Fishery statistics (2019)

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PURPOSE

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

BACKGROUND

The International Pacific Halibut Commission (IPHC) estimates all Pacific halibut (*Hippoglossus stenolepis*) removals taken in the IPHC Convention Area and uses this information in its yearly stock assessment (see IPHC-2019-IM095-09) and other analyses. The data are compiled by the IPHC Secretariat and include data from Federal and State agencies of each Contracting Party. All 2019 data are in net weight (head-off, dressed, ice and slime deducted) and are considered preliminary at this time.

This paper includes Pacific halibut removals for:

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

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

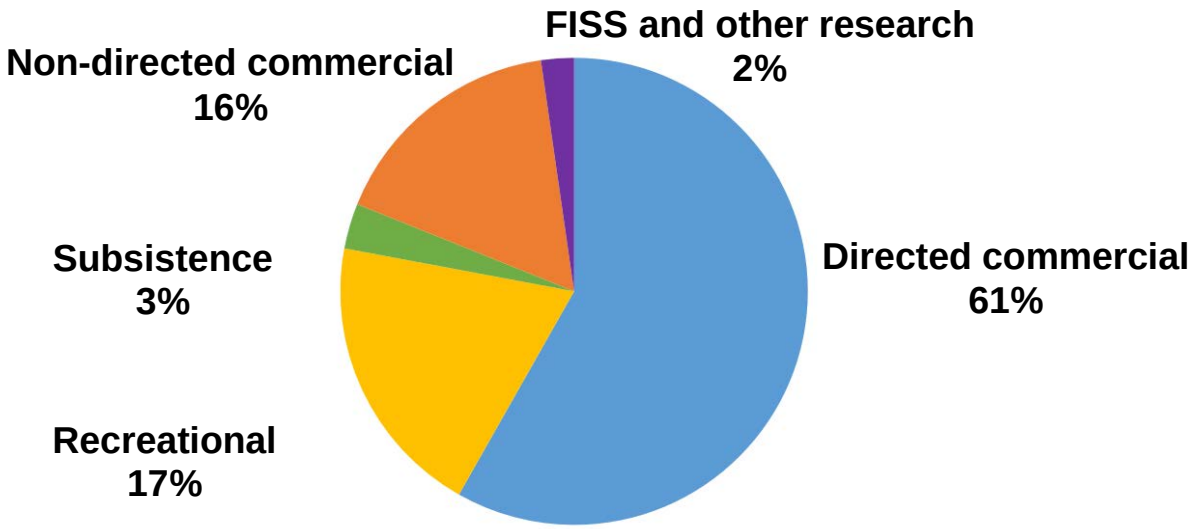

Figure 1. Distribution of Pacific halibut mortality by source in 2019.

Table 1. 2019 estimates of total removals (net weight), including fishery limits and landings of Pacific halibut by IPHC Regulatory Area. Preliminary as of 19 November 2019. Totals have been rounded.

IPHC Regulatory Area	Fishery limits (net weight)		Landings (net weight)		Percent
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	%
Area 2A (California, Oregon, and Washington)	750.24	1,654,000	693.63	1,526,992	92
Non-treaty directed commercial (south of Pt. Chehalis)	115.41	254,426	114.65	252,761	99
Non-treaty incidental catch in salmon troll fishery	20.37	44,899	19.69	43,417	97
Non-treaty incidental catch in sablefish fishery (north of Pt. Chehalis)	31.75	70,000	36.00	79,360	113
Treaty Indian commercial	225.44	497,000	224.33	494,568	100
Discard mortality (directed commercial)[1]	9.07	20,000	13.15	29,000	145
Recreational – Washington	125.69	277,100	122.48	270,024	97
Recreational – Oregon	131.35	289,575	72.71	160,306	55
Recreational – California	17.69	39,000	8.15	17,968	46
Recreational discard mortality	1.81	4,000	2.59	5,706	143
Treaty Indian ceremonial and subsistence	12.70	28,000	12.70	28,000	100
Discard mortality (non-directed commercial)[1]	58.97	130,000	57.15	126,000	97
IPHC fishery-independent setline survey and research	none	none	9.02	19,882	n/a
Area 2B (British Columbia)	3,095.77	6,825,000	3,072.05	6,772,713	99
Commercial fishery	2,313.32	5,100,000	2,285.39	5,038,414	99
Discard mortality (directed commercial)[1]	58.97	130,000	63.50	140,000	108
Recreational fishery	381.02	840,000	364.40	803,367	96
Recreational discard mortality[1]	36.29	80,000	18.97	41,816	52
Recreational fishery (XRQ)	n/a	n/a	8.16	18,000	n/a
Subsistence[1]	183.70	405,000	183.70	405,000	100
Discard mortality (non-directed commercial)[1]	122.47	270,000	108.41	239,000	89
IPHC fishery-independent setline survey and research	none	none	39.52	87,116	n/a
Area 2C (southeastern Alaska)	2,874.19	6,336,500	2,781.44	6,132,024	97
Commercial fishery	1,637.47	3,610,000	1,523.21	3,358,103	95
Discard mortality (directed commercial)[1]	27.22	60,000	36.29	80,000	133
Metlakatla (Annette Island Reserve)	n/a	n/a	12.90	28,435	n/a
Guided recreational fishery	371.95	820,000	287.58	634,000	81[3]
Guided recreational discard mortality[2]	n/a	n/a	14.97	33,000	n/a
Guided recreational fishery (GAF)[1]	n/a	n/a	34.04	75,039	n/a
Unguided recreational fishery[1]	625.96	1,380,000	515.28	1,136,000	83[3]
Unguided recreational discard mortality[2]	n/a	n/a	6.80	15,000	n/a
Subsistence[1]	197.99	436,500	166.11	366,214	84
Discard mortality (non-directed commercial)[1]	13.61	30,000	40.37	89,000	297
IPHC fishery-independent setline survey and research	none	none	143.89	317,233	n/a
Area 3A (central Gulf of Alaska)	6,124.63	13,502,500	6,299.21	13,887,386	103
Commercial fishery	3,655.95	8,060,000	3,579.36	7,891,137	98
Discard mortality (directed commercial)[1]	140.61	310,000	160.12	353,000	114
Guided recreational fishery	857.29	1,890,000	907.18	2,000,000	107[3]
Guided recreational discard mortality[2]	n/a	n/a	8.62	19,000	n/a
Guided recreational fishery (GAF)	n/a	n/a	4.83	10,652	n/a
Unguided recreational fishery[1]	789.25	1,740,000	742.08	1,636,000	96[3]
Unguided recreational discard mortality[2]	n/a	n/a	12.70	28,000	n/a
Subsistence[1]	100.92	222,500	85.14	187,698	84
Discard mortality (non-directed commercial)[1]	580.60	1,280,000	661.34	1,458,000	114
IPHC fishery-independent setline survey and research	none	none	137.85	303,899	n/a

Table 1 continued. 2019 estimates of total removals (net weight), including fishery limits and landings of Pacific halibut by IPHC Regulatory Area. Preliminary as of 19 November 2019. Totals have been rounded.

