Eureka and Trinidad 50 some years ago. Studies have shown halibut migrate, and therefore we can handle a larger quota. Halibut have been caught from the Oregon border all the way to San Francisco near the Farallon islands. That is 300 plus miles of halibut barring coastline. The numbers are drastic. Please consider giving California more quota. Thank you very much, Tucker Banner.

Alaska Quota: Unlimited. Washington Quota: 291,950. Oregon Quota: 275,214.California Quota: 39,520.

APPENDIX V

Statement by Joel Kawahara, Coastal Trollers Association

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	IPHC-2024-AM100-PropC1
Submitted comment	Coastal Trollers Association (CTA) supports IPHC-2024-AM100-PropC1, the Makah proposal for a TCEY of 1.65 Million pounds for year 2024. CTA notes the O32 WPUE (IPHC-2024-AM100-10, Figure 4) shows a 10% increase over 2023, strongly suggesting there are no underlying conservation concerns with maintaining the status quo in area 2A.

APPENDIX VI

Statement by Darryl Bosshardt, Pybus Point Lodge

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5 - Mortality and Fishery Limits
Submitted comment	

January 18, 2024

SUBJECT: Annual Harvest Limits of IPHC Fishery Regulations

To Whom It May Concern:

Pybus Point Lodge is a remote fishing and adventure lodge located on the southern end of Admiralty Island. We offer 4-day/night all-inclusive adventures which include fishing and enjoying all the beauty that Southeast Alaska has to offer. We typically run 7 guided boats each day (8:00-3:30) with about 38 total guests. We also have several smaller "skiffs" that we make available to guests in the evenings for sightseeing and exploring the area on their own.

Before the introduction of guided halibut "day-closers" in 2023, these smaller skiffs were primary used for exploring the bay and looking for wildlife. Even though our guests have always been able to use these "self-guided" skiffs for additional fishing after harvesting one, size-regulated, guided halibut during the day, it was a seldom occurrence. Therefore, most of our guests each season would harvest 1, smaller-sized halibut each day of around 35-39". Although our guests all knew they could harvest 2 halibut of any size unguided, most of our guests have always been happy with just the 1, smaller, guided halibut.

Unfortunately, that all changed in 2023 with the introduction of day closures which was much more of a Pandora's Box than any of us would have guessed. As soon as the "No Halibut Monday" was introduced, many of our guests that were previously happy with 1 halibut per day of a smaller size, opted to use our "self-guided" skiffs fishing. So instead of harvesting one smaller halibut with our guide, they would regularly return to the dock with 2 oversized. And although the closure was for just 1 day a week, after catching 2 per-day, with no-size-limit, many would opt for self-guiding the rest of their trip.

Years ago, before the rapid advancement of GPS and sonar, targeting halibut grounds without a guide was much more difficult. This made the historic success of self-guided much lower than it is today. However, with the high-quality GPS and sonars of today, a repeat Alaskan fisherman has no trouble harvesting 2 over-sized, breeding, halibut each day. This means, that with the introduction of guided halibut day-closers, rather than reducing the number of harvested halibut, the number has dramatically increased. And not just the number of halibut, but they are targeting the larger breading stock that we all desperately want to preserve.

It is our hope that the commission will take this into consideration and universally implement a Halibut bag limit of 1 for guided **AND**/**OR** unguided sport fishing. Furthermore, if a day-closure(s) is necessary for preservation, then implement that day-closer equitably for all guided **AND**/**OR** unguided fishing.

Sincerely,

Darryl Bosshardt,
General Manager
darryl@pybus.com
Office: 1-800-947-928

APPENDIX VII

Statement by Joel Steenstra, Alaska Wide Open Charters

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5 - Mortality and Fishery Limits
Submitted comment	Dear IPHC,

My name is Joel Steenstra, owner of Alaska Wide Open Charters out of Craig, Alaska in 2c. Next season will be my 21st season as a Captain for halibut out of Craig. We are a family run business and have two boats. I guide clients, my wife cleans and cuts fish, and my three children help her and are very involved in the business. We take 8 clients at a time and provide fishing, lodging, and fish processing for them. We are year round Alaska residents and are very active in our community. Our other Captain we employ is a born and raised Alaskan, and a year round resident of Craig where he also raises his family of four children.

Halibut has become a source of stress for both myself and my clients. As we have watched limits get cut and days of the week close, we no longer have security in our business that we once had. Clients are constantly asking what the limits will be and if days of the week will be closed. It's much harder for us to have a good product for our customers when we have so little halibut to offer them. As a result of the day of the week closures, I have been using a large amount of GAF fish to keep them happy which is very costly to my business. Long term outlook will not be good for the local, Alaska owned small businesses like myself who do not have extensive advertising campaigns and who do not live south near populations centers to constantly be recruiting new clients.

We are particularly at a disadvantage when other areas like 3a get a one halibut of any size while we get stuck in the chicken patches for small halibut. We have heard that Canada has better limits than us too. And our clients are very much in tune to what limits are in other areas.

Another big issue is the restrictive limits are pushing many clients towards self guided operations. While we take cut after cut, self guided operations continue to grow with zero cuts. Many of us have been fishing out there for decades with constant reductions in limits, while new self guided operations show up out of the blue and enjoy zero cuts at our expense. We simply cannot compete with businesses who fish similar waters as us and have a two fish, no size limit, while we have a 1 fish, reverse slot limit with day of the week closures. And all the pain we endure by taking cuts is simply going to the self guided industry with no savings to the resource.

I ask that you protect the small businesses in Alaska. Thank you.

Joel and Leanne Steenstra
Alaska Wide Open Charters

APPENDIX VIII

Statement by Allen Landeen, Southeast Alaska Business Operator

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	IPHC Fishery Regulations

Submitted comment

January 18, 2024

Attn:
Jon Kurland, Chair
Paul Ryall, Vice Chair
Richard Yamada
Robert Alverson
Neil Davis
Peter DeGreef

Re: The struggle we face on lowering halibut allocations as businesses operating in Southeast Alaska

To whom it may concern my, name is Allen Landeen. I am the Operations Manager of Taylor Charters located in Gustavus AK. We run 8 boats and can serve up to 48 clients at a time. Operating primarily 5 day fishing trips. I am writing to express my concerns over the pending Halibut allocation and its impact on the business I manage.

I have been a captain in Gustavus for the past 5 seasons and have served several "types" pf guests including people who have already been fishing annually/ semiannually in Gustavus for many years, people who have been fishing in many different areas of Alaska, and people who are on their first trip to Alaska. In Gustavus we do have people who love to fish for salmon and different rockfish species, but without exception in Gustavus people come primarily to fish for Halibut and other species are seen as welcome additions to their primary reason to fish out of the Gustavus Port.

Each year before the season starts and even each week as new guests are arriving is a period of anxiety about how the guests will feel on day one when we explain the halibut regulations for this current season. As most guests book at least one year in advance and often are booking two and even three years in advance, we have no way of reliably telling them at point of sale of the trip what the upcoming seasons limits are going to be.

It is very common for the first day which is full of anticipation and excitement to go out and catch some amazing Halibut to struggle to explain to clients how the limits this year are (fill in the blank). I often spend the drive to our first fishing spot on day having to answer a lot of questions about "why the size drop from last year", or statements like "when we booked the trip the limit was a lot bigger", or "you never said there would be a day closure.." I then have to spend a significant amount of time through their trip trying to explain in simple terms the complex system of allocation and international treaties and having to really work hard to prevent them from feeling like they have been lied to when in fact we have no idea what the regulations are going to be when we sell the trip.

Allen Landeen (801)654-6868 allen.landeen@gmail.com
Operations Manager Box 53 Gustavus, Alaska 99826

I've have several groups that had been fishing in Gustavus loyally for many years leave to go try somewhere else with better size regulations. The day closure was really a difficult additional to smaller size limits and I had a group of 6 guys who had been to gustavus annually for 16 years said enough is enough with this the size we can keep is shrinking every year and now they are shutting days down? We have to go somewhere else.

We have had to adapt part of our business model to offer self guiding options as we have lost guided clients which adds a whole additional aspect of conflict with people coming back after being told its 1 per person under 38 and then they see a deck full of larger halibut and smiling faces and we have to explain how for some reason because they don't have a captain on their boat they can keep more and larger fish.

We don't know what to do on our end outside of try to supplement with purchasing GAF permits which adds to the complexity and workload with strict high fines for any late submittals or mistakes. Im grateful we have that option and it has been a saving grace to be able to offer it but would and should not be necessary to even have that as the way to dig ourselves out of a hole we should not have been placed in.
In Gustavus specifically we don't have the luxury of short drives to fish for salmon, and when people book here specifically because they want to be able to fish for Halibut on inside passage waters because they get seasick, and we tell them they cant even fish for halibut because of a day closure and we have to go out to the open water to salmon fish, it is really difficult to convert people into being return clients, leading to more advertising costs to find new people to come in the future.

Please understand how this trend of smaller size limits and day closures will impact our livelihood in Gustavus. I'm not the owner of the company, but I am the operations manager and intend on buying the company in the future. When I look at this trend, I wonder what will halibut regulations be in 10 years from now and is this even a sustainable business plan for me to pursue? Continuing down this path will put the interests of the guided sportfishing fleet in Gustavus in serious Jeopardy if it continues.

Allen Landeen (801)654-6868 allen.landeen@gmail.com
Operations Manager Box 53 Gustavus, Alaska 99826

APPENDIX IX

Statement by Charles McNamee, Angling Unlimited Inc.

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 28 - Recreational (Sport) Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E

Submitted comment

Angling Unlimited
SITKA ALASKA

January 19, 2024

My name is Chuck McNamee. I am the owner of Angling Unlimited Inc., which is a charter fishing company in Sitka, Alaska. Angling Unlimited has been in operation in Sitka since 1995, and currently welcomes approximately 1400 guests each summer to enjoy an Alaskan multi-day fishing experience.

One of the main reasons our guests choose to fish Alaska versus any other part of the world is to catch halibut. It goes without saying that halibut is important not only to us as business owners that are supporting the local Southeast Alaska communities, but to the guests that visit during our summer fishing season. Over the past few years, as the regulations for halibut have tightened to the point to which we are now having day closures, and size restrictions that are requiring us to keep only the smaller fish, the excitement for halibut fishing in Sitka on a guided trip is fizzling and making it a difficult selling point.

Some of our guests that used to enjoy the safety and comfort of halibut fishing as part of a guided trip are exploring self-guided charters or searching for other areas in Alaska or Canada that have regulations that better suit their interests, or just choosing to stay home. As a business owner I am exploring all options to keep our guests satisfied with our guided fishing experience. All options such as GAF come with a price tag that I think will be unacceptable to most fishing guests.

I understand that regulations are necessary to protect the health of current and future halibut resources. I will continue to do all I can to ensure that Angling Unlimited provides the best possible guided Alaska fishing experience to all our guests. I will ask that you please set halibut regulations carefully so those of us in the charter fishing industry can have a chance to keep our summer fishing guests excited to visit Southeast Alaska.

Sincerely,

Chuck McNamee

APPENDIX X

Statement by Scott McKelvey, Waterfall Resort

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5 - Mortality and Fishery Limits
Submitted comment	

International Pacific Halibut Commission
2320 West Commodore Way
Suite 300
Seattle, WA
98199

01/18/2024

Waterfall Resort
1249 Tongass Avenue
Suite A
Ketchikan, Alaska
99901

To whom it may concern:

Please let me start out by introducing myself. My name is Scott McKelvey, and I am the General Manager for Waterfall Resort which is located in Area 2C of Southeast Alaska. Waterfall Resort is a large operation that has been in business as a fishing lodge for over 40 years, and I have been affiliated with them for last 33 years. We have 27 boats and can accommodate up to 92 guests at one time. Being a remote location that is not connected to any town via roadway, we rely heavily upon the many small local businesses for supplies, transportation needs between Ketchikan and our property, hotels in Ketchikan for guest stays before and after visits to our property, city sales taxes generated, as well as employing many Alaskan residents.

This being said, I must voice my concern over the continued reductions within the guided halibut fishery. Over the many years, I have witnessed a number of ups and downs in all the fisheries and I am literally on the front lines of hearing what our clients have been saying. Over time, one of the largest amount of complaints that I have fielded has to do with the ever tightening of halibut size limits, recent day of the week closures, and why other locations (Areas) are able to have higher daily possession limits. As best as I can, I try to educate our guests as to some of the reasoning of each, but in the end it makes it very difficult to compete with other areas in and out of the State of Alaska. Our company already has been offering GAF permits to guests to try and help compensate for the day closures we have had, as it is very difficult to talk customers in to booking when there is a "Day Closure" over their stay. But, that

becomes expensive fast! Also an area of concern has to do with size limits, and then trying to convince guests to come and catch a halibut that keeps getting smaller. For these above reasonings, we have already lost many of clients, as I am sure most other lodges have felt the same pinch, to other Areas in and out of Alaska, or are starting to see them move over to the mainly unrestricted/unregulated (and quickly growing) unguided sector.

In closing and to summarize, my fears are that if we are faced with more stringent regulations in the guided sport industry, it will become even more difficult to book and/or rebook potential clients in the future. If this does indeed happen, it not only will affect our businesses and the tourism industry as a whole, but greatly affect the many local businesses and small communities that heavily rely on the guided fishing industry. The only industry that may prosper off this would be the non-guided sector which do not have the same restrictions and/or regulations or monitoring, and this will actually cause a higher harvest amount and be an even bigger issue in halibut abundance in the future.

Very Respectfully,

Scott McKelvey
General Manager
Waterfall Resort
805-630-2533
scott@waterfallresort.com

APPENDIX XI

Statement by Greg Kain, Kain's Fishing Adventures

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5 - Mortality and Fishery Limits

Submitted comment

1/18/2024

IPHC Commission Members,

My name is Greg Kain, owner of Kain's Fishing Adventures operating out of Sitka, AK.

I am commenting about the upcoming IPHC annual allocation setting for Halibut in area 2C.

The last few years we have been struggling to keep our guests motivated in continuing there annual Halibut fishing trip. It has become difficult to appeal to new first time guests wanting to book a Halibut fishing trip because regulations have become to restrictive. Area 2C Guided Charters have to compete with other regions that have less restrictive Halibut regulations. When prospective guests have the choice between less restrictive regulations and one that offers a One Halibut of Sub 40 inch per day and day closuresIt becomes really difficult to be competitive and book trips. Now we are seeing a fast pace growth in the Rental Boat non guided fishing activity in area 2C to the point that they are dominating the overall catch numbers with 2 Halibut of any size per day and no day closures. The majority of traditional guided Charter fishing lodges, with exception of a couple long standing self guided lodges, have built their business models on fishing for Halibut "at one time" a two fish per day zero size restriction and 7 days a week fishing opportunity.

In 2023 we experienced the first Halibut day closures in area 2C for guided sport anglers. To say guests were not happy is a understatement. Especially when they find out they could rent a boat and catch two Halibut of any size per day and fish on days that guided anglers could not fish. To have to explain this restriction to guests, why a guided fisherman can not fish and non guided fisherman can fish is frustrating for the guests to understand. I heard from several guests that said they may choose to fish elsewhere due to better halibut regulations, or possibly just stop coming. Another option, they can opt to do the Self Guided trip option, which just eats up more quota. These restrictions make Guided Charter fishing a less attractive option for guests to fish for Halibut.

I encourage the commission to not take any additional cuts in allowed harvest in area 2C. No day closure restrictions for guided anglers. Consider a 1 fish Halibut bag limit for everyone Halibut fishing in area 2C.

Thank you,

Greg Kain

APPENDIX XII

Statement by Haley Janttie, Eagle Charters

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5 - Mortality and Fishery Limits
Submitted comment	

January 20, 2024

Dear International Pacific Halibut Commission,

On behalf of Eagle Charters lodge, I am writing to request your consideration of the following comments when determining the 2024 halibut regulations. Eagle Charters is a sport fishing lodge located in Elfin Cove in southeast, Alaska. We typically fish twenty four customers a day on our six boats, all of which are guided. Our charter boats primarily fish in Area 2C. Historically, halibut fishing is a large reason our customers choose our location and lodge. The halibut fishing in our area has been a market advantage over some of the larger ports. Over the years our customers continue to voice complaints regarding the size restrictions of retainable halibut. The day closure also had a significant impact on our customers attitude and trust in the industry. While our guides and management try to explain the closures in a professional manner, our customers still voice many complaints regarding the day closure in addition to the already existing restrictive size limits. Our customers also shared concerns that the regulating bodies are unpredictable. Many customers have explained that with such uncertainty each year they are not sure they will continue to book fishing trips at the risk of even worse regulations.

Our company chooses to purchase a large amount of GAF permits and make those available to our customers but this still does not make up for the restrictive size limit or day closure. From a marketing standpoint, it is very hard to sell trips with such restrictive size limits and an entire day when halibut cannot be targeted. Explaining this to new potential customers immediately decreases their interest. For long time existing customers explaining the new regulations each year creates a sense of concern and statements like “maybe it is time to try somewhere else” or “when are they going to completely shut down fishing.”

Many of our customers are also concerned with the significantly different limits for the self-guided fishery, often making comments that they will have to consider a self-guided trip instead of choosing our charter lodge. This is a large concern to our business as well as the halibut industry. We have already seen a decrease in customer volume with many of those past customers stating the restrictions are the reason for not returning. Pushing more people into the self-guided fishing industry is concerning to the impact it has on the halibut populations with the current regulations. With less restrictive size limits and no day closures, we believe the customer retention for guided operations will increase which would positively impact the historical norms of the industry. As you know, guided operations are beneficial to the halibut fishery because the charter catch allocations are clearly established as specified in the Catch Sharing Plan resulting in a predictable removal.

Thank you for considering the impact of restrictive size limits and day closures on the charter fishing industry.

Sincerely,
Haley Janttie
Eagle Charters

APPENDIX XIII

Statement by David Creighton, Shelter Cove Lodge

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5 - Mortality and Fishery Limits
Submitted comment	My Name is David Creighton. I am the second-generation operator of Shelter Cove Lodge located in Craig. I operate as a full service lodge with the only fine dining restaurant in Craig, full service bar and a fleet of 8 vessels two of which are 6 packs. This organization has provided me and 3 other families with year round employment and the ability to raise our children in SE Alaska. The intent of this letter is to express my fear that ever tightening regulations may render Shelter Cove Lodge unavailable for the 3rd generation. Regulations for SE AK have been so dramatically reduced over the last decade that we have begun to lose our marketability. Our clients travel great distances to fish 3 days and losing 1 of those 3 days of halibut fishing has created additional marketing issues. The 2024 season sales have been significantly more difficult than recent past seasons. Every repeat client I lose costs marketing dollars to recruit new. Day closures are culprit number 1. The next most common concern is the halibut size. “I want to go catch a baby halibut”…..said no one ever. Many people come to Alaska to fulfil their dream of catching a nice halibut. To stay marketable, I have been forced to lease halibut to supplement catch opportunity with GAF tags. As you know, this is incredibly costly yet not as costly as not having clients. For our day closures, I have been forced to gift these tags to our clients in order to make their trips feel worth the increasing expense. I have recently lost several long-time clients to self-guided lodges. They have learned how to fish for halibut from us and moved on to more productive setups. They can keep one large fish self-guided and have more fish to take home than all three they would be able to keep with us. This trend is going tonot only hurt SE guide businesses but also increase fish caught in potentially under-managed sector of the sport fishery. SE Alaska has experienced reductions to the bare minimum on king salmon, ling cod, and we have already gone below the bare minimum on halibut. Any further reductions on halibut will make a difficult situation even worse. At risk is a significant portion of Alaska’s tourism economy that is a major supporter of the smaller outlying communities like Craig. Almost every business in Craig would be affected by the loss of even a single medium-sized charter operation. I’m aware you’ve read many letters like this. The reason is because we love and rely on our businesses. Small adjustments in your decision-making processes can have huge impacts on our success or failure. We

will feel the impact of the Monday closures for years. Adding to this will undoubtedly make things more difficult.

Please proceed with caution.

Sincerely,

David Creighton

Shelter Cove Lodge

907-401-0686

APPENDIX XIV

Statement by Jack Stevenson, Alaskan lodge owner 2c

Section of IPHC Fishery Regulations or regulatory proposal reference the comment will refer to	Section 5 - Mortality and Fishery Limits
Submitted comment	We are sick and tiered of our guest complaining that they fished for 3 out of 4 days because one day was closed to halibut fishing and they went home with only 15lbs of halibut. they want to know why the boat next to them caught halibut on the day it was closed because they were self guiding. why the boat next to them came in with ten huge halibut while they only had 5 under 40" We have had three clients switch from guided to self guided. others simple said they would not re-book. We had regs before of a 36" fish and it was a disaster. It is unbelievable that you continue to ignore the self guided and resident allocation and have done nothing to have them share in the responsibility of preserving the halibut. resource. You are forcing us as a mater of preservation and fairness to consider a lawsuit forcing you to fairly distribute the burden of conservation to all who fish for halibut. This is a federally regulated fish and to refuse to limit the residents of Alaska is clearly a direct dereliction of you mandate to protect the resource.

INTERNATIONAL PACIFIC HALIBUT COMMISSION (IPHC)
STATEMENT ON CLIMATE CHANGE

The International Pacific Halibut Commission (IPHC):

RECALLING Article III.3 of the 1979 *Protocol Amending the Convention Between the United States and Canada for the Preservation of the Halibut Fishery of the North Pacific Ocean and the Bering Sea* acknowledges that "*the purpose of developing the stocks of halibut of the North Pacific Ocean and Bering Sea to levels which will permit the optimum yield from that fishery, and of maintaining the stock at those levels*";

RECOGNISING international initiatives to address the impacts of climate change including through the United Nations Framework Convention on Climate Change and the Paris Agreement;

NOTING the work of the Intergovernmental Panel on Climate Change;

MINDFUL of the work of the IPHC Secretariat and the Contracting Parties in assessing the impacts of climate change on Pacific halibut, and species belonging to the same ecosystem or dependent or associated with the target stocks in the Convention Area;

CONVINCED of the importance of addressing the potential impacts of climate change on Pacific halibut, non-target species, and species belonging to the same ecosystem or dependent or associated with Pacific halibut in the IPHC Convention Area;

BEARING IN MIND that the Agreement for the implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) was adopted in cognisance of the need to avoid adverse impacts on the marine environment, preserve biodiversity, maintain the integrity of marine ecosystems and minimise the risk of long-term or irreversible effects of fishing operations;

RECALLING that Article 5 of the UNFSA requires States to assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks and to adopt, where necessary, conservation and management measures for species belonging to the same ecosystem or associated with or dependent upon the target stocks, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened;

CONCERNED by the findings of the 2022 Intergovernmental Panel on Climate Change with high confidence that climate change is causing the redistribution of marine fish stocks, increasing risk of transboundary management conflicts among fisheries users, and negatively affecting equitable distribution of food provisioning services as fish stocks shift from lower to higher latitude regions, thereby increasing the need for climate-informed transboundary management and cooperation;

ADOPTS the following:

1. The Commission shall in its deliberations, to the extent possible, including in the development of fisheries regulations, take into account the best available scientific information on the potential impacts of climate change on Pacific halibut, including effects on other species and other fisheries that may have implications for Pacific halibut.

2. The Commission shall consider the potential impacts of climate change on Pacific halibut fisheries and stocks in its research, including research to inform potential measures to mitigate and/or adapt to climate change impacts.

3. The IPHC Secretariat and Scientific Review Board shall consider and advise on the potential implications of climate change for the conservation and management of Pacific halibut, and any related impacts on the Contracting Parties.

4. The IPHC Secretariat shall seek, on an ongoing basis, to reduce the carbon footprint of the IPHC activities related to headquarters and field operations, and meetings of the Commission and its subsidiary bodies, and shall propose such measures for endorsement by the Commission.

IPHC data products – progress report

PREPARED BY: IPHC SECRETARIAT (B. HUTNICZAK; 11 DECEMBER 2023)

PURPOSE

To provide the Commission with an overview of steps taken to improve the overall quality and usability of publicly available IPHC data products.

BACKGROUND

Distribution of Pacific halibut information is a primary goal of the International Pacific Halibut Commission (IPHC). Historically conducted through print publication, the IPHC's website, www.iphc.int, is now the principal method of information dissemination.

DISCUSSION

The intent of the IPHC is to allow free access to all non-confidential information pertaining to Pacific halibut. Static data tables have been published by the International Pacific Halibut Commission Secretariat since the organisation's inception. Beginning in 2018, interactive tools such as Tableau and R Shiny have been utilised to better visualise the data collected by the IPHC and to increase user engagement at the IPHC website.

Initial offerings included visualisations featuring the IPHC's Fishery-Independent Setline Survey (FISS) data.

- FISS – Raw Survey Data
- FISS – Pacific Halibut Data
- FISS CPUE
- FISS Biologicals
- FISS Performance
- FISS All Species number per unit of effort (NPUE)

Following FISS' lead, additional online applications have been added to the IPHC website, including:

- IPHC Space-Time Explorer
- Management Strategy Evaluation (MSE) Explorer
- Year to date directed commercial landings
- Pacific halibut economic impact visualization tool

Most recently, time series datasets (TSDs), including modelled output from the Secretariat, historical removals data, commercial landings data, and biological data have been published as data visualisations. The interactive nature of the visualisations allows users to focus on the information both temporally and spatially. The TSDs previously published as simple flat files have also been upgraded with more-comprehensive metadata and citation information. Existing data products will be updated by the IPHC Secretariat as warranted and new interactives published when available. The TSD collection now also has a new more user-friendly interface (Appendix I).

Information not currently available at www.iphc.int can be requested using an online Data Request Form available at https://www.iphc.int/forms/data-request/. The procedures outlined in IPHC Data Confidentiality Policy and Data Sharing Procedures dictate how requests are handled. Non-confidential products are made available to the general public via the IPHC website while confidential requests are communicated directly with the requester via secure format when approved. The status of a data requests, as well as the online resolutions if available, can be found at IPHC Data Request Tracker.

RECOMMENDATION

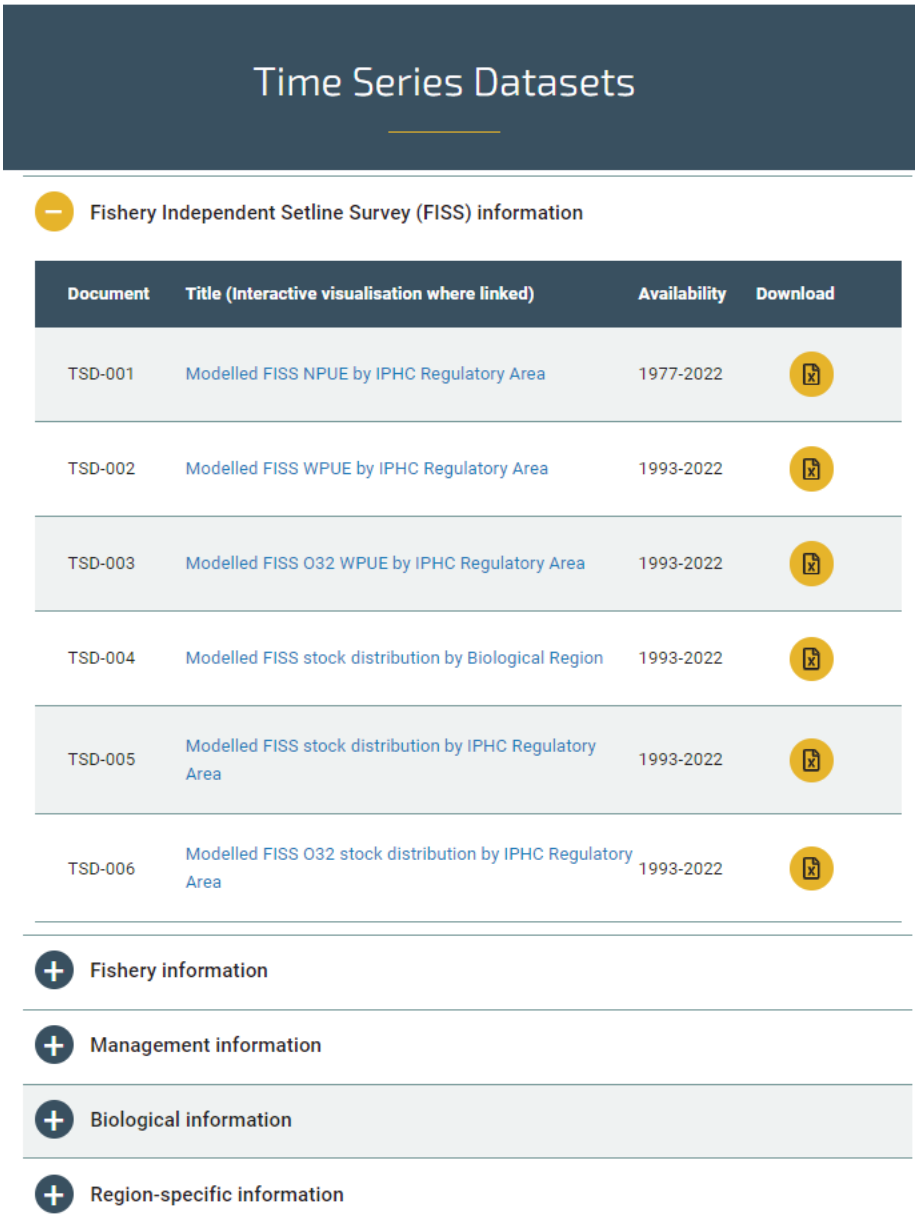
That the Commission:

1) **NOTE** paper IPHC-2024-AM100-INF03, which provides the Commission with an overview of steps taken to improve the overall quality and usability of publicly available IPHC data products.

