



**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
Main: 907-465-4270
Fax: 907-465-2034

3298 Douglas Place
Homer, AK 99603
Main: 907-235-8191
Fax: 907-235-2448

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 Milb (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 Milb in Area 3B and 0.003 Milb in Area 4. The final estimate for 3B is down from last year's preliminary estimates of 0.008 Milb and down from last year's estimate of 0.006 Milb 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:

$$R = \hat{N} \cdot DMR \cdot \hat{w}$$

where

\hat{N} = the number of fish released,

DMR = the assumed short-term discard mortality rate due to capture, handling, and release, and

\hat{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 Milb in Area 2C, with 0.039 Milb 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 Milb, with 0.014 Milb 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 Milb in Area 2C, 0.029 Milb 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 Milb in Area 2C and 2.648 Milb 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 Milb in Area 2C and 2.543 Milb 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.

Area	Mean Survey Date	Charter		Unguided		Total	
		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