



THE STATE
of **ALASKA**
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FISHERY SECTOR

Recreational

IPHC REGULATORY AREA/S

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

DISCUSSION

In October 2018, we provided final estimates of the 2017 sport harvest and preliminary estimates of the 2018 sport harvest for Areas 2C, 3A, 3B, and 4. The full report is in Appendix 1.

2017 Final Harvest Estimates

The Area 2C charter fishery regulations for 2017 included a one-fish daily bag limit and reverse slot (or “protected slot”) limit that allowed harvest of halibut less than or equal to 44 inches and halibut greater than or equal to 80 inches. The Area 3A charter regulations included a two-fish bag limit with a maximum size on one of the fish of 28 inches, a limit of one trip per charter vessel per day (on which halibut are harvested), a limit of one trip per Charter Halibut Permit (CHP) per day, a closure of halibut retention on Wednesdays all year, three Tuesday closures (7/18, 7/25, 8/1), and a 4-fish annual limit with a harvest recording requirement. Charter captains and crew were not allowed to retain halibut while guiding clients in Area 2C or Area 3A under regulations of the North Pacific Fishery Management Council’s Catch Sharing Plan (CSP) for these areas. Charter fishery regulations in the remainder of the state included a daily bag limit of two fish of any size, and there was no prohibition on retention of halibut by captains or crew. Non-charter (or unguided) fisheries statewide were managed under a two-fish daily bag limit with no size limit.

The 2017 Area 2C estimated sport harvest (excluding release mortality) was 131,464 fish, for a yield of 2.120 million pounds. 2C charter removals (including O26 release mortality) were estimated to be 0.941 Milb, approximately 2.8% over the allocation of 0.915 Milb. Non-charter removals (including all sizes of release mortality) were estimated to be 1.234 Milb. The Area 3A estimated sport harvest was 251,636 fish, for a yield of 3.606 Milb. 3A charter removals (including O26 release mortality) were estimated to be 2.089

Mlb, approximately 10.5% over the allocation of 1.890 Mlb. Non-charter removals (including all sizes of release mortality) were estimated to be 1.553 Mlb. Areas 3B and 4 do not have separate charter allocations. The final harvest estimates were 41 halibut in Area 3B and 368 halibut in Area 4. Applying the non-charter Kodiak average weight of 15.35 lb resulted in yield estimates of 0.001 Mlb in Area 3B and 0.006 Mlb in Area 4. Additional detail on numbers of fish harvested and released, average weights, and confidence intervals can be found in tables 1, 3, and 4 of Appendix 1. Information on harvest by port and historical harvest can be found in C1 - Area 2C 3A Sport Harvests Final 2017 (North Pacific Fisheries Management Council 2018).

2018 Preliminary Harvest Estimates

The Area 2C charter fishery regulations for 2018 included a one-fish daily bag limit and reverse slot of less than or equal to 38 inches and greater than or equal to 80 inches. The Area 3A charter regulations included a two-fish bag limit with a maximum size on one of the fish of 28 inches, a limit of one trip per charter vessel per day and per CHP per day, a closure of halibut retention on Wednesdays all year, six Tuesday closures (7/10, 7/17, 7/24, 7/31, 8/7, 8/14), and a 4-fish annual limit with a recording requirement. Charter captains and crew were not allowed to retain halibut while guiding clients in Area 2C or Area 3A. Charter fishery regulations in the remainder of the state included a daily bag limit of two fish of any size. Non-charter fisheries statewide were managed under a two-fish daily bag limit with no size limit.

The preliminary estimate of 2018 sport halibut harvest in Area 2C (excluding release mortality) was 135,181 halibut, or 2.029 Mlb. 2C charter removals (including all sizes of release mortality) were estimated to be 0.729 Mlb, approximately 10.0% under the allocation of 0.810 Mlb. Non-charter removals (including all release mortality) were estimated to be 1.379 Mlb. The preliminary estimate for Area 3A was 256,266 halibut, for a total sport fishery yield of 3.588 Mlb. 3A charter removals (including all release mortality) were estimated to be 1.867 Mlb, approximately 4.3% over the allocation of 1.790 Mlb. Non-charter removals (including all release mortality) were estimated to be 1.765 Mlb. The preliminary harvests for 2018 were 156 halibut in Area 3B and 758 halibut in Area 4. Applying the non-charter average weight of 14.08 lb from Kodiak resulted in removal projections of 0.002 Mlb in Area 3B and 0.011 Mlb in Area 4. Additional detail on numbers of fish harvested and released, average weights, and confidence intervals can be found in tables 2, 4, and 5 of Appendix 1.