IPHC Regulatory Area	Fishery limits (net weight)		Landings (net weight)		Percent
	Tonnes (t)	Pounds (lb)	Tonnes (t)	Pounds (lb)	%
Area 3B (western Gulf of Alaska)	1,317.32	2,904,200	1,325.50	2,922,222	101
Commercial fishery	1,056.87	2,330,000	977.58	2,155,192	92
Discard mortality (directed commercial)[1]	86.18	190,000	73.94	163,000	86
Recreational fishery[1]	4.54	10,000	1.81	4,000	40
Recreational discard mortality	0.00	0	0	0	0
Subsistence[1]	6.44	14,200	7.55	16,644	117
Discard mortality (non-directed commercial)[1]	163.29	360,000	208.20	459,000	128
IPHC fishery-independent setline survey and research	none	none	56.42	124,386	n/a
Area 4A (eastern Aleutians)	879.11	1,938,100	846.13	1,865,390	96
Commercial fishery	748.43	1,650,000	621.03	1,369,148	83
Discard mortality (directed commercial)[1]	40.82	90,000	47.17	104,000	116
Recreational fishery[1]	4.54	10,000	6.35	14,000	140
Recreational discard mortality	0.00	0	0	0	0
Subsistence[1]	3.67	8,100	6.00	13,237	163
Discard mortality (non-directed commercial)[1]	81.65	180,000	149.23	329,000	183
IPHC fishery-independent setline survey and research	none	none	16.33	36,005	n/a
Area 4B (central/western Aleutians)	657.84	1,450,300	551.89	1,216,718	84
Commercial fishery	548.85	1,210,000	443.50	977,742	81
Discard mortality (directed commercial)[1]	9.07	20,000	17.24	38,000	190
Recreational fishery[1]	0.00	0	0	0	0
Recreational discard mortality	0.00	0	0	0	0
Subsistence[1]	0.14	300	0.76	1,684	561
Discard mortality (non-directed commercial)[1]	99.79	220,000	76.66	169,000	77
IPHC fishery-independent setline survey and research	none	none	13.74	30,292	n/a
Area 4CDE (Bering Sea)[4]	1,815.77	4,003,080	2,419.77	5,334,682	133
Commercial fishery	925.33	2,040,000	741.02	1,633,659	80
Discard mortality (directed commercial)[1]	18.14	40,000	34.02	75,000	188
Recreational fishery[1]	0.00	0	0.00	0	0
Recreational discard mortality	0.00	0	0.00	0	0
Subsistence[1]	24.08	53,080	17.04	37,564	71
Discard mortality (non-directed commercial)[1]	848.22	1,870,000	1,617.96	3,567,000	191
IPHC fishery-independent setline survey and research	none	none	9.73	21,459	n/a
Totals	17,514.87	38,613,680	17,988.62	39,658,127	103
Commercial fishery	11,279.17	24,866,325	10,578.65	23,321,936	94
Discard mortality (directed commercial)[1]	390.09	860,000	445.43	982,000	114
Recreational fishery	3,309.26	7,295,675	3,118.15	6,874,356	94
Recreational discard mortality[5]	20.76	45,760	21.56	47,522	104
Subsistence[1]	529.65	1,167,680	479.01	1,056,041	90
Discard mortality (non-directed commercial)[1]	1,968.59	4,340,000	2,919.32	6,436,000	148
IPHC fishery-independent setline survey and research	none	none	426.50	940,272	n/a

[1] 'Limit' is value from 2018 estimates which were used in setting the TCEY for each IPHC Regulatory Area.
[2] Limit included in limit listed above.
[3] Includes recreational discard mortality.
[4] Landings in IPHC Regulatory Area 4CDE are combined to meet confidentiality requirements.
[5] Limit for IPHC Regulatory Areas 2A and 2B only. Recreational discard mortality limits included with recreational fishery limits for all other IPHC Regulatory Areas.
n/a = not available and XRQ = Experimental Quota and GAF = Guided Angler Fish (XRQ and GAF leased from commercial quota).