APPENDICES

Appendix I: Time Series Datasets collection new interface

APPENDIX I
Time Series Datasets collection new interface



Time Series Datasets

Fishery Independent Setline Survey (FISS) information

Document	Title (Interactive visualisation where linked)	Availability	Download
TSD-001	Modelled FISS NPUE by IPHC Regulatory Area	1977-2022	
TSD-002	Modelled FISS WPUE by IPHC Regulatory Area	1993-2022	
TSD-003	Modelled FISS O32 WPUE by IPHC Regulatory Area	1993-2022	
TSD-004	Modelled FISS stock distribution by Biological Region	1993-2022	
TSD-005	Modelled FISS stock distribution by IPHC Regulatory Area	1993-2022	
TSD-006	Modelled FISS O32 stock distribution by IPHC Regulatory Area	1993-2022	

Fishery information

Management information

Biological information

Region-specific information

The IPHC mortality projection tool for 2024 mortality limits

PREPARED BY: IPHC SECRETARIAT (I. STEWART; 10 JANUARY 2024)

PURPOSE

This document provides a description of the IPHC's web-based mortality projection tool (https://www.iphc.int/data/projection-tool) for setting mortality limits in 2024.

BACKGROUND

Since 2019, IPHC Secretariat has provided an interactive tool in support of the IPHC's process for setting Pacific halibut mortality limits based on the coastwide TCEY and the distribution of that mortality among IPHC Regulatory Areas. The tool has been updated each year to reflect the IPHC's interim management procedure and all associated modifications and agreements in place each year.

THE MORTALITY PROJECTION TOOL

The tool relies on previously calculated stock assessment outputs representing a broad range of total mortality. These include projections of spawning stock size and fishing intensity, such that alternative harvest levels can be evaluated in the context of the harvest decision table as well as relative trends. The tool is divided into five components:

1) Inputs
2) Summary results
3) Biological distribution
4) Detailed sector mortality information
5) Graphics

A brief description of each of these is provided below.

Inputs

The first section of the tool provides the user with two primary inputs:

1) The total distributed mortality limit (TCEY) in millions of net[1] pounds.
2) The percent of the distributed mortality limit (TCEY) assigned to each IPHC Regulatory Area.

Previous versions of this tool have provided default values that reflected the IPHC's interim management procedure, as it was specified at the time. The previous interim agreement was specified to apply for the period from 2019-2022 (AM095; para. 69). As there is no interim agreement currently in place for 2024 (as in 2023), there are no default values in the current version of the tool and the user must input both the total coastwide TCEY and the percentage distributed to each IPHC Regulatory Area.

The distribution percentages for each IPHC Regulatory Area are input manually, and are intended to sum to 100%, if they do not, the total will be highlighted in red, and the inputs for

[1] Net pounds refer to the weight with the head and entrails removed; this is approximately 75% of the round (wet) weight.

Alaskan IPHC Regulatory Areas will be automatically rescaled so that the sum of the distributed mortality limits across all IPHC Regulatory Area will exactly match the coastwide total input.

There are two optional inputs, with drop-down menus, specifying:

1) The basis for projecting non-directed discard mortality. The default projection, consistent with the IPHC's recent Interim Management Procedure (specified during AM096 para. 97), is to use the three-year average non-directed discard mortality from the most recent year. Alternatives include the previous year's estimates and the values consistent with full regulatory attainment of domestic non-directed discard mortality limits.
2) The units of mortality measurement. This can either be millions of net pounds (default) or net metric pounds.

Summary results

The second section of the tool provides the projected coastwide SPR for comparison with the harvest decision table. In addition, this section reports the distributed mortality limit (TCEY) for each IPHC Regulatory Area; the total can be compared to the total input above to verify that the calculations are working properly. The total mortality limit (all sizes and sources of mortality, including U26 non-directed discard mortality of Pacific halibut) is also summarized by IPHC Regulatory Area.

Biological and fishery distribution

The third section of the mortality projection tool provides the most current modelled estimates of stock distribution by Biological Region, compared to the distributed mortality limits (TCEY). These two values are then used to project a harvest rate by Biological Region, standardized such that Region 3 (IPHC Regulatory Areas 3A and 3B) is always equal to a value of 1.0 and the other Regions (2, 4 and 4B) are relative to that value.

Detailed sector mortality information

This section provides a full distribution of mortality among IPHC Regulatory Areas and fishery sectors. Calculations are based on catch sharing agreements used by the domestic agencies for IPHC Regulatory Areas 2A, 2B, 2C, 3A, and 4CDE (4CDE allocating among sub-Areas). Static projections are used for non-directed discard mortality (see above), and subsistence mortality (based on the most recent estimates available). Discard mortality in directed fisheries scales with the landings based on the most recently observed rates for each fishery. The total of this section (matching the total in the summary results) provides the best projection of all sizes and sources of Pacific halibut mortality based on the specified mortality limits.

Graphics

The last section of the projection tool provides a series of five graphical results updated to reflect the inputs made by the user. These graphics are similar to those provided in the annual stock assessment and/or presentation material.

The first figure uses previously calculated three-year projections for a range of coastwide TCEY (and corresponding SPR) values to illustrate the coastwide spawning biomass trend associated

with the specified inputs to the tool. Uncertainty is shown as a shaded region, with the projected period highlighted by the brighter color relative to the darker estimated time-series. Importantly, not all possible SPR values are available, so the closest value available is reported. The projected SPR is reported above the figure, and a warning will be returned if the user has specified a coastwide TCEY outside of the range of values available, or if the value lies between the pre-calculated grid.

The second figure provides a bar chart of the time-series of estimated relative fishing intensity with 95% confidence intervals. The inputs to the projection tool provide the basis for the projected fishing intensity, shown as the hatched bar at the end of the series. Values are relative to the IPHC's Interim Management procedure, currently based on an SPR of 43% (see description above), such that values above the target represent higher fishing intensity.

The third figure provides a graphical display of the relative harvest rates by Biological Region as reported in the ***Biological and fishery distribution*** section.

The fourth and fifth figures provided the detailed sector mortality information (allocations) in both absolute values (millions of net pounds) and relative values (percent of the projected mortality) by IPHC Regulatory Area.

DISCUSSION

There may be some alternatives may require additional analyses beyond those available in this tool. Such alternatives will continue to be produced by the Secretariat staff as needed to support all meetings and decision-making.

UPDATE SCHEDULE

The mortality projection tool was updated in early January 2024 for use during the 2024 Annual Meeting (AM100). The update included final end-of-year 2023 mortality estimates from various fisheries, including non-directed discard mortality estimates that affect projections for 2024.

REFERENCES

IPHC. 2020. Report of the 96th Session of the IPHC Annual Meeting (AM096).

Report on the Alaska recreational Pacific halibut fishery – correspondence from the Alaska Department of Fish and Game

PREPARED BY: IPHC SECRETARIAT (B. HUTNICZAK; 16 JANUARY 2024)

PURPOSE

To provide the Commission with the report on the Alaska recreational Pacific halibut fishery in support of the annual IPHC stock assessment received by the IPHC Secretariat from Alaska Department of Fish and Game (ADFG).

BACKGROUND

The IPHC Secretariat annually receives a report from the ADFG on the Alaska recreational Pacific halibut fishery in support of the annual IPHC stock assessment. The report summarizes the methods used and basic results for the recreational mortality estimates.

APPENDICES

Appendix I: Correspondence from the Alaska Department of Fish and Game (ADFG).

APPENDIX I
Correspondence from the Alaska Department of Fish and Game (ADFG)

[The attached document begins on the following page.]

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

DIVISION OF SPORT FISH

333 Raspberry Road
Anchorage, AK 99518
Main: 907-267-2218
Fax: 907-267-2424

P.O. Box 110024
Juneau, AK 99811-0024
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3298 Douglas Place
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Main: 907-235-8191
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December 20th, 2023

Barbara Hutniczak
International Pacific Halibut Commission
2320 West Commodore Way
Salmon Bay, Suite 300
Seattle, WA 98199-1287

Dear Barbara Hutniczak:

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 2022 estimates of sport fishery harvest and yield by IPHC regulatory area,
2. Preliminary 2023 estimates of harvest and yield by IPHC area,
3. Final 2022 and preliminary 2023 estimates of sport fishery release mortality by IPHC area, and
4. Final 2022 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.2022.04.pdf*

Southcentral Region creel sampling: *https://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.2A.2022.24.pdf*

Statewide halibut estimation: *http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.4A.2020.04.pdf*

We hope this information satisfies the IPHC's needs. Please feel free to contact us if you require clarification or additional information.

Sincerely,

(sent via email)

Brianna Bowman, Sarah Webster, Mike Jaenicke, Diana Tersteeg, Clay Mckean and Marian Ford

Final Estimates of 2022 Sport Harvest and Yield

In Fall 2022 we provided preliminary estimates of the 2022 sport harvest for Areas 2C, 3A, 3B, and 4. This letter provides final estimates of the 2022 sport harvest based on Alaska Department of Fish and Game (ADF&G) saltwater logbook data and estimates from the ADF&G Statewide Harvest Survey (SWHS). The final estimates for Area 2C and 3A are also be posted on the North Pacific Fishery Management Council website.

The Area 2C charter fishery regulations for 2022 included a one-fish daily bag limit and reverse slot (or "protected slot") limit that allowed harvest of halibut less than or equal to 40 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 of one 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 all Wednesdays, and an additional closure of two Tuesdays. 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 bag limit of two fish of any size.

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 (charter) and seven subareas (unguided) 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 estimates of charter average weight for Homer, Seward, and Whittier were stratified to account for differences in sizes of halibut cleaned at sea and cleaned in port. 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 and is counted against IFQ.

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 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 and is the westernmost sampled port. 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 = 106). In 2022, 37 halibut were estimated from Area 3A locations in Area R.

Results:

The 2022 Area 2C estimated sport harvest (excluding release mortality) was 150,446 fish, for a yield of 2.000 million pounds (Table 1). Charter yield represented 40% of the total. Average net weight was estimated at 13.29 lb overall and was lower for the charter sector due to size restrictions. Average weight was estimated from samples of 5,598 charter halibut and 4,565 unguided halibut.

Area 3A estimated sport harvest was 245,503 fish, for a yield of 2.621 Mlb (Table 1). The charter sector accounted for 66% of the total yield. Average net weight was estimated at 10.68 lb overall and was slightly lower for the charter sector. Average weight was estimated from samples of 4,747 charter halibut and 1,797 unguided halibut.

The final estimates of charter halibut yield were about 0.3% higher than last year's preliminary estimate in Area 2C and 1.9% lower in Area 3A. The final estimates of unguided yield were 5.8% higher than the preliminary estimates in Area 2C and 24.4% lower in Area 3A. The preliminary estimates were derived from exponential time series forecasts (SAS ESM procedure) for the unguided sector.

The final harvest estimates for western areas were 503 halibut in Area 3B and 281 halibut in Area 4 (Table 1). Applying the Kodiak unguided average weight of 11.04 lb resulted in yield estimates of 0.006 Mlb in Area 3B and 0.003 Mlb in Area 4. The final estimate for 3B is down from last year's preliminary estimates of 0.008 Mlb and down from last year's estimate of 0.006 Mlb in Area 4.

Preliminary 2023 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 charter logbooks. Harvest and release estimates from the SWHS are used for all unguided fishery estimates in 2C and 3A as well as total sport fishery estimates for Areas 3B and 4. Neither complete logbook data nor SWHS estimates are available 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 and Regulatory Area.

The Area 2C charter fishery regulations for 2023 included a one-fish daily bag limit and reverse slot (or "protected slot") limit that allowed harvest of halibut less than or equal to 40 inches and halibut greater than or equal to 80 inches, as well as Monday closures starting July 24th and continuing through the end of the year. The Area 3A charter regulations included a two-fish bag limit with a maximum size of one 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 all Wednesdays and nine Tuesdays (June 20th – August 15th). 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 bag limit of two fish of any size.

Electronic logbooks (eLogbook) were mandatory throughout 2C in 2023. As such, harvest reported in eLogbooks through October 3rd was used to estimate preliminary harvest. It is expected that this number will change slightly when final harvest is available due to data cleaning that still needs to occur and submission of late pages. From 2017 – 2022 there was effectively no charter harvest in 2C after October 1st; it is anticipated that late season harvest in 2023 will not have a substantial effect on total harvest. Charter harvest for 3A was projected from partial-year logbook data. The majority of operators in 3A still use paper logbooks and there was no mandate to use eLogbook in most of 3A in 2023. Logbook data were entered and available in mid-October for most trips taken through July 31st and this was used to project harvest for the year in 3A. Harvest data through July 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 1.7%. 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 2006-2019 and 2022-2023 logbook data. Data from 2020 were omitted from forecasts due to the unusual timing of the fishery caused by the COVID-19 pandemic.

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. Data from 2020 were omitted from unguided forecasts in 2C and 3A due to the reduced effort caused by the COVID-19 pandemic in those Areas.

For both sectors in Areas 2C and 3A, preliminary harvest at the subarea level was used to estimate yield. Charter and unguided yield were estimated by multiplying the subarea estimated harvest 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 2023, so the Kodiak area average weight from the unguided fishery was again substituted for these Areas.

Results:

The preliminary estimate of 2023 sport halibut harvest in Area 2C (excluding release mortality) was 149,978 halibut, or 1.837 Mlb (Table 2). Average weight was estimated at 12.25 lb. The charter average weight was 6.42 lbs lower than the unguided average weight due to the charter fishery size limit. Average weights for Area 2C were estimated from samples of 4,496 charter halibut and 4,598 unguided halibut.

The preliminary estimate for Area 3A was 240,258 halibut, for a total sport fishery yield of 2.515 Mlb (Table 2). The estimated average weights in Area 3A were 10.47 lb overall. Average weights were estimated from samples of 2,756 charter and 1,162 unguided halibut.

The preliminary harvest estimates for 2023 were 554 halibut in Area 3B and 432 halibut in Area 4. Applying the unguided average weight of 11.36 lb from Kodiak resulted in yield projections of 0.006 Mlb in Area 3B and 0.005 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 2022 and Preliminary 2023 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 2022 were based on final logbook data. The numbers of halibut released in 2023 used eLogbook data through October 3rd and were projected using logbook data through July 31st in 3A that were adjusted for late pages, errors, and late season releases. The projections in 3A used simple exponential forecasts of the proportion of releases through July 31st from 2006-2019 and 2021-2022 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 2022 was obtained from the SWHS. The projections for 2023 were simple exponential time series forecasts using previous release numbers from the SWHS and did not include 2020 data.

Assumed discard mortality rates (*DMRs*) were derived in 2007 for each Area and sector based on the type of hooks that were reported through port sampling and are 5% for Area 3A charter-caught halibut, 6% for Area 2C charter halibut and Area 3A unguided halibut, and 7% for Area 2C unguided halibut. A discard mortality rate of 6% was assumed for Areas 3B and 4, as no data on hook has been collected. These DMRs are described in the operational plan (see cover page for link).

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 and average weight was calculated using the IPHC length-weight relationship.

For the Area 2C charter fishery, additional steps were needed to estimate release mortality due to the reverse slot limits in place in 2022 and 2023. This required partitioning the released fish into size categories as follows: U40 (≤ 40 inches), 40-80, 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 U40 (2022 or 2023) 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 small fish released but overestimate average weight. Because the model assumes that the percentage of fish kept at length never exceeds 95%, it may also overestimate the numbers of large fish released, but probably has little effect on their average weight.

Results:

For 2022, estimated release mortality was 0.062 Mlb in Area 2C, with 0.039 Mlb from the charter fishery (Table 3). The size class breakdown of the Area 2C charter release mortality indicated that the majority of fish were in the U40 category, and the majority of poundage was in the O40-U80 size range (Table 4). Estimated release mortality in Area 3A was 0.027 Mlb, with 0.014 Mlb from the charter fishery (Table 3). Areas 3B and 4 each had negligible amounts of release mortality from the sport fishery.

For 2023, estimated release mortality was 0.042 Mlb in Area 2C, 0.029 Mlb in Area 3A, and virtually zero in Areas 3B and 4 (Table 5). The size class breakdown of the Area 2C charter release mortality indicated that the majority of fish released were in the U40 length range and the poundage of release mortality was greatest in the U40 length range (Table 4).

The 2022 total sport fishery removals, including harvest and all sizes of release mortality, was 2.062 Mlb in Area 2C and 2.648 Mlb in Area 3A. Release mortality made up 3.0% of all Area 2C removals and 1.0% of Area 3A removals in 2022. For 2023, the preliminary estimates of total sport removals are 1.879 Mlb in Area 2C and 2.543 Mlb in Area 3A. Release mortality accounted for 2.2% of Area 2C removals and 1.1% of Area 3A removals in 2023.

Final Sport Fishery Yield Prior to the Mean IPHC Survey Dates in 2022

This information is provided to aid the IPHC's adjustment to the Fishery Independent Setline Survey CPUE that is used to apportion estimated exploitable biomass among regulatory areas. The mean survey dates for 2022 were July 02 in Area 2C and July 12 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 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 final estimated harvests in each subarea to derive the overall proportions. In 2022, there were no dockside interviews in Central Cook Inlet and a midsummer vacancy in Kodiak, so for the unguided sector the average proportion from ports with interview data was used as a proxy. The total sport yield taken prior to the mean survey date was calculated by multiplying the charter and unguided proportions by their respective final yields and summing.

Results:

In 2022, an estimated 0.616 Mlb of halibut were taken by the sport fishery in Area 2C prior to July 02, and an estimated 1.429 Mlb were taken in Area 3A prior to July 12 (Table 6).

Table 1. Final estimates of the 2022 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	83,136	9.74	0.810	0.770-0.849
	Unguided	67,310	17.69	1.191	1.029-1.352
	Total	150,446	13.29	2.000	1.834-2.166
Area 3A	Charter	169,592	10.18	1.727	1.619-1.835
	Unguided	75,911	11.78	0.894	0.785-1.003
	Total	245,503	10.68	2.621	2.467-2.774
Area 3B	Total	503	11.04[a]	0.006	NA
Area 4	Total	281	11.04[a]	0.003	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 2023 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	83,605	9.41	0.786	0.763-0.809
	Unguided	66,373	15.83	1.050	0.906-1.195
	Total	149,978	12.25	1.837	1.691-1.983
Area 3A	Charter	153,337	10.09	1.546	1.384-1.709
	Unguided	86,921	11.14	0.968	0.805-1.131
	Total	240,258	10.47	2.515	2.311-2.718
Area 3B	Total	554	11.36[a]	0.006	NA
Area 4	Total	432	11.36[a]	0.005	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 2022. Some columns may not appear to add correctly due to rounding.

IPHC Area	Sector	Estimated No. Halibut Released	Assumed Mortality Rate	Number Released that Died	Estimated Average Net Weight (lb)	Release Mortality (Mlb)
Area 2C	Charter	38,417	6.0%	2,305	16.72	0.039
	Unguided	40,043	7.0%	2,803	8.32	0.023
	Total	78,460	6.5%	5,108	12.11	0.062
Area 3A	Charter	51,460	5.0%	2,573	5.33	0.014
	Unguided	40,173	6.0%	2,410	5.53	0.013
	Total	91,633	5.4%	4,983	5.43	0.027
Area 3B	Total	470	6.0%	28	4.82	0.000
Area 4	Total	149	6.0%	9	5.11	0.000

Table 4. Breakdown of Area 2C estimates of charter release mortality by size class for 2022 (final) and 2023 (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)
2022	U40	31,032	6.0%	1,862	6.07	0.013
	O40U80	7,206	6.0%	432	53.89	0.023
	O80	178	6.0%	11	228.88	0.002
	Total	38,417	6.0%	2,305	16.72	0.039
2023	U40	38,953	6.0%	2,337	6.69	0.016
	O40U80	3,291	6.0%	197	50.74	0.010
	O80	50	6.0%	3	228.88	0.001
	Total	42,294	6.0%	2,538	10.38	0.026

Table 5. Preliminary estimates of release mortality for sport fisheries in Areas 2C, 3A, 3B, and 4 in 2023. Some columns may not appear to add correctly due to rounding.

IPHC Area	Sector	Estimated No. Halibut Released	Assumed Mortality Rate	Number Released that Died	Estimated Average Net Weight (lb)	Release Mortality (Mlb)
Area 2C	Charter	42,294	6.0%	2,538	10.38	0.026
	Unguided	32,606	7.0%	2,282	6.69	0.015
	Total	74,900	6.4%	4,820	8.63	0.042
Area 3A	Charter	35,614	5.0%	1,781	5.18	0.009
	Unguided	53,873	6.0%	3,232	6.01	0.019
	Total	89,487	5.6%	5,013	5.71	0.029
Area 3B	Total	513	6.0%	31	6.27	0.000
Area 4	Total	391	6.0%	23	6.29	0.000

Table 6. Estimated sport harvest prior to the mean IPHC survey dates in 2022 in Areas 2C and 3A.

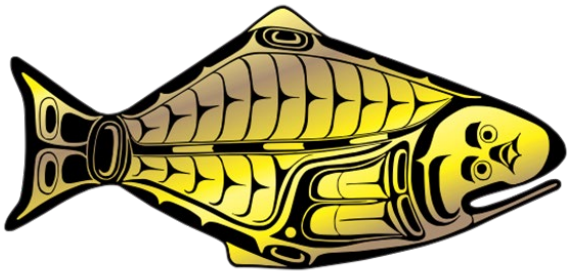
		Charter		Unguided		Total	
Area	Mean Survey Date	Percent	Harvest (Mlb)	Percent	Harvest (Mlb)	Percent	Harvest (Mlb)
2C	July 2	30.6%	0.248	30.9%	0.368	30.8%	0.616
3A	July 12	48.3%	0.834	66.6%	0.596	54.5%	1.429

INTERNATIONAL PACIFIC HALIBUT COMMISSION

INTERIM: HARVEST STRATEGY POLICY

(2024)

INTERNATIONAL PACIFIC



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NOTE: The following is an interim 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 year, the IPHC will develop and implement a harvest strategy, and that this policy document will then be updated accordingly.

ACRONYMS

HCR	Harvest Control Rule
HSP	Harvest Strategy Policy
IPHC	International Pacific Halibut Commission
LIM	Limit
MP	Management Procedure
MSAB	Management Strategy Advisory Board
MSE	Management Strategy Evaluation
NER	Net economic returns
OM	Operating Model
SB	Spawning Biomass (female)
SPR	Spawning Potential Ratio
SRB	Scientific Review Board
TCEY	Total Constant Exploitable Yield
THRESH	Threshold
U.S.A.	United States of America

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

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Chapter 1 INTRODUCTION

The *IPHC Harvest Strategy Policy* (HSP) provides a framework for applying a consistent and transparent science-based approach to setting mortality limits for Pacific halibut (*Hippoglossus stenolepis*) fisheries throughout the Convention Area while ensuring sustainability of the Pacific halibut population.

It defines biological and economic objectives that apply to the development of a harvest strategy for Pacific halibut. It also identifies 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)*[1], provides the basis to manage the risk to Pacific halibut fisheries and the Pacific halibut population.

A harvest strategy developed under this policy will take available information about the Pacific halibut resource and apply a consistent and transparent science-based approach to setting mortality limits. A harvest strategy consistent with this policy will provide all interested sectors with confidence that the Pacific halibut fisheries are being managed for long-term economic viability while ensuring long-term ecological sustainability of the Pacific halibut population. The implementation of a clearly specified harvest strategy will also provide the fishing industry with a more certain operating environment.

1.1 SCOPE

The IPHC Harvest Strategy Policy applies to the Pacific halibut population managed by the IPHC, and where overlap with domestic jurisdictional management exists (e.g. managed jointly by the IPHC and Contracting Party domestic agencies) the IPHC will seek to apply and encourage the adoption of this policy in negotiating and implementing joint or cooperative management arrangements.

The IPHC is responsible for determining the mortality limit in each of eight (8) IPHC Regulatory Areas (Figure 1). The mortality limit in each IPHC Regulatory Area consists of all fishing mortality of all sizes and from all sources, except for discard mortality of under 26-inch (U26) Pacific halibut from non-directed commercial fisheries. This mortality limit without U26 non-directed commercial discard mortality has been termed the Total Constant Exploitation Yield, or the TCEY, but mortality limit is used here.

Mortality limits for each sector within an IPHC Regulatory Area, and all sizes of non-directed commercial discard mortality, are determined by Contracting Party domestic agencies. Therefore, this Harvest Strategy Policy is specific to the mortality limit in each IPHC Regulatory Area.

[1] https://www.iphc.int/uploads/pdf/basic-texts/iphc-1979-pacific-halibut-convention.pdf

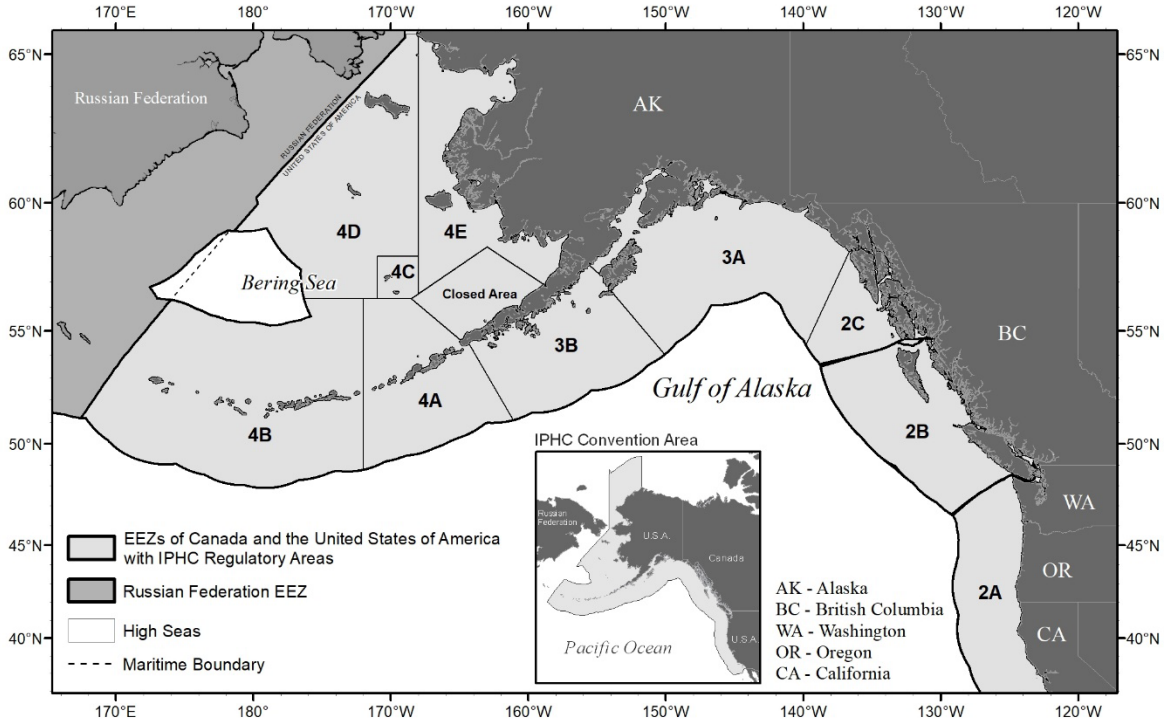

Figure 1. IPHC Regulatory Areas where 4C, 4D, 4E, and the closed area are considered one IPHC Regulatory Area (4CDE). The IPHC Convention Area is shown in the inset.

1.2 WHAT IS A HARVEST STRATEGY POLICY (HSP)?

Being a framework, the harvest strategy policy encompasses the entire process of the harvest strategy and decision-making process to determine mortality limits (Figure 2) as well as other important considerations such as objectives, key principles, and responses to specific events. To determine mortality limits, the process begins with determining the coastwide scale of fishing mortality (the MP) followed by the process for distributing the TCEY among IPHC Regulatory Areas (part of the harvest strategy). The final step of the HSP, which is not part of the MP, is the decision-making process that occurs at the Annual Meeting of the IPHC. The final mortality limits may deviate from those determined from the management procedure, resulting in less transparency in the process.