2C and 3A Charter Halibut Management Measure Analyses

In addition to estimating all recreational halibut harvest in Alaska, the Alaska Department of Fish and Game is responsible for analyzing alternative management measures for the charter halibut fisheries in Areas 2C and 3A. Analyses were requested by the Charter Halibut Management Committee on 30 October 2018 and results were presented at the North Pacific Fisheries Management Council meeting in December, 2018. Projected removals in 2019 under status quo regulations are 0.833 Mlb in 2C and 1.834 Mlb in 3A. A full report of the analyses and results can be found in C1 - Analysis of Charter Mgmt Options 2C 3A for 2019 (North Pacific Fisheries Management Council 2018).

REFERENCES

North Pacific Fisheries Management Council (2018). NPFMC December 2018, Agenda, Item C-1. Retrieved 12 December 2018, from <https://meetings.npfmc.org/Meeting/Details/313>.

APPENDICES

Appendix 1 – Letter to Lara Erikson (IPHC) from Sarah Webster, Mike Jaenicke, Diana Tersteeg, and Martin Schuster (ADFG – DSF) reporting on the Alaska recreational halibut fishery.



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October 19, 2018

Lara Erikson
International Pacific Halibut Commission
2320 West Commodore Way
Salmon Bay, Suite 300
Seattle, WA 98199-1287

Dear Ms. Erikson:

This letter represents our report on the Alaska recreational halibut fishery in support of the annual IPHC stock assessment. This year's letter provides:

1. Final 2017 estimates of sport fishery harvest and yield by IPHC regulatory area,
2. Preliminary 2018 estimates of harvest and yield by IPHC area,
3. Final 2017 and preliminary 2018 estimates of sport fishery release mortality by IPHC area, and
4. Final 2017 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.2017.02.pdf>

Southcentral Region creel sampling: <http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.2A.2016.20.pdf>

Statewide halibut estimation: <http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.4A.2014.08.pdf>

We hope this information satisfies the IPHC's needs. Please feel free to contact us if you require clarification or additional information.

Sincerely;

(sent via email)

Sarah Webster, Mike Jaenicke, Diana Tersteeg, and Martin Schuster
Fishery Biologists

Final Estimates of 2017 Sport Harvest and Yield

In October 2017 we provided preliminary estimates of the 2017 sport harvest for Areas 2C, 3A, 3B, and 4. This letter provides final estimates of the 2017 sport harvest based on Alaska Department of Fish and Game (ADF&G) saltwater logbook data as of September 4, 2018, and final estimates from the ADF&G Statewide Harvest Survey (SWHS). The final estimates for Area 2C and 3A will also be posted on the North Pacific Fishery Management Council web site.

The Area 2C charter fishery regulations for 2017 included a one-fish daily bag limit and reverse slot (or “protected slot”) limit that allowed harvest of halibut less than or equal to 44 inches and halibut greater than or equal to 80 inches. The Area 3A charter regulations included a two-fish bag limit with a maximum size on one of the fish of 28 inches, a limit of one trip per charter vessel per day (on which halibut are harvested), a limit of one trip per Charter Halibut Permit (CHP) per day, a closure of halibut retention on Wednesdays all year, three Tuesday closures (7/18, 7/25, 8/1), and a 4-fish annual limit with a harvest recording requirement. Charter captains and crew were not allowed to retain halibut while guiding clients in Area 2C or Area 3A under regulations of the North Pacific Fishery Management Council’s Catch Sharing Plan (CSP) for these areas. Charter fishery regulations in the remainder of the state included a daily bag limit of two fish of any size, and there was no prohibition on retention of halibut by captains or crew. Noncharter (or unguided) fisheries statewide were managed under a two-fish bag limit with no size limit.

