



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

Department of Fish and Game

DIVISION OF SPORT FISH

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

P.O. Box 110024  
Juneau, AK 99811-0024  
Main: 907-465-4270  
Fax: 907-465-2034

November 5, 2015

Claude Dykstra  
International Pacific Halibut Commission  
P.O. Box 95009  
Seattle, WA 98145

Dear Mr. Dykstra:

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

1. Final 2014 estimates of sport fishery harvest and yield by IPHC regulatory area,
2. Preliminary 2015 estimates of harvest and yield by IPHC area,
3. Final 2014 and preliminary 2015 estimates of release mortality by IPHC area, and
4. Final 2014 and preliminary 2015 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.2015.06.pdf>

Southcentral Region creel sampling: <http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.2A.2013.12.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)*

Scott Meyer, Mike Jaenicke, Diana Tersteeg, and Barbi Failor  
Fishery Biologists

## **Final Estimates of 2014 Sport Harvest and Yield**

In November 2014, we provided preliminary estimates of the 2014 sport harvest for Areas 2C, 3A, 3B, and 4. This letter provides final estimates based on Alaska Department of Fish and Game (ADF&G) saltwater logbook data as of June 9, 2015, and final estimates from the ADF&G Statewide Harvest Survey (SWHS). The final estimates for Area 2C and 3A were also posted on the North Pacific Fishery Management Council web site in October of this year.

The Area 2C charter fishery regulations for 2014 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 76 inches. The Area 3A charter regulations included a two-fish bag limit with a maximum size on one of the fish of 29 inches, and a limit of one trip per charter vessel per day. 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 (unguided) fisheries statewide were also 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 North Pacific Council 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 halibut harvested at major ports in Areas 2C and 3A. All fish from each vessel-trip selected for sampling were measured. Two-stage 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 the Glacier Bay subarea included fish caught in Areas 3A and 2C. Only 1 of 202 fish caught in Area 3A and landed at sampled ports in Glacier Bay was caught by an unguided angler. Therefore, 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 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 weighted mean of the Kodiak charter and noncharter average weights as a proxy for average weight in Areas 3B and 4. Use of the Kodiak average weight may bias the yield estimates for these areas. Anecdotal reports from the Dutch Harbor/Unalaska area suggest that average weight is higher than at Kodiak.

As has been done historically, harvest for specific reporting locations in SWHS Area R (Alaska Peninsula and Aleutian Islands south of Cape Douglas) was apportioned to IPHC Areas 3B and 4. 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 (average = 131). We continue to report these Area 3A harvests in Area 3B because the number of SWHS responses on which they are based is too small to reliably apportion between charter and noncharter as well as between Areas 3A and 3B. Harvest estimates for SWHS Area R typically have low precision; the Area R harvest estimate for 2014 had a coefficient of variation of 31%. This approach has more impact on the Area 3B sport harvest estimate than the Area 3A estimate because the Area 3A harvest is relatively much larger. All charter harvest from Area 3A was included in the Area 3A charter estimates because they are based on logbook data.

### Results:

The 2014 Area 2C overall sport yield, excluding release mortality, was estimated at 1.954 million pounds (Table 1). The charter portion was 0.783 M lb (40%) and the noncharter portion was 1.170 M lb (60%). Estimated harvests (in numbers of fish) were 65,036 for the charter sector, 69,060 for the noncharter sector, and 134,096 overall. Average net weight was estimated at 12.04 lb for the charter harvest, 16.95 lb for the noncharter harvest, and 14.57 lb overall. Average weights were based on length measurements of 4,772 charter fish and 5,337 noncharter fish.

The Area 3A overall sport yield estimate was 3.565 M lb, with 2.032 M lb (57%) from the charter sector and 1.533 M lb (43%) from the noncharter sector (Table 1). Estimated harvests were 174,351 for the charter sector, 127,125 for the noncharter sector, and 301,476 halibut overall. Average net weight was estimated at 11.65 lb for the charter fishery, 12.06 lb for the noncharter fishery, and 11.82 lb overall. Average weight was estimated from length data from 5,682 charter halibut and 2,269 noncharter halibut.

Last year's preliminary estimates of charter harvest were about 5% higher than the final estimates in Areas 2C and 3A. The difference was due primarily to fewer halibut being harvested after July than predicted. The preliminary estimate was based on an expansion of logbook data through July using the trend in the proportion of harvest that has occurred through July in past years. In contrast, the noncharter projections were about 5% lower than the final estimates in both areas. Noncharter projections were simple exponential time series forecasts (SAS ESM procedure). Larger projection errors are normally expected for the noncharter fisheries because the harvest time series is quite variable.