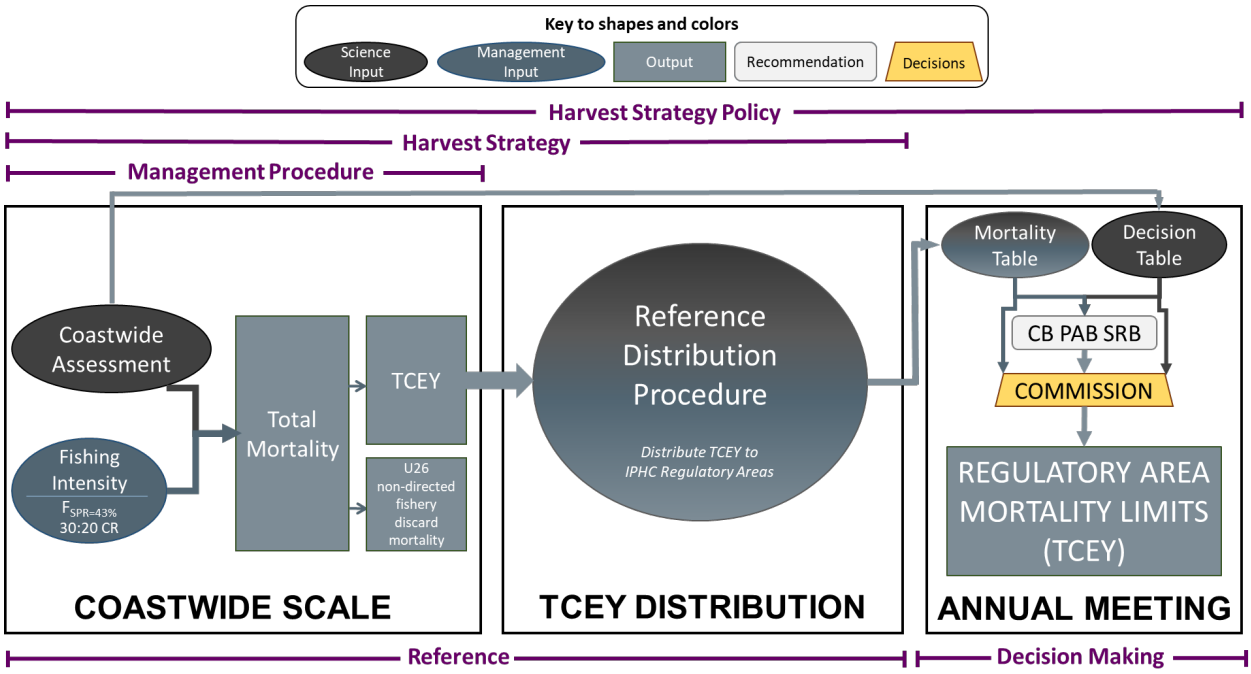

Figure 2. Illustration of the interim IPHC harvest strategy policy process to determine mortality limits showing the coastwide scale component as the management procedure along with the TCEY distribution component that comprise the harvest strategy. The TCEY distribution and Annual Meeting components make up the Commission decision-making process, which considers inputs from many sources and may deviate from the management procedure.

1.3 WHAT IS A HARVEST STRATEGY?

A harvest strategy, which may also be referred to as a management strategy, is the decision framework necessary to achieve defined biological and economic objectives for Pacific halibut. A harvest strategy will outline:

- Objectives and key principles for the sustainable and profitable use of Pacific halibut.
- Reference points and other quantities used when applying the harvest strategy.
- Processes for monitoring and assessing the biological conditions of the Pacific halibut population and economic conditions of Pacific halibut fisheries in relation to biological and fishery reference levels (a reference point or points).
- Pre-determined rules that determine fishing mortality according to the biological status of the Pacific halibut stock and economic conditions of the Pacific halibut fishery (as defined by monitoring and/or assessment). These rules are referred to as harvest control rules or decision rules.

A management procedure (MP) contains many of the components of a harvest strategy and is sometimes synonymous with harvest strategy. Here, we define an MP as different from a harvest strategy in that each component of an MP is more formally specified and has been shown to meet the objectives through simulation testing while also being robust to uncertainty and variability. Harvest strategy is a more general concept and refers to the entire process needed for determining reference mortality limits (i.e. the TCEY for each IPHC Regulatory Area) that are then subject to the decision-making step. Some steps, such as the

distribution of the TCEY, may not have been simulation tested and are subject to negotiation and decision-making. Simulation testing MPs using MSE models with decision-making variability ensure that a harvest strategy policy is robust to this uncertainty.

Management Procedure (MP): A formulaic procedure to determine a management outcome (e.g. mortality limit) that has been simulation tested and produces a repeatable outcome.

Harvest Strategy: The entire process to produce endpoint reference management outcomes (e.g. TCEYs for each IPHC Regulatory Area) which may have some components that are not simulation tested and subject to uncertainty. This outcome informs the decision-making process.

Chapter 2 OBJECTIVES AND KEY PRINCIPLES

A goal of the IPHC Harvest Strategy Policy is the long-term sustainable and profitable use (optimum yield) of Pacific halibut through the implementation of a harvest strategy that maintains the stock at sustainable levels while maximising economic returns.

To achieve this goal the IPHC will implement a harvest strategy that minimises risk to the stock and pursues maximum economic yield (MEY) for the directed Pacific halibut fisheries. Maximising the net economic return from the fishery may not always equate with maximising the profitability of the fishery. Net economic return may consider inter-annual stability to maintain markets, and economic activity may also arise from recreational and Indigenous fishing, and the need to share the resources appropriately will be considered where necessary. Priority objectives to achieve this goal include:

- maintain Pacific halibut female spawning biomass, above a female spawning biomass limit where the risk to the stock is regarded as unacceptable (SB_{LIM}), at least 95% of the time;
- maintain Pacific halibut female spawning biomass, at least 50% of the time, at or above a reference (fixed or dynamic) female spawning biomass that optimises fishing activities on a spatial and temporal scale relevant to the fishery;
- optimise average coastwide yield given the constraints above;
- limit annual changes in the coastwide mortality limit (TCEY).

The harvest strategy will ensure fishing is conducted in a manner that does not lead to *overfishing*. Overfishing is defined as where the stock is subject to a level of fishing that would move it to an *overfished* state, or prevent it from rebuilding to a 'not overfished' state, within a specific time-frame and probability. Where it is identified that overfishing of the stock is occurring, action will be taken immediately to cease that overfishing and action taken to recover the overfished stock to levels that will ensure long-term sustainability and productivity to maximise NER.

The harvest strategy will also ensure that if the stock is overfished, the fishery must be managed such that, with regard to fishing impacts, there is a high degree of probability the stock will recover. If the stock is assessed to be below the female spawning biomass limit reference point (i.e. *overfished*), a stock rebuilding strategy will be developed to rebuild the stock to the limit female spawning biomass level, whereby the harvest control rules would then take effect to build the stock further to target female spawning biomass levels.

Overfished: when the estimated probability that female spawning stock biomass is below the limit reference point (SB_{LIM}) is greater than 50%.

Overfishing: where the stock is subject to a level of fishing that would move it to an overfished state, or prevent it from rebuilding to a '*not overfished*' state, within a specific time-frame and probability, to be determined.

Chapter 3 DEVELOPMENT OF THE HARVEST STRATEGY

The following requirements provide the basis for a transparent and systematic approach used when developing the harvest strategy to assist in meeting the objectives of the Harvest Strategy Policy.

3.1 ACCOUNTING FOR FISHING MORTALITY ON ALL SIZES AND FROM ALL SOURCES

The harvest strategy accounts for all known sources of fishing mortality on the stock and all sizes of Pacific halibut mortality, including directed commercial, recreational, subsistence, and fishing mortality under the management of another jurisdiction, such as non-directed fishing mortality. Discard mortality of released fish is accounted for using best available knowledge.

3.2 VARIABILITY IN THE ENVIRONMENT AND BIOLOGICAL CHARACTERISTICS

The productivity of Pacific halibut is affected by variability in the environment and by natural changes in biological characteristics. The environment fluctuates naturally and is altered due to climate change and other factors, which may affect biological characteristics such as size-at-age and recruitment of age-0 fish. The following types of variability were considered when developing the harvest strategy for Pacific halibut. Additional environmental linkages to the ecology and biology of Pacific halibut should be considered as knowledge improves.

- Variability in recruitment of age-0 Pacific halibut due to unknown causes
- Variability in average recruitment of age-0 Pacific halibut due to the environment (e.g. Pacific Decadal Oscillation, PDO).
- Variability in the distribution of age-0 recruits linked to the PDO.
- Changes in weight-at-age due to unknown causes
- Variability in movement throughout the Convention Area due to the environment (e.g. linked to the PDO).

The potential impacts of climate change were taken into account when developing the harvest strategy policy and future research on the potential effects of climate change on Pacific halibut fisheries and stocks will be incorporated as necessary.

3.3 MONITORING STANDARDS

[To be completed] This section describes standards for monitoring. For example, FISS, port sampling, catch monitoring, etc.

3.4 ESTABLISHING AND APPLYING DECISION RULES

The harvest strategy developed under this policy specifies all required management actions or considerations for Pacific halibut, at the stock or IPHC Regulatory Area level, necessary to achieve the ecological and economic management objectives for the fishery. Specifics are provided in Chapter 4.

3.5 BALANCING RISK, COST AND CATCH

This policy establishes a risk-based management approach, which provides for an increased level of caution when establishing control rules in association with increasing levels of uncertainty about stock status.

In the context of this policy, the risk, cost, and catch trade-off, refers to a trade-off between the amount of resources invested in data collection, analysis and management of Pacific halibut, and the level of catch (or fishing mortality) applied. Fishing mortality should always be constrained to levels at which scientific assessment indicates Pacific halibut is not exposed to an 'unacceptable ecological risk' (that is the risk that stocks will fall below the limit reference point).

The management decision to be taken in this context is whether investment of more resources in data collection and analyses and/or additional management will increase the understanding of the risk to a species or stock from fishing and provide confidence in the sustainability of a higher level of fishing pressure or catch. In the absence of this additional information–and associated improved understanding of a stock, it may be necessary to reduce the fishing effort in order to manage the risk. Decisions about investment in managing risk versus the economic return of the catch taken will be transparently made, clearly documented and publicly available.

3.6 REFERENCE POINTS AND PROXIES

A reference point is a specified level of an indicator used as a basis for managing Pacific halibut. The reference point should reflect acceptable levels of biological impact on the stock and the desired economic outcomes from the fishery. A reference point will often be based on indicators of either the total or female spawning stock size (relative or absolute spawning biomass), the amount of harvest (fishing mortality), or on other factors such as economic return from the fishery.

A harvest strategy for Pacific halibut shall be based on 'threshold' reference points and 'limit' reference points. A threshold reference point is a level that achieves the policy objectives if the indicator is at or above that level. When the stock is at or above a threshold reference point, optimal yield is possible. A biological limit reference point indicates a point beyond which the long-term health of the stock or the commercial fishery is considered unacceptable and should be avoided. Fishing when the Pacific halibut population is below the biological limit reference point places the Pacific halibut stock at a range of biological risks, including an unacceptable risk to recruitment and productivity, and an increased risk that the stock will fail to maintain its ecological function, although risk of extinction is not a major concern. A fishery limit reference point indicates a stock level below which the fishery is unlikely to remain profitable. Proxy reference points are described in Table 1.

Spawning biomass reference points may be dynamic or absolute calculations. A dynamic calculation pertains to relative spawning biomass (RSB) being relative to the spawning biomass that would have occurred if fishing had not occurred, but other variability had occurred (e.g. recruitment deviations, changes in size-at-age, etc). This measures the effect of only fishing, rather than the effect of fishing and the environment. An absolute spawning biomass is typically a specified spawning biomass level and may be presented as a number or a value estimated in a particular year. An absolute spawning biomass may be useful as a threshold reference point where being below would result in low catch rates and possibly other concerns. Currently there are no absolute spawning biomass reference points, but they may be a useful contrast to dynamic reference points.

Table 1. Proxy reference points

Reference point	Definition	Proxy
Threshold reference point SB_{THRESH}	The female dynamic spawning biomass level at maximum economic yield (SB_{MEY})	36% of the unfished spawning biomass ($SB_{36\%}$).
Biological limit reference point SB_{LIM}	The female dynamic spawning biomass level where the ecological risk to the population is regarded as unacceptable (i.e. at least 95 percent of the time)	20%of the unfished female spawning biomass ($SB_{20\%}$).

3.7 TECHNICAL EVALUATION OF THE HARVEST STRATEGY

A harvest strategy should be formally tested to demonstrate that it is highly likely to meet the objective and key principles of this policy, and outcomes of that testing should be made publicly available. Management strategy evaluation (MSE), a procedure where alternative management strategies are tested and compared using simulations of stock and fishery dynamics, is one of the best options to test harvest strategies. An MSE should incorporate variability and uncertainty, such as described in Section 3.2, structural uncertainty in operating models (OMs), and represent spatial fishing sectors appropriately. An accepted harvest strategy should, at a minimum, be evaluated using MSE and meet the priority objectives outlined in Chapter 2.

MSE involves determining objectives, identifying MPs to evaluate, simulating those MPs with a closed-loop simulation framework, evaluating the MPs to determine which one best meets the objectives, and finally adopting that MP as part of the harvest strategy. This process takes input from stakeholders through meetings of the Management Strategy Advisory Board (MSAB) and is reviewed by the IPHC Scientific Review Board (SRB).

3.8 RE-EVALUATING THE HARVEST STRATEGY AND MANAGEMENT PROCEDURE

A harvest strategy is a transparent and science-based approach to determining mortality limits and is meant to remain in place for many years. Frequent modifications or departures from the harvest strategy reduce the transparency and science-based approach. Therefore, it is important to specify, as part of the harvest strategy, time periods for re-evaluation of management procedures and to identify exceptional circumstances that would trigger a re-evaluation before that time period.

The IPHC currently operates of a schedule of three-years for full stock assessments, with update stock assessments in the intervening two years, and the MSE OM is updated following each full stock assessment to maintain consistent approaches and paradigms. Therefore, MPs are re-evaluated at a minimum of three years after implementation, if needed. An exceptional circumstance may trigger a re-evaluation before then and are defined as follows.

- The coastwide all-sizes FISS WPUE or NPUE from the space-time model is above the 97.5th percentile or below the 2.5th percentile of the simulated FISS index for two or more consecutive years.
- The observed FISS all-sizes stock distribution for any Biological Region is above the 97.5th percentile or below the 2.5th percentile of the simulated FISS index over a period of two or more years.
- Recruitment, weight-at-age, sex ratios, other biological observations, or new research indicating parameters that are outside the 2.5th and 97.5th percentiles of the range used or calculated in the MSE simulations.

Exceptional circumstances would be reviewed by the SRB to determine if one should be declared.

In the event that an exceptional circumstance is declared, the following actions are to be completed.

- A review of the MSE simulations to determine if the OM can be improved and MPs should be re-evaluated.
- Consult with the SRB and MSAB to identify why the exceptional circumstance occurred, what can be done to resolve it, and determine a set of MPs to evaluate with an updated OM.
- Further consult with the SRB and MSAB after simulations are complete to identify whether a new MP is appropriate.

MSE work is currently ongoing to supplement this interim harvest strategy policy. Current elements of MPs being investigated include not conducting a stock assessment every year and using an empirical rule based on the FISS WPUE in years without a stock assessment to determine the coastwide TCEY. With the harvest strategy currently being evaluated, updates to this interim harvest strategy policy may occur before three years.

Chapter 4 APPLYING THE HARVEST STRATEGY

4.1 JOINTLY-MANAGED DOMESTIC STOCKS

Consistent 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), the IPHC will pursue the sustainable use of Pacific halibut within fisheries managed by other jurisdictions.

4.2 JOINTLY-MANAGED INTERNATIONAL STOCKS

The IPHC Harvest Strategy Policy does not prescribe management arrangements in the case of fisheries that are managed by a Party external to the IPHC Convention. This includes management arrangements for commercial and traditional fishing in the US Treaty Tribes and Canadian First Nations, that are governed by provisions within relevant Treaties. However, it does articulate the IPHC preferred approach.

4.3 STOCK ASSESSMENT

[To be completed] The stock assessment occurs annually, although a full stock assessment, investigating all aspects and potentially making major changes, occurs triennially. The stock assessment will include a summary of the data available for analysis, estimates of current stock size and trend relative to reference points, and short-term projections of various risk metrics (probability of stock decrease, probability of exceeding fishing intensity reference points, etc.) under different levels of future harvest.

4.4 COASTWIDE MORTALITY LIMIT

The coastwide mortality limit is determined using the stock assessment and a fishing intensity (i.e. F_{SPR}) defined by a harvest control rule (Figure 3). The stock assessment estimates the stock status which is used in the harvest control rule to determine if fishing intensity should be reduced from a reference SPR of 43%. The reference SPR is linearly reduced when the stock status is estimated below 30% and is set to 100% (no fishing for directed fisheries) when the stock status is estimated at or below 20%.

4.5 REBUILDING IF THE STOCK BECOMES OVERFISHED

If Pacific halibut is determined to be overfished (when the probability that female spawning stock biomass is below the limit reference point (SB_{LIM}) is greater than 50%), immediate action is required to cease directed fishing and rebuild the stock to levels that will ensure long-term sustainability and productivity, i.e. at or above SB_{LIM}. A rebuilding strategy must be developed to rebuild the stock to above its limit reference point, for agreement by the Commission. A rebuilding strategy will be required until the stock is above the limit reference point with a reasonable level of certainty (at least a 70% probability that the stock has rebuilt to or above the limit reference point). It must ensure adequate monitoring and data collection is in place to assess the status of the stock and rebuilding progress.

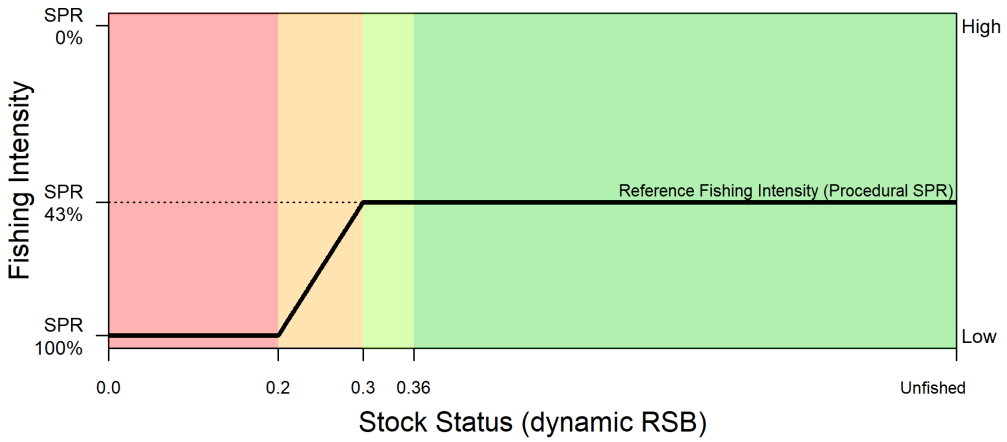

Figure 3. Harvest control rule for the fishing intensity (i.e. F_{SPR}) to determine the coastwide total mortality limit. The stock status is the dynamic relative spawning biomass (RSB) determined from the stock assessment. The reference fishing intensity is $F_{SPR=43\%}$, and is applied when stock status is above the trigger of 30%. SPR is linearly reduced between a stock status of 30% and 20%, and set to 100% when at or below 20% (no directed fishing). A stock status of 20% is also the reference point SB_{LIM}. The threshold RSB, 36%, is related to an objective to maintain the relative spawning biomass at or above $SB_{36\%}$ at least 50 percent of the time. Colours show the area below B_{LIM}, the area 'on the ramp', the area above the trigger and below SB_{THRESH}, and the area above SB_{THRESH}.

Directed fishing and incidental mortality of Pacific halibut, if determined to be overfished, should be constrained as much as possible to levels that allow rebuilding to the limit reference point (SB_{LIM}) within the specified timeframe. Once a stock has been rebuilt to above the limit reference point with a reasonable level of certainty, it may be appropriate to recommence directed fishing, and increase incidental mortality in line with the harvest strategy, noting that the usual harvest strategy requirements regarding the application of the harvest control rule and risk of breaching the limit reference point will apply.

The rebuilding strategy should note where sources of mortality exist that cannot be managed or constrained by the IPHC, and must take this mortality into account. Where practical and appropriate, the IPHC will work with other jurisdictions to ensure other sources of mortality from fishing are reasonably constrained consistent with any catch sharing arrangement.

When a rebuilding strategy is being developed, it must include performance measures and detail on how and when these measures will be reported on. Where there is no evidence that a stock is rebuilding, or is going to rebuild in the required timeframe and probability, the IPHC will review the rebuilding strategy and make the result of the review public. If changes to the rebuilding strategy are considered necessary, such changes should be made in a timely manner.

4.5.1 Rebuilding timeframes

Rebuilding timeframes are explicitly related to the minimum timeframe for rebuilding in the absence of commercial fishing. Rebuilding timeframes should take into account Pacific halibut productivity and recruitment; the relationship between spawning biomass and recruitment; and the stock's current level of depletion.

4.6 MORTALITY LIMITS FOR EACH IPHC REGULATORY AREA

The final outputs of the harvest strategy policy before domestic management is applied are mortality limits for each IPHC Regulatory Area. This component (Figure 2) is part of the harvest strategy but is not part of the management procedure because it is subject to negotiation and decision-making. During this process, the coastwide mortality limit may change as well, which has been accounted for in the MSE by incorporating decision-making variability.

Reference mortality limits for each IPHC Regulatory Area are useful for the decision-making process. These are determined using the coastwide TCEY, stock distribution estimated from the FISS observations, and defined relative harvest rates for each IPHC Regulatory Area (1.0 for IPHC Regulatory Areas 2A, 2B, 3C, and 3A, and 0.75 for IPHC Regulatory Areas3B, 3A, 4CDE, and 4B). Using stock distribution provides insight into where biomass is distributed, and lower relative harvest rates in western areas protects biomass that may still move to eastern areas and may have lower sustainable harvest rates.

4.7 COMMON OUTPUTS USED FOR DECISION-MAKING

Two outputs are produced as part of the harvest strategy policy to assist the decision-making process at the Annual Meeting (Figure 2): a *mortality table* and a *decision table*.

Mortality table: The mortality table uses the output of the harvest strategy, mortality limits for each IPHC Regulatory Area, and defines the mortality limits for each sector within each IPHC Regulatory Area. Domestic catch-sharing plans and Commission agreements on projecting non-directed discard mortality are used to fill out the details. This table can be produced for any projected year, but is commonly presented for only the first projected year.

Decision table: The decision table is a stock assessment output that provides risk relative to stock trend, stock status, fishery trends, and fishery status for a range of coastwide mortality levels. The decision table is not dependent on the harvest strategy, although the reference F_{SPR} is a provided as a central point of the range and allocation of mortality among IPHC Regulatory Areas and sectors may have a small influence. Alternative coastwide mortality limits are presented on either side of the reference mortality limit. The decision table presents probabilities for different metrics over a three-year projection period.

4.8 STAKEHOLDER AND SCIENTIFIC INPUT

Stakeholder and scientific input into the application of the harvest strategy are an important process to support the sustainable and profitable management of the Pacific halibut fishery. Input from both of these sources occurs at meetings throughout the year.

4.8.1 Stakeholder input

Stakeholder input can occur via public testimony at any public IPHC meeting or at meetings of various IPHC subsidiary bodies. In particular, the MSAB, Research Advisory Board (RAB), Conference Board (CB), and Processor Advisory Board (PAB) are populated by individuals representing various interests related to Pacific halibut. Terms of reference and rules of procedure are provided for each subsidiary body.

MSAB: The Management Strategy Advisory Board suggests topics to be considered in the MSE process, provide the IPHC Secretariat with direct input and advice on current and planned MSE activities, and

represent constituent views in the MSE process. The MSAB meets at least once per year before the Annual Meeting.

CB: The Conference Board consists of individuals representing Pacific halibut harvesters, organisations, and associations, and provides a forum for the discussion of management and policy matters relevant to Pacific halibut and provides advice to the Commission on these matters. The CB also reviews IPHC Secretariat reports and recommendations, regulatory proposals received by the Commission, and provide its advice concerning these items to the Commission at its Annual Meeting, or on other occasions as requested. The CB meets during the week of the Annual Meeting.

PAB: The Processor Advisory Board represents the commercial Pacific halibut processing industry from Canada and the United States of America and advises the Commission on issues related to the management of the Pacific halibut resource in the Convention Area. The PAB meets during the week of the Annual Meeting.

RAB: The Research Advisory Board, composed of members of the Pacific halibut community, suggests research topics to be considered for incorporation in the IPHC integrated research and monitoring activities and comments upon operational and implementation considerations of those research and monitoring activities. The RAB also provides the IPHC Secretariat staff with direct input and advice from industry on current and planned research activities contemplated for inclusion in the IPHC 5-Year program of integrated research and monitoring. The RAB meets once per year, typically before the Interim Meeting.

4.8.2 Scientific input

Scientific input occurs through independent, external reviews, including, but not limited to, semi-annual meetings of the Scientific Review Board (SRB). The SRB reviews science/research proposals, programs, products, strategy, progress, and overall performance, as well as the recommendations arising from the MSAB and RAB.

4.9 ANNUAL PROCESS

A series of meetings occurs throughout the year, leading up the Annual Meeting in January when mortality limit decisions are made. The MSAB meets at least once a year in spring to provide guidance on the MSE and may also meet in autumn if necessary. The SRB meets in June and September to peer review IPHC science products, including the stock assessment and MSE. The CB and the PAB meet during the week of the Annual Meeting to advise the Commission on issues related to the management of the Pacific halibut resource in the Convention Area.

An Interim Meeting, typically late November, precedes the Annual Meeting and is when the stock assessment, stock projections, and harvest decision table are first presented. The final stock assessment, stock projections, and harvest decision table are presented at the Annual Meeting, typically in late January, to support mortality limit decisions.

Report of the 100th Session of the IPHC Finance and Administration Committee (FAC100)

Anchorage, AK, U.S.A., 22 January 2024

Commissioners

Canada	United States of America
Paul Ryall	Jon Kurland
Neil Davis	Robert Alverson
Peter DeGreef	Richard Yamada

Executive Director

David T. Wilson, Ph.D.

DISTRIBUTION:
Participants in the Session
Members of the Commission
IPHC Secretariat

BIBLIOGRAPHIC ENTRY
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INTERNATIONAL PACIFIC HALIBUT COMMISSION

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ACRONYMS

AM	Annual Meeting
FAC	Finance and Administration Committee
FISS	Fishery-Independent Setline Survey
FY	Financial Year
GAAP	Generally Accepted Accounting Principles
IM	Interim Meeting
IPHC	International Pacific Halibut Commission

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**; **ACCEPTED** (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 100th Session of the International Pacific Halibut Commission (IPHC) Finance and Administration Committee (FAC100) was held in Anchorage, AK, USA on 22 January 2024. A total of 6 members (6 Commissioners) attended the Session, as well as 15 advisors/experts from the two (2) Contracting Parties as well as 10 observers. The list of participants is provided at Appendix I. The meeting was opened by the Chairperson, Mr Jon Kurland (USA) who welcomed participants.

The following are a subset of the complete recommendations and requests for action from the FAC100, which are provided at Appendix VIII.

RECOMMENDATIONS

Financial Statement for FY2023

FAC100-Rec.01 (para. 7) The FAC **RECOMMENDED** that the Commission **NOTE** the Financial Statement for FY2023, as detailed in paper IPHC-2024-FAC100-04.

Annual independent auditor's report (2023)

FAC100-Rec.02 (para. 12) The FAC **RECOMMENDED** that the Commission accept the independent external auditor's report for FY2023 (IPHC-2024-FAC100-05), as per Regulation 14 of the IPHC Financial Regulations (2021), by consensus.

FY2024 budget - update

FAC100-Rec.03 (para. 21) The FAC **RECOMMENDED** that, pending discussions to be held during AM100 on the final 2024 FISS design, the Commission adopt the amended FY2024 budget (1 October 2023 to 30 September 2024), as detailed in Appendix IV, noting that the amendments do not change the previously adopted Contracting Party contributions for FY2024:

a) **ADOPT** the amended FY2024 budget (1 October 2023 to 30 September 2024), as detailed in Appendix IV, including contributions from the Contracting Parties to the General Fund as follows:

- Canada: Contribution to the General Fund: **US$927,419.21**
- U.S.A.: Contribution to the General Fund: **US$4,282,492.80** (subject to appropriations)
- U.S.A.: Contribution to the headquarters building lease and maintenance costs: **US$513,712.50**

b) **NOTE** the extra-budgetary (IFCP Fund deficit) contributions from each Contracting Party for FY2024 as follows:

- Canada: 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$127,848**
- U.S.A.: 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$127,848**

c) **NOTE** that Fund 35 – AK Cost Recovery expenses are budgeted at **US$947,210** for FY2024, however, the amount that NOAA fisheries will reimburse for our FY2024 expenses will not be known until as late as March/April 2025, and the IPHC will not be reimbursed until 1 October 2025 (FY2026), two fiscal years after the expenses were incurred. Thus, as a precautionary measure, the heads of delegation have directed the Secretariat to include an estimated **US$875,000** to be reimbursed for the FY2024 IPHC budget, through the cost-recovery program and a further **US$72,210** to be provided in supplementary income from NOAA fisheries.