Methods:

For Areas 2C and 3A, sport fishery yield was calculated separately for the charter and noncharter sectors as the product of the number of fish harvested and average weight of harvested halibut. Yield estimates do not include release mortality (provided later in this document). Estimates were done for six subareas in Area 2C and eight subareas in Area 3A and summed. Charter harvest was based entirely on logbook data, per the provisions of the CSP. Noncharter harvest was estimated through the SWHS. Standard errors of the SWHS estimates for the noncharter sector were obtained by bootstrapping. Average net weight was estimated by applying the IPHC length-weight relationship to length measurements of harvested halibut sampled at major ports in Areas 2C and 3A. All fish from each vessel-trip selected for sampling were measured. Bootstrapping was used to estimate the standard errors of average weight. The estimate of charter average weight for Homer was stratified to account for differences in sizes of halibut cleaned at sea and cleaned onshore. Length measurements from sites in the Glacier Bay subarea included fish caught in Areas 3A and 2C; average weights were calculated separately for each area and sector. All noncharter harvest in the Glacier Bay subarea was assumed to have occurred in Area 2C. Charter-caught halibut taken under a Guided Angler Fish (GAF) permit from the National Marine Fisheries Service were not included in charter harvest calculations because the CSP specifies that this harvest accrues toward the commercial catch limit.

Final estimates of sport fishery yield for Areas 3B and 4 are for the charter and noncharter sectors combined and are based entirely on the SWHS. Because ADF&G does not sample the sport harvest in these areas, we followed past practices of the IPHC and used the average weight of Kodiak sport harvest as a proxy for average weight in Areas 3B and 4. Specifically, we used the average weight from the noncharter sector because it was unaffected by size limits. Even so, use of the Kodiak average weight may bias the yield estimates for these areas.

As has been done historically, harvest from SWHS Area R (Alaska Peninsula and Aleutian Islands south of Cape Douglas) was apportioned to IPHC Areas 3B and 4 using specific locations reported in the survey. In some years, Area R harvest estimates have included harvests for sites that are actually in Area 3A. Since 1991, the estimated harvest of Area 3A halibut included in Area 3B estimates has ranged from 0 to 728 fish per year (average = 122). For 2017, 21 halibut were estimated from Area 3A locations in Area R.

Results:

The 2017 Area 2C estimated sport harvest (excluding release mortality) was 131,464 fish, for a yield of 2.120 million pounds (Table 1). Charter yield represented 43% of the total. Average net weight was estimated at

16.12 lb overall and was lower for the charter sector due to size limit restrictions. Average weight was estimated from samples of 4,351 charter halibut and 4,361 noncharter halibut.

The Area 3A estimated sport harvest was 251,636 fish, for a yield of 3.606 Mlb (Table 1). The charter sector accounted for 58% of the total yield. Average net weight was estimated at 14.33 lb overall and was slightly higher for the charter sector. Average weight was estimated from samples of 3,364 charter halibut and 1,625 noncharter halibut.

The final estimates of charter halibut yield were about 2.2% higher than last year's preliminary estimate in Area 2C and 0.2% lower than the preliminary estimate in Area 3A. These differences were largely due to errors in estimating the proportions of harvest taken through July 31, the cutoff date for using logbook data. The final estimates of noncharter yield were 14% lower in Area 2C and 16% lower than the preliminary estimate for Area 3A. The preliminary estimates were derived from simple exponential time series forecasts (SAS ESM procedure) and large forecasting errors are expected due to high annual variability in the harvest time series.

The final harvest estimates for western areas were 41 halibut in Area 3B and 368 halibut in Area 4 (Table 1). Applying the Kodiak average weight of 15.35 lb resulted in yield estimates of 0.001 Mlb in Area 3B and 0.006 Mlb in Area 4. These final estimates were down from last year's preliminary estimates of 0.008 in Area 3B and 0.015 in Area 4.

Preliminary 2018 Estimates of Harvest and Yield

Methods:

Sport charter fishery mortality for Areas 2C and 3A is based on numbers of halibut reported harvested and released in ADF&G mandatory charter logbooks. Harvest and release estimates from the SWHS are still used for all noncharter fishery estimates as well as total sport fishery estimates for Areas 3B and 4. Neither complete logbook data nor SWHS estimates are available yet for the current year, and creel sampling is not designed to produce estimates of harvest. A variety of methods were used to provide preliminary estimates of the numbers of fish harvested by each sector or regulatory area.

Charter harvest for Areas 2C and 3A was projected from partial-year logbook data. Logbook data were entered and available in mid-October for most trips taken through July 31. Areas 2C and 3A are divided into several subareas closely corresponding to state management areas. Harvest data were corrected to account for late logbook submissions and other reporting errors based on past data. This adjusted the harvest in each area by less than 2%. The harvest data were then expanded by forecasting the proportion of harvest taken through July in each subarea. Forecasts and their standard errors were obtained from a simple exponential smoother using 2006-2017 logbook data as of September 4, 2018.