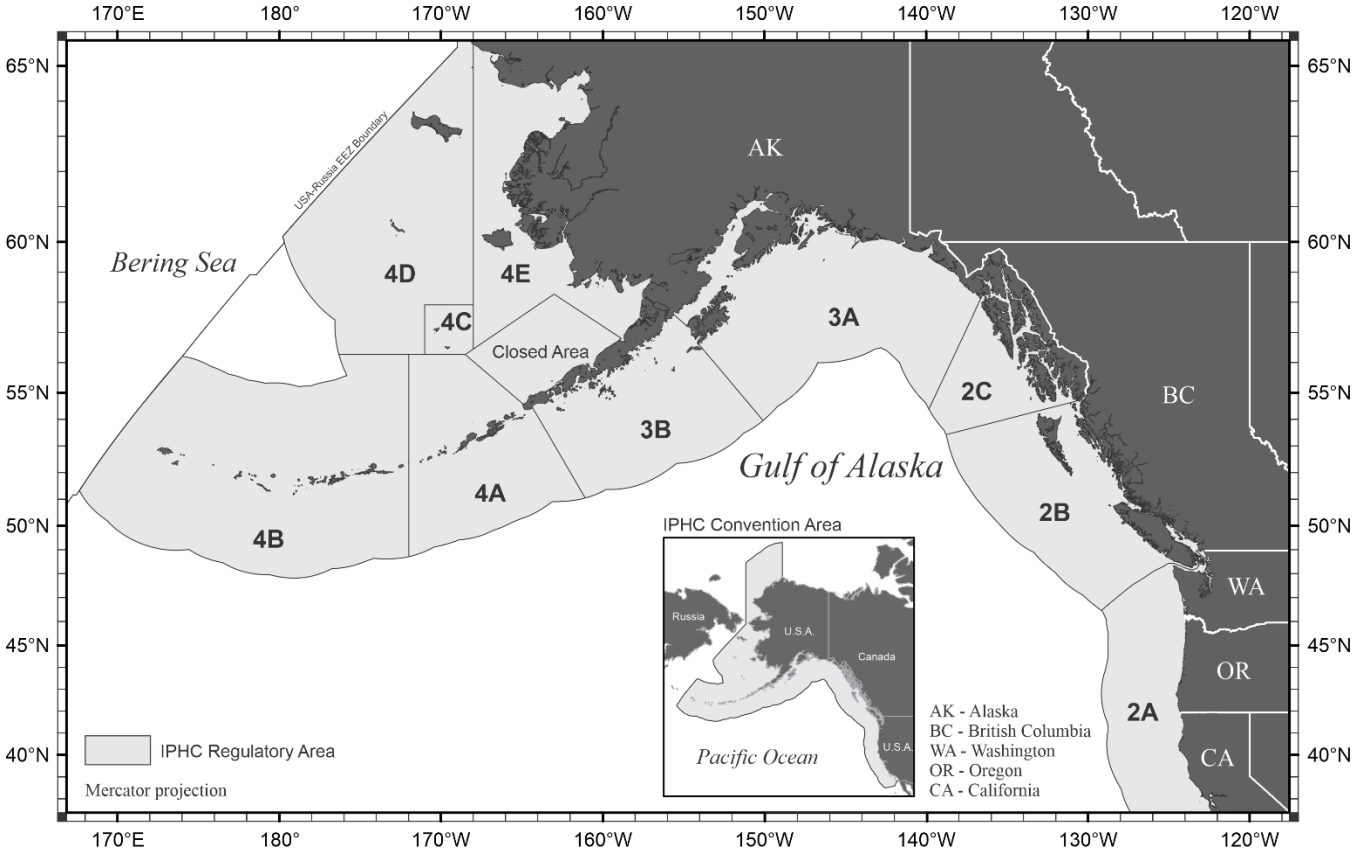

Figure 2. Map of the IPHC Convention Area (insert) and IPHC Regulatory Areas.

DEFINITIONS

Commercial fisheries: include commercial landings and directed commercial discard mortality. Commercial discard mortality continues to include estimates of sub-legal Pacific halibut (under 81.3 cm (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 (formerly called personal use/subsistence): are non-commercial, customary, and traditional use of Pacific halibut for direct personal, family, or community consumption or sharing as food, or customary trade. Subsistence fisheries include:

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

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

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

DIRECTED COMMERCIAL FISHERIES

The IPHC's commercial fisheries span from northern California through to northern and western Alaska in USA and Canada waters of the northeastern Pacific Ocean. The IPHC sets annual limits for the catch of Pacific halibut in each IPHC Regulatory Area. Participants in these commercial fisheries use longline and pot gear to catch Pacific halibut for sale. The 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 (*Anoplopoma fimbria*) fisheries, and the treaty Indian fisheries. Farther north, the commercial fisheries consisted of the Individual Vessel Quota (IVQ) fishery in IPHC Regulatory Area 2B in British Columbia, Canada; the Individual Fishing Quota (IFQ) system in Alaska, USA, the Community Development Quota (CDQ) fisheries in IPHC Regulatory Areas 4B and 4CDE, and the Metlakatla fishery in IPHC Regulatory Area 2C. All 2018 landing and discard mortality data presented in this document are preliminary.

Commercial Fishing Periods

The Canadian IVQ fishery in IPHC Regulatory Area 2B and the USA IFQ and CDQ fisheries in IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E commenced at 12 noon local time on 15 March and closed at 12 noon local time on 14 November 2019 (Table 2). The IPHC Regulatory Area 2A commercial fisheries, including the treaty Indian commercial fisheries, occurred during the same calendar period (15 March to 14 November 2018). For IPHC Regulatory Area 2A, eight potential 10-hour fishing periods for the non-treaty directed commercial fishery were adopted: 26 June, 27 June, 10 July, 24 July, 7 August, 21 August, 4 September, and 18 September 2019. All fishing periods began at 0800 and ended at 1800 local time, were further restricted by fishing period limits, and closed for the remainder of the year after the third opening on 24 July (no opening was observed on 27 June) when the IPHC Regulatory Area 2A directed commercial fishery allocation was estimated to have been reached.

Table 2. Fishing periods for commercial Pacific halibut fisheries by IPHC Regulatory Area, 2010-19.

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

Directed Commercial Landings

Commercial landings and fishery limits by IPHC Regulatory Area for the 2019 fishing season are shown in Table 3. Commercial fishery limit, as referred to here, is the IPHC commercial fishery limit set by the Contracting Parties following the Annual Meeting. The fishery limits with adjustments from the underage and overage programs from the previous year's quota share programs, and in IPHC Regulatory Area 2B, it also includes relinquishment of quota and quota leasing programs among sectors and the Use of Fish allocation are not presented. Historical landings and fishery limits from 2010 through 2019 are shown in Table 3.

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

Table 3. Pacific halibut directed commercial landings, discard mortality, fishery limits and percent of fishery limit attained (tonnes, net weight) by IPHC Regulatory Area, 2010-19.

IPHC Regulatory Area	**Directed Commercial Landings**									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2A	185	238	252	239	231	250	291	337	298	400
2B	2,997	2,999	2,664	2,700	2,620	2,669	2,742	2,781	2,380	2,285
2C[1]	1,991	1,072	1,168	1,321	1,486	1,634	1,759	1,859	1,557	1,536
3A	9,156	6,522	5,323	4,922	3,349	3,503	3,315	3,478	3,259	3,579
3B	4,517	3,274	2,237	1,818	1,277	1,168	1,183	1,359	1,098	978
4A	1,027	1,051	700	547	378	606	611	572	554	621
4B	810	917	778	555	495	490	492	476	471	444
4CDE	1,491	1,549	1,056	797	564	532	664	735	641	741
Total	22,174	7,620	14,178	12,900	10,400	10,851	11,056	11,598	9,595	10,606
IPHC Regulatory Area	**Directed Commercial Discard Mortality**									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2A	12	11	12	12	10	14	17	9	10	13
2B	139	133	104	97	114	114	108	81	64	64
2C[1]	124	43	55	59	62	61	65	49	35	36
3A	692	438	292	265	224	254	194	171	145	160
3B	411	352	239	179	148	100	109	109	98	74
4A	65	77	43	37	17	38	24	29	33	47
4B	23	26	20	15	26	17	26	15	11	17
4CDE	43	83	36	26	24	24	32	13	14	34
Total	1,507	1,163	801	690	625	622	575	475	410	445
IPHC Regulatory Area	**Directed Commercial Total Removals**									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2A	197	249	264	251	241	264	308	346	308	413
2B	3,136	3,132	2,768	2,797	2,734	2,783	2,850	2,862	2,444	2,349
2C[1]	2,115	1,115	1,223	1,380	1,548	1,695	1,824	1,908	1,592	1,572
3A	9,848	6,960	5,615	5,187	3,573	3,757	3,509	3,649	3,404	3,739
3B	4,928	3,626	2,476	1,997	1,425	1,268	1,292	1,468	1,196	1,052
4A	1,092	1,128	743	584	395	644	635	601	587	668
4B	833	943	798	570	521	507	518	491	482	461
4CDE	1,534	1,632	1,092	823	588	556	696	748	655	775
Total	23,681	18,785	14,979	13,589	11,025	11,474	11,632	12,072	10,668	11,051
IPHC Regulatory Area	**Directed Commercial Fishery Limits**									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2A	191	218	248	245	236	232	291	350	307	393
2B	2,993	3,040	2,700	2,703	2,628	2,710	2,812	2,845	2,402	2,313
2C	1,996	1,057	1,190	1,347	1,505	1,669	1,780	1,911	1,619	1,637
3A	9,067	6,514	5,406	5,003	3,319	3,533	3,328	3,510	3,334	3,656
3B	4,491	3,406	2,300	1,946	1,288	1,202	1,229	1,424	1,188	1,057
4A	1,057	1,093	711	603	386	630	630	630	621	748
4B	980	989	848	658	517	517	517	517	476	549
4CDE	1,624	1,687	1,118	875	583	583	753	771	717	925
Total	22,398	18,004	14,520	13,380	10,462	11,077	11,340	11,959	10,665	11,279
IPHC Regulatory Area	**Directed Commercial Limits – Percent Attained**									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2A	97	109	102	98	98	108	100	96	97	102
2B	100	99	99	100	100	98	98	98	99	100
2C[1]	100	101	98	98	99	98	99	97	96	94
3A	101	100	98	98	101	99	100	99	98	98
3B	101	96	97	93	99	97	96	95	92	93
4A	97	96	98	91	98	96	97	91	89	83
4B	83	93	92	84	96	95	95	92	99	81
4CDE	92	92	94	91	97	91	88	95	89	80
Total	99	42	98	96	99	98	97	97	90	94