FAC100-Rec.04 (para. 23) The FAC **RECOMMENDED** that the Commission agree to an intersessional process to:

a) develop a short-term plan of action on how to fund the 1) FY2023 shortfall (see para 8), and 2) expected shortfalls in the AK cost recovery funds available for FY2024, FY2025 and FY2026 (within the current approved grant period of FY2022-FY2026);

b) develop a long-term plan of action to address the future (FY2027-FY2031) given the USA indicated limits on cost recovery from the fleet (3% of the commercial fishery's landed value) are likely to continue.

Budget estimates: FY2025 (for approval)

FAC100-Rec.05 (para. 27) The FAC **RECOMMENDED** that the Commission note the proposed FY2025 budget (financial period: 1 October 2024 to 30 September 2025; Appendix V), including the contributions from the Contracting Parties to the General Fund for FY2025 as follows:

- Canada: Contribution to the General Fund: **US$970,606.61** (Canada).
- U.S.A.: Contribution to the General Fund: **US$4,421,652.32** (subject to appropriations).
- U.S.A.: Contribution to the headquarters building lease and maintenance costs: **US$$458,608.60**.

FAC100-Rec.06 (para. 28) The FAC **RECOMMENDED** that the Commission **NOTE** the extra-budgetary (IFCP Fund deficit) contributions from each Contracting Party for FY2024 as follows:

- Canada:
  - 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$150,573**
- U.S.A.:
  - 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$150,573**

FAC100-Rec.07 (para. 29) The FAC **RECOMMENDED** that the Commission **AGREE** for the two Contracting Parties to engage in inter-sessional discussions over the coming months to adopt a budget for FY2025 and the associated Contributions. In doing so, the Contracting Parties may consult with, and request assistance from the IPHC Secretariat.

IPHC Financial Regulations (2024) - Revisions

FAC100-Rec.08 (para. 33) The FAC **RECOMMENDED** that the Commission consider for adoption, the International Pacific Halibut Commission Financial Regulations (2024), as provided in IPHC-2024-FAC100-08.

IPHC Rules of Procedure (2024) - Revisions

FAC100-Rec.09 (para. 37) The FAC **RECOMMENDED** that the Commission adopt the International Pacific Halibut Commission Rules of Procedure (2024), as provided in IPHC-2024-FAC100-09.

1. OPENING OF THE SESSION

1. The 100th Session of the International Pacific Halibut Commission (IPHC) Finance and Administration Committee (FAC100) was held in Anchorage, AK, USA on 22 January 2024. A total of 6 members (6 Commissioners) attended the Session, as well as 15 advisors/experts from the two (2) Contracting Parties as well as 10 observers. The list of participants is provided at Appendix I. The meeting was opened by the Chairperson, Mr Jon Kurland (USA) who welcomed participants.

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

2. The FAC **ADOPTED** the Agenda as provided at Appendix II. The documents provided to the FAC100 are listed in Appendix III.

3. UPDATE ON ACTIONS ARISING FROM THE 99TH SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC099)

3. The FAC **NOTED** paper IPHC-2024-FAC100-03, that provided an opportunity to consider the progress made during the inter-sessional period in relation to the direct requests for action by the FAC during the FAC099.

4. The FAC **AGREED** to consider and revise as necessary, the actions arising from FAC099, and for these to be combined with any new actions arising from the FAC100.

4. FINANCIAL STATEMENT FOR FY2023

5. The FAC **NOTED** paper IPHC-2024-FAC100-04 that provided the end-of-year financial statement for FY2023 (financial period: 1 October 2022 to 30 September 2023), and paper IPHC-2024-FAC100-INF01, the statement explaining the writing-off of losses for FY2023.

6. The FAC **NOTED** the total Assets at year-end closing totalled **US$6,126,082.29** (up from US$3,516,085.07 at the end of FY2022). The total equity or combined fund balance at year-end closing totalled **US$3,417,407.34** (up from US$1,728,916.98 at the end of FY2022). Fund equity balances at year end:
    - Fund equity balances at year end:
    - General Fund (10): **US$706,071.80**
    - Research Fund (20): **US$39,686.72**
    - Statistics Fund (30): **-US$141,010.08**
    - AK Cost Recovery (35): **US$1,491,412.83**
    - FISS Fund (40): **-US$115,997.85**
    - Reserve Fund (50): **US$1,437,243.92**

7. The FAC **RECOMMENDED** that the Commission **NOTE** the Financial Statement for FY2023, as detailed in paper IPHC-2024-FAC100-04.

8. The FAC **NOTED** that:

    a) the total eligible expenses incurred by the IPHC Secretariat in FY2023, and submitted to NOAA for reimbursement, on the IPHC's directed commercial catch sampling of Pacific halibut in Alaska, amounted to US$891,527.01;

    b) this amount does not represent the total funds expended on the program in Alaska, but rather a scaled down portion in accordance with the grant eligibility rules;

    c) NOAA Fisheries indicated at FAC100 that the total amount to be reimbursed for FY2023 expenses, has been approved at US$786,926;

    d) there is a shortfall in income against expenditures of US$104,601.01;

    e) NOAA fisheries provided a supplementary contribution to offset the expected shortfall, of US$77,790 (the FY2023 portion of a total US$150,00 provided for FY2023 and FY2024 expected shortfalls);

    f) the final short for FY2023 amounts to **US$26,811.01**.

5. ANNUAL INDEPENDENT AUDITOR'S REPORT (2023)

9. The FAC **NOTED** paper IPHC-2024-FAC100-05 that provided the Commission with the Independent External Auditor's Report for FY2023, as per Regulation 14 of the IPHC Financial Regulations (2021).

10. The FAC **RECALLED** that the report of the Independent External Auditors for FY2023 (1 October 2022 – 30 September 2023), was presented directly by Clark Nuber PS to the Commission via video conference in January 2024, who offered their 'unmodified opinion'. [Note: *An unmodified opinion implies that the auditor was satisfied with the financial statements audited. This means that the statements met the requirements demanded by the regulations and they were prepared in accordance with appropriate accounting principles, criteria and standards.*]

11. The FAC **ACKNOWLEDGED** the great strides that the IPHC Secretariat has continued to make over the past four years to improve the transparency, accountability, and accessibility of the IPHC accounting systems and practices. The 'unmodified opinion' provided by the independent auditors for the past four years is testament to the work done.

12. The FAC **RECOMMENDED** that the Commission accept the independent external auditor's report for FY2023 (IPHC-2024-FAC100-05), as per Regulation 14 of the IPHC Financial Regulations (2021), by consensus.

6. FY2024 BUDGET - UPDATE

13. The FAC **NOTED** paper IPHC-2024-FAC100-06 that provided an update on the approved FY2024 budget (financial period: 1 October 2023 to 30 September 2024), and that current expenditure for the first quarter of FY2024 is in-line with the approved budget.

14. The FAC **NOTED** that the following contributions (with dates) have been received from the Contracting Parties:

    a) Canada: **$927,419.21** (received 13 October 2023)

    b) U.S.A.: **US$4,000,000** (received 29 November 2023)

        - Balance outstanding: **US$796,205.30**

15. The FAC **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, either Contracting Party can call an intersessional meeting for the Commission to consider in-year budget reductions to match the contributions received.

16. The FAC **RECALLED** that at the 99th Session of the IPHC Interim Meeting (IM099), the Commission agreed to an optimized 2023 FISS design with caveats, as follows:

    IPHC-2023-IM099-R (para. 51) *The Commission AGREED on an optimized design for the 2024 FISS as provided at Appendix IV, that balances the Commission's primary and secondary objectives for the FISS. Specifically, the 2024 design shall include Options 1, 2, and 3 from Table 2. In addition, Option 4 shall be included in the RFT process but is not yet endorsed. Once bids are received and evaluated in February 2024, the Commission will make a final decision on whether to proceed or not with Option 4, based on bids and logistical constraints at that time and potentially a new option for IPHC Regulatory Area 4CDE.*

    IPHC-2023-IM099-R (para. 54) *The Commission AGREED to consider whether to maintain the oceanographic sampling program to provide a continuous source of data on environmental conditions experienced by Pacific halibut, and whether to staff the NOAA trawl surveys, in January 2024.*

    IPHC-2023-IM099-R (para. 58). *The Commission AGREED that supplementary funding is likely needed to sustain the FISS moving forward and AGREED to explore options for funding, e.g. from Contracting Parties or external partners.*

17. The FAC **REQUESTED** an update from the Secretariat on funding options explored to date and how Contracting Parties may assist in those endeavours.

18. The FAC **NOTED** that Options 1-4 of the design described in paper IPHC-2023-AM100-13 is estimated to result in a total:

    - Income of US$2,429,762.50.
    - Expense: US$2,824,348.36.
    - Balance: -US$394,585.86.

    Assumptions:

    - Catch rates = 5% decline from 2023.
    - Fish price = 0% change from 2023.
    - No oceanographic monitoring (water profilers).
    - No deployment of Secretariat staff on the NOAA trawl surveys in Alaska.

19. The FAC **NOTED** that Option 4 is estimated to account for ~US$250,000 of the balance stated above, that adding oceanographic monitoring is estimated to cost ~US$85,000, and that deployment of Secretariat on the NOAA trawl survey is estimated to cost ~US$125,000.

20. The FAC **NOTED** a number of other adjustments in the FY2024 budget for other Funds to better reflect known costs given we are approaching the end of the 1st quarter of the fiscal year, and the expected expense for Fund 35 – AK Costs recovery (the grant from NOAA Fisheries to the IPHC), which was approved by NOAA at the start of the fiscal year and after the IPHC budget was originally adopted.

21. The FAC **RECOMMENDED** that, pending discussions to be held during AM100 on the final 2024 FISS design, the Commission adopt the amended FY2024 budget (1 October 2023 to 30 September 2024), as detailed in Appendix IV, noting that the amendments do not change the previously adopted Contracting Party contributions for FY2024:

    a) **ADOPT** the amended FY2024 budget (1 October 2023 to 30 September 2024), as detailed in Appendix IV, including contributions from the Contracting Parties to the General Fund as follows:

        a) Canada: Contribution to the General Fund: **US$927,419.21**
        b) U.S.A.: Contribution to the General Fund: **US$4,282,492.80** (subject to appropriations)
        c) U.S.A.: Contribution to the headquarters building lease and maintenance costs: **US$513,712.50**

    b) **NOTE** the extra-budgetary (IFCP Fund deficit) contributions from each Contracting Party for FY2024 as follows:

        a) Canada: 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$127,848**
        b) U.S.A.: 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$127,848**

    c) **NOTE** that Fund 35 – AK Cost Recovery expenses are budgeted at **US$947,210** for FY2024, however, the amount that NOAA fisheries will reimburse for our FY2024 expenses will not be known until as late as March/April 2025, and the IPHC will not be reimbursed until 1 October 2025 (FY2026), two fiscal years after the expenses were incurred. Thus, as a precautionary measure, the heads of delegation have directed the Secretariat to include an estimated **US$875,000** to be reimbursed for the FY2024 IPHC budget, through the cost-recovery program and a further **US$72,210** to be provided in supplementary income from NOAA fisheries.

22. The FAC **NOTED** the Secretariats' request that:

    "*the NOAA Grant, "International Pacific Halibut Commission Directed Commercial Catch Sampling of Pacific halibut in Alaska" be renewed prior to IPHC fiscal year FY2027 that commences on 1 October 2026, noting that the current five-year grant period covering IPHC activities is for IPHC FY2022, FY2023, FY2024, FY2025, and FY2026. The IPHC Secretariat and NOAA shall work together to provide a draft grant agreement to the Commission for review at the AM101 (January 2026).*"

23. The FAC **RECOMMENDED** that the Commission agree to an intersessional process to:

    a) develop a short-term plan of action on how to fund the 1) FY2023 shortfall (see para 8), and 2) expected shortfalls in the AK cost recovery funds available for FY2024, FY2025 and FY2026 (within the current approved grant period of FY2022-FY2026);

    b) develop a long-term plan of action to address the future (FY2027-FY2031) given the USA indicated limits on cost recovery from the fleet (3% of the commercial fishery's landed value) are likely to continue.

7. BUDGET ESTIMATES: FY2025 (FOR APPROVAL); FY2026 AND FY2027 (FOR INFORMATION)

24. The FAC **NOTED** paper IPHC-2023-FAC100-07 that provided budget estimates for FY2025 (1 October 2024 to 30 September 2025) for recommendation to the Commission (for approval), and for FY2026 and FY2027 (for information) (1 October 2024 to 30 September 2025, & 1 October 2026 to 30 September 2027, respectively).

25. The FAC **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, either Contracting Party can call an intersessional meeting for the Commission to consider in-year budget reductions to match the contributions received.

FY2025

26. The FAC **NOTED** that the:

    a) contributions include a 3.5% increase from FY2024 for both Contracting Parties to **US$970,606.61** (Canada) and **US$4,421,652.32** (United States of America).

    b) Other general cost assumptions include increases in operation costs, salaries and wages (5%, based on cost of living and step increases) and health care costs (~12%).

    c) The headquarters costs to the USA will decrease to $458,608.60 in FY2025 in accordance with the new building lease signed in 2023.

    d) The extra-budgetary deficit payments to the IFC Pension Fund (closed in 2001 to new participants), will increase in FY2025 to $150,573 for each Contracting Party. This increase was determined through the updated actuarial report and 10-year amortization of the total deficit which stands at US$3,011,460.

    e) the IPHC Fishery-Independent Setline Survey (FISS) budget is tentative as it is based on the design noted at the 99th Session of the IPHC Interim Meeting (IM099) and may change substantially prior to the 2025 FISS season.

27. The FAC **RECOMMENDED** that the Commission note the proposed FY2025 budget (financial period: 1 October 2024 to 30 September 2025; Appendix V), including the contributions from the Contracting Parties to the General Fund for FY2025 as follows:

    - Canada: Contribution to the General Fund: **US$970,606.61** (Canada).
    - U.S.A.: Contribution to the General Fund: **US$4,421,652.32** (subject to appropriations).
    - U.S.A.: Contribution to the headquarters building lease and maintenance costs: **US$$458,608.60**.

28. The FAC **RECOMMENDED** that the Commission **NOTE** the extra-budgetary (IFCP Fund deficit) contributions from each Contracting Party for FY2024 as follows:

    - Canada:
        - 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$150,573**

- U.S.A.:
  - 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$150,573**

29. The FAC **RECOMMENDED** that the Commission **AGREE** for the two Contracting Parties to engage in inter-sessional discussions over the coming months to adopt a budget for FY2025 and the associated Contributions. In doing so, the Contracting Parties may consult with, and request assistance from the IPHC Secretariat.

FY2026 and FY2027

30. The FAC **NOTED** that the IPHC provisional budgets for FY2026 and FY2027 (Appendix VI and Appendix VII, respectively) are based on a nominal 5% increase in general contributions for Canada and U.S.A. to cover expected matching increases in operations expenses, cost in salaries (based on cost of living and step increases) and health care costs.

8. IPHC FINANCIAL REGULATIONS (2024) - REVISIONS

31. The FAC **NOTED** paper IPHC-2024-FAC100-08 that proposed amendments to the IPHC Financial Regulations (2021) for endorsement and recommendation to the Commission.

32. The FAC **NOTED** that the proposed amendments complete the IPHC's transition from an OCBOA basis of accounting to a GAAP basis of accounting, a transition decision made by the Commission at AM097 in 2021.

33. The FAC **RECOMMENDED** that the Commission consider for adoption, the International Pacific Halibut Commission Financial Regulations (2024), as provided in IPHC-2024-FAC100-08.

9. IPHC RULES OF PROCEDURE (2024) - REVISIONS

34. The FAC **NOTED** paper IPHC-2024-FAC100-09 that proposed amendments to the IPHC Rules of Procedure (2023) for endorsement and recommendation to the Commission.

35. The FAC **NOTED** that the amendments focused on a new rule on Diversity, Equity, Inclusion, and Accessibility (DEIA) (as Rule 2). This Commission-wide policy expands upon that already in place for the IPHC Secretariat since 2021, via the staff regulations, and aim to cover the officers of the IPHC, meeting participants, employees, and broader stakeholder engagements, given that collectively we are the most valuable asset the IPHC as an organisation possesses.

36. The FAC **NOTED** that the overarching goal of the new organisational DEIA rule, would be to ensure that every person, regardless of their gender, race, ethnicity, age, sexual orientation, physical ability, or socioeconomic status, feels welcome and to thrive in the IPHC community. Diversity supports our mission, and our collective success can only occur in an open and inclusive environment.

37. The FAC **RECOMMENDED** that the Commission adopt the International Pacific Halibut Commission Rules of Procedure (2024), as provided in IPHC-2024-FAC100-09.

38. The FAC **REQUESTED** that the Secretariat include annual updates on implementation steps and successes in the application of the DEIA rule, within the annual Report of the Secretariat to the Commission.

10. OTHER BUSINESS

39. Nil

11. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 100TH SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100)

40. The Report of the 100th Session of the IPHC Finance and Administration Committee (IPHC-2024-FAC100-R) was **ADOPTED** via correspondence on 23 January 2024, including the consolidated set of recommendations and requests arising from FAC100, provided at Appendix VIII.

APPENDIX I
LIST OF PARTICIPANTS FOR THE 100TH SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100)

Commission Officers

Chairperson	Vice-Chairperson
Mr Jon **Kurland** (United States of America)	Mr Paul **Ryall** (Canada)

Commissioners

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

Advisors/experts

Canada	United States of America
Ms Felicia **Cull** - Advisor	Ms Rachel **Baker** – Policy Advisor
Ms Ann-Marie **Huang** – Advisor	Ms Heather **Fitch** - Technical Advisor
Ms Gwynhyfar **Mason** – Advisor	Dr Peter **Hulson** – Scientific Advisor
Mr Trevor **Ruelle** – Advisor	Mr Kurt **Iverson** – Technical Advisor
Ms Danielle **Scriven** – Advisor	Dr Kelly **Kryc** – Deputy Assistant Secretary for International Fisheries
Mr. Matt **Sweeting-Woods** – Advisor	Mr Frank **Lockhart** – Technical/Policy Advisor
Mr. Mark **Waddell** – Advisor	Mr Patrick **Moran** – Policy Advisor
	Mr Demian **Schane** – Legal Advisor

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Mr Tom **Marking**	Recreational Fishing Alliance, California	tmmarking@sbcglobal.net
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APPENDIX II
AGENDA FOR THE 100TH SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100)

Date: 22 January 2024
Location: Anchorage, AK, U.S.A.
Venue: Hotel Captain Cook
Time (AKST): 09:00-12:00
Chairperson: Mr Jon Kurland (USA)
Vice-Chairperson: Mr Paul Ryall (Canada)

1. **OPENING OF THE SESSION**
2. **ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION**
3. **UPDATE ON ACTIONS ARISING FROM THE 99th SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC099)**
4. **FINANCIAL STATEMENT FOR FY2023**
5. **ANNUAL INDEPENDENT AUDITOR'S REPORT (2023)**
6. **FY2024 BUDGET – UPDATE**
7. **BUDGET ESTIMATES: FY2025 (for approval); FY2026 and FY2027 (for information)**
8. **IPHC FINANCIAL REGULATIONS (2024) - Revisions**
9. **IPHC RULES OF PROCEDURE (2024) - Revisions**
10. **OTHER BUSINESS**
11. **REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 100th SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100)**

APPENDIX III
LIST OF DOCUMENTS FOR THE 100TH SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100)

Meeting documents	Title	Availability
IPHC-2024-FAC100-01	Agenda for the 100th Session of the IPHC Finance and Administration Committee (FAC100)	✓ 5 June 2023
IPHC-2024-FAC100-02	List of Documents for the 100th Session of the IPHC Finance and Administration Committee (FAC100)	✓ 5 June 2023 ✓ 12 Dec 2023 ✓ 21 Jan 2024
IPHC-2024-FAC100-03	Update on actions arising from the 99th Session of the IPHC Finance and Administration Committee (FAC099) (D. Wilson)	✓ 5 June 2023
IPHC-2024-FAC100-04	Financial Statement for FY2023 (D. Wilson)	✓ 18 Dec 2023
IPHC-2024-FAC100-05	Report of the Independent auditors and Financial Statements (FY2023) (D. Wilson & A. Keikkala)	✓ 22 Dec 2023
IPHC-2024-FAC100-06	FY2024 Financial Budget – Update (D. Wilson & A. Keikkala)	✓ 20 Dec 2023
IPHC-2024-FAC100-07	Budget estimates: FY2025 (for approval), FY2026 and FY2027 (for information) (D. Wilson & A. Keikkala)	✓ 20 Dec 2023
IPHC-2024-FAC100-08	IPHC Financial Regulations (2024) - Draft (D. Wilson & A. Keikkala)	✓ 22 Dec 2023
IPHC-2024-FAC100-09	IPHC Rules of Procedure (2024) – Draft (D. Wilson)	✓ 12 Dec 2023
Information papers		
IPHC-2024-FAC100-INF01	Write-off statement – for FAC100 (IPHC Secretariat)	✓ 21 Jan 2024

APPENDIX IV
FY2024 BUDGET: REVISED AND PROPOSED

(1 Oct. 2023 to 30 Sept. 2024)

FY2024: Proposed for FAC100 Account Number	10 - General FY2024	20 - Research FY2024	30 - Statistics FY2024	35 - AK Cost-Recovery FY2024	TOTAL (10,20,30,35) FY2024	40 - FISS FY2024	TOTAL (All Funds) FY2024
Income							
40000 Contracting Party Contributions							
40000.01 - Canada	$ -	$ -	$ -	$ -	$ 927,419.21	$ -	$ 927,419.21
40000.02 - United States of America	$ -	$ -	$ -	$ -	$ 4,282,492.80	$ -	$ 4,282,492.80
40000 - Contracting Party Contributions	**$ 3,062,239.28**	**$ 1,073,364.05**	**$ 1,074,308.68**	**$ -**	**$ 5,209,912.01**	**$ -**	**$ 5,209,912.01**
40055 - Headquartes (Lease and Maintenance)	$ 513,712.50	$ -	$ -	$ -	$ 513,712.50	$ -	$ 513,712.50
40055 - Headquarters (Lease & Maintenance)	**$ 513,712.50**	**$ -**	**$ -**	**$ -**	**$ 513,712.50**	**$ -**	**$ 513,712.50**
40060 Other Income							
40060.05 - Recoupend leave expenses	$ 14,930.27	$ 7,297.53	$ 18,517.20	$ 14,930.27	$ 55,675.27	$ 7,762.50	$ 63,437.77
40060.06 - Rent - Dutch Harbor	$ -	$ -	$ -	$ 5,600.00	$ 5,600.00	$ -	$ 5,600.00
40060 - Other Income	**$ 14,930.27**	**$ 7,297.53**	**$ 18,517.20**	**$ 20,530.27**	**$ 61,275.27**	**$ 7,762.50**	**$ 69,037.77**
40100 Grants, Contracts & Agreements							
40100.01 - 802 - Directed Commercial Catch Sampling of Pacific halibut in Alaska	$ -	$ -	$ -	$ 875,000.00	$ 875,000.00	$ -	$ 875,000.00
40100.02 - MoU WDFW Rockfish sampling	$ -	$ -	$ -	$ -	$ -	$ -	$ -
40100.07 - Supplementary funding	$ -	$ -	$ -	$ 72,210.00	$ 72,210.00	$ -	$ 72,210.00
40100 - Grants, Contracts & Agreements	**$ -**	**$ -**	**$ -**	**$ 947,210.00**	**$ 947,210.00**	**$ -**	**$ 947,210.00**
40200 Interest Income							
40200.01 - Bank Interest	$ 15,000.00	$ -	$ -	$ -	$ 15,000.00	$ -	$ 15,000.00
Total 40200 - Interest Income	**$ 15,000.00**	**$ -**	**$ -**	**$ -**	**$ 15,000.00**	**$ -**	**$ 15,000.00**
40350 Fish Sales							
40350.01 - Fish Sales - Pacific Halibut	$ -	$ -	$ -	$ -	$ -	$ 2,375,000.00	$ 2,375,000.00
40350.02 - Fish Sales - Byproduct	$ -	$ -	$ -	$ -	$ -	$ 47,000.00	$ 47,000.00
40350 - Fish Sales	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,422,000.00**	**$ 2,422,000.00**
Total Income	**$ 3,605,882.05**	**$ 1,080,661.58**	**$ 1,092,825.88**	**$ 967,740.27**	**$ 6,747,109.78**	**$ 2,429,762.50**	**$ 9,176,872.28**
Expense							
Personnel Expenses							
50000 - Salary & Wages	$ 1,541,300.75	$ 611,737.73	$ 751,299.57	$ 559,866.82	$ 3,464,204.87	$ 663,547.52	$ 4,127,752.39
50100 - Benefits	$ 626,421.45	$ 236,295.85	$ 253,526.64	$ 223,497.11	$ 1,339,741.05	$ 258,750.84	$ 1,598,491.89
50200 - Training & Education	$ 43,000.00	$ 18,477.00	$ 5,650.00	$ 21,803.00	$ 88,930.00	$ 30,000.00	$ 118,930.00
50300 - Personnel Related Expenses	$ 5,000.00	$ -	$ 1,532.00	$ 3,468.00	$ 10,000.00	$ 8,000.00	$ 18,000.00
Total Personnel Expenses	**$ 2,215,722.20**	**$ 866,510.58**	**$ 1,012,008.21**	**$ 808,634.93**	**$ 4,902,875.92**	**$ 960,298.36**	**$ 5,863,174.28**
Operational Expenses							
5000 - Publications	$ 5,000.00	$ 7,500.00	$ 1,609.00	$ 191.00	$ 14,300.00	$ 500.00	$ 14,800.00
51100 - Mailing and Shipping	$ 4,000.00	$ 7,000.00	$ 1,750.00	$ 2,835.68	$ 15,585.68	$ 71,500.00	$ 87,085.68
51200 - Travel	$ 99,500.00	$ 14,825.00	$ 11,900.00	$ 37,926.00	$ 164,151.00	$ 45,250.00	$ 209,401.00
51300 - IPHC Meetings	$ 194,755.32	$ -	$ -	$ -	$ 194,755.32	$ -	$ 194,755.32
51400 - Technology	$ 144,049.80	$ -	$ 30,192.00	$ 4,000.00	$ 178,241.80	$ 5,000.00	$ 183,241.80
Total Operational Expenses	**$ 447,305.12**	**$ 29,325.00**	**$ 45,451.00**	**$ 44,952.68**	**$ 567,033.80**	**$ 122,250.00**	**$ 689,283.80**
Fees and Contract Expenses							
52000 - Professional Fees	$ 230,600.00	$ -	$ -	$ 3,183.00	$ 233,783.00	$ 4,000.00	$ 237,783.00
52100 - Vessel Expenses	$ -	$ -	$ -	$ -	$ -	$ 300,000.00	$ 300,000.00
52200 - Other Fees and Charges	$ 39,124.66	$ -	$ 1,258.35	$ 9,178.00	$ 49,561.01	$ 31,200.00	$ 80,761.01
52300 - Leases and Contracts	$ 44,564.00	$ 39,019.00	$ 19,300.00	$ 13,290.00	$ 116,173.00	$ 1,106,000.00	$ 1,222,173.00
54000 - Communications	$ 35,500.00	$ -	$ 3,060.00	$ -	$ 38,560.00	$ 1,600.00	$ 40,160.00
Total Fees and Contract Expenses	**$ 349,788.66**	**$ 39,019.00**	**$ 23,618.35**	**$ 25,651.00**	**$ 438,077.01**	**$ 1,442,800.00**	**$ 1,880,877.01**
Facilities and Equipment Expenses							
54000 - Equipment Expense	$ 3,000.00	$ -	$ 5,371.82	$ 5,018.00	$ 13,389.82	$ 15,000.00	$ 28,389.82
54000 - Supplies Expense	$ 42,000.00	$ 144,807.00	$ 1,096.50	$ 5,745.32	$ 193,648.82	$ 265,500.00	$ 459,148.82
54000 - Maintenance and Utilities	$ 55,337.50	$ -	$ 1,280.00	$ 848.00	$ 57,465.50	$ 1,000.00	$ 58,465.50
54000 - Facility Rentals	$ 478,151.16	$ 1,000.00	$ 4,000.00	$ 31,128.75	$ 514,279.91	$ 17,500.00	$ 531,779.91
Total Facilities and Equipment Expenses	**$ 578,488.66**	**$ 145,807.00**	**$ 11,748.32**	**$ 42,740.07**	**$ 778,784.05**	**$ 299,000.00**	**$ 1,077,784.05**
Other Expenses							
55000 - Budget Contingency	$ 60,339.00	$ -	$ -	$ -	$ 60,339.00	$ -	$ 60,339.00
55250 - Indirect costs	$ (80,812.00)	$ -	$ -	$ 80,812.00	$ -	$ -	$ -
Other Expenses	**$ (20,473.00)**	**$ -**	**$ -**	**$ 80,812.00**	**$ 60,339.00**	**$ -**	**$ 60,339.00**
Total Expense	**$ 3,570,831.64**	**$ 1,080,661.58**	**$ 1,092,825.88**	**$ 1,002,790.68**	**$ 6,747,109.78**	**$ 2,824,348.36**	**$ 9,571,458.14**
Net Income (Loss)	**$ 35,050.41**	**$ 0.00**	**$ (0.00)**	**$ (35,050.41)**	**$ (0.00)**	**$ (394,585.86)**	**$ (394,585.86)**