Noncharter harvest in Areas 2C and 3A, and overall sport harvests for Areas 3B and 4 were projected from the existing time series of SWHS estimates using simple exponential smoother forecasts. Charter and noncharter yield were estimated by multiplying the subarea harvest forecasts by the corresponding estimates of average weight. Average weights were estimated by applying the IPHC length-weight relationship to length measurements of harvested halibut obtained through sampling of the recreational harvest. No sampling was conducted in Areas 3B or 4 in 2018, so the Kodiak area average weight from the noncharter fishery was again substituted for these areas.

Results:

The preliminary estimate of 2018 sport halibut harvest in Area 2C (excluding release mortality) was 135,181 halibut, or 2.029 Mlb (Table 2). Charter harvest was estimated using a projection that 66% of the harvest was taken through the end of July. Average weight was estimated at 15.01 lb. The charter average weight was nearly 12 lbs lower than the noncharter average weight due to the charter fishery size limit. Average weights for Area 2C were based on length measurements of 4,426 charter halibut and 4,156 noncharter halibut.

The preliminary estimate for Area 3A was 256,266 halibut, for a total sport fishery yield of 3.588 MIb (Table 2). Charter harvest was estimated using a projection that 69% of the harvest was taken through the end of July. The estimated average weights in Area 3A was 14.00 lb overall. Average weights were estimated from samples of 4,647 charter and 2,923 noncharter halibut.

The preliminary harvests for 2018 were 156 halibut in Area 3B and 758 halibut in Area 4. Applying the noncharter average weight of 14.08 lb from Kodiak resulted in yield projections of 0.002 MIb in Area 3B and 0.011 MIb 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 noncharter average weight as a proxy for average weight in these areas.

Final 2017 and Preliminary 2018 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 2017 were based on final logbook data. The numbers of halibut released in 2018 were projected using logbook data through July 31. The projections used simple exponential forecasts of the proportion of releases through July 31 from 2006-2017 data. For the noncharter fishery, and the overall sport fisheries in Areas 3B and 4, the estimated number of fish released in each subarea in 2017 was obtained from the SWHS. The projections for 2018 were simple exponential time series forecasts using previous release numbers from the SWHS.

Assumed mortality rates ($DMRs$) were 5% for Area 3A charter-caught halibut, 6% for Area 2C charter and Area 3A noncharter, and 7% for Area 2C noncharter halibut. These rates were developed by assuming a 3.5% mortality rate for halibut released on circle hooks and a 10% mortality rate for halibut released on all other hook types. The hook type data were collected in 2007 and 2008 in Area 2C, and every year since 2007 in Area 3A. These rates were applied to the reported number of fish released on each hook type to calculate a weighted mean mortality rate for each user group in each subarea. These weighted mean rates were then rounded up to the next whole percentage point to address uncertainty and account for possible cumulative effects of multiple recaptures. A discard mortality rate of 6% was assumed for Areas 3B and 4, as no data on hook use were collected.

For most IPHC regulatory areas, the average weights of released fish in each subarea were estimated using a logistic model of the proportion of catch retained at length, as described in the operational plan for statewide halibut estimation (see cover page for link). The model uses the length composition of the retained fish to infer the length distribution of released fish. The resulting length distributions are partitioned into U26 (<26 inch) and O26 (≥ 26 inch) components, and average weight was calculated using the IPHC length-weight relationship. The U26 and O26 separation was done for consistency with how these two size classes of waste have been handled by the IPHC.

For the Area 2C charter fishery, additional steps were needed to estimate release mortality due to the reverse slot limits in place in 2017 and 2018. In 2017, charter anglers were prohibited from harvesting fish between 44 and 80 inches in length. The protected slot was 38-80 inches in 2018. This required partitioning the released fish into size categories as follows: the 2017 size classes were U44 (≤ 44 inches) and O44 (> 44

inches). The 2018 size classes were U38 and O38. 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 U44 (2017) and U38 (2018) size classes was estimated using the model described above. The average weights of released fish in the protected slot and above the upper limit were estimated as the average weight of fish in these size ranges in 2010, the most recent year without a charter size limit.