[1] In Area 2C, includes the Metlakatla fishery landed catch.

Table 4. 2019 commercial landings (tonnes, net weight, preliminary) of Pacific halibut for Alaska, USA and British Columbia, Canada by IPHC Regulatory Area and month. Preliminary as of 25 October 2019.

IPHC Regulatory Area	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total
2B[1]	283	309	265	258	393	285	207	140	n/a	2,140
2C[2]	189	312	332	143	102	171	139	92	n/a	1,480
3A[2]	232	616	694	475	268	468	397	231	n/a	3,380
3B[2]	30	125	101	169	92	150	159	78	n/a	904
4A[2]	-	38[3]	56	68	76	114	174	63	n/a	589
4B[2]	-	61[3]	108	53	79	67	37	21	n/a	425
4CDE[2]	-	-	15[3]	112	159	279	103	54	n/a	721
Alaska, USA Total	451	1,151	1,305	1,020	776	1,249	1,009	538	n/a	7,499
Grand Total	734	1,460	1,570	1,278	1,169	1,534	1,216	678	n/a	9,639

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

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

The 2019 IPHC Regulatory Area 2A fisheries and respective fishery limits are listed in Table 1. The total directed commercial landings of 114.65 t (253,000 pounds) were 1% under the fishery limit of 115.41 t (254,426 pounds) after three 10-hour openers. The fishing period limits by vessel size class for each opening in 2019 are listed in Table 5.

At the start of the salmon troll fishery season on 20 April, the allowable incidental landing ratio was one Pacific halibut per three Chinook (*Oncorhynchus tshawytscha*), plus an "extra" Pacific halibut per landing, and a vessel trip limit of 10 fish. The allowable incidental landing ratio was changed to one Pacific halibut per two Chinook, plus an "extra" Pacific halibut per landing, and a vessel trip limit of 15 fish on 1 May. The allowable incidental landing ratio was changed to one Pacific halibut per two Chinook, plus an "extra" Pacific halibut per landing, and a vessel trip limit of 15 fish on 1 July. The allowable incidental landing ratio was changed to one Pacific halibut per two Chinook, plus an "extra" Pacific halibut per landing, and a vessel trip limit of 4 fish on 19 July. The allowable incidental landing ratio was changed to one Pacific halibut per two Chinook, plus an "extra" Pacific halibut per landing, and a vessel trip limit of 2 fish on 29 July. The incidental Pacific halibut retention in Washington and California was open through 30 September with Oregon remaining open through the month of October. Total landings of 19.69 tonnes (43,417 pounds) was 3% under the fishery limit (20.37 tonnes (44,899 pounds)). Incidental Pacific halibut retention during the limited-entry sablefish fishery remained open from 1 April to noon on 31 October. Beginning 1 April, the allowable landing ratio was 0.09 tonnes (200 pounds) (net weight) of Pacific halibut to 0.45 tonnes (1,000 pounds) (net weight) of sablefish, and up to two additional Pacific halibut in excess of the ratio limit. Effective 2 August, the landing ratio was modified to 0.11 tonnes (250 pounds) (net weight) of Pacific halibut to 0.45 tonnes (1,000 pounds) (net weight) of sablefish, and up to two additional Pacific halibut in excess of the ratio limit. The total landings of 36.00 tonnes (79,360 pounds) were 13% over the fishery limit (31.75 t (70,000 pounds)).

In IPHC Regulatory Area 2A, north of Point Chehalis, the treaty Indian tribes manage the commercial landings by allocating 75% to an open access fishery and 25% to a restricted fishery with daily and vessel limits. There were one unrestricted, open access fishery 15 March to 15 May and two restricted fisheries, including a vessel per day limit of 0.23 tonnes (500 pounds) for 15 March to 15 May and 20 May to 5 June openings. The 2019 tribal commercial season closed to all parties following a late fishery 11 June to 24 July with each tribe fishing a share of approximately 0.15 tonnes (327 pounds) with total landings of 224 tonnes (494,568 pounds), 0.5% under the fishery limit (225 t (497,000 pounds)).

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

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

IPHC Regulatory Area 2B (British Columbia, Canada)

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 152 in 2019. In addition, Pacific halibut can be landed as incidental catch in other licensed groundfish fisheries. Therefore, Pacific halibut was landed from a total of 223 active licences in 2019, with 71 of these licences from other fisheries. The 2019 directed commercial landings of 2,285 tonnes (5,038,000 pounds) were 1% under the fishery limit (2,313 tonnes (5,100,000 pounds)) (Table 3).

Directed commercial trips from IPHC Regulatory Area 2B were delivered into 14 different ports in 2019. The ports of Port Hardy (including Coal Harbour and Port McNeill) and Prince Rupert/Port Edward were the major landing locations, receiving 90% of the commercial landings. Port Hardy received 40% while Prince Rupert received 50% (848 and 1,072 tonnes (1,870,000 and 2,363,000 pounds), respectively) of the commercial landings. All of the IVQ landings were landed in IPHC Regulatory Area 2B.