APPENDIX V
FY2025 BUDGET: PROPOSED

(1 Oct. 2024 to 30 Sept. 2025)

FY2025: Proposed for FAC100 Account Number	10 - General FY2025	20 - Research FY2025	30 - Statistics FY2025	35 - AK Cost-Recovery FY2025	TOTAL (10,20,30) FY2025	40 - FISS FY2025	TOTAL (All Funds) FY2025
Income							
40000 Contracting Party Contributions							
40000.01 - Canada	$ -	$ -	$ -	$ -	$ 970,606.61	$ -	$ 970,606.61
40000.02 - United States of America	$ -	$ -	$ -	$ -	$ 4,421,652.32	$ -	$ 4,421,652.32
40000 - Contracting Party Contributions	**$ 3,161,820.41**	**$ 1,134,240.13**	**$ 1,096,198.39**	**$ -**	**$ 5,392,258.93**	**$ -**	**$ 5,392,258.93**
40055 - Headquartes (Lease and Maintenance)	$ 458,608.60	$ -	$ -	$ -	$ 458,608.60	$ -	$ 458,608.60
40055 - Headquarters (Lease & Maintenance)	**$ 458,608.60**	**$ -**	**$ -**	**$ -**	**$ 458,608.60**	**$ -**	**$ 458,608.60**
40060 Other Income							
40060.05 - Recoupend leave expenses	$ 15,452.83	$ 7,552.95	$ 19,165.30	$ 15,452.83	$ 57,623.90	$ 7,762.50	$ 65,386.40
40060.06 - Rent - Dutch Harbor	$ -	$ -	$ -	$ 5,941.60	$ 5,941.60	$ -	$ 5,941.60
40060 - Other Income	**$ 15,452.83**	**$ 7,552.95**	**$ 19,165.30**	**$ 21,394.43**	**$ 63,565.50**	**$ 7,762.50**	**$ 71,328.00**
40100 Grants, Contracts & Agreements							
40100.01 - 802 - Directed Commercial Catch Sampling of Pacific halibut in Alaska	$ -	$ -	$ -	$ 999,847.00	$ 999,847.00	$ -	$ 999,847.00
40100.02 - MoU WDFW Rockfish sampling	$ -	$ -	$ -	$ -	$ -	$ 37,803.00	$ 37,803.00
40100.07 - Supplementary funding	$ -	$ -	$ -	$ 63,925.60	$ 63,925.60	$ -	$ 63,925.60
40100 - Grants, Contracts & Agreements	**$ -**	**$ -**	**$ -**	**$ 1,063,772.60**	**$ 1,063,772.60**	**$ 37,803.00**	**$ 1,101,575.60**
40200 Interest Income							
40200.01 - Bank Interest	$ 17,000.00	$ -	$ -	$ -	$ 17,000.00	$ -	$ 17,000.00
Total 40200 - Interest Income	**$ 17,000.00**	**$ -**	**$ -**	**$ -**	**$ 17,000.00**	**$ -**	**$ 17,000.00**
40350 Fish Sales							
40350.01 - Fish Sales - Pacific Halibut	$ -	$ -	$ -	$ -	$ -	$ 2,468,249.24	$ 2,468,249.24
40350.02 - Fish Sales - Byproduct	$ -	$ -	$ -	$ -	$ -	$ 48,645.00	$ 48,645.00
40350 - Fish Sales	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,516,894.24**	**$ 2,516,894.24**
Total Income	**$ 3,652,881.83**	**$ 1,141,793.08**	**$ 1,115,363.69**	**$ 1,063,772.60**	**$ 6,973,811.20**	**$ 2,562,459.74**	**$ 9,536,270.94**
Expense							
Personnel Expenses							
50000 - Salary & Wages	$ 1,618,065.79	$ 642,324.62	$ 784,634.88	$ 587,860.16	$ 3,632,885.44	$ 679,270.50	$ 4,312,155.94
50100 - Benefits	$ 675,303.42	$ 258,960.98	$ 275,101.43	$ 244,000.39	$ 1,453,366.23	$ 285,070.53	$ 1,738,436.76
50200 - Training & Education	$ 44,225.00	$ 19,123.70	$ 5,847.75	$ 23,132.98	$ 92,329.43	$ 31,050.00	$ 123,379.43
50300 - Personnel Related Expenses	$ 5,122.50	$ -	$ 1,532.00	$ 3,679.55	$ 10,334.05	$ 8,280.00	$ 18,614.05
Total Personnel Expenses	**$ 2,342,716.71**	**$ 920,409.29**	**$ 1,067,116.06**	**$ 858,673.08**	**$ 5,188,915.14**	**$ 1,003,671.03**	**$ 6,192,586.17**
Operational Expenses							
5000 - Publications	$ 5,000.00	$ 7,500.00	$ 1,609.00	$ 202.65	$ 14,311.65	$ 500.00	$ 14,811.65
51100 - Mailing and Shipping	$ 4,140.00	$ 7,245.00	$ 1,811.25	$ 3,008.66	$ 16,204.91	$ 74,002.50	$ 90,207.41
51200 - Travel	$ 102,982.50	$ 15,343.88	$ 12,316.50	$ 40,239.49	$ 170,882.36	$ 46,833.75	$ 217,716.11
51300 - IPHC Meetings	$ 201,571.76	$ -	$ -	$ -	$ 201,571.76	$ -	$ 201,571.76
51400 - Technology	$ 149,091.54	$ -	$ 11,000.00	$ 4,244.00	$ 164,335.54	$ 5,175.00	$ 169,510.54
Total Operational Expenses	**$ 462,785.80**	**$ 30,088.88**	**$ 26,736.75**	**$ 47,694.79**	**$ 567,306.22**	**$ 126,511.25**	**$ 693,817.47**
Fees and Contract Expenses							
52000 - Professional Fees	$ 238,671.00	$ -	$ -	$ 3,377.16	$ 242,048.16	$ 4,140.00	$ 246,188.16
52100 - Vessel Expenses	$ -	$ -	$ -	$ -	$ -	$ 310,500.00	$ 310,500.00
52200 - Other Fees and Charges	$ 41,080.89	$ -	$ 1,321.27	$ 9,737.86	$ 52,140.02	$ 32,760.00	$ 84,900.02
52300 - Leases and Contracts	$ 46,123.74	$ 40,384.67	$ 4,863.00	$ 14,100.69	$ 105,472.10	$ 1,144,710.00	$ 1,250,182.10
54000 - Communications	$ 36,742.50	$ -	$ 3,167.10	$ -	$ 39,909.60	$ 1,656.00	$ 41,565.60
Total Fees and Contract Expenses	**$ 362,618.13**	**$ 40,384.67**	**$ 9,351.37**	**$ 27,215.71**	**$ 439,569.88**	**$ 1,493,766.00**	**$ 1,933,335.88**
Facilities and Equipment Expenses							
54000 - Equipment Expense	$ 3,105.00	$ -	$ 5,559.83	$ 5,324.10	$ 13,988.93	$ 15,525.00	$ 29,513.93
54000 - Supplies Expense	$ 43,470.00	$ 149,875.25	$ 1,134.88	$ 6,095.78	$ 200,575.91	$ 274,792.50	$ 475,368.41
54000 - Maintenance and Utilities	$ 57,274.31	$ -	$ 1,324.80	$ 899.73	$ 59,498.84	$ 1,035.00	$ 60,533.84
54000 - Facility Rentals	$ 432,041.44	$ 1,035.00	$ 4,140.00	$ 33,027.60	$ 470,244.04	$ 18,112.50	$ 488,356.54
Total Facilities and Equipment Expenses	**$ 535,890.75**	**$ 150,910.25**	**$ 12,159.51**	**$ 44,447.49**	**$ 743,407.99**	**$ 309,465.00**	**$ 1,052,872.99**
Other Expenses							
55000 - Budget Contingency	$ 34,611.97	$ -	$ -	$ -	$ 34,611.97	$ -	$ 34,611.97
55200 - Fund Cost Recovery	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55250 - Indirect costs	$ (85,741.53)	$ -	$ -	$ 85,741.53	$ -	$ -	$ -
Other Expenses	**$ (51,129.56)**	**$ -**	**$ -**	**$ 85,741.53**	**$ 34,611.97**	**$ -**	**$ 34,611.97**
Total Expense	**$ 3,652,881.83**	**$ 1,141,793.08**	**$ 1,115,363.69**	**$ 1,063,772.60**	**$ 6,973,811.20**	**$ 2,933,413.28**	**$ 9,907,224.48**
Net Income (Loss)	**$ 0.00**	**$ (0.00)**	**$ 0.00**	**$ (0.00)**	**$ 0.00**	**$ (370,953.54)**	**$ (370,953.54)**

APPENDIX VI
FY2026 INDICATIVE BUDGET

(1 Oct. 2025 to 30 Sept. 2026)

FY2026: Proposed for FAC100 Account Number	10 - General FY2026	20 - Research FY2026	30 - Statistics FY2026	35 - AK Cost-Recovery FY2026	TOTAL (10,20,30) FY2026	40 - FISS FY2026	TOTAL (All Funds) FY2026
Income							
40000 Contracting Party Contributions							
40000.01 - Canada	$ -	$ -	$ -	$ -	$ 1,019,136.94	$ -	$ 1,019,136.94
40000.02 - United States of America	$ -	$ -	$ -	$ -	$ 4,642,734.94	$ -	$ 4,642,734.94
40000 - Contracting Party Contributions	**$ 3,297,627.63**	**$ 1,199,363.09**	**$ 1,164,881.16**	**$ -**	**$ 5,661,871.88**	**$ -**	**$ 5,661,871.88**
40055 - Headquartes (Lease and Maintenance)	$ 417,765.64	$ -	$ -	$ -	$ 417,765.64	$ -	$ 417,765.64
40055 - Headquarters (Lease & Maintenance)	**$ 417,765.64**	**$ -**	**$ -**	**$ -**	**$ 417,765.64**	**$ -**	**$ 417,765.64**
40060 Other Income							
40060.05 - Recoupend leave expenses	$ 15,993.68	$ 7,817.30	$ 19,836.09	$ 15,993.68	$ 59,640.74	$ 7,762.50	$ 67,403.24
40060.06 - Rent - Dutch Harbor	$ -	$ -	$ -	$ 6,304.04	$ 6,304.04	$ -	$ 6,304.04
40060 - Other Income	**$ 15,993.68**	**$ 7,817.30**	**$ 19,836.09**	**$ 22,297.71**	**$ 65,944.78**	**$ 7,762.50**	**$ 73,707.28**
40100 Grants, Contracts & Agreements							
40100.01 - 802 - Directed Commercial Catch Sampling of Pacific halibut in Alaska	$ -	$ -	$ -	$ 1,054,530.00	$ 1,054,530.00	$ -	$ 1,054,530.00
40100.02 - MoU WDFW Rockfish sampling	$ -	$ -	$ -	$ -	$ -	$ 39,693.15	$ 39,693.15
40100.07 - Supplementary funding	$ -	$ -	$ -	$ 75,466.61	$ 75,466.61	$ -	$ 75,466.61
40100 - Grants, Contracts & Agreements	**$ -**	**$ -**	**$ -**	**$ 1,129,996.61**	**$ 1,129,996.61**	**$ 39,693.15**	**$ 1,169,689.76**
40200 Interest Income							
40200.01 - Bank Interest	$ 17,850.00	$ -	$ -	$ -	$ 17,850.00	$ -	$ 17,850.00
Total 40200 - Interest Income	**$ 17,850.00**	**$ -**	**$ -**	**$ -**	**$ 17,850.00**	**$ -**	**$ 17,850.00**
40350 Fish Sales							
40350.01 - Fish Sales - Pacific Halibut	$ -	$ -	$ -	$ -	$ -	$ 2,565,959.68	$ 2,565,959.68
40350.02 - Fish Sales - Byproduct	$ -	$ -	$ -	$ -	$ -	$ 50,347.58	$ 50,347.58
40350 - Fish Sales	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,616,307.26**	**$ 2,616,307.26**
Total Income	**$ 3,749,236.95**	**$ 1,207,180.39**	**$ 1,184,717.25**	**$ 1,129,996.61**	**$ 7,271,131.20**	**$ 2,663,762.91**	**$ 9,934,894.11**
Expense							
Personnel Expenses							
50000 - Salary & Wages	$ 1,698,669.08	$ 674,440.85	$ 828,307.78	$ 617,253.17	$ 3,818,670.87	$ 731,407.39	$ 4,550,078.26
50100 - Benefits	$ 728,953.04	$ 284,076.80	$ 298,871.63	$ 266,684.75	$ 1,578,586.22	$ 314,331.85	$ 1,892,918.07
50200 - Training & Education	$ 45,492.88	$ 19,793.02	$ 6,052.42	$ 24,544.09	$ 95,882.42	$ 32,136.75	$ 128,019.17
50300 - Personnel Related Expenses	$ 5,249.29	$ -	$ 1,585.62	$ 3,904.00	$ 10,738.91	$ 5,356.13	$ 16,095.03
Total Personnel Expenses	**$ 2,478,364.28**	**$ 978,310.67**	**$ 1,134,817.45**	**$ 912,386.01**	**$ 5,503,878.41**	**$ 1,083,232.12**	**$ 6,587,110.53**
Operational Expenses							
5000 - Publications	$ 4,000.00	$ 7,500.00	$ 1,609.00	$ 215.01	$ 13,324.01	$ 500.00	$ 13,824.01
51100 - Mailing and Shipping	$ 4,284.90	$ 7,498.58	$ 1,874.64	$ 3,192.18	$ 16,850.30	$ 76,592.59	$ 93,442.89
51200 - Travel	$ 108,500.00	$ 15,880.91	$ 12,747.58	$ 42,694.09	$ 179,822.58	$ 48,472.93	$ 228,295.51
51300 - IPHC Meetings	$ 217,071.13	$ -	$ -	$ -	$ 217,071.13	$ -	$ 217,071.13
51400 - Technology	$ 154,309.75	$ -	$ 11,385.00	$ 4,502.88	$ 170,197.63	$ 5,356.13	$ 175,553.76
Total Operational Expenses	**$ 488,165.77**	**$ 30,879.49**	**$ 27,616.22**	**$ 50,604.18**	**$ 597,265.66**	**$ 130,921.64**	**$ 728,187.30**
Fees and Contract Expenses							
52000 - Professional Fees	$ 247,024.49	$ -	$ -	$ 3,583.17	$ 250,607.65	$ 4,284.90	$ 254,892.55
52100 - Vessel Expenses	$ -	$ -	$ -	$ -	$ -	$ 321,367.50	$ 321,367.50
52200 - Other Fees and Charges	$ 43,134.94	$ -	$ 1,387.33	$ 10,331.87	$ 54,854.14	$ 34,398.00	$ 89,252.14
52300 - Leases and Contracts	$ 47,738.07	$ 41,798.13	$ 5,033.21	$ 14,960.83	$ 109,530.24	$ 1,184,774.85	$ 1,294,305.09
54000 - Communications	$ 38,028.49	$ -	$ 3,277.95	$ -	$ 41,306.44	$ 1,713.96	$ 43,020.40
Total Fees and Contract Expenses	**$ 375,925.98**	**$ 41,798.13**	**$ 9,698.48**	**$ 28,875.87**	**$ 456,298.46**	**$ 1,546,539.21**	**$ 2,002,837.67**
Facilities and Equipment Expenses							
54000 - Equipment Expense	$ 3,213.68	$ -	$ 5,754.43	$ 5,648.87	$ 14,616.97	$ 16,068.38	$ 30,685.35
54000 - Supplies Expense	$ 44,991.45	$ 155,120.88	$ 1,174.60	$ 6,467.63	$ 207,754.55	$ 284,410.24	$ 492,164.79
54000 - Maintenance and Utilities	$ 59,278.91	$ -	$ 1,371.17	$ 954.61	$ 61,604.69	$ 1,071.23	$ 62,675.92
54000 - Facility Rentals	$ 390,268.64	$ 1,071.23	$ 4,284.90	$ 35,042.29	$ 430,667.05	$ 18,746.44	$ 449,413.49
Total Facilities and Equipment Expenses	**$ 497,752.68**	**$ 156,192.10**	**$ 12,585.09**	**$ 47,158.78**	**$ 713,688.66**	**$ 320,296.28**	**$ 1,033,984.93**
Other Expenses							
55000 - Budget Contingency	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55200 - Fund Cost Recovery	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55250 - Indirect costs	$ (90,971.77)	$ -	$ -	$ 90,971.77	$ -	$ -	$ -
Other Expenses	**$ (90,971.77)**	**$ -**	**$ -**	**$ 90,971.77**	**$ -**	**$ -**	**$ -**
Total Expense	**$ 3,749,236.95**	**$ 1,207,180.39**	**$ 1,184,717.25**	**$ 1,129,996.61**	**$ 7,271,131.19**	**$ 3,080,989.25**	**$ 10,352,120.44**
Net Income (Loss)	**$ 0.00**	**$ 0.00**	**$ 0.00**	**0.00**	**$ 0.01**	**$ (417,226.34)**	**$ (417,226.33)**

APPENDIX VII
FY2027 INDICATIVE BUDGET

(1 Oct. 2026 to 30 Sept. 2027)

FY2027: Proposed for FAC100 Account Number	10 - General FY2027	20 - Research FY2027	30 - Statistics FY2027	35 - AK Cost-Recovery FY2027	TOTAL (10,20,30) FY2027	40 - FISS FY2027	TOTAL (All Funds) FY2027
Income							
40000 Contracting Party Contributions							
40000.01 - Canada	$ -	$ -	$ -	$ -	$ 1,070,093.78	$ -	$ 1,070,093.78
40000.02 - United States of America	$ -	$ -	$ -	$ -	$ 4,874,871.69	$ -	$ 4,874,871.69
40000 - Contracting Party Contributions	**$ 3,446,878.23**	**$ 1,269,099.89**	**$ 1,228,987.35**	**$ -**	**$ 5,944,965.47**	**$ -**	**$ 5,944,965.47**
40055 - Headquartes (Lease and Maintenance)	$ 428,632.36	$ -	$ -	$ -	$ 428,632.36	$ -	$ 428,632.36
40055 - Headquarters (Lease & Maintenance)	**$ 428,632.36**	**$ -**	**$ -**	**$ -**	**$ 428,632.36**	**$ -**	**$ 428,632.36**
40060 Other Income							
40060.05 - Recoupend leave expenses	$ 16,553.46	$ 8,090.91	$ 20,530.35	$ 16,553.46	$ 61,728.17	$ 7,762.50	$ 69,490.67
40060.06 - Rent - Dutch Harbor	$ -	$ -	$ -	$ 6,688.58	$ 6,688.58	$ -	$ 6,688.58
40060 - Other Income	**$ 16,553.46**	**$ 8,090.91**	**$ 20,530.35**	**$ 23,242.04**	**$ 68,416.75**	**$ 7,762.50**	**$ 76,179.25**
40100 Grants, Contracts & Agreements							
40100.01 - 802 - Directed Commercial Catch Sampling of Pacific halibut in Alaska	$ -	$ -	$ -	$ 1,178,754.14	$ 1,178,754.14	$ -	$ 1,178,754.14
40100.02 - MoU WDFW Rockfish sampling	$ -	$ -	$ -	$ -	$ -	$ 41,677.81	$ 41,677.81
40100.07 - Supplementary funding	$ -	$ -	$ -	$ -	$ -	$ -	$ -
40100 - Grants, Contracts & Agreements	**$ -**	**$ -**	**$ -**	**$ 1,178,754.14**	**$ 1,178,754.14**	**$ 41,677.81**	**$ 1,220,431.95**
40200 Interest Income							
40200.01 - Bank Interest	$ 18,000.00	$ -	$ -	$ -	$ 18,000.00	$ -	$ 18,000.00
Total 40200 - Interest Income	**$ 18,000.00**	**$ -**	**$ -**	**$ -**	**$ 18,000.00**	**$ -**	**$ 18,000.00**
40350 Fish Sales							
40350.01 - Fish Sales - Pacific Halibut	$ -	$ -	$ -	$ -	$ -	$ 2,667,089.99	$ 2,667,089.99
40350.02 - Fish Sales - Byproduct	$ -	$ -	$ -	$ -	$ -	$ 52,109.74	$ 52,109.74
40350 - Fish Sales	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,719,199.73**	**$ 2,719,199.73**
Total Income	**$ 3,910,064.04**	**$ 1,277,190.80**	**$ 1,249,517.70**	**$ 1,201,996.18**	**$ 7,638,768.72**	**$ 2,768,640.04**	**$ 10,407,408.76**
Expense							
Personnel Expenses							
50000 - Salary & Wages	$ 1,783,302.53	$ 708,162.89	$ 865,059.95	$ 648,115.83	$ 4,004,641.20	$ 748,741.97	$ 4,753,383.17
50100 - Benefits	$ 787,895.08	$ 311,924.47	$ 325,082.70	$ 291,799.24	$ 1,716,701.49	$ 346,877.65	$ 2,063,579.15
50200 - Training & Education	$ 43,000.00	$ 20,485.78	$ 6,264.26	$ 26,041.28	$ 95,791.32	$ 33,261.54	$ 129,052.86
50300 - Personnel Related Expenses	$ 5,380.51	$ -	$ 1,500.00	$ 4,142.14	$ 11,022.66	$ 5,543.59	$ 16,566.25
Total Personnel Expenses	**$ 2,619,578.12**	**$ 1,040,573.14**	**$ 1,197,906.91**	**$ 970,098.50**	**$ 5,828,156.67**	**$ 1,134,424.75**	**$ 6,962,581.42**
Operational Expenses							
5000 - Publications	$ 4,000.00	$ 7,500.00	$ 1,609.00	$ 228.13	$ 13,337.13	$ 500.00	$ 13,837.13
51100 - Mailing and Shipping	$ 4,434.87	$ 7,761.03	$ 1,940.26	$ 3,386.91	$ 17,523.06	$ 79,273.33	$ 96,796.39
51200 - Travel	$ 107,158.31	$ 16,436.74	$ 13,193.74	$ 45,298.43	$ 182,087.23	$ 50,169.48	$ 232,256.71
51300 - IPHC Meetings	$ 212,500.00	$ -	$ -	$ -	$ 212,500.00	$ -	$ 212,500.00
51400 - Technology	$ 159,710.59	$ -	$ 11,783.48	$ 4,777.56	$ 176,271.62	$ 5,543.59	$ 181,815.21
Total Operational Expenses	**$ 487,803.77**	**$ 31,697.77**	**$ 28,526.47**	**$ 53,691.03**	**$ 601,719.04**	**$ 135,486.40**	**$ 737,205.44**
Fees and Contract Expenses							
52000 - Professional Fees	$ 255,561.62	$ -	$ -	$ 3,801.74	$ 259,363.37	$ 4,434.87	$ 263,798.24
52100 - Vessel Expenses	$ -	$ -	$ -	$ -	$ -	$ 332,615.36	$ 332,615.36
52200 - Other Fees and Charges	$ 45,291.68	$ -	$ 1,456.70	$ 10,962.11	$ 57,710.49	$ 36,117.90	$ 93,828.39
52300 - Leases and Contracts	$ 49,408.90	$ 43,261.06	$ 5,209.37	$ 15,873.44	$ 113,752.78	$ 1,226,241.97	$ 1,339,994.75
54000 - Communications	$ 39,359.48	$ -	$ 3,392.68	$ -	$ 42,752.16	$ 1,773.95	$ 44,526.11
Total Fees and Contract Expenses	**$ 389,621.70**	**$ 43,261.06**	**$ 10,058.74**	**$ 30,637.30**	**$ 473,578.80**	**$ 1,601,184.05**	**$ 2,074,762.85**
Facilities and Equipment Expenses							
54000 - Equipment Expense	$ 3,326.15	$ -	$ 5,955.83	$ 5,993.45	$ 15,275.44	$ 16,630.77	$ 31,906.20
54000 - Supplies Expense	$ 44,728.72	$ 160,550.11	$ 1,215.71	$ 6,862.15	$ 213,356.69	$ 294,364.60	$ 507,721.28
54000 - Maintenance and Utilities	$ 61,353.68	$ -	$ 1,419.16	$ 1,012.84	$ 63,785.68	$ 1,108.72	$ 64,894.39
54000 - Facility Rentals	$ 400,172.96	$ 1,108.72	$ 4,434.87	$ 37,179.87	$ 442,896.41	$ 19,402.56	$ 462,298.98
Total Facilities and Equipment Expenses	**$ 509,581.50**	**$ 161,658.83**	**$ 13,025.57**	**$ 51,048.31**	**$ 684,265.90**	**$ 331,506.64**	**$ 1,015,772.55**
Other Expenses							
55000 - Budget Contingency	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55200 - Fund Cost Recovery	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55250 - Indirect costs	$ (96,521.04)	$ -	$ -	$ 96,521.04	$ -	$ -	$ -
Other Expenses	**$ (96,521.04)**	**$ -**	**$ -**	**$ 96,521.04**	**$ -**	**$ -**	**$ -**
Total Expense	**$ 3,910,064.05**	**$ 1,277,190.80**	**$ 1,249,517.70**	**$ 1,201,996.18**	**$ 7,638,768.72**	**$ 3,202,601.85**	**$ 10,841,370.57**
Net Income (Loss)	**$ (0.00)**	**$ (0.00)**	**$ 0.00**	**$ (0.00)**	**$ (0.00)**	**$ (433,961.81)**	**$ (433,961.81)**

APPENDIX VIII
CONSOLIDATED SET OF RECOMMENDATIONS AND REQUESTS OF THE 100TH SESSION OF THE IPHC FINANCE AND ADMINISTRATION COMMITTEE (FAC100) (22 JANUARY 2024)

RECOMMENDATIONS

Financial Statement for FY2023

FAC100-Rec.01 (para. 7) The FAC **RECOMMENDED** that the Commission **NOTE** the Financial Statement for FY2023, as detailed in paper IPHC-2024-FAC100-04.

Annual independent auditor's report (2023)

FAC100-Rec.02 (para. 12) The FAC **RECOMMENDED** that the Commission accept the independent external auditor's report for FY2023 (IPHC-2024-FAC100-05), as per Regulation 14 of the IPHC Financial Regulations (2021), by consensus.

FY2024 budget - update

FAC100-Rec.03 (para. 21) The FAC **RECOMMENDED** that, pending discussions to be held during AM100 on the final 2024 FISS design, the Commission adopt the amended FY2024 budget (1 October 2023 to 30 September 2024), as detailed in Appendix IV, noting that the amendments do not change the previously adopted Contracting Party contributions for FY2024:

a) **ADOPT** the amended FY2024 budget (1 October 2023 to 30 September 2024), as detailed in Appendix IV, including contributions from the Contracting Parties to the General Fund as follows:

- Canada: Contribution to the General Fund: **US$927,419.21**
- U.S.A.: Contribution to the General Fund: **US$4,282,492.80** (subject to appropriations)
- U.S.A.: Contribution to the headquarters building lease and maintenance costs: **US$513,712.50**

b) **NOTE** the extra-budgetary (IFCP Fund deficit) contributions from each Contracting Party for FY2024 as follows:

- Canada: 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$127,848**
- U.S.A.: 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$127,848**

c) **NOTE** that Fund 35 – AK Cost Recovery expenses are budgeted at **US$947,210** for FY2024, however, the amount that NOAA fisheries will reimburse for our FY2024 expenses will not be known until as late as March/April 2025, and the IPHC will not be reimbursed until 1 October 2025 (FY2026), two fiscal years after the expenses were incurred. Thus, as a precautionary measure, the heads of delegation have directed the Secretariat to include an estimated **US$875,000** to be reimbursed for the FY2024 IPHC budget, through the cost-recovery program and a further **US$72,210** to be provided in supplementary income from NOAA fisheries.

FAC100-Rec.04 (para. 23) The FAC **RECOMMENDED** that the Commission agree to an intersessional process to:

a) develop a short-term plan of action on how to fund the 1) FY2023 shortfall (see para 8), and 2) expected shortfalls in the AK cost recovery funds available for FY2024, FY2025 and FY2026 (within the current approved grant period of FY2022-FY2026);

b) develop a long-term plan of action to address the future (FY2027-FY2031) given the USA indicated limits on cost recovery from the fleet (3% of the commercial fishery's landed value) are likely to continue.

Budget estimates: FY2025 (for approval)

FAC100-Rec.05 (para. 27) The FAC **RECOMMENDED** that the Commission note the proposed FY2025 budget (financial period: 1 October 2024 to 30 September 2025; Appendix V), including the contributions from the Contracting Parties to the General Fund for FY2025 as follows:

- Canada: Contribution to the General Fund: **US$970,606.61** (Canada).
- U.S.A.: Contribution to the General Fund: **US$4,421,652.32** (subject to appropriations).
- U.S.A.: Contribution to the headquarters building lease and maintenance costs: **US$$458,608.60**.