The North Pacific Fishery Management Council's Scientific and Statistical Committee reviewed the logistic modeling approach in 2007 and concluded that it provided "reasonable" estimates of average weight given the lack of data. One problem inherent in this method is that the size distribution of released fish is truncated at the size of the smallest fish measured in the harvest sample. It is likely that some halibut are released that are smaller than the smallest halibut retained and measured. Therefore, the method may in effect underestimate the numbers of U26 fish released but overestimate their average weight. Because the model assumes that the percent of fish kept at length never exceeds 95%, it may also overestimate the numbers of O26 fish released, but probably has little effect on their average weight.

Results:

For 2017, estimated U26 release mortality was 0.004 Mlb in Area 2C, 0.017 Mlb in Area 3A, and virtually zero in Areas 3B and 4 (Table 3). Estimated O26 release mortality was 0.053 Mlb in Area 2C, with 0.040 Mlb from the charter fishery. The size class breakdown of the Area 2C charter O26 release mortality indicated that while the majority of fish released were in the length range 26-44 inches, the poundage of release mortality was greatest in the O44 range because of the higher average weight (Table 4). Estimated O26 release mortality in Area 3A was 0.028 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 2018, estimated release mortality of U26 halibut was 0.005 Mlb in Area 2C, 0.014 Mlb in Area 3A, and virtually zero in Areas 3B and 4 (Table 5). Mortality of O26 releases in Area 2C was estimated at 0.073 Mlb, with 0.060 Mlb from the charter fishery. The size class breakdown of the Area 2C charter O26 release mortality indicated that the majority of release mortality was from the O38 length range (Table 4). Mortality of O26 releases in Area 3A was 0.030 Mlb, with most (0.019 Mlb) coming from the noncharter fishery (Table 5). The O26 release mortality was negligible in Area 3B and Area 4.

The 2017 total sport fishery removals, including harvest and all sizes of release mortality, added up to 2.177 Mlb in Area 2C and 3.651 Mlb in Area 3A. Release mortality made up 2.6% of all Area 2C removals and 1.2% of Area 3A removals. For 2018, the preliminary estimates of total sport removals are 2.108 Mlb in Area 2C and 3.633 Mlb in Area 3A. Release mortality accounted for 3.7% of Area 2C removals and 1.2% of Area 3A removals in 2018.

Sport Fishery Yield Prior to the Mean IPHC Survey Dates in 2017 (Areas 2C and 3A only)

This information is provided to aid the IPHC's adjustment to survey CPUE that is used to apportion estimated exploitable biomass among regulatory areas. The mean survey dates for 2017 were July 5 in Area 2C and July 1 in Area 3A.

Methods:

The proportions of harvest prior to the mean survey date were calculated separately for the charter and noncharter sectors. For the charter sector, the proportion of harvest taken prior to the mean survey date in 2017 was obtained from logbook harvest data. For the noncharter 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 2017 final estimated harvests in each subarea to derive the overall proportions. The total sport yield taken prior to the mean survey date was calculated by multiplying the charter and noncharter proportions by their respective final or projected yields and summing.

Results:

In 2017, an estimated 0.722 Mlb of halibut were taken by the sport fishery in Area 2C prior to July 5, and an estimated 1.242 Mlb were taken in Area 3A prior to July 1 (Table 6).

Table 1. Final estimates of the 2017 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	70,647	12.76	0.901	0.845 – 0.958
	Noncharter	60,817	20.03	1.218	1.058 – 1.379
	Total	131,464	16.12	2.120	1.950 - 2.290
Area 3A	Charter	142,664	14.55	2.076	1.915 – 2.237
	Noncharter	108,972	14.04	1.530	1.342 – 1.718
	Total	251,636	14.33	3.606	3.358 – 3.854
Area 3B	Total	41	15.35 ^a	0.001	NA
Area 4	Total	368	15.35 ^a	0.006	NA

^a – No size data were available from Areas 3B and 4, so the noncharter average weight from Kodiak was substituted.

Table 2. Preliminary estimates of the 2018 sport halibut harvest (numbers of fish), average net weight (pounds), and yield (millions of pounds net weight) in Areas 2C, 3A, 3B, and 4. “NA” indicates no estimate is available.