The final harvest estimates for western areas were 469 halibut in Area 3B and 627 halibut in Area 4 (Table 1). Applying the Kodiak average weight of 14.70 lb resulted in yield estimates of 0.007 M lb in Area 3B and 0.009 M lb in Area 4. These final estimates were less than one-half of last year's preliminary estimates, again because preliminary estimates were based on simple exponential time series forecasts based on highly variable harvest time series.

### **Preliminary 2015 Estimates of Harvest and Yield**

#### Methods:

As in 2014, sport charter catch accounting in 2015 for Areas 2C and 3A is based on numbers of halibut reported harvested 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. As of mid-October, logbook data were entered and available for trips taken through July 31. Areas 2C and 3A are divided into several subareas closely corresponding to state management areas. Harvest data were available for each subarea through July. These data were 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 2006-2014 logbook data as of October 13, 2015. An additional adjustment was made to these forecasts to account for late logbook submissions and other reporting errors resolved in the final logbook data. These adjustments were done by subarea using the average change in logbook data from October to the final version over the previous three years. These minor adjustments increased the harvest in each area by less than 1%.

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 2014, so the Kodiak area average weight was again substituted for these areas.

### Results:

The preliminary 2015 halibut yield estimates for Area 2C, excluding release mortality, were 0.800 M lb for the charter sector and 1.124 M lb for the noncharter sector, for a total sport yield of 1.924 M lb (Table 2). Estimated harvests (in numbers of fish) were 68,092 for the charter sector, 64,124 for the noncharter sector, for a total sport harvest of 132,216 halibut. For the charter fishery, 64% of the reported harvest was projected to have been taken through the end of July, though the percentages varied by subarea. Average weights were 11.75 lb for the charter sector, 17.52 lb for the noncharter sector, and 14.55 lb overall. Average weights for Area 2C were based on length measurements of 5,239 charter halibut and 4,465 noncharter halibut.

The preliminary yield estimates for Area 3A were 2.035 M lb for the charter sector and 1.495 M lb for the noncharter sector, for a total sport fishery yield of 3.530 M lb (Table 2). Corresponding estimates of harvest were 160,353 charter halibut and 126,057 noncharter halibut, for a total of 286,410 halibut. Seventy percent of the charter harvest was projected to have been taken through the end of July. Estimated average weights in Area 3A were 12.69 lb for the charter harvest, 11.86 lb for the noncharter harvest, and 12.33 lb overall. Average weights were estimated from 4,698 charter and 2,621 noncharter halibut length measurements.

The preliminary harvests for 2015 were 733 halibut in Area 3B and 1,225 halibut in Area 4. Applying the overall (charter and noncharter) average weight of 13.53 lb from Kodiak resulted in yield projections of 0.010 M lb in Area 3B and 0.017 M lb in Area 4 (Table 2). Large confidence intervals indicate substantial uncertainty in these estimates due to use of a time series forecast applied to highly variable harvest estimates that are based on relatively low numbers of responses in the SWHS. Use of the Kodiak average weight as a proxy for average weight in these areas adds additional uncertainty.

### **Final 2014 and Preliminary 2015 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 were based on final logbook data for 2014 and a projection of logbook releases for 2015. As with charter harvest, the release numbers for trips through July 31 were expanded to the entire year using simple exponential forecasts of the proportion of releases through July 31 from 2006-2014 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 2014 was obtained from the SWHS. The projections for 2015 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 through modeling. For the noncharter fishery in Area 2C, and all fisheries in Areas 3A, 3B, and 4, the length distribution of released fish was estimated using a logistic model of the probability of retaining a fish as a function of length. The observed proportions of halibut harvest in each length group were divided by the predicted probability of keeping a halibut of that length to predict the catch and, by subtraction, the release numbers at each length. Modeling average weight for Areas 3B and 4 was problematic because no size data were available from the harvest. The Kodiak estimate of size composition was used as a proxy for length composition of the harvest in these areas.