FAC100-Rec.06 (para. 28) The FAC **RECOMMENDED** that the Commission **NOTE** the extra-budgetary (IFCP Fund deficit) contributions from each Contracting Party for FY2024 as follows:

- Canada:
  - 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$150,573**
- U.S.A.:
  - 50% Contribution to the IFCP Fund deficit (former staff pension plan): **US$150,573**

FAC100-Rec.07 (para. 29) The FAC **RECOMMENDED** that the Commission **AGREE** for the two Contracting Parties to engage in inter-sessional discussions over the coming months to adopt a budget for FY2025 and the associated Contributions. In doing so, the Contracting Parties may consult with, and request assistance from the IPHC Secretariat.

IPHC Financial Regulations (2024) - Revisions

FAC100-Rec.08 (para. 33) The FAC **RECOMMENDED** that the Commission consider for adoption, the International Pacific Halibut Commission Financial Regulations (2024), as provided in IPHC-2024-FAC100-08.

IPHC Rules of Procedure (2024) - Revisions

FAC100-Rec.09 (para. 37) The FAC **RECOMMENDED** that the Commission adopt the International Pacific Halibut Commission Rules of Procedure (2024), as provided in IPHC-2024-FAC100-09.

REQUESTS

FY2024 budget - update

FAC100-Req.01 (para. 17) The FAC **REQUESTED** an update from the Secretariat on funding options explored to date and how Contracting Parties may assist in those endeavours.

IPHC Rules of Procedure (2024) - Revisions

FAC100-Req.02 (para. 38) The FAC **REQUESTED** that the Secretariat include annual updates on implementation steps and successes in the application of the DEIA rule, within the annual Report of the Secretariat to the Commission.

INTERNATIONAL PACIFIC HALIBUT COMMISSION

IPHC-2024-PAB029-R

Report of the 29th Session of the IPHC Processor Advisory Board (PAB029)

Anchorage, Alaska, USA, 23-24 January 2024

Commissioners

Canada	United States of America
Paul Ryall	Jon Kurland
Neil Davis	Robert Alverson
Peter DeGreef	Richard Yamada

Executive Director

David T. Wilson, Ph.D.

DISTRIBUTION:
Participants in the Session
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IPHC Secretariat

BIBLIOGRAPHIC ENTRY
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IPHC–2024–PAB029–R, 19 pp.

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ACRONYMS

AM	Annual Meeting, of the IPHC
FCEY	Fishery Constant Exploitation Yield
FISS	Fishery-independent setline survey
IPHC	International Pacific Halibut Commission
NOAA	National Oceanic and Atmospheric Association
SPR	Spawning Potential Ratio
TCEY	Total Constant Exploitation Yield
WPUE	Weight Per Unit Effort

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**; **ACCEPTED** (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 29th Session of the International Pacific Halibut Commission (IPHC) Processor Advisory Board (PAB029) was held in Anchorage, Alaska, USA, from 23-24 January 2024. A total of 19 (16 in 2023) members attended the Session from the two (2) Contracting Parties. The meeting was opened by the Chairperson, Mr Norman Pillen (U.S.A.) and the Vice-Chairperson, Mr Carl Nordmann (Canada) who welcomed participants.

The following are a subset of the complete recommendations and requests for action from the PAB029, which are provided at Appendix V.

RECOMMENDATIONS

FISS 2024

PAB029-Rec.01 (para. 14) The PAB **RECOMMENDED** that the Commission prioritize funding for a FISS in IPHC Regulatory Area 4CDE in 2024. *[Unanimous].*

Fishing periods: season opening and closing dates

PAB029-Rec.02 (para. 16) The PAB **RECOMMENDED** the following fishing periods for 2024: *[In favour=13; against=2 abstain=3; Absent=1]*

a) Opening: 15 March
b) Closing: 15 November

PAB029-Rec.03 (para. 17) The PAB **RECOMMENDED** the following fishing periods opening and closing times of day for 2024: *[In favour=15; against=0 abstain=2; Absent=2]*

a) Opening: 06:00 hrs (on the 15th)
b) Closing: 23:59 hrs (on the 15th)

TCEY Recommendations

PAB029-Rec.04 (para. 20) The PAB **RECOMMENDED** the following TCEY mortality limits for the 2024 fishing period as provided in Table 3, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat) provided in Appendix III, and an SPR of 52%. *[Canada: In favour=2; against=3 abstain=0 [U.S.A.: In favour=13; against=1; abstain=0]*

Table 3. Processor Advisory Board (PAB) recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
2A	1.65	748.43
2B	6.31	2,862.17
2C	5.67	2,571.87
3A	11.36	5,152.81
3B	3.41	1,546.75
4A	1.63	739.36
4B	1.28	580.6
4CDE	3.66	1,660.15
Total (IPHC Convention Area)	**34.97**	**15,862.13**

IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5)

PAB029-Rec.05 (para. 21) The PAB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-204-AM100-PropA1, with the addition of the mortality limits for each Contracting Party, by sector, as detailed in Section 5.3, but

also include all mortality (e.g. subsistence, bycatch, and non-guided sport) in annual summary framework table *[In favour: 16; Against=0; Abstain=0; Absent=3].*

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

PAB029-Rec.06 (para. 22) The PAB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-2024-AM100-PropA2, which specified fishing periods for the commercial Pacific halibut fisheries. See Section 4 for a summary of discussions and recommendations. *[In favour: 14; Against=1; Abstain=4].*

IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5) (Regulatory Area 2A)

PAB029-Rec.07 (para. 26) The PAB **NOTED** and **RECOMMENDED** that the Commission adopt fishery regulation proposal IPHC-2024-AM100-PropC1, that proposed amendments to include a TCEY floor in IPHC Regulatory Area 2A. *[In favour: 16; Against=0; Abstain=1].*

1. OPENING OF THE SESSION

1. The 29th Session of the International Pacific Halibut Commission (IPHC) Processor Advisory Board (PAB029) was held in Anchorage, Alaska, USA, from 23-24 January 2024. A total of 19 (16 in 2023) members attended the Session from the two (2) Contracting Parties. The list of participants is provided at Appendix I. The meeting was opened by the Chairperson, Mr Norman Pillen (U.S.A.) and the Vice-Chairperson, Mr Carl Nordmann (Canada) who welcomed participants.

2. The PAB **RECALLED** the intersessional voting process undertaken to elect a new USA Chairperson following the resignation of the sitting chair, as follows:

> *"Nominations for the position of USA Chairperson of the PAB for the next biennium, or until a replacement is elected was called for intersessionally, and Mr Norman Pillen (USA) was nominated, seconded and **ELECTED** as USA Chairperson. Mr Pillen's term will expire at the end of the PAB in 2026." [In favour: 11; Against: Nil; Abstain: 1; No response: 4].*

1.1 Accreditation of PAB membership (2024)

3. The PAB **ENDORSED** the accreditation of 5 new members in accordance with the IPHC Rules of Procedure (2023), Appendix VI, Section II. para. 7, for participation in the 2024 Processor Advisory Board proceedings, as detailed in Table 1.

Table 1. Accredited new PAB members.

Number	PAB Member	Representative	Initial accreditation date	5-year accreditation expiry
Canada				
1	Aero Trading Co. Ltd	Liam Stockwell	23 Jan 2024	23 Jan 2029
USA				
1	Wind and Tide LLC (Peninsula Seafoods)	Jeff Grannum	23 Jan 2024	23 Jan 2029
2	Alaska Fish Factory	Jeff Choinski	23 Jan 2024	23 Jan 2029
Associations				
1	Halibut Association of North America (HANA)	Peggy Parker	23 Jan 2024	23 Jan 2029
2	Pacific Seafood Processors Association (PSPA)	Nicole Kimball	23 Jan 2024	23 Jan 2029

4. The PAB **NOTED** that it does not agree with the process implemented by the Secretariat on accreditation. The PAB wishes to retain autonomy on which parties are allowed into the PAB.

5. The PAB **NOTED** the clarifying statement from the IPHC Secretariat that the process was run in accordance with the IPHC Rules of Procedure (2023), that were updated in 2023 under unanimous agreement of the Commission. Modification of the Rules of Procedure would require consultation and agreement by the Commission.

6. The PAB **ENDORSED** the re-accreditation of 16 members in accordance with the IPHC Rules of Procedure (2023), Appendix VI, Section II. para. 8, for participation in the 2024 Processor Advisory Board proceedings, as detailed in Table 2.

Table 2. Re-accredited PAB members.

Number	PAB Member	Representative	Initial accreditation date	5-year accreditation expiry
Canada				
1	Coldfish Seafood Co. Inc.	Casey Sugden	24 Jan 2023	24 Jan 2028
2	FAS Seafood Producers, Ltd	Bruce Hale	24 Jan 2023	24 Jan 2028
3	Seven Seas Fish Co. Ltd	Nick Heras	24 Jan 2023	24 Jan 2028
4	S.M. Products (B.C) Ltd	Carl Nordmann	24 Jan 2023	24 Jan 2028
USA				
1	170 Degrees West	Heather McCarty	24 Jan 2023	24 Jan 2028
2	Dana Besecker Co.	Susan Adair	24 Jan 2023	24 Jan 2028
3	E&E Foods, Inc.	Kit Durnil	24 Jan 2023	24 Jan 2028
4	John Nagle Company	Mark Callahan	24 Jan 2023	24 Jan 2028
5	Northport Fisheries	Tyler Goodnight	24 Jan 2023	24 Jan 2028
6	OBI Seafoods	John Woodruff	24 Jan 2023	24 Jan 2028
7	Peter Pan Seafood Co.	Steven Minor	24 Jan 2023	24 Jan 2028
8	Seafood Producers Coop.	Norman Pillen	24 Jan 2023	24 Jan 2028
9	Taku Fisheries, Hoonah Cold Storage	Tim James	24 Jan 2023	24 Jan 2028
10	Alaska Glacier Seafoods	Jessie Keplinger	24 Jan 2023	24 Jan 2028
11	Pacific Seafoods	David Brindle	24 Jan 2023	24 Jan 2028
12	Katchemak Bay Seafoods	William Sullivan	24 Jan 2023	24 Jan 2028

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

7. The PAB **ADOPTED** the Agenda as provided at Appendix II. The documents provided to the PAB029 are those submitted for the 100th Session of the IPHC Annual Meeting (AM100). To assist the PAB in navigating its meeting, all documents relevant to the agenda were posted as links on the PAB webpage: https://www.iphc.int/meetings/29th-session-of-the-iphc-processor-advisory-board-pab029/.

3. IPHC SECRETARIAT INFORMATIONAL SESSION

3.1 Mortality Limits and TCEY

8. The PAB **NOTED** the question-and-answer period by Dr. Ian Stewart (IPHC Quantitative Scientist).
9. The PAB **NOTED** that:
   a) concerns were raised about the confidence in the statistic indicating that 42% of the 2012 year class is sexually mature, part of the Spawning Biomass;
   b) obtaining certainty for this data point is challenging, despite the improved methods like histological analyses;
   c) the maturity speed hasn't changed significantly with size at age;
   d) there is a high level of uncertainty in estimating future recruitment, especially with only the 2012 year class available, assuming a constant rate of maturity;
   e) the link between the size of spawning biomass and recruitment is considered weak;
   f) a proposal to change the harvest rate was discussed, but it was highlighted that it's linked to management policy objectives;
   g) the stock condition involves young Pacific halibut showing up in surveys, indicating potential future fish availability. Natural variability and fishing effort are key components, with the latter having had an overall decreased effect for the past 13 years, though recruitment remains a challenge;
   h) the discussion also touched on changes in size at age since the 1990s and uncertainty regarding a reproductive threshold for recruitment, expressing the hope of winning the "recruitment lottery."

3.2 MSE update

10. The PAB **NOTED** the question-and-answer session provided by Dr. Allan Hicks (IPHC Quantitative Scientist).

11. The PAB **NOTED** that:

    a) the discussion focused on finalizing a formal harvest policy, with ongoing efforts for Commission approval and plans to present it at AM101;

    b) emphasizing transparency and scientific grounding, the shift is towards SPR-based management;

    c) an intersessional stakeholder discussion before the AM101 is proposed for better preparedness for future comments;

    d) the importance of involvement with the MSAB and MSE for strategic direction, suggesting the use of the MSE explorer to understand implications of different management approaches.

3.3 FISS 2024

12. The PAB **NOTED** the question-and-answer session provided by Dr. Ray Webster (IPHC Quantitative Scientist).

13. The PAB **NOTED** that:

    a) the discussion revolved around a proposal/comment to combine NOAA Sablefish survey and Pacific halibut survey in some aspects;

    b) concerns about conducting FISS designs that are not revenue-neutral, with the desire to conduct all necessary FISS based on scientific recommendations;

    c) industry challenges were raised, surrounding the FISS, including the need for stable funding, market dynamics affecting bidding, landing dates and times, and concerns about fish quality;

    d) the overall sentiment acknowledges the tough economic climate but emphasizes the importance of maintaining a science-driven FISS design.

    e) The PAB discussed that additional advanced notice of IPHC survey trip would help accomplish a higher dock price.

    f) Discussion was made to propose a subcommittee to address the needs of increasing value on FISS landings.

14. The PAB **RECOMMENDED** that the Commission prioritize funding for a FISS in IPHC Regulatory Area 4CDE in 2024. *[Unanimous].*

4. FISHING PERIODS: SEASON OPENING AND CLOSING DATES

15. The PAB **NOTED** that there were considerations about the timing of the fishing season, particularly starting post the Boston Seafood show around March 10-12. Suggestions were made for a season extending from 15 March 2024 to 1 November 2024, with favorable tides on 15-18 March 2024 in some parts of the Convention Area. However, concerns were raised about the election in November 2024. Opinions varied on the ideal season duration, with some advocating for a later start and earlier closure, while others emphasized the benefits of a longer season for pricing and allowing fishermen ample time.

16. The PAB **RECOMMENDED** the following fishing periods for 2024: *[In favour=13; against=2 abstain=3; Absent=1]*

    a) Opening: 15 March

    b) Closing: 15 November

17. The PAB **RECOMMENDED** the following fishing periods opening and closing times of day for 2024: *[In favour=15; against=0 abstain=2; Absent=2]*

    a) Opening: 06:00 hrs (on the 15th)

    b) Closing: 23:59 hrs (on the 15th)

5. MORTALITY LIMITS

5.1 Coastwide perspectives

18. The PAB **NOTED** a considerable discussion surrounding whether to provide TCEY advice at a coastwide level only, versus by regulatory area. Consideration was given to providing an across the board cut for 2024, versus some proportional cut by Regulatory Area.

5.2 Regulatory Area perspectives

19. Nil

5.3 TCEY Recommendations

20. The PAB **RECOMMENDED** the following TCEY mortality limits for the 2024 fishing period as provided in Table 3, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat) provided in Appendix III, and an SPR of 52%. *[Canada: In favour=2; against=3 abstain=0 [U.S.A.: In favour=13; against=1; abstain=0]*

Table 3. Processor Advisory Board (PAB) recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
2A	1.65	748.43
2B	6.31	2,862.17
2C	5.67	2,571.87
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4A	1.63	739.36
4B	1.28	580.6
4CDE	3.66	1,660.15
Total (IPHC Convention Area)	**34.97**	**15,862.13**

6. IPHC FISHERY REGULATION PROPOSALS FOR 2024

6.1 IPHC Secretariat fishery regulation proposals

6.1.1 IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5)

21. The PAB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-204-AM100-PropA1, with the addition of the mortality limits for each Contracting Party, by sector, as detailed in Section 5.3, but also include all mortality (e.g. subsistence, bycatch, and non-guided sport) in annual summary framework table *[In favour: 16; Against=0; Abstain=0; Absent=3].*

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

22. The PAB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-2024-AM100-PropA2, which specified fishing periods for the commercial Pacific halibut fisheries. See Section 4 for a summary of discussions and recommendations. *[In favour: 14; Against=1; Abstain=4].*

6.1.3 IPHC Fishery Regulations: IPHC Fishery Regulations: Logs (Sect 19)

23. The PAB **NOTED** fishery regulation proposal IPHC-2024-AM100-PropA3, , to update and align logs requirements for Contracting Parties in the IPHC Fishery Regulations, but did not take action.

6.2 Contracting Party fishery regulation proposals

6.2.1 Recreational (sport) fishing for Pacific halibut—IPHC Regulatory areas 2c, 3a, 3b, 4a, 4b, 4c, 4d, 4e (Sect. 28) – Charter management measures in IPHC Regulatory Areas 2C and 3A

24. The PAB **NOTED** fishery regulation proposal IPHC-2024-AM100-PropB1, that 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 Fishery Management Council's (NPFMC) Pacific halibut Catch Sharing Plan, but did not take any action.

6.2.2 IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5), and In-Season Actions (Sect. 6)

25. The PAB **NOTED** fishery regulation proposal IPHC-2024-AM100-PropB2, that aimed to modify IPHC Fishery Regulations, Section 5 (Mortality and Fishery Limits) and Section 6 (In-Season Actions) reflective of changes to the Catch Sharing Plan (CSP) that allocates the IPHC Regulatory Area 2A Pacific halibut catch limit, but did not take any action.

6.3 Other Stakeholder fishery regulation proposals

6.3.1 IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5) (Regulatory Area 2A)

26. The PAB **NOTED** and **RECOMMENDED** that the Commission adopt fishery regulation proposal IPHC-2024-AM100-PropC1, that proposed amendments to include a TCEY floor in IPHC Regulatory Area 2A. *[In favour: 16; Against=0; Abstain=1].*

6.3.2 IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E (Sect. 28) - Onboard consumption in IPHC Regulatory Area 2C

27. The PAB **NOTED** fishery regulation proposal IPHC-2024-AM100-PropC2, that proposed adding flexibility to existing recreational (sport) Pacific halibut fishing regulations in Alaska and to provide increased flexibility for the consumption of Pacific halibut on board of recreational vessels, but did not take any action.

7. ELECTION OF CHAIRPERSON AND VICE-CHAIRPERSON

28. In accordance with Appendix IV, Section III of the IPHC Rules of Procedure (2023), the PAB **NOTED** the requirement to elect a Canadian Chairperson of the PAB the next biennium, given the current term of Mr Carl Nordman expires at the close of the PAB029 meeting.

> "*The PAB's annual meeting shall be convened by the PAB Chairperson and Vice-Chairperson, one representing each country. Officers are elected for two-year terms. The election of the officers whose terms have expired will be at the end of the annual session of the PAB, or through intersessional voting should a position become vacant sooner.*"

29. The PAB **CALLED** for nominations for the position of Canadian Chairperson of the PAB for the next biennium, or until a replacement is elected. Mr Bruce Hale (Canada) was nominated, seconded and elected as Canadian Chairperson.

30. The PAB **NOTED** that in accordance with Rule 2, para 3, and Rule 9, para. 1 of the IPHC Rules of Procedure (2023), Mr Bruce Hale (Canada) will Chair the CB095 in 2025, and Mr Norman Pillen (USA) will act in the capacity of Vice-Chairperson of the CB095 in 2025.

8. OTHER BUSINESS

31. The PAB **WELCOMED** the participation of the Chairperson and Vice-Chairperson of the Commission who attended the session to provide information on their TCEY advice to the PAB and clarifications on the recent Rules of Procedure changes and the letter to the PAB dated 18 December 2023, provided at Appendix IV.

32. The PAB **NOTED** the rationale provided by the Chairperson and Vice-Chairperson of the Commission, and that should issues arise regarding PAB membership numbers, that they would be dealt with at that time.

33. The PAB **NOTED** their concern about many potential impacts of the changes to the Terms of Reference on the PAB.

9. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 29TH SESSION OF THE IPHC PROCESSOR ADVISORY BOARD (PAB029)

34. The PAB **ADOPTED** the Report of the 29th Session of the IPHC Processor Advisory Board (IPHC-2024-PAB029-R) on 25 January 2024, including the consolidated set of recommendations and requests arising from PAB029, provided at Appendix V. *[Canada: In favour=unanimous][U.S.A.: In favour=unanimous].*

APPENDIX I
LIST OF PARTICIPANTS FOR THE 29TH SESSION OF THE IPHC PROCESSOR ADVISORY BOARD (PAB029)

Officers

Chairperson	Vice-Chairperson
Mr Norman Pillen (United States of America)	Mr Carl Nordmann (Canada)

PAB Members

Canada			
	Member	**Representative**	**Email**
1	Seven Seas Fish	Mr Nick Heras	nheras@7seas.ca
2	Coldfish Seafood	Mr Casey Sugden	casey@coldfish.ca
3	FAS Seafood Producers	Mr Bruce Hale	bruce@fasseafood.com
4	S.M. Products (BC) Ltd	Mr Carl Nordmann	carl@halibut.ca
5	Aero Trading Co. Ltd	Liam Stockwell	liam@aerotrading.ca
United States of America			
	Member	**Representative**	**Email**
1	170 Degrees West	Ms Heather McCarty	hdmccarty@gmail.com
2	Alaska Glacier Seafoods Inc.	Ms Jessie Keplinger	jessica@akhomepack.com
3	Dana F. Besecker Co. Inc.	Ms. Susan Adair	susan@dfbcompany.com
4	Icy Strait Seafoods & Taku Fisheries*	Mr Tim James Mr Hank Baumgart	tim@icystraitseafoods.com
5	Kachemak Bay	Mr William Sullivan	freshhalibut@gmail.com
6	Northport Seafoods	Mr Tyler Goodnight	tyler@northportfisheries.com
7	OBI Seafoods	Mr John Woodruff	John.woodruff@obiseafoods.com
8	Seafood Producers Cooperative (SPC)	Mr Norm Pillen	npillen@spcsales.com
9	Peter Pan Seafood Co., LLC	Mr Steven K. Minor	stevenm@ppsf.com
10	E&E Food Inc.	Mr Christopher (Kit) Durnil Mr Greg Indreland	kitd@eefoods.com
11	Pacific Seafoods	Mr David Brindle	dbrindle@pacseafood.com
12	John Nagle Co.	Mr Mark Callahan	msc@johnnagle.com
13	Wind and Tide LLC dba Peninsula Seafoods	Mr Jeff Grannum	grannum@peninsulaseafood.com
14	Alaska Fish Factory	Mr Jeff Choinski	jeff.alaskanfishfactory@gmail.com
Associations			
	Member	**Representative**	**Email**
1	Halibut Association of North America (HANA)	Peggy Parker	peggyparker616@gmail.com
2	Pacific Seafood Processors Association (PSPA)	Nicole Kimball	NicoleK@pspafish.net

*Absent in 2024

Observers (In person)

Name	Organization	Email
Mr. Bob **Fraumeni**	FAS Seafood Producers	rghf@fasseafood.com
Mr. Charles **McEldowney**	IFQ Holder	charlesm@icicleseafoods.com
Mr. Kirik **Kuznetson**	IFQ Holder	kuznetsovkirik@yahoo.com
Mr. Scott **Mazzone**	Quinault Tribe	smazzone@quinault.org
Mr. Tommy **Moore**	NW Indian Fisheries Commission	tmoore@nwifc.org
Ms. Lynn **Mattes**	Oregon Department of Fish & Wildlife & Pacific Fisheries Management Council	lynn.mattes@odfw.oregon.gov
Mr. William **Jasper**	Makah Tribe	william.jasper@makah.com

Observers (Online)

Participant	Organisation	Email
Mr Steve **Becic**	Pacific Seafood	sbecic@pacseafood.com
Mr Colby **Boulton***	Trident Seafoods	cboulton@tridentseafoods.com
Mr Bob **Gallaugher**	Gallaugher's Sports Fishing Camp	gallaughers1@shaw.ca
Mr Scott **Jellison**	Resurrection Bay Seafoods	sjellison@pacificseafood.com
Ms Stacey **McGee**	N/A	staceym@aisobservers.com

IPHC Secretariat

Participant	Title	Email
Dr David **Wilson**	Executive Director	david.wilson@iphc.int
Ms Andrea **Keikkala**	Assistant Director	andrea.keikkala@iphc.int
Dr Barbara **Hutniczak**	Fisheries Regulations & Data Services Branch Manager	barbara.hutniczak@iphc.int
Dr Josep **Planas**	Biological and Ecosystem Sciences Branch Manager	josep.planas@iphc.int
Dr Allan **Hicks**	Quantitative Scientist (MSE)	allan.hicks@iphc.int
Dr Raymond **Webster**	Quantitative Scientist (Biometrician)	ray.webster@iphc.int
Ms Lorissa **Burkhalter***	Administrative Specialist	lorissa.burkhalter@iphc.int
Mr Kevin **Coll***	Setline Survey Specialist	kevin.coll@iphc.int
Mr Claude **Dykstra***	Research Biologist (Mortality & Survival)	claude.dykstra@iphc.int
Ms Joan **Forsberg***	Otolith Laboratory Technician (Snr)	joan.forsberg@iphc.int
Mr Andrew **Jasonowicz***	Research Biologist (Genetics)	andy.jasonowicz@iphc.int
Ms Kelsey **Magrane***	Fisheries Data Specialist (HQ)/Otolith Technician	kelsey.magrane@iphc.int
Ms Rachel **Rillera***	Setline Survey Specialist	rached.rillera@iphc.int
Ms Kimberly **Sawyer Van Vleck***	Fisheries Data Specialist (HQ)/Otolith Technician	kimberly.sawyer.vanvleck@iphc.int
Ms Crystal **Simchick***	Biological Science Lab Technician	crystal.simchick@iphc.int
Ms Monica **Thom**	Port Operations Coordinator	monica.thom@iphc.int
Ms Ola **Wietecha***	Administrative Specialist	Ola.witetecha@iphc.int

*remote participation

APPENDIX II
AGENDA FOR THE 29TH SESSION OF THE IPHC PROCESSOR ADVISORY BOARD (PAB029)

Date: 23-24 January 2024
Location: Anchorage, AK, U.S.A.
Venue: Hotel Captain Cook
Time: 23rd : 14:00-17:30; **24th**: 09:00-17:30;
Chairperson: Norman Pillen (USA); **Vice-Chairperson**: Mr Carl Nordmann (Canada)

1. OPENING OF THE SESSION
- 1.1 Election of Chairperson and Vice-Chairperson (IPHC Secretariat)
- 1.2 Accreditation of PAB Membership (2024) (IPHC Secretariat)

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION (Chairperson)

3. IPHC SECRETARIAT INFORMATIONAL SESSION
- 3.1 Mortality Limits and TCEY (I. Stewart)
- 3.2 MSE Update (A. Hicks)
- 3.3 FISS 2024 (R. Webster & K. Ualesi)

4. FISHING PERIODS: SEASON OPENING AND CLOSING DATES

5. MORTALITY LIMITS (Chairperson)
- 5.1 Coastwide perspectives
- 5.2 Regulatory Area perspectives
- 5.3 TCEY Recommendations

6. IPHC FISHERY REGULATION PROPOSALS FOR 2024
- 6.1 IPHC Secretariat fishery regulation proposals (B. Hutniczak)
- 6.2 Contracting Party fishery regulation proposals (Contracting Parties)
- 6.3 Other Stakeholder fishery regulation proposals (Stakeholders)

7. OTHER BUSINESS (Chairperson)

8. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 29th SESSION OF THE IPHC PROCESSOR ADVISORY BOARD (PAB029) (Chairperson, IPHC Secretariat)

APPENDIX III
PACIFIC HALIBUT MORTALITY PROJECTED FOR 2024 BASED ON THE PAB RECOMMENDED TCEY MORTALITY LIMITS

Note: All values reported in millions of net pounds.

RECOMMENDATION

Detailed 2024 projections, by sector, based on the TCEY mortality limits.

Sector	IPHC Regulatory Area								
	2A	**2B**	**2C**	**3A**	**3B**	**4A**	**4B**	**4CDE**	**Total**
Commercial discards	0.11	0.18	NA	NA	0.23	0.05	0.01	0.08	0.65
O26 Non-directed discards	0.08	0.29	0.06	0.25	0.22	0.27	0.14	1.55	2.86
Recreational	NA	0.03	1.07	0.99	0.01	0.01	0.00	0.00	2.09
Subsistence	NA	0.41	0.25	0.12	0.01	0.00	0.00	0.01	0.81
Total non-FCEY	0.18	0.90	1.37	1.36	0.47	0.33	0.16	1.64	6.42
Commercial discards	NA	NA	0.11	0.54	NA	NA	NA	NA	0.65
Recreational	0.61	0.81	0.79	1.89	NA	NA	NA	NA	4.10
Subsistence	0.02	NA	NA	NA	NA	NA	NA	NA	0.02
Commercial landings	0.83	4.60	3.40	7.56	2.94	1.30	1.12	2.02	23.78
Total FCEY	1.47	5.41	4.30	10.00	2.94	1.30	1.12	2.02	28.56
						4C FCEY		0.90	
						4D FCEY		0.90	
						4E FCEY		0.22	
TCEY	1.65	6.31	5.67	11.36	3.41	1.63	1.28	3.66	34.97
U26 Non-directed discards	0.00	0.04	0.00	0.18	0.09	0.13	0.01	1.11	1.56
Total	1.65	6.35	5.67	11.54	3.50	1.76	1.29	4.77	36.53

APPENDIX IV
LETTER TO THE PAB FROM THE COMMISSION

COMMISSIONERS:
ROBERT ALVERSON
SEATTLE, WA
NEIL DAVIS
VANCOUVER, BC
PETER DeGREEF
NORTH SAANICH, BC
JON KURLAND
JUNEAU, AK
PAUL RYALL
VANCOUVER, BC
RICHARD YAMADA
JUNEAU, AK

INTERNATIONAL PACIFIC HALIBUT COMMISSION

ESTABLISHED BY A CONVENTION BETWEEN CANADA

AND THE UNITED STATES OF AMERICA

EXECUTIVE DIRECTOR
DAVID T. WILSON

2320 W. COMMODORE WY, STE 300
SEATTLE, WA 98199-1287

TELEPHONE:
(206) 634-1838

FAX:
(206) 632-2983

EL2023603
18 December 2023

Jessie Keplinger, 2024 Chair
Carl Nordmann, 2024 Vice-Chair
IPHC Processor Advisory Board

Dear Jessie and Carl:

Thank you for your letter expressing concerns about the Commission's recently adopted revised Processor Advisory Board (PAB) – Terms of Reference and Rules of Procedure (2023).