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

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

The total 2019 landings from the IFQ/CDQ Pacific halibut fishery for the waters off Alaska, USA were 7,886 tonnes (17,385,000 pounds), less than 8% under the fishery limit (Table 3). By IPHC Regulatory Area, the landings were under the fishery limit by 5% for Area 2C, 2% for Area 3A, 8% for Area 3B, 17% for Area 4A, and 19% for Area 4B. The total combined IPHC Regulatory Area 4CDE commercial landings of 741 tonnes (1,634,000 pounds) were 20% under the combined Area 4CDE fishery limit (925 tonnes (2,040,000 pounds)). The North Pacific Fishery Management Council's Catch Sharing Plan allowed IPHC Regulatory Area 4D CDQ to be harvested in IPHC Regulatory Areas 4D or 4E and Area 4C IFQ and CDQ to be fished in Areas 4C or 4D.

Homer received approximately 15% (1,103 tonnes (2,432,000 pounds)) of the commercial landings of Alaskan catch making it the port that received the greatest number of pounds in 2019. Seward received the second and Kodiak the third largest landing volume at 11% (864 tonnes (1,880,000 pounds)) and 11% (838 tonnes (1,847,000 pounds)) of the Alaskan commercial landings, respectively. In Southeast Alaska, the two largest landing volumes were received in Juneau (529 tonnes (1,166,000 pounds)) and Sitka (523 tonnes (1,154,000 pounds)), and their combined landings represented 14% of the commercial Alaskan landings. The Alaskan QS catch that was landed outside of Alaska, USA was 2%.

The Metlakatla Indian Community (within IPHC Regulatory Area 2C) was authorized by the United States government to conduct a commercial Pacific halibut fishery within the Annette Islands Reserve. There were 13 two-day openings between 29 March and 15 September for total landings of 12.90 tonnes (28,435 pounds) (Table 6).

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

Fishing Period Dates	Landings		Number of Vessels
	(Tonnes)	(Pounds)	
29 – 31 March	0.8	1,661	7
12 – 14 April	0.8	1,767	8
26 – 28 April	0.9	1,992	6
10 – 12 May	1.2	2,568	9
24 – 26 May	0.8	1,649	8
07 – 9 June	0.9	1,992	5
21 – 23 June	0.7	1,513	7
05 – 07 July	1.7	3,684	7
19 – 21 July	1.2	2,694	6
02 – 04 August	0.7	1,599	5
16 – 18 August	1.2	2,716	7
30 August – 01 September	0.9	1,904	5
13 – 15 September	0.9	1,901	8
27 – 29 September	0.4	795	3
Total	12.9	28,435	14 Openings

Directed Commercial Discard Mortality

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

Pacific halibut discard mortality estimates from the commercial Pacific halibut fishery are summarized by IPHC Regulatory Area in Table 1 and over a series of years in Table 3.

RECREATIONAL FISHERIES

The 2019 recreational removals of Pacific halibut, including discard mortality, was estimated at 3,140 tonnes (6,922,000 pounds), a decrease of the recreational harvest in 2018 by 57 tonnes. 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 7, and summarized in Table 1.

Table 7. Recreational removals and limits of Pacific halibut (tonnes, net weight) by IPHC Regulatory Area, 2013-19.

IPHC Regulatory Area	Recreational Retained						
	2013	2014	2015	2016	2017	2018	2019
2A	227	216	202	229	234	211	203
2B – XRQ Leased	4	2	2	3	4	8	8
2B	369	414	445	463	516	364	364
2B	373	416	447	466	520	371	373
2C – GAF Leased	-	24	13	18	19	29	34
2C – Charter	346	355	348	358	409	298	288
2C – Noncharter	617	531	602	565	552	552	515
2C	963	911	963	941	962	878	837
3A – GAF Leased	-	5	2	4	3	4	5
3A – Charter	1140	923	938	909	942	850	907
3A – Noncharter	659	695	733	698	694	705	742
3A	1,799	1,622	1,673	1,611	1,636	1,555	1,654
3B	7	3	2	4	0	2	2
4A	4	4	3	7	3	6	6
4B and 4CDE	-	-	-	-	-	-	-
Total	3,369	3,142	3,273	3,232	3,587	2,995	3,075
IPHC Regulatory Area	Recreational Discard Mortality						
	2013	2014	2015	2016	2017	2018	2019
2A	2	2	2	2	2	2	3
2B	20	15	28	30	24	34	19
2C – Charter	19	21	21	23	19	28	15
2C – Noncharter	13	7	8	9	7	7	7
2C	32	28	29	32	25	34	22
3A – Charter	22	20	16	13	10	8	9
3A – Noncharter	14	12	17	12	10	9	13
3A	36	31	33	25	20	18	21
3B and 4	-	-	-	-	-	-	-
Total	90	76	92	89	71	88	64
IPHC Regulatory Area	Recreational Total Removals						
	2013	2014	2015	2016	2017	2018	2019
2A	229	218	204	230	235	213	206
2B	393	431	475	496	543	397	392
2C	995	939	992	973	1005	913	859
3A	1,835	1,654	1,706	1,636	1,659	1,573	1,675
3B	7	3	2	4	0	2	2
4A	4	4	3	7	3	6	6
4B and 4CDE	-	-	-	-	-	-	-
Total	3,462	3,259	3,382	3,346	3,686	3,083	3,140
IPHC Regulatory Area	Recreational Limits						
	2013	2014	2015	2016	2017	2018	2019
2A	190	187	194	210	240	220	277
2B	490	479	483	499	507	421	381
2C	357	345	386	411	415	367	372
3A	1240	808	857	823	857	812	857
3B and 4	-	-	-	-	-	-	-
Total	2,277	1,820	1,920	1,944	2,019	1,821	1,887
IPHC Regulatory Area	Recreational Limit Percent Attained						
	2013	2014	2015	2016	2017	2018	2019
2A	121	117	105	109	98	94	74
2B	75	86	92	93	102	94	96
2C	102	109	96	93	103	90	81
3A	94	117	111	112	111	104	107
3B and 4	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

Recreational Landings

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

The 2019 IPHC Regulatory Area 2A recreational allocation was 274.7 tonnes (605,674 pounds) net weight and based on the Pacific Fishery Management Council's Catch Sharing Plan formula, which divides the overall fishery fishery limit among all sectors. The recreational allocation was further subdivided to seven subareas, after 31.8 tonnes (70,000 pounds) were allocated to the incidental Pacific halibut catch in the commercial sablefish fishery in Washington. This subdivision resulted in 121.8 tonnes (268,633 pounds) being allocated to Washington subareas, 128.3 tonnes (282,914 pounds) to Oregon subareas. In addition, California received an allocation of 17.7 tonnes (39,000 pounds). The IPHC Regulatory Area 2A recreational harvest totaled 203 tonnes (448,298 pounds), 26% under the recreational allocation (Table 7).