IPHC Area	Sector	Harvest (no. fish)	Average Net Wt. (lb)	Yield (Mlb)	95% CI for Yield (Mlb)
Area 2C	Charter	71,107	9.39	0.668	0.637-0.698
	Noncharter	64,074	21.25	1.362	1.089-1.635
	Total	135,181	15.01	2.029	1.755-2.304
Area 3A	Charter	135,031	13.70	1.850	1.683-2.017
	Noncharter	121,235	14.33	1.738	1.422-2.054
	Total	256,266	14.00	3.588	3.231-3.945
Area 3B	Total	156	14.08 ^a	0.002	NA
Area 4	Total	758	14.08 ^a	0.011	NA

^a – No size data were available from Areas 3B and 4, so the noncharter average weight from Kodiak was substituted.

Table 3. Final estimates of release mortality for sport fisheries in Areas 2C, 3A, 3B, and 4 in 2017. Some columns may not appear to add correctly due to rounding.

IPHC Area	Size Class	Sector	Estimated No. Halibut Released	Assumed Mortality Rate	Number Released that Died	Estimated Average Net Weight (lb)	Release Mortality (Mlb)
Area 2C	U26	Charter	6,977	6.0%	419	3.55	0.001
		Noncharter	10,275	7.0%	719	3.45	0.002
		Total	17,252		1138	3.49	0.004
	O26	Charter	24,628	6.0%	1,478	26.95	0.040
		Noncharter	16,555	7.0%	1,159	11.38	0.013
		Total	41,183		2,637	20.11	0.053
Area 3A	U26	Charter	46,804	5.0%	2,340	3.47	0.008
		Noncharter	40,613	6.0%	2,437	3.65	0.009
		Total	87,417		4,777	3.56	0.017
	O26	Charter	28,272	5.0%	1,414	9.60	0.014
		Noncharter	28,264	6.0%	1,696	8.45	0.014
		Total	56,536		3,109	8.97	0.028
Area 3B	U26	Total	26	6.0%	2	3.39	0.000
	O26	Total	15	6.0%	1	8.34	0.000
Area 4	U26	Total	74	6.0%	4	3.38	0.000
	O26	Total	50	6.0%	3	10.56	0.000

Table 4. Breakdown of Area 2C estimates of O26 charter release mortality by size class for 2017 (final) and 2018 (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)
2017	O26U44	17,215	6.0%	1,033	10.60	0.011
	O44	7,413	6.0%	445	64.93	0.029
	Total O26	24,628	6.0%	1,478	26.95	0.040
2018	O26U38	13,193	6.0%	792	8.96	0.007
	O38	16,534	6.0%	992	53.24	0.053
	Total O26	29,726		1,784	33.58	0.060

Table 5. Preliminary estimates of release mortality for sport fisheries in Areas 2C, 3A, 3B, and 4 in 2018. Some columns may not appear to add correctly due to rounding.

IPHC Area	Size Class	Sector	Estimated No. Halibut Released	Assumed Mortality Rate	Number Released that Died	Estimated Average Net Weight (lb)	Release Mortality (Mlb)
Area 2C	U26	Charter	8,242	6.0%	495	3.69	0.002
		Noncharter	13,822	7.0%	968	3.59	0.003
		Total	22,064		1,462	3.62	0.005
	O26	Charter	29,726	6.0%	1,784	33.59	0.060
		Noncharter	17,724	7.0%	1,241	10.77	0.013
		Total	47,451		3,024	24.22	0.073
Area 3A	U26	Charter	31,798	5.0%	1,590	3.54	0.006
		Noncharter	44,356	6.0%	2,661	3.22	0.009
		Total	76,154		4,251	3.34	0.014
	O26	Charter	22,632	5.0%	1,132	10.00	0.011
		Noncharter	36,431	6.0%	2,186	8.67	0.019
		Total	59,063		3,317	9.13	0.030
Area 3B	U26	Total	54	6.0%	3	3.60	0.000
	O26	Total	89	6.0%	5	8.53	0.000
Area 4	U26	Total	247	6.0%	15	3.59	0.000
	O26	Total	405	6.0%	24	8.54	0.000

Table 6. Final estimated sport harvest prior to the mean IPHC survey dates in 2017 in Areas 2C and 3A.

Year	Area	Mean Survey Date	Charter		Noncharter		Total	
			Percent	Harvest (Mlb)	Percent	Harvest (Mlb)	Percent	Harvest (Mlb)
2017	2C	July 05	34.9%	0.315	33.4%	0.407	34.0%	0.722
	3A	July 01	30.2%	0.627	40.2%	0.615	34.4%	1.242