The Commission identified the need and process for considering and adopting these amendments last January at the 99th Session of the IPHC Annual Meeting (AM099) and extended that timeframe based on the availability of interested parties. The Commission reviewed the final changes at a Commission work meeting in September. The Commission adopted revised PAB terms of reference and rules of procedure inter-seasonally via IPHC Circulars IPHC-2023-CR-024 and then IPHC-2023-CR-025, while noting that all subsidiary bodies of the Commission operate under the Rules of Procedure of the Commission (IPHC Rules of Procedure (2023), Rule 2: para. 3).

We appreciate the input from the PAB and its small working group to advise us on potentially appropriate changes. Our overarching goal was to reform the PAB's governance to ensure that the Commission receives well considered advice from a broad range of parties involved in processing.

The Commission unanimously agreed to broaden the PAB's membership eligibility to include any buyers who process and/or custom process, Pacific halibut caught in the Convention Area, including associations with at least one (1) member that meets these criteria. We chose not to limit membership to "first ex-vessel" buyers because we see no reason to exclude other processors.

The Commission unanimously agreed to use an accreditation questionnaire submitted via the Secretariat as an administratively efficient way to ensure accreditations comport with the Commission's Rules of Procedure.

The Commission unanimously agreed to revise the text about PAB officers. We trust that the new language provide sufficient operational flexibility. If it proves to be problematic over time, we encourage you to convey to us what is not working and suggest potential revisions. We acknowledge your preference to use the term "Co-Chairs" rather than "Chairperson" and "Vice Chairperson" however, we unanimously agreed that the existing terminology of Chairperson and Vice-Chairperson should remain in alignment with the Commission's rules, noting that the rotational basis for chairing is already established within those rules and applies to the PAB.

We thank the small working group for their valuable input into this process and look forward to an engaging and informative PAB029 session in January 2024. We would be pleased to meet with the PAB at that time to hear any remaining concerns on the new rules you may have and answer questions.

Yours sincerely

Jon Kurland 18/12/2023

Jon Kurland (Chairperson)

Paul Ryall 19/12/2023

Paul Ryall (Vice-Chairperson)

CC: David T. Wilson, Executive Director; IPHC Processor Advisory Board

APPENDIX V
CONSOLIDATED SET OF RECOMMENDATIONS AND REQUESTS OF THE 29TH SESSION OF THE IPHC PROCESSOR ADVISORY BOARD (PAB029) (23-24 JANUARY 2024)

RECOMMENDATIONS

FISS 2024

PAB029-Rec.01 (para. 14) The PAB **RECOMMENDED** that the Commission prioritize funding for a FISS in IPHC Regulatory Area 4CDE in 2024. *[Unanimous].*

Fishing periods: season opening and closing dates

PAB029-Rec.02 (para. 16) The PAB **RECOMMENDED** the following fishing periods for 2024: *[In favour=13; against=2 abstain=3; Absent=1]*

a) Opening: 15 March
b) Closing: 15 November

PAB029-Rec.03 (para. 17) The PAB **RECOMMENDED** the following fishing periods opening and closing times of day for 2024: *[In favour=15; against=0 abstain=2; Absent=2]*

c) Opening: 06:00 hrs (on the 15th)
d) Closing: 23:59 hrs (on the 15th)

TCEY Recommendations

PAB029-Rec.04 (para. 20) The PAB **RECOMMENDED** the following TCEY mortality limits for the 2024 fishing period as provided in Table 3, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat) provided in Appendix III, and an SPR of 52%. *[Canada: In favour=2; against=3 abstain=0 [U.S.A.: In favour=13; against=1; abstain=0]*

Table 3. Processor Advisory Board (PAB) recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
2A	1.65	748.43
2B	6.31	2,862.17
2C	5.67	2,571.87
3A	11.36	5,152.81
3B	3.41	1,546.75
4A	1.63	739.36
4B	1.28	580.6
4CDE	3.66	1,660.15
Total (IPHC Convention Area)	**34.97**	**15,862.13**

IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5)

PAB029-Rec.05 (para. 21) The PAB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-204-AM100-PropA1, with the addition of the mortality limits for each Contracting Party, by sector, as detailed in Section 5.3, but also include all mortality (e.g. subsistence, bycatch, and non-guided sport) in annual summary framework table *[In favour: 16; Against=0; Abstain=0; Absent=3].*

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

PAB029-Rec.06 (para. 22) The PAB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-2024-AM100-PropA2, which specified fishing periods for the commercial Pacific halibut fisheries. See Section 4 for a summary of discussions and recommendations. *[In favour: 14; Against=1; Abstain=4].*

IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5) (Regulatory Area 2A)

PAB029-Rec.07 (para. 26) The PAB **NOTED** and **RECOMMENDED** that the Commission adopt fishery regulation proposal IPHC-2024-AM100-PropC1, that proposed amendments to include a TCEY floor in IPHC Regulatory Area 2A. *[In favour: 16; Against=0; Abstain=1].*

INTERNATIONAL PACIFIC HALIBUT COMMISSION

IPHC-2024-CB094-R

Report of the 94th Session of the IPHC Conference Board (CB094)

Anchorage, Alaska, USA, 23-25 January 2024

Commissioners

Canada	United States of America
Paul Ryall	Jon Kurland
Neil Davis	Robert Alverson
Peter DeGreef	Richard Yamada

Executive Director

David T. Wilson, Ph.D.

DISTRIBUTION:
Participants in the Session
Members of the Commission
IPHC Secretariat

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INTERNATIONAL PACIFIC HALIBUT COMMISSION

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ACRONYMS

AM	Annual Meeting, of the IPHC
CB	Conference Board
FCEY	Fishery Constant Exploitation Yield
FISS	Fishery-independent setline survey
IPHC	International Pacific Halibut Commission
TCEY	Total Constant Exploitation Yield
WPUE	Weight Per Unit Effort

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**; **ACCEPTED** (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 94th Session of the International Pacific Halibut Commission (IPHC) Conference Board (CB094) was held in Anchorage, Alaska, USA from 23-25 January 2024. A total of 62 (56 in 2023) members attended the Session from the two (2) Contracting Parties. The list of participants is provided at Appendix I. The meeting was opened by Ms. Linda Behnken (U.S.A.) and Mr. Jim Lane (Canada) (Co-Chairpersons), who welcomed participants.

The following are a subset of the complete recommendations and requests for action from the CB094, which are provided at Appendix IV.

RECOMMENDATIONS

FISS 2024

CB094-Rec.01 (para. 18) The CB **ACKNOWLEDGED** the importance of FISS data in the Bering Sea and **RECOMMENDED** prioritizing FISS survey in the Bering Sea in 2024 and regularly in the years to come *[Canada: no objections; 3=abstain] [U.S.A.: unanimous]*

Fishing periods: season opening and closing dates

CB094-Rec.02 (para. 28) The CB **RECOMMENDED** change to the fishing period opening hour to 06:00 hrs. *[Canada: In favour=20; against=0 abstain=1] [U.S.A.: unanimous]*. In support of changing the opening time, CB members **NOTED** that allowing a full day facilitated access to markets and improved fishing efficiency and opportunity.

CB094-Rec.03 (para. 29) The CB **RECOMMENDED** the fishing period closing date on 7 December *[Canada: In favour=19; against=0 abstain=0] [U.S.A.: In favour=22; against=1; abstain=3]*.

CB094-Rec.04 (para. 30) The CB **RECOMMENDED** change to the fishing closing hour to 23:59 hrs. *[Canada: In favour=16; against=0 abstain=1] [U.S.A.: In favour=26; against=0, abstain=8]* In support of changing the closing times, CB members **NOTED** that allowing a full day facilitated access to markets and improved fishing efficiency and opportunity.

TCEY Recommendations

CB094-Rec.05 (para. 35) The USA CB members **RECOMMENDED** the following TCEY mortality limits for the 2024 fishing period as provided in Table 2, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat, Appendix III), and an SPR of 52%. [Canada: In favour=0; against=20 abstain=0] [U.S.A.: In favour=30; against=0, abstain=1]

Table 2. USA CB members recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
2A	1.65	748.43
2B	6.00	2,721.55
2C	5.79	2,626.30
3A	11.72	5,316.10
3B	3.56	1,614.79
4A	1.63	739.36
4B	1.28	580.60
4CDE	3.70	1,678.29
Total (IPHC Convention Area)	**35.33**	**16,025.42**

CB094-Rec.06 (para. 40) The Canadian CB members **RECOMMENDED** the TCEY mortality limits for the 2024 fishing period representing the 10% reduction from 2023 TCEYs distributed equally between Contracting Parties as provided in Table 3, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat, Appendix III), and an SPR of 54%. *[Canada, in favor-22, against-0, abs-0][USA: In favour – 1, Against=30, abstain=1]*

Table 3. Canadian CB members recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
USA Regulatory Areas	27.17	12,324.10
2B	6.10	27,766.91
Total (IPHC Convention Area)	**33.27**	**15,091.02**

CB094-Rec.07 (para. 43) The USA CB **RECOMMENDED** Commissioners initiate a stakeholder driven committee focused on identifying a formalized distribution strategy for Alaska regulatory areas and request Secretariat support to be completed prior to the AM101:

a) Using as a starting point the biological distribution;

b) To safeguard stakeholders from the potential shortfalls of ad-how distribution methods and inconsistent weighting of socioeconomic needs;

c) To allow consideration to shift harvest distribution between USA Regulatory Areas.

IPHC Fishery Regulations: IPHC Fishery Regulations: Logs (Sect 19)

CB094-Rec.08 (para. 50) The CB **NOTED** and **RECOMMENDED** that the Commission adopt fishery regulation proposal IPHC-2024-AM100-PropA3 Rev_1 updating and align logs requirements for Contracting Parties in the IPHC Fishery Regulations. *[Canada: In favour=1; against=0 abstain=16] [U.S.A.: In favour=30; against=0; abstain=1]*

Recreational (sport) fishing for Pacific halibut—IPHC Regulatory areas 2c, 3a, 3b, 4a, 4b, 4c, 4d, 4e (Sect. 28) – Charter management measures in IPHC Regulatory Areas 2C and 3A

CB094-Rec.09 (para. 51) The CB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-2024-AM100-PropB1 Rev_1, that 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 Fishery Management Council's (NPFMC) Pacific halibut Catch Sharing Plan: *[Canada: abstain] [U.S.A.: unanimous]*

Incidental catch (Bycatch)

CB094-Rec.10 (para. 61) The CB **RECOMMENDED** that the Commission acknowledge that groundfish [as referred to in the USA] fisheries encounter and take Pacific halibut incidentally as bycatch. Pacific halibut bycatch minimization remains a high priority of CB members, along with full and robust monitoring measures to quantify Pacific halibut removals and mortality *[Canada: unanimous] [U.S.A.: In favour=31; against=0; abstain=4]*

1. OPENING OF THE SESSION

1. The 94th Session of the International Pacific Halibut Commission (IPHC) Conference Board (CB094) was held in Anchorage, Alaska, USA from 23-25 January 2024. A total of 62 (56 in 2023) members attended the Session from the two (2) Contracting Parties. The list of participants is provided at Appendix I. The meeting was opened by Ms Linda Behnken (U.S.A.) and Mr. Jim Lane (Canada) (Co-Chairpersons), who welcomed participants.

1.1 Accreditation of CB Membership (2021-25): new members

2. The CB **ENDORSED** the accreditation of 4 new members in accordance with the IPHC Rules of Procedure (2023), Appendix IV, Section II, paras. 4 and 5, for participation in the 2024 Conference Board proceedings, as detailed in Table 1.

Table 1. Accredited new CB members.

Number	CB Member	Representative	Initial accreditation date	5-year accreditation expiry
Canada				
1	Finest At Sea Seafoods	Ben Cameron	23 Jan 2024	CB in 2026
2	A-Tlegay Fisheries LP	Christa Rusel	23 Jan 2024	CB in 2026
3	Active Guiding and Tackle	Deryk Krefting	23 Jan 2024	CB in 2026
USA				
1	American Sport Fishing Association	Larry Phillips	23 Jan 2024	CB in 2026

3. The CB **ENDORSED** the re-accreditation of 58 members (Canada: 23; USA: 35) in accordance with the IPHC Rules of Procedure (2023), appendix IV, Section II, paras. 4 and 5, for participation in the 2024 Conference Board proceedings, as detailed in Appendix I.

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

4. The CB **ADOPTED** the Agenda as provided at Appendix II with the following additions:
   - discussion on the adoption of electronic logbooks in Alaska;
   - discussion on the hour of opening and closing of the fishing season;
   - discussion on monitoring of catch in commercial fisheries;
   - update on the Pacific halibut abundance-based management (ABM) of Pacific halibut in the Bering Sea and the associated lawsuit.
5. The CB **NOTED** that the documents provided to the CB094 are those submitted for the 100th Session of the IPHC Annual Meeting (AM100). To assist the CB in navigating its meeting, all documents relevant to the agenda were posted as links on the CB webpage: https://www.iphc.int/meetings/94th-session-of-the-iphc-conference-board-cb094/.

3. IPHC SECRETARIAT INFORMATIONAL SESSION

3.1 Mortality Limits and TCEY

6. The CB **NOTED** the presentation and questions and answers session provided by Dr. Ian Stewart (IPHC Quantitative Scientist).
7. The CB **NOTED** with appreciation for the stock assessment preview presented by Dr. Stewart on 16 January 2024, and **AGREED** that this should continue as an annual process.
8. The CB **NOTED** the advice provided on:
   a) the accounting of whale depredation when processing logbook data;
   b) the importance of the 2012 year class to the condition of the Pacific halibut stock;

c) the use of data from fixed gear as primary index in the stock assessment in Alaska vs. snap gear being the primary driver for the estimates in IPHC Regulatory Areas 2A and 2B;

d) impact of adding end of season logbook data on the stock trend;

e) quality of information available on the 2016 year class from the trawl survey;

f) possible stock decline within next 3 years if another good year class does not materialize; and

g) possibility of incorporation of sport creel survey data as input to understand recruitment.

3.2 MSE update

9. The CB **NOTED** the presentation and question-and-answer session provided by Dr. Allan Hicks (IPHC Quantitative Scientist).

10. The CB **NOTED** that:

a) relative spawning biomass was above 36% in 2023;

b) 2022 FISS & Commercial WPUE lowest observed since 1993;

c) to achieve MSY, the stock status would be less than 30%;

d) the long-term TCEY in a high PDO regime may be 1.6 times the long term TCEY in the low PDO regime, highlighting the importance of environmental effects on changes in recruitment and movement and therefore yield;

e) the PDO may be more variable and possibly less coupled to Pacific halibut recruitment strength; and

f) in a no-fishing scenario in MSE simulations, the relative spawning biomass would go to 100%, but absolute biomass would continue to vary.

11. The CB **NOTED** the discussion of identifying a harvest policy that included criteria for and conditions when moving away from a formulaic approach could be justified, particularly focusing on additional factors that might necessitate a more precautionary approach, such as variations in catch rates and socioeconomic considerations.

12. The CB **NOTED** the new potential for adding an additional objective in the MSE of maintaining or increasing catch rates and how that might address stakeholders needs.

13. The CB **NOTED** appreciation for the extensive information aiding simulations and decision-making processes,

14. The CB **NOTED** the redesign of FISS for revenue goals and its consequent impact on the MSE process, highlighting the necessity to account for this added uncertainty in the management process.

3.3 FISS 2024

15. The CB **NOTED** the question-and-answer session provided by Dr. Ray Webster (IPHC Quantitative Scientist).

16. The CB **NOTED** that stock assessment still relies heavily on the FISS and expressed concern over the lack of more consistent fishery-independent data collected from Region 4 and the reduction of information from some areas in in Region 3 and 2 areas.

17. The CB **NOTED** the need for IPHC Fisheries-Independent Setline Survey (FISS) in IPHC Regulatory Areas 4CDE, highlighting the difference in the size of fish that are captured by the FISS vs. NOAA trawl surveys.

18. The CB **ACKNOWLEDGED** the importance of FISS data in the Bering Sea and **RECOMMENDED** prioritizing FISS survey in the Bering Sea in 2024 and regularly in the years to come *[Canada: no objections; 3=abstain] [U.S.A.: unanimous]*

19. The CB **NOTED** concern with increasing the TCEY in a Regulatory Area in the absence of FISS or trawl survey data.

20. The CB **NOTED** rationale for the recommendation on FISS prioritization:

    a) The Bering Sea is the IPHC Regulatory Area undergoing the most rapid ecosystem changes including substantial changes in the distribution of commercially important species. The IPHC's Scientific Review Board recommended that the Secretariat prioritize sampling in this area to monitor for potential changes in Pacific halibut distribution and biology;

    b) Historically there was an important amount of Pacific halibut biomass on the shelf-slope edge, an area not well surveyed by the NOAA Fisheries trawl survey and therefore requiring direct sampling by the FISS. In addition, there is very little commercial effort on the edge break in 4D – so the IPHC is not obtaining sufficient data from the fleet;

    c) At this point, a 2024 Bering Sea FISS is not guaranteed. Given the importance of FISS data in the ABM PSC index, the CB stresses the importance of having an annual FISS in the Bering Sea;

    d) While the NOAA trawl survey is helpful and covers a large area of the BSAI, it is important to have data from the edge and island stations to have more representative and comprehensive coverage;

    e) An accurate estimate in Regulatory Area 4 is necessary if using stock distribution to distribute TCEY;

    f) Regulatory Area 4 is an area with impactful allocations between sectors, especially when TCEY is small – Sector splits and reduced bycatch limits become very difficult to achieve without appropriate data – and the ABM program must have the FISS data as one of its indices of abundance;

    g) Regulatory Area 4 is a source area that feeds other Regulatory Areas (movement from west to east). The Bering Sea is known as a net emigration area for Pacific halibut – so understanding what is happening in the Bering Sea is important to all IPHC Regulatory Areas.

21. The CB **NOTED** the follow-up comments supportive of prioritizing the FISS in the Bering Sea, but members also noted the importance of the FISS in other areas, highlighting the need for sources of external funding (e.g. domestic agencies) to conduct comprehensive surveys, and the option to use the FISS reserve to fund the Bering Sea component of the FISS in 2024.

22. The CB **NOTED** discussion initiated by the Adak Community Development Corporation (ACDC) on the motion to prioritize the FISS in the Bering Sea and that (1) ACDC reluctantly supports the motion; (2) 4B has been leaving fish in the water for a multiple of reasons; (3) this has resulted in 4B contributing to Balancing the Bank; and (4) ACDC supports the research priority in attempts to acquiring the data necessary to manage area 4B. In this context, ACDC highlighted page 25 of the 5-Year Program of Integrated Research and Monitoring stating:

> *"Tagging and genetic analyses have indicated the potential for Area 4B to be demographically isolated. An alternative to current assessment and management structure would be to treat Area 4B separately from the rest of the coast. This would not likely have a large effect on the coastwide stock assessment as Area 4B represents approximately 5% of the surveyed stock, However, it would imply that the specific mortality limits for Area 4B could be very important to local dynamics and should be separated from stock-wide trends. Therefore, information on the stock structure for Area 4B has been identified as a top priority."*

4. FISHING PERIODS: SEASON OPENING AND CLOSING DATES

23. The CB **NOTED** the NOAA Fisheries comment that the agency does not support a season start date earlier than 10 March. There are logistical challenges that make it difficult for the agency from supporting an earlier date.

24. The CB **NOTED** a motion from USA on fishing period opening date of 7 March. The motion passed among members from USA: [U.S.A.: In favour=13; against=6; abstain=11].

25. The CB **NOTED** a motion from Canada on fishing period opening date on 1 March. The motion passed among members from Canada. *[Canada: In favour=17; against=0; abstain=1].*

26. The CB **NOTED** that longer season would provide additional opportunity for producers, consumers and direct marketers.

27. The CB **NOTED** minority USA support for both earlier (1 March) and later (15 March) season opening date.

28. The CB **RECOMMENDED** change to the fishing period opening hour to 06:00 hrs. *[Canada: In favour=20; against=0 abstain=1] [U.S.A.: unanimous].* In support of changing the opening time, CB members **NOTED** that allowing a full day facilitated access to markets and improved fishing efficiency and opportunity.

29. The CB **RECOMMENDED** the fishing period closing date on 7 December *[Canada: In favour=19; against=0 abstain=0] [U.S.A.: In favour=22; against=1; abstain=3].*

30. The CB **RECOMMENDED** change to the fishing closing hour to 23:59 hrs. *[Canada: In favour=16; against=0 abstain=1] [U.S.A.: In favour=26; against=0, abstain=8]* In support of changing the closing times, CB members **NOTED** that allowing a full day facilitated access to markets and improved fishing efficiency and opportunity.

5. MORTALITY LIMITS

5.1 Coastwide perspectives

31. The CB **RECALLED** the full decision table provided in paper IPHC-2024-AM100-12.

32. The CB **NOTED** the following perspectives shared by Canada: CB members from Canada supported equal cuts between Contracting Patries of 10% from 2023 levels.

33. The CB **NOTED** the following perspectives shared by U.S.A: members from USA support distribution that aligns with FISS estimates of O32 Pacific halibut abundance and area specific metrics.

5.2 TCEY Recommendations

34. The CB **NOTED** a motion from the USA CB members to reduce the coastwide TCEY by 4.5% from adopted 2023 levels to 35.22 million pounds based on the rationale that this level of reduction represents additional reduction to the significant reductions made in some areas and to the coastwide TCEY in 2023, to the lower level of directed commercial fishery landings relative to the fishery limit in 2023 with similar outcomes expected for 2024, and that this proposed reduction is responsive to short- and long-term expected changes in the stock. USA CB members stressed that the coastwide TCEY and the distribution of the TCEY should be scientifically based and follow a consistent policy across all areas. US CB members also identified the need for better genetic data on Pacific halibut in IPHC Regulatory Area 4B to determine if a separate management approach may be needed in this area.

35. The USA CB members **RECOMMENDED** the following TCEY mortality limits for the 2024 fishing period as provided in Table 2, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat, Appendix III), and an SPR of 52%. [Canada: In favour=0; against=20 abstain=0] [U.S.A.: In favour=30; against=0, abstain=1]

Table 2. USA CB members recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
2A	1.65	748.43
2B	6.00	2,721.55
2C	5.79	2,626.30
3A	11.72	5,316.10
3B	3.56	1,614.79
4A	1.63	739.36
4B	1.28	580.60
4CDE	3.70	1,678.29
Total (IPHC Convention Area)	**35.33**	**16,025.42**

36. The USA CB members **NOTED** the rationale for coastwide and area-specific mortality limits:

a) Coastwide:

i. 3% drop in survey WPUE

ii. Compromise - big cuts in the US last year and those are carrying forward, with additional reductions.

iii. Compromise position until a Harvest Policy can be established. Takes us a step closer to having TCEYS based on biological stock distribution.

iv. Coastwide indicators are concerning and suggest taking a cautious approach

v. The fishery is currently bridging a gap in recruitment, is fishing predominantly on the 2012 year class that was less than 50% mature in 2023 and we do not see any new big year classes coming in yet

vi. Individual area decreases proposed are a compromise between areas to achieve a coastwide decrease of 4.5%

vii. The proposed reduction is partially based on the uncertainties that will become more clear in the next three years

viii. The coastwide harvest in 2023 was 86% of the TCEY, and it is likely that fish will be left in the water again in 2024

ix. This motion is responsive to short term changes as well as long term historical trends within O32 stock distribution

b) 2C:

i. O32 FISS WPUE 0% change, All Sizes WPUE -1%, all sizes WPUE -1%

ii. 2C has often taken the burden of conservation for all of are 2, giving up fish to make the 2b numbers work.

iii. has the highest catch per unit effort of any area and this has been a consistent trend

iv. The FISS showed 0% change from the 2023 survey

v. Area 2C agrees to a 1% drop as a concession to achieve coastwise goals

c) 3A:

O32 WPUE -5%, All sizes WPUE -8%, all sizes NPUE -8%

i. 3A took a 17% reduction in 2023

ii. 3a took large cuts last year but the 2023 FISS did not indicate as drastic of cuts for 2024

iii. In recent history 3a has seen large swings in their quota and recognize the need for a coastwise cut, but want the cut to be more moderate rather than the large swings that have been occurring recently.

iv. A 3% reduction feels safe when looking at the risk assessment table

v. This motion reflects waiting on the 2014-18 recruitment to be better known over the next three years

d) 3B:

i. 032 WPUE -8%, All Sizes WPUE -7%, All sizes NPUE -3%

ii. 3B is currently propping up other regions by giving up more than 2 million pounds of its 032 distribution

iii. Cutting 3B based on 1 yr survey results is double dipping

iv. 3b saw smallest decrease in Fishery performance in 2023

v. 3b has 2nd highest WPUE in the fishery

vi. 2023 TCEY's resulted in the Largest Deficit between reference TCEY and adopted TCEY of all Areas. Resulting in 2.61 million pounds of lost yield to 3B stakeholders in 2023

vii. 2nd highest O32 FISS WPUE

viii. Smallest Decrease in Commercial WPUE in 2023 indicates stability in the area.

ix. O32 Distribution trend has increased over 5 years is estimated to be 17.8%, But area removals were less than 10% of Coastwide TCEY.

x. To have continued large cuts in 3b would continue to put a disproportionate burden on that specific area, rather than spreading the cuts further through the coast.

xi. Fishery data has not indicated a need for cuts to 3B in the same way the FISS does.

e) 4A:

i. O32 WPUE -8, All sizes WPUE -7, All sizes NPUE -3%

ii. Areas 4A is typically underrepresented in comparison to other areas which shouldn't mean a land grab to bolster the TAC in other Areas

f) 4B:

i. O32 WPUE has increased 4%, All sizes WPUE has increased 5%, All sizes NPUE has increased 5%

ii. No Survey conducted in 23, relies on the space-time modelling, so caution is necessary

iii. Low percentage of quota landed

iv. Estimated stock distribution increasing since 2021

v. Because no sampling occurred in 4B in 2023, the degree of variability in these modelled estimates may be higher relative to better sampled areas and should be used cautiously.

vi. In 2023, there continued to be considerable underutilization of TCEY in 4B due to a combination of biological and socioeconomic factors

vii. the western Aleutians are very remote, and wit the lack of processing activity fewer vessels have been fishing in 4B.

viii. Commercial WPUE was down -8% for fixed hook and down -45% for snap gear.

ix. The Aleutians have also been experiencing warm water conditions for the past decade, and temperatures have not shown signs of normalizing as they have in the Bering Sea.

x. 4B had the worst catch rate this season followed by 4A compared to other halibut areas which certainly warrants a decrease. However, the poor catch rates may partly be attributed to socio economic restraints such as distance and fuel costs.

g) 4CDE:

i. While there wasn't a FISS hook survey in 4CDE in 2023, NMFS trawl survey data was used in the space-time modelling for 4CDE

ii. Dr. Stewart noted that the NMFS trawl survey has been the primary source of information for 4CDE

iii. Modelled FISS numbers are stable - O32 WPUE 0%, All sized WPUE +1%, and All sizes NPUE +1%

iv. Stock distribution in Area 4 is stable to slightly increasing

v. EBS Trawl Survey +14%. It has been increasing since 2020

vi. Harvest Rate - still be penalized by lower harvest rates that move quota to other areas

vii. Area 4 harvests the youngest fish of all areas, but the average fishery WPUE is the second highest next to 2C

viii. O26 bycatch down by down 14.4% or 248,000 lbs

ix. Should see additional bycatch reduction again in 2024 based on expected change in behaviour by the A80 fleet.

37. A minority of USA CB members **NOTED** that they do not support starting with last years negotiated TCEY's and adjusting the TCEYs based on one year survey data. Also, their concern with coastwide TCEY being too high given that "stock is at lowest absolute population level in the last 30 years" and that SB30 is a percent of a declining number and might not be a reliable trigger for additional conservation measures. Additionally, the Risk Tables reflect a great deal of uncertainty, and combined with environmental uncertainty, a more precautionary approach is warranted. The minority thinks the current stock level is too low and that less fish should be taken out of the water to increase chances of the stock going up.