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

IPHC Regulatory Area 2B (Canada: British Columbia)

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

British Columbia, Canada and Alaska, USA both have programs that allow recreational harvesters to land fish that is leased from commercial fishery quota share holders for the current season. In Canada, an estimated 8.16 tonnes (18,000 pounds) were leased from the commercial quota fishery and landed as recreational harvest.

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

A reverse slot limit allowing for the retention of Pacific halibut, if ≤ 97 cm (38 inches) or ≥ 203 cm (80 inches) in total length, was continued by the IPHC for the charter fishery in IPHC Regulatory Area 2C. In IPHC Regulatory Area 3A, charter anglers were allowed to retain two fish, but only one could exceed 71.1 cm (28 inches) in length, a four fish annual limit with a recording requirement, one trip per calendar day per charter permit, with no charter retention of Pacific halibut on Wednesdays throughout the season and 9 July, 16 July, 23 July, 30 July, 6 August and 13 August.

Similar to British Columbia (Canada), Alaska (USA) has programs that allow recreational harvesters to land fish that is leased from commercial fishery quota share holders for the current season. In IPHC Regulatory Areas 2C and 3A, 34.0 tonnes (75,039 pounds) and 4.8 tonnes (10,652 pounds), respectively, were leased from the commercial quota fisheries in those areas and landed as recreational harvest.

Recreational Discard Mortality

Pacific halibut discarded for any reason suffer some degree of discard mortality, and impacts more of the stock with the increasing use of size restrictions, such as reverse slot limits. Current year estimates from Contracting Parties' agencies of recreational discard mortality have been received from Alaska and Oregon in the USA, and British Columbia, Canada and are provided in Table 7.

SUBSISTENCE FISHERIES

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

The coastwide subsistence estimate for 2019 is 479.0 tonnes (1,056,041 pounds). Subsistence harvest by IPHC Regulatory Areas from 2010 through 2019 is available in Table 8.

Table 8. Subsistence Pacific halibut fisheries removals (tonnes, net weight) by IPHC Regulatory Area, 2010-19.

IPHC Regulatory Area	Subsistence Fishery									
	2010	2011	2012	2013[1]	2014	2015[1]	2016	2017[1]	2018[1]	2019[1]
2A	11	11	15	13	14	15	13	13	13	13
2B	184	184	184	184	184	184	184	184	184	184
2C	193	176	180	180	192	192	198	198	166	166
3A	142	121	115	115	109	109	101	101	85	85
3B	10	10	7	7	6	6	6	6	7	8
4A	7	6	4	4	3	3	4	4	6	6
4B	0	0	1	1	0	0	0	0	1	1
4C	5	1	1	1	2	2	2	2	2	2
4D	1	0	0	0	0	0	0	0	0	0
4E	5	3	4	4	32	32	19	19	11	11
4D/4E (CDQ U32)	4	8	9	5	2	2	2	3	5	3
Total	561	519	519	513	546	546	530	530	480	479

[1] Alaska, USA estimates were carried over for the 2013 estimates from 2012, for the 2015 estimates from 2014, for the 2017 estimates from 2016, and for the 2019 estimates from 2018, with the exception that 4D/4E subsistence harvest in the CDQ fishery were updated.

Estimated subsistence harvests by area

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

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

The Pacific Fishery Management Council's Catch Sharing Plan allocates the Pacific halibut fishery limit to commercial, recreational, and treaty Indian users in IPHC Regulatory Area 2A. The treaty tribal fishery limit is further sub-divided into commercial and ceremonial and subsistence (C&S) fisheries. The 2018 final estimate of C&S was 12.7 tonnes (28,000 pounds)

and this catch estimate became the 2019 C&S allocation. The estimate of the 2019 removals is not available so it is assumed the treaty tribal C&S allocation was fully harvested.

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 136.1 tonnes (300,000 pounds) annually until 2006, and since 2007, the yearly estimate has been provided as 183.7 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 persons registered with NOAA Fisheries Restricted Access Management to obtain a SHARC. The Division of Subsistence at ADF&G was contracted by NOAA Fisheries to estimate the subsistence harvest in Alaska, USA through a data collection program. Yearly reports are available at http://www.fakr.noaa.gov/ram/ subsistence/halibut.htm. Each year, the data collection program included an annual voluntary survey of fishers conducted by mail or phone, with some onsite visits. The 2012 estimate has been carried forward for the 2013 estimate and the 2014 estimate has been used for 2014 through 2015; a 2016 estimate was used for 2016 through 2017 and a new 2018 estimate is used for 2018 through 2019. The 2014 estimates are about 10% higher than in 2012, and are noticeably higher in IPHC Regulatory Area 4E. To collect the 2014 harvest estimates, the ADF&G staff conducted face to face interviews in two of the major subsistence harvesting communities within IPHC Regulatory Area 4E rather than relying on mailed returns. Face to face interviews likely resulted in more realistic harvest estimates than the mail survey alone, so it is likely that the IPHC Regulatory Area 4E harvest estimates between 2009 through 2013 were low.

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

Reports for 2019 were received from three organizations: Bristol Bay Economic Development Corporation (BBEDC), Coastal Villages Regional Fund (CVRF), and Norton Sound Economic Development Corporation (NSEDC). The reports are summarized below, and the reported amounts of retained U32 Pacific halibut are shown in Table 9. A total of 3.3 tonnes (7,252 pounds) of retained U32 Pacific halibut was reported by CDQ organizations. Generally, annual changes are a reflection of the amount of effort by the local small boat fleets and the availability of fish in their nearshore fisheries.

Table 9. Reported annual amount (tonnes, net weight) of U32 (<32 inches in fork length) Pacific halibut retained by Community Development Quota harvesters fishing in IPHC Regulatory Areas 4D and 4E.

Organization	U32 CDQ Landings									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BBEDC	1.0	1.2	2.3	1.6	1.6	1.1	1.6	2.4	3.9	1.5
CVRF	1.8	4.5	4.7	2.4	0.4	0.0	0.0	0.0	0.0	0.0
NSEDC	1.6	1.9	2.1	0.6	0.5	1.0	0.9	1.0	0.7	1.8
Total	4.3	7.7	9.2	4.6	2.5	2.1	2.5	3.3	4.5	3.3

CDQ - Bristol Bay Economic Development Corporation (BBEDC)

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

CDQ - Coastal Villages Regional Fund (CVRF)

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

CDQ - Norton Sound Economic Development Corporation (NSEDC)

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

NON-DIRECTED COMMERCIAL DISCARD MORTALITY

The IPHC accounts for non-directed commercial discard mortality by IPHC Regulatory Area and sector. Table 10 provides these estimates from 2010 through 2019.