38. The CB **NOTED** a comment from Canadian delegates indicating that the US motion does not result in a large enough reduction in the coastwide TCEY. The motion considers survey and commercial catch rates in 2023 compared to 2022 but fails to acknowledge the overall changes in survey results over the full time period presented, as well as the magnitude of the decline coastwide and in some Regions and IPHC Regulatory Areas. It is also important to remember that the IPHC Secretariat has advised there is no biological basis from the IPHC Regulatory Areas, so some metrics at the Biological Region level may be more meaningful. The motion also fails to take into account Canada's historic share. As outlined in a past IPHC paper, 032 biomass distribution is a scientific exercise while TCEY distribution is a policy decision that incorporates socioeconomic considerations. Further, the MSE process evaluated a management procedure that demonstrated a 20% national share for Canada met all conservation objectives – it would not create a conservation issue. Canada and USA have deviated from O32 distribution when setting TCEYs between Contracting Parties as well as USA IPHC Regulatory Areas.

39. The CB **NOTED** a motion from the Canadian CB members recommending a 10% reduction in the coastwide TCEY for 2024 (33.3 million lbs coastwide TCEY for 2024) with the contracting parties each taking a 10% reduction. For Canada this would mean a 2024 TCEY of 6.10 million lbs. In making this motion Canada considered the coastwide, regional survey and commercial fishery metrics, in particular the continuing decline at the coastwide level and the magnitude of that decline over the time series of the data. The Canadian CB members are also very concerned about the lack of recruitment into the fishery. There was a gap in recruitment from 2006 to 2012, where recruitment was very poor in each year. Further, while the 2012 year class is stronger it does not appear to be nearly as large as the 2005 year class, the 2013 year class appears to be small, 2014 year class is at best average, early indication are that the 2015 year class will not be strong and it is too early to tell the strength of the 2016-2018 years classes.

40. The Canadian CB members **RECOMMENDED** the TCEY mortality limits for the 2024 fishing period representing the 10% reduction from 2023 TCEYs distributed equally between Contracting Parties as provided in Table 3, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat, Appendix III), and an SPR of 54%. *[Canada, in favor-22, against-0, abs-0][USA: In favour – 1, Against=30, abstain=1]*

Table 3. Canadian CB members recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
USA Regulatory Areas	27.17	12,324.10
2B	6.10	27,766.91
Total (IPHC Convention Area)	**33.27**	**15,091.02**

41. The USA CB members **NOTED** opposition to the Canadian motion: The USA CB members categorically **OPPOSED** a national share for Canada, which is a recent request and not rooted in the treaty. The US delegation cannot support an equal cut between contracting parties because it maintains Canada's TCEY at a disproportionately large coastwide percentage compared to O32 distribution. Furthermore, the higher percentage distribution enshrined by the recent adhoc interim agreement gives Canada a higher allocation starting point, and any cut from that higher amount is less of a burden to Canadian stakeholders compared to USA stakeholders.

42. The USA CB **NOTED** that 9 out of 14 comments provided via IPHC-2024-AM100-INF01 were related to the impact of the unconstrained unguided sport fishery in IPHC Regulatory Areas 2C and 3A and **URGED** the Commission to acknowledge these concerns and identify the appropriate management body to address these concerns.

43. The USA CB **RECOMMENDED** Commissioners initiate a stakeholder driven committee focused on identifying a formalized distribution strategy for Alaska regulatory areas and request Secretariat support to be completed prior to the AM101:

    a) Using as a starting point the biological distribution;

    b) To safeguard stakeholders from the potential shortfalls of ad-how distribution methods and inconsistent weighting of socioeconomic needs;

    c) To allow consideration to shift harvest distribution between USA Regulatory Areas.

6. IPHC FISHERY REGULATIONS: PROPOSALS FOR THE 2023-24 PROCESS

6.1 IPHC Secretariat fishery regulation proposals

6.1.1 IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5)

44. The CB **NOTED** fishery regulation proposal IPHC-2024-AM100-PropA1 with an understanding that the addition of the mortality and fishery limits for each Contracting Party, by sector, will be a result of the discussion by the Commission following the input from CB.

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

45. The CB **NOTED** fishery regulation proposal IPHC-2024-AM100-PropA2 with an understanding that specific fishing periods for the commercial Pacific halibut fisheries will be a result discussion by the Commission following the input from CB.

6.1.3 IPHC Fishery Regulations: IPHC Fishery Regulations: Logs (Sect 19)

46. The CB **NOTED** presentation provided by Lange Solberg on electronic logbooks in Alaska that could be available from Deckhand should the Commission approve IPHC-2024-AM100-PropA3 Rev_1.

47. The CB **NOTED** the discussion on the lack of logbook requirements in USA for vessels under 26ft, but acknowledged that the harvest from these vessels represents .07% of total catch.

48. The CB **NOTED** comments on positive experience with electronic logbooks in general from Canadian members and positive experience with Deckhand logbook from vessels participating in the 2023 NOAA trial.

49. The CB **NOTED** that the IPHC will be conducting electronic logbook trial in Alaska and **URGED** interested vessels to contact the Secretariat if they are interested in participating.

50. The CB **NOTED** and **RECOMMENDED** that the Commission adopt fishery regulation proposal IPHC-2024-AM100-PropA3 Rev_1 updating and align logs requirements for Contracting Parties in the IPHC Fishery Regulations. *[Canada: In favour=1; against=0 abstain=16] [U.S.A.: In favour=30; against=0; abstain=1]*

6.2 Contracting Party fishery regulation proposals

6.2.1 Recreational (sport) fishing for Pacific halibut—IPHC Regulatory areas 2c, 3a, 3b, 4a, 4b, 4c, 4d, 4e (Sect. 28) – Charter management measures in IPHC Regulatory Areas 2C and 3A

51. The CB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-2024-AM100-PropB1_Rev_1, that 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 Fishery Management Council's (NPFMC) Pacific halibut Catch Sharing Plan: *[Canada: abstain] [U.S.A.: unanimous]*

6.2.2 IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5), and In-Season Actions (Sect. 6)

52. The CB **NOTED** fishery regulation proposal IPHC-2024-AM100-PropB2, that aimed to modify IPHC Fishery Regulations, Section 5 (Mortality and Fishery Limits) and Section 6 (In-Season Actions) reflective of changes to the Catch Sharing Plan (CSP) that allocates the IPHC Regulatory Area 2A Pacific halibut catch limit.

6.3 Other Stakeholder fishery regulation proposals

6.3.1 IPHC Fishery Regulations: Mortality and Fishery Limits (Sect. 5) (Regulatory Area 2A)

53. The CB NOTED comments provided by Russell Svec on behalf of the Makah tribe in support of fishery regulation proposal IPHC-2024-AM100-PropC1.

54. The CB **NOTED** support from 2A stakeholders for this mortality limit and recalled support for the same limit in 2019. The CB also **RECALLED** that the MSE simulations identify that harvest in IPHC Regulatory Area 2A in excess of FISS abundance estimates does not create a conservation concern for the Pacific halibut stock and does not have a socioeconomic impact on stakeholders in other IPHC Regulatory Areas. Canadian CB members **NOTED** concerns with an allocation based on an absolute number rather than a percentage, as it does not reflect changes in abundance or result in Regulatory Area 2A sharing in the costs of conservation. Canadian CB members **NOTED** that the MSE process evaluated a management procedure that demonstrated a 20% national share for Canada does not create a conservation concern for the Pacific halibut stock and that Canada also has Indigenous treaty and Reconciliation commitments that are anticipated to increase going forward. USA CB members **NOTED** the Canadian national share does have socioeconomic impact on Alaska Regulatory Areas.

55. The CB **CONSIDERED** and did not take action on fishery regulation proposal IPHC-2024-AM100-PropC1. The CB **AGREED** that the TCEY limit is more adequately addressed as a part of the discussion on Regulatory Area perspectives on TCEY limits.

6.3.2 IPHC Fishery Regulations: Recreational (Sport) Fishing for Pacific Halibut—IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, 4E (Sect. 28) - Onboard consumption in IPHC Regulatory Area 2C

56. The CB **NOTED** comments provided by NOAA Enforcement representative (Benjamin Cheeseman) that summarized positive feedback on the current regulation allowing limited onboard consumption and no realized issues with the enforcement of the current measure. However, concerns were identified to resources required to enforce measures as proposed in IPHC-2024-AM100-PropC2.

57. The CB **NOTED** and took no action on fishery regulation proposal IPHC-2024-AM100-PropC2, that proposed adding flexibility to existing recreational (sport) Pacific halibut fishing regulations in Alaska and to provide increased flexibility for the consumption of Pacific halibut on board of recreational vessels.

7. INCIDENTAL CATCH (BYCATCH)

58. The CB **NOTED** information provided by Dr. Ian Stewart (IPHC Quantitative Scientist).

59. The CB **NOTED** a summary on bycatch provided by Dr. Stewart, as follows:

> *"Non-directed discard mortality ('bycatch') occurs when Pacific halibut are captured in fisheries that are not allowed to legally retain them, are discarded and subsequently die. Estimated non-directed discard mortality was large and highly variable during the 1960s through the early 1990s with peaks of 21.4 million pounds (net weight) in 1965, and 20.3 million pounds in 1992. Since then, there has been a steady decline in this source of mortality to a time-series low of 3.84 million pounds in 2021, of which 56% occurred in IPHC Regulatory Area 4CDE. IPHC Regulatory Area 3A, an important historical component (28% of the coastwide total in 2015) has declined to only 9% of the total in 2023, largely due to reductions in effort in shelf fisheries in that area. The 5-year coastwide average from 2019-2023 is 4.96 million pounds, comprising 13.3% of all known Pacific halibut mortality. The effects of non-directed discard mortality on yields in the directed fisheries are variable, depending on the fishing intensity, the age-structure of the population and the demographic rates (growth, maturity and mortality), but have been estimated by the Commission to be approximately 1.15 pounds of directed yield to 1.0 pounds of non-directed mortality."*

60. The CB **NOTED** the decrease in incidental catch in IPHC Regulatory Area 3A and the increase in incidental catch in IPHC Regulatory Area 2B and **NOTED** response provided by Canadian CB members that Regulatory Area 2B the increase is currently under investigation.

61. The CB **RECOMMENDED** that the Commission acknowledge that groundfish [as referred to in the USA] fisheries encounter and take Pacific halibut incidentally as bycatch. Pacific halibut bycatch minimization remains a high priority of CB members, along with full and robust monitoring measures to quantify Pacific halibut removals and mortality *[Canada: unanimous] [U.S.A.: In favour=31; against=0; abstain=4]*

8. OTHER BUSINESS

8.1 Abundance-based fisheries management (ABM)

62. The CB **NOTED** the presentation provided by the St. Paul Fishing Company (Mr Jeff Kauffman) on the Bering Sea Pacific halibut abundance-based bycatch management (ABM), and the associated lawsuit.

63. The CB **NOTED** the update provided by Kodiak Vessel Owners Association (Linda Kozak) on the Alaska Bycatch Taskforce.

8.2 Election of Vice-Chairpersons

64. In accordance with Appendix IV, Section III of the IPHC Rules of Procedure (2024), the CB **NOTED** the requirement to consider electing up to two (2) Vice-Chairpersons.

65. The CB **NOTED** a motion to nominate a Vice-Chairperson for the U.S.A. Mr. Brian Ritchie was nominated, seconded, and elected for a one-year term by unanimous vote.

66. The CB **NOTED** the option to nominate a vice-chairperson for Canada but refrained.

67. The CB **NOTED** with gratitude the support throughout the process from IPHC Secretariat.

9. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 94TH SESSION OF THE IPHC CONFERENCE BOARD (CB094)

68. The CB **ADOPTED** the Report of the 94th Session of the IPHC Conference Board (IPHC-2024-CB094-R) on 25 January 2024, including the consolidated set of recommendations and requests arising from CB093, provided at Appendix IV. *[Canada: In favour=unanimous][U.S.A.: In favour=unanimous]*.

APPENDIX I
LIST OF PARTICIPANTS FOR THE 94TH SESSION OF THE IPHC CONFERENCE BOARD (CB094)

Officers

Co-Chairperson	Co-Chairperson
Mr. Jim **Lane** (Canada)	Ms. Linda **Behnken** (United States of America)

CB Members

Number	CB Member	Representative	Initial accreditation date	5-year accreditation expiry
Canada				
1	A-Tlegay Fisheries Society (AFS)	Daniel Smith	26 Jan 2021	CB in 2026
2	Annieville Halibut Association (AHA)	*	26 Jan 2021	CB in 2026
3	Council of the Haida Nation (CHN)	*Shawn Cowpar	26 Jan 2021	CB in 2026
4	Commercial Integrated Groundfish Society (CIGS)	*	26 Jan 2021	CB in 2026
5	Canadian Sablefish Association (CSA)	Tom Russel	26 Jan 2021	CB in 2026
6	Dididaht First Nation (DFN)	*	26 Jan 2021	CB in 2026
7	Halibut Advisory Board (HAB)	David Boyes	26 Jan 2021	CB in 2026
8	Halibut Longline Fisherman's Association (HLFA)	Rob Stanley	26 Jan 2021	CB in 2026
9	Hook and Line Groundfish Association (HLGA)	Ken Wing	26 Jan 2021	CB in 2026
10	Island Marine Aquatic Working Group (IMAWG)	Jessica Moffat	26 Jan 2021	CB in 2026
11	Northern Halibut Producers Association (NHPA)	Douglas Mavin	26 Jan 2021	CB in 2026
12	Northern Trollers Association (NTA)	Robert Hauknes	26 Jan 2021	CB in 2026
13	Nuu-Chah-Nulth Tribal Council (NTC)	Jim Lane	26 Jan 2021	CB in 2026
14	Pacific Coast Fishing Vessel Owners Guild (PCFVOG)	Zeke Pellegrin	26 Jan 2021	CB in 2026
15	Pacific Halibut Management Association of BC (PHMA)	Chris Sporer	26 Jan 2021	CB in 2026
16	Sport Fishing Advisory Board (SFABM) - Main Board	Gerry Kristianson	26 Jan 2021	CB in 2026
17	Sport Fishing Advisory Board (SFABN) - North Coast Region	Mike Fowler	26 Jan 2021	CB in 2026
18	Sport Fishing Advisory Board - South Coast Region (SFABS)	Chuck Ashcroft	26 Jan 2021	CB in 2026
19	Sport Fishing Institute of BC (SFI)	Owen Bird	26 Jan 2021	CB in 2026
20	Steveston Halibut Association (SHA)	Angus Grout	26 Jan 2021	CB in 2026
21	South Vancouver Island Anglers Coalition (SVIAC)	Christopher Bos	26 Jan 2021	CB in 2026
22	Tuna Fishing Association (TFA)	Tiare Boyes	26 Jan 2021	CB in 2026
23	United Fishermen and Allied Workers' Union (UNIFOR)	Russell Cameron	26 Jan 2021	CB in 2026
24	Vancouver Island Longline Association (VILA)	Lyle Pierce	26 Jan 2021	CB in 2026
25	West Coast Fishing Guides Association (WCFGA)	Pat Ahern	26 Jan 2021	CB in 2026

26	BC Wildlife Federation (BCWF)	David Lewis	26 Jan 2021	CB in 2026
USA				
1	Area 4 Concerned Harvesters (A4CF)	*	26 Jan 2021	CB in 2026
2	Aleut Corporation (AC)	Chase Berenson	26 Jan 2021	CB in 2026
3	Alaska Charter Association (ACA)	Garrett Lambert	26 Jan 2021	CB in 2026
4	Adak Community Development Corporation (ACDC)	Layton Lockett	26 Jan 2021	CB in 2026
5	Alaska Longline Fishermen's Association (ALFA)	Richard Curran	26 Jan 2021	CB in 2026
6	Aleutian Pribilof Island Community Development Association (APICDA)	Angel Drobnica	26 Jan 2021	CB in 2026
7	Alaska Whitefish Trawlers Association (AWTA)	Rebecca Skinner	26 Jan 2021	CB in 2026
8	Bristol Bay Economic Development Corporation (BBEDC)	Steve Ricci	26 Jan 2021	CB in 2026
9	CATCH Association (CA)	Brian Ritchie	26 Jan 2021	CB in 2026
10	Cape Barnabas, Inc (CB)	*	26 Jan 2021	CB in 2026
11	Central Bering Sea Fishermen's Association (CBSFA)	Joe Kashevarof	26 Jan 2021	CB in 2026
12	Coastal Conservation Association (CCA)	Dave Croonquist	26 Jan 2021	CB in 2026
13	Cordova District Fishermen United (CDFU)	Marc Carrel	26 Jan 2021	CB in 2026
14	Coastal Trollers Association (CTA)	*	26 Jan 2021	CB in 2026
15	Coastal Villages Region Fund (CVRF)	Paul Wilkins	26 Jan 2021	CB in 2026
16	Deep Sea Fishermen's Union of the Pacific (DSFU)	Shawn McManus	26 Jan 2021	CB in 2026
17	Edmonds Veteran Independent Longliners (EVIL)	*	26 Jan 2021	CB in 2026
18	Freezer Longline Coalition (FLC)	Jim Armstrong	26 Jan 2021	CB in 2026
19	Fishing Vessel Owners Association (FVOA)	Brian Dafforn	26 Jan 2021	CB in 2026
20	Humbolt Area Saltwater Anglers (HASA)	Tim Klassen	26 Jan 2021	CB in 2026
21	Halibut Coalition (HC)	Tom Gemmell	26 Jan 2021	CB in 2026
22	Homer Charter Association (HCA)	Daniel Donich	26 Jan 2021	CB in 2026
23	K-Bay Fisheries Association (KBAY)	Kiril Basargin	26 Jan 2021	CB in 2026
24	Kruzof Fisheries (KRUZOF)	Jim Hubbard	26 Jan 2021	CB in 2026
25	Kodiak Vessel Owners Association (KVOA)	Linda Kozak	26 Jan 2021	CB in 2026
26	Next Generation Fishermen's Association (NGFA)	Garrett Elwood	26 Jan 2021	CB in 2026
27	North Pacific Fisheries Association (NPFA)	Malcolm Milne	26 Jan 2021	CB in 2026
28	Pacific Fishing Inc (PFI)	Patricia Phillips	24 Jan 2023	CB in 2026
29	Petersburg Vessel Owners Association (PVOA)	Nels Evens	26 Jan 2021	CB in 2026
30	Recreational Fishing Alliance – California (RFAC)	Tom Marking	26 Jan 2021	CB in 2026
31	Recreational Fishing Alliance – National (RFAN)	Jim Martin	26 Jan 2021	CB in 2026
32	Southeast Alaska Fishermen's Alliance (SEAFA)	Kathy Hansen	26 Jan 2021	CB in 2026

33	Southeast Alaska Guides Organization (SEAGO)	Forrest Braden	26 Jan 2021	CB in 2026
34	Sablefish and Halibut Pot Association (SHPA)	*	26 Jan 2021	CB in 2026
35	Sitka Halibut & Sablefish Marketing Association (SHSMA)	Phillip Wyman	26 Jan 2021	CB in 2026
36	Seafood Producers Coop (SPC)	Carter Hughes	26 Jan 2021	CB in 2026
37	St. Paul Fishing Company (SPFC)	Jeff Kauffman	26 Jan 2021	CB in 2026
38	Tribal Government of St. Paul (TGSP)	Myron Melovidov	26 Jan 2021	CB in 2026
39	United Fishermen's Marketing Association (UFMA)	*	26 Jan 2021	CB in 2026
40	Westport Charter Boat Association (WCBA)	Paul Mirante	26 Jan 2021	CB in 2026
41	Yukon Delta Fisheries Development Association (YDFDA)	Landry Price	26 Jan 2021	CB in 2026

*Absent in 2024

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APPENDIX II
AGENDA FOR THE 94TH SESSION OF THE IPHC CONFERENCE BOARD (CB094)

Date: 23-25 January 2024
Location: Anchorage, AK, U.S.A.
Venue: Hotel Captain Cook
Time (AKST): 23rd : 14:00-17:30; **24th**: 09:00-17:30;
(Available if needed: **25th**: 0800-11:00)
Co-Chairperson: Mr Jim **Lane** (Canada); Ms Linda **Behnken** (United States of America)
Vice-Chairperson: Mr Brian **Ritchie** (USA)

1. OPENING OF THE SESSION (Co-Chairpersons)
- 1.1 Accreditation of CB Membership (2021-25): new members

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION (Co-Chairpersons)

3. IPHC SECRETARIAT INFORMATIONAL SESSION
- 3.1 Mortality Limits and TCEY (I. Stewart)
- 3.2 MSE Update (A. Hicks)
- 3.3 FISS 2024 (R. Webster & K. Ualesi)

4. FISHING PERIODS: SEASON OPENING AND CLOSING DATES

5. MORTALITY LIMITS (Co-Chairpersons)
- 5.1 Coastwide perspectives
- 5.2 Regulatory Area perspectives
- 5.3 Distribution Strategy – discussion/recommendations
- 5.4 TCEY Recommendations

6. IPHC FISHERY REGULATIONS: PROPOSALS FOR THE 2023-24 PROCESS
- 6.1 IPHC Secretariat fishery regulation proposals (B. Hutniczak)
- 6.2 Contracting Party fishery regulation proposals (Contracting Parties)
- 6.3 Other Stakeholder fishery regulation proposals (Stakeholders)

7. INCIDENTAL CATCH (BYCATCH) (Co-Chairpersons)

8. OTHER BUSINESS (Co-Chairpersons)
- 8.1 Election of Vice-Chairpersons

9. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 94th SESSION OF THE IPHC CONFERENCE BOARD (CB094) (Co-Chairpersons; IPHC Secretariat)

APPENDIX III
PACIFIC HALIBUT MORTALITY PROJECTED FOR 2024 BASED ON THE CB RECOMMENDED TCEY MORTALITY LIMITS

Note: All values reported in millions of net pounds.

RECOMMENDATION

USA CB members detailed 2024 projections, by sector, based on the TCEY mortality limits.

Sector	IPHC Regulatory Area								
	2A	**2B**	**2C**	**3A**	**3B**	**4A**	**4B**	**4CDE**	**Total**
Commercial discards	0.11	0.17	NA	NA	0.25	0.05	0.01	0.08	0.66
O26 Non-directed discards	0.08	0.29	0.06	0.25	0.22	0.27	0.14	1.55	2.86
Recreational	NA	0.03	1.07	0.99	0.01	0.01	0.00	0.00	2.09
Subsistence	NA	0.41	0.25	0.12	0.01	0.00	0.00	0.01	0.81
Total non-FCEY	0.18	0.89	1.37	1.36	0.48	0.33	0.16	1.64	6.42
Commercial discards	NA	NA	0.11	0.57	NA	NA	NA	NA	0.68
Recreational	0.61	0.77	0.81	1.89	NA	NA	NA	NA	4.08
Subsistence	0.02	NA	NA	NA	NA	NA	NA	NA	0.02
Commercial landings	0.83	4.34	3.50	7.90	3.08	1.30	1.12	2.06	24.13
Total FCEY	1.47	5.11	4.42	10.36	3.08	1.30	1.12	2.06	28.91
						4C FCEY		0.92	
						4D FCEY		0.92	
						4E FCEY		0.22	
TCEY	1.65	6.00	5.79	11.72	3.56	1.63	1.28	3.70	35.33
U26 Non-directed discards	0.00	0.04	0.00	0.18	0.09	0.13	0.01	1.11	1.56
Total	1.65	6.04	5.79	11.90	3.65	1.76	1.29	4.81	36.89

Canada CB members detailed 2024 projections, by sector, based on the TCEY mortality limits.

Sector	IPHC Regulatory Area								
	2A	**2B**	**2C**	**3A**	**3B**	**4A**	**4B**	**4CDE**	**Total**
Commercial discards		0.17							
O26 Non-directed discards		0.29							
Recreational		0.03							
Subsistence		0.41							
Total non-FCEY		0.90							
Commercial discards		NA							
Recreational		0.78							
Subsistence		NA							
Commercial landings		4.43							
Total FCEY		5.21							
						4C FCEY			
						4D FCEY			
						4E FCEY			
TCEY		6.10							33.27
U26 Non-directed discards		0.04							1.56
Total		6.14							34.83

APPENDIX IV
CONSOLIDATED SET OF RECOMMENDATIONS AND REQUESTS OF THE 94TH SESSION OF THE IPHC CONFERENCE BOARD (CB094) (23-24 JANUARY 2024)

RECOMMENDATIONS

FISS 2024

CB094-Rec.01 (para. 18) The CB **ACKNOWLEDGED** the importance of FISS data in the Bering Sea and **RECOMMENDED** prioritizing FISS survey in the Bering Sea in 2024 and regularly in the years to come *[Canada: no objections; 3=abstain] [U.S.A.: unanimous]*

Fishing periods: season opening and closing dates

CB094-Rec.02 (para. 28) The CB **RECOMMENDED** change to the fishing period opening hour to 06:00 hrs. *[Canada: In favour=20; against=0 abstain=1] [U.S.A.: unanimous]*. In support of changing the opening time, CB members **NOTED** that allowing a full day facilitated access to markets and improved fishing efficiency and opportunity.

CB094-Rec.03 (para. 29) The CB **RECOMMENDED** the fishing period closing date on 7 December *[Canada: In favour=19; against=0 abstain=0] [U.S.A.: In favour=22; against=1; abstain=3].*

CB094-Rec.04 (para. 30) The CB **RECOMMENDED** change to the fishing closing hour to 23:59 hrs. *[Canada: In favour=16; against=0 abstain=1] [U.S.A.: In favour=26; against=0, abstain=8]* In support of changing the closing times, CB members **NOTED** that allowing a full day facilitated access to markets and improved fishing efficiency and opportunity.

TCEY Recommendations

CB094-Rec.05 (para. 35) The USA CB members **RECOMMENDED** the following TCEY mortality limits for the 2024 fishing period as provided in Table 2, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat, Appendix III), and an SPR of 52%. [Canada: In favour=0; against=20 abstain=0] [U.S.A.: In favour=30; against=0, abstain=1]

Table 2. USA CB members recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
2A	1.65	748.43
2B	6.00	2,721.55
2C	5.79	2,626.30
3A	11.72	5,316.10
3B	3.56	1,614.79
4A	1.63	739.36
4B	1.28	580.60
4CDE	3.70	1,678.29
Total (IPHC Convention Area)	**35.33**	**16,025.42**

CB094-Rec.06 (para. 40) The Canadian CB members **RECOMMENDED** the TCEY mortality limits for the 2024 fishing period representing the 10% reduction from 2023 TCEYs distributed equally between Contracting Parties as provided in Table 3, which translate to the mortality estimates by sector (as provided by the IPHC Secretariat, Appendix III), and an SPR of 54%. *[Canada, in favor-22, against-0, abs-0][USA: In favour – 1, Against=30, abstain=1]*

Table 3. Canadian CB members recommended TCEY mortality limits for 2024. See previous paragraphs for voting.

IPHC Regulatory Area	Mortality limit (TCEY) (mlbs)	Mortality limit (TCEY) (mt)
USA Regulatory Areas	27.17	12,324.10
2B	6.10	27,766.91
Total (IPHC Convention Area)	**33.27**	**15,091.02**

CB094-Rec.07 (para. 43) The USA CB **RECOMMENDED** Commissioners initiate a stakeholder driven committee focused on identifying a formalized distribution strategy for Alaska regulatory areas and request Secretariat support to be completed prior to the AM101:

a) Using as a starting point the biological distribution;

b) To safeguard stakeholders from the potential shortfalls of ad-how distribution methods and inconsistent weighting of socioeconomic needs;

c) To allow consideration to shift harvest distribution between USA Regulatory Areas.

IPHC Fishery Regulations: IPHC Fishery Regulations: Logs (Sect 19)

CB094-Rec.08 (para. 50) The CB **NOTED** and **RECOMMENDED** that the Commission adopt fishery regulation proposal IPHC-2024-AM100-PropA3 Rev_1 updating and align logs requirements for Contracting Parties in the IPHC Fishery Regulations. *[Canada: In favour=1; against=0 abstain=16] [U.S.A.: In favour=30; against=0; abstain=1]*

Recreational (sport) fishing for Pacific halibut—IPHC Regulatory areas 2c, 3a, 3b, 4a, 4b, 4c, 4d, 4e (Sect. 28) – Charter management measures in IPHC Regulatory Areas 2C and 3A

CB094-Rec.09 (para. 51) The CB **NOTED** and **RECOMMENDED** that the Commission adopt, fishery regulation proposal IPHC-2024-AM100-PropB1_Rev_1, that 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 Fishery Management Council's (NPFMC) Pacific halibut Catch Sharing Plan: *[Canada: abstain] [U.S.A.: unanimous]*

Incidental catch (Bycatch)

CB094-Rec.10 (para. 61) The CB **RECOMMENDED** that the Commission acknowledge that groundfish [as referred to in the USA] fisheries encounter and take Pacific halibut incidentally as bycatch. Pacific halibut bycatch minimization remains a high priority of CB members, along with full and robust monitoring measures to quantify Pacific halibut removals and mortality *[Canada: unanimous] [U.S.A.: In favour=31; against=0; abstain=4]*