Table 10. Non-directed commercial discard mortality estimates of Pacific halibut (tonnes, net weight) by year, IPHC Regulatory Area, and fishery, for 2010-19. Estimates for 2019 are preliminary.[1]

IPHC Regulatory Area and Gear	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AREA 2A										
Groundfish Trawl	136									
IFQ Bottom Trawl		23	27	24	20	25	25	26	23	32
Other Groundfish Trawl	1	1	1	2	1	1	1	1	2	0
Groundfish Pot		0	0	0	0	0	0	1	0	0
Hook & Line	97	16	24	4	24	10	18	33	24	24
Shrimp Trawl	0	0	0	0	0	0	0	0	0	0
Total	157	41	53	30	45	36	44	61	49	57
AREA 2B										
Groundfish Bottom Trawl	82	105	86	102	111	148	123	114	136	108
Total	82	105	86	102	111	148	123	114	136	108
AREA 2C										
Crab Pot	8	5	10	6	0	0	0	0	0	0
Groundfish Trawl	0	0	0	0	0	0	0	0	0	0
Hook & Line (non-IFQ)	2	1	3	4	3	5	7	2	2	2
Hook & Line (IFQ)	1	1	5	6	4	3	6	6	18	23
Chatham Str. Sablefish	4	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Clarence Str. Sablefish	11	11	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total	26	22	19	16	8	8	13	8	21	25
AREA 3A										
Scallop Dredge	6	5	4	6	11	11	11	11	11	11
Groundfish Trawl	921	1,012	645	606	762	813	677	558	679	615
Hook & Line (non-IFQ)	50	42	108	98	70	101	95	58	28	20
Hook & Line (IFQ)	54	54	11	14	7	15	12	16	32	10
Groundfish Pot	5	10	13	15	5	11	18	4	1	0
Pr Wm Sd Sablefish	5	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total	1,042	1,128	782	739	856	951	813	647	751	657
AREA 3B										
Crab Pot	23	23	23	23	23	23	23	23	23	23
Scallop Dredge	0	2	2	4	6	6	6	6	6	6
Groundfish Trawl	307	365	449	332	367	244	321	348	188	131
Hook & Line (non-IFQ)	122	78	48	40	52	43	56	42	6	5
Hook & Line (IFQ)	53	53	11	6	8	7	4	7	7	42
Groundfish Pot	16	10	9	20	8	5	14	6	1	1
Total	520	531	541	425	464	328	424	433	231	208

continued…

Table 10 continued. Non-directed commercial discard mortality estimates of Pacific halibut (tonnes, net weight) by year, IPHC Regulatory Area, and fishery, for 2010-19. Estimates for 2019 are preliminary.[1]

IPHC Regulatory Area and Gear	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AREA 4A										
Scallop Dredge	0	0	0	0	0	0	0	0	0	0
Crab Pot	10	7	6	12	12	12	12	12	12	12
Groundfish Trawl	363	358	596	275	279	219	211	138	123	118
Hook & Line (non-IFQ)	97	66	59	93	73	67	45	40	13	15
Hook & Line (IFQ)	7	7	2	2	1	2	1	1	1	3
Groundfish Pot	3	4	5	15	12	3	2	2	1	1
Total	480	441	668	396	377	303	272	194	150	149
AREA 4B										
Crab Pot	0	1	0	1	1	1	1	1	1	1
Groundfish Trawl	168	182	98	53	46	91	62	88	57	69
Hook & Line (non-IFQ)	29	15	12	3	11	9	2	6	5	5
Hook & Line (IFQ)	18	18	5	5	2	1	1	0	0	0
Groundfish Pot	0	0	0	2	1	0	0	0	1	1
Total	217	216	116	63	61	103	67	95	65	77
AREA 4CDE+CA										
Scallop Dredge	0	0	0	0	0	0	0	0	0	0
Crab Pot	28	22	13	13	13	17	17	17	17	17
Groundfish Trawl	1,555	1,132	1,569	1,864	1,907	1,362	1,313	1,107	1,282	1,545
Hook & Line (non-IFQ)	310	214	348	303	244	174	141	121	51	55
Hook & Line (IFQ)	2	2	0	68	5	0	0	0	0	0
Groundfish Pot	0	1	2	8	6	1	1	1	0	1
Total	1,897	1,372	1,932	2,257	2,176	1,554	1,472	1,246	1,350	1,618
AREA 4 Subtotal										
Scallop Dredge	0	0	0	0	0	0	0	0	0	0
Crab Pot	39	29	19	27	27	30	30	30	30	30
Groundfish Trawl	2,087	1,672	2,262	2,192	2,232	1,672	1,587	1,333	1,462	1,732
Hook & Line (non-IFQ)	436	294	420	398	327	250	188	168	69	76
Hook & Line (IFQ)	27	27	8	75	9	2	1	1	1	3
Groundfish Pot	4	5	7	25	19	4	3	3	2	3
Total	2,593	2,028	2,716	2,717	2,614	1,959	1,810	1,535	1,564	1,844
GRAND TOTAL	**4,420**	**3,856**	**4,215**	**4,048**	**4,119**	**3,450**	**3,427**	**2,818**	**2,771**	**2,919**

[1]Note that some totals may not sum precisely due to rounding.

Estimating Non-Directed Commercial Discard Mortality

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

The IPHC relies upon information supplied by observer programs run by domestic agencies for non-directed commercial discard mortality estimates in most fisheries. Non-IPHC research survey information is used to generate estimates of non-directed commercial discard mortality in the few cases where fishery observations are unavailable. The 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. Trawl fisheries off British Columbia (BC: Canada) are comprehensively monitored and non-directed commercial discard mortality information is provided to IPHC by DFO.

Off the USA West Coast, an individual quota (IQ) program was implemented in 2011 for the domestic groundfish trawl fisheries. The program is quite similar to the program for the BC trawl fishery, in that it contains an individual non-directed commercial discard mortality quota component for managing and reducing Pacific halibut non-directed commercial discard mortality. Fishery monitoring is required at 100% coverage levels, so all vessels carry an observer to record the vessel's catch. Non-directed commercial discard mortality is reported to IPHC by NOAA Fisheries (Jannot et al. 2018). Non-directed commercial discard mortality estimates for the shrimp trawl fishery have been provided by Oregon Department of Fish and Wildlife (ODFW) staff from examinations of Pacific halibut non-directed commercial catch during gear experiments. Updated estimates were provided by ODFW in 2011.

The amount of information varies for fisheries conducted off BC, Canada. For the trawl fishery, non-directed commercial discard mortality is managed with an individual non-directed commercial discard mortality quota program implemented by DFO in 1996. Fishery observers sample the catch on each bottom trawler, collecting data to estimate catch and non-directed commercial discard mortality. Non-directed commercial discard mortality in other fisheries, such as the shrimp trawl, sablefish pot, and rockfish hook-and-line fisheries, was largely unknown until the inception of the Integrated Fisheries Management Program in 2006. The program has requirements for full accounting and accountability of all non-directed commercial discard mortality, and includes 100% at-sea monitoring, either by human observers or electronic monitoring. Estimates of trawl non-directed commercial discard mortality were provided by DFO staff at the Pacific Biological Station, based on data collected by observers. Reporting of non-directed commercial discard mortality from the non-trawl programs is being developed with DFO staff and will be provided in future reports.

Estimates of non-directed commercial discard mortality off Alaska, USA in federally managed fisheries were provided by the NOAA Fisheries Alaska Region. Several fishery programs have a mandatory 100% monitoring requirement, including the CGOARP, the BSAI CDQ fisheries, the AFA pollock cooperatives, and the BSAI A80 fishery cooperatives. NOAA Fisheries Alaska Fisheries Science Center's Annual Deployment Plan (ADP) provides the scientific guidelines which determine how vessels not involved in these full coverage programs are chosen for monitoring, including vessels in the directed Pacific halibut IFQ fishery. Additional details about the ADP can be found in NOAA Fisheries (2017). The NOAA Fisheries projections were provided in metric tons, round weight, and were converted to net weight using net weight = round weight x 0.75.

Estimates of Pacific halibut non-directed commercial discard mortality in scallop dredge and crab fisheries are obtained from the ADF&G, but not on an annual basis. The catch estimates are based on fishery data collected by on-board observers. The most recent estimates of 2016 were rolled forward for 2017 and 2018. Work is underway to develop an annual approach to updating these data.

Non-directed Commercial Discard Mortality by Area

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

Groundfish fisheries off Washington, Oregon, and California are managed by the NOAA Fisheries, following advice and recommendations developed by the Pacific Fishery Management Council.

IPHC Regulatory Area 2B (Canada: British Columbia)

In Canada, Pacific halibut non-directed commercial discard mortality in trawl fisheries are capped at 453.6 tonnes round weight by DFO. Non-trawl non-directed commercial discard mortality is handled under an IFQ system within the directed Pacific halibut fishery cap.

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

Groundfish fisheries in Alaska, USA are managed by the NOAA Fisheries, following advice and recommendations developed by the North Pacific Fishery Management Council. The North Pacific Fishery Management Council sets limits on the amount of Pacific halibut non-directed commercial discard mortality which is allowed to occur annually in the groundfish fisheries, known as the Prohibited Species Catch (PSC) limits. These PSC limits are published in metric tons (t) (round weight) and are shown in Table 11, with their equivalent net weight. If a fishery's PSC limit is reached, the fishery is closed. Certain gear types, e.g., pots or jigs, are exempted from closures due to their low non-directed commercial discard mortality properties and to encourage their use. Non-directed commercial discard mortality projected estimates for Alaskan areas in the USA in Table 10 were provided by NOAA Fisheries.

Table 11. Pacific halibut non-directed commercial discard mortality limits in the Alaska, USA groundfish fishery 2010-19**.**

Geographical Area	**Sector**	**Non-directed Commercial Discard Mortality Limits** (tonnes, round weight)									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gulf of Alaska	Trawl	2,000	2,000	2,000	1,973	1,848	1,759	1,706	1,706	1,706	1,706
	Fixed Gears	300	300	300	300	279	270	266	266	266	266
Bering Sea/ Aleutian Islands	Trawl	3,625	3,575	3,525	3,525	3,525	3,525	2,805	2,805	2,805	2,805
	Fixed Gears	900	900	900	900	900	900	710	710	710	710
Geographical Area	**Sector**	**Non-directed Commercial Discard Mortality Limits** (tonnes, net weight)									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gulf of Alaska	Trawl	1,500	1,500	1,500	1,480	1,386	1,319	1,280	1,280	1,280	1,280
	Fixed Gears	225	225	225	225	209	203	200	200	200	200
Bering Sea/ Aleutian Islands	Trawl	2,719	2,681	2,644	2,644	2,644	2644	2104	2104	2104	2104
	Fixed Gears	675	675	675	675	675	675	533	533	533	533

IPHC Regulatory Area 2C (USA: Southeast Alaska)

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

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

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

IPHC Regulatory Area 3 is comprised of Areas 3A and 3B. IPHC tracks non-directed commercial discard mortality for each IPHC Regulatory Area due to assessment and stock management needs, while groundfish fisheries operate throughout both areas. Trawl fisheries are responsible for the majority of the non-directed commercial discard mortality in these IPHC Regulatory Areas, with hook-and-line fisheries a distant second (Table 10). State-managed crab and scallop fisheries are also known to take Pacific halibut as non-directed commercial discard mortality, but at low levels.

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

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

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

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

Within the Bering Sea, non-directed commercial discard mortality mortality estimates have typically been the highest in IPHC Regulatory Area 4CDE (Table 10). This is due to the groundfish fisheries which operate in the area, i.e., those for flatfish.

IPHC FISHERY-INDEPENDENT SETLINE SURVEY AND OTHER RESEARCH

The IPHC's FISS provides catch information and biological data on Pacific halibut (*Hippoglossus stenolepis)* that are independently collected from the commercial fishery. Approximately 393 tonnes (866,000 pounds) of Pacific halibut were landed from the FISS in 2019 with the amount landed from each IPHC Regulatory Area documented IPHC-2019-IM095-06.

RECOMMENDATION/S

That the Commission:

1) **NOTE** paper IPHC-2019-IM095-05 Rev_1 which provides preliminary fishery statistics from fisheries catching Pacific halibut during 2019, including the status of removals compared to fishery limits implemented by the Contracting Parties.

REFERENCES

Jannot, J.E., Somers, K., Riley, N.B., Tuttle, V., and McVeigh, J. 2018. Pacific Halibut Bycatch in the US West Coast Fisheries (2002-2017). NOAA Fisheries, NWFSC Observer Program, 2725 Montlake Blvd E., Seattle, WA 98112. 134 p. Available online at: https://www.pcouncil.org/wp-content/uploads/2018/08/I1b_NMFS_NWFSC_Rpt2_E-Only_Pacific_Halibut_Bycatch_2002_2017_SEPT2018BB.pdf

NOAA Fisheries. 2016. 2017 Annual Deployment Plan for Observers in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street. Juneau, Alaska 99802. Published December 2016. 30 p. Available online at: https://alaskafisheries.noaa.gov/sites/default/files/2017finaladp.pdf

APPENDICES

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