The fisheries literature was searched for empirical relationships that could be exploited to fit the logistic model. Data collected on a variety of saltwater and freshwater species suggested that, at the 10<sup>th</sup> percentile for length in the harvest, an average of 22% of fish caught were retained. Likewise, at the 90<sup>th</sup> percentile for length, 83% of fish were retained on average. Therefore, parameters of the logistic model were selected for each subarea and sector by minimizing the relative difference between these empirical data points and their predicted values, while imposing the constraint that the predicted numbers of fish released equaled the final 2014 estimates or 2015 forecasts. The resulting length distributions of released fish were 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 2014 and 2015. In 2014, charter anglers were prohibited from harvesting fish between 44 and 76 inches in length. The protected slot was 42-80 inches in 2015. This required partitioning the released fish into size categories as follows: in 2014 the size classes were U44 (< 44 inches), 44-76, and O76 (≥ 76 inches). In 2015 the size classes were U42, 42-80, and O80. The proportions of fish in each size class were obtained from creel survey interviews where anglers were asked to classify their released fish by size class. The average weight of released fish in the U44 (2014) and U42 (2015) size classes was estimated using the modeling procedure 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. We have also begun exploration of a Bayesian model to estimate the size composition of released fish using some of the same data inputs as above.

#### Results:

For 2014, estimated U26 release mortality was 0.004M lb in Area 2C, 0.014M lb in Area 3A, and virtually zero in Areas 3B and 4 (Table 3). Estimated O26 release mortality was 0.058 M lb in Area 2C, with 0.044 M lb of that coming in the charter fishery. The size class breakdown of the 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 greater in the 44-76 inch protected slot because of the higher average weight (Table 4). Estimated O26 release mortality in Area 3A was 0.056 M lb, with 0.034 M lb from the charter fishery (Table 3). Areas 3B and 4 each had negligible amounts of release mortality from the sport fishery.

Preliminary estimates of release mortality for 2015 were similar in magnitude to 2014 estimates. Mortality of U26 halibut was 0.003 M lb in Area 2C, 0.014 M lb in Area 3A, and virtually zero in Areas 3B and 4 (Table 5). Mortality of O26 releases in Area 2C was estimated at 0.064 M lb, with 0.047 M lb of that from the charter fishery. Of the O26 charter release mortality in Area 2C, about one-half was due to releases of fish in the 42-80 inch size class (Table 4). Mortality of O26 releases in Area 3A was 0.056 M lb, with similar contributions from the charter and noncharter fisheries (Table 5). The O26 release mortality was negligible in Area 3B and less than 0.001 M lb in Area 4.

The 2014 total sport fishery removals, including harvest and all sizes of release mortality, added up to 2.016 M lb in Area 2C and 3.635 M lb in Area 3A. Release mortality made up 3.1% of all Area 2C removals and 1.9% of Area 3A removals. For 2015, total sport removals were 1.991 M lb in Area 2C and 3.600 M lb in Area 3A. Release mortality accounted for 3.4% of Area 2C removals and 1.9% of Area 3A removals in 2015.

### **Sport Fishery Yield Prior to the Mean IPHC Survey Dates in 2014 and 2015 (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 2014 were July 1 in Area 2C and July 7 in Area 3A. The mean survey dates for 2015 were July 3 in Area 2C and June 18 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 2014 was obtained from logbook harvest data. For 2015, the preliminary estimate was based on the average proportion of logbook harvest prior to the mean survey date over the last three years. 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 2014 final estimated harvests or the 2015 projected 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:

For 2014, an estimated 0.537 M lb of halibut were taken by the sport fishery in Area 2C prior to July 1, and an estimated 1.464 M lb were taken in Area 3A prior to July 7. For 2015, an estimated 0.592 M lb of halibut were harvested by the sport fishery in Area 2C prior to July 3, and about 0.678 M lb of halibut were taken in Area 3A prior to June 18 (Table 6). About 31% of the 2015 overall sport harvest was projected to have been taken prior to the mean survey date in Area 2C, compared with about 19% in Area 3A. The preliminary estimates will be updated next year once logbook data, interview data, and SWHS estimates are finalized.

Table 1. Final estimates of the 2014 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 (M lb)	95% CI for Yield (M lb)
Area 2C	Charter	65,036	12.04	0.783	0.757 – 0.810
	Noncharter	69,060	16.95	1.170	1.035 – 1.306
	Total	134,096	14.57	1.954	1.816 – 2.092
Area 3A	Charter	174,351	11.65	2.032	1.934 – 2.130
	Noncharter	127,125	12.06	1.533	1.382 – 1.684
	Total	301,476	11.82	3.565	3.317 – 3.812
Area 3B	Total	469	14.70 <sup>a</sup>	0.007	NA
Area 4	Total	627	14.70 <sup>a</sup>	0.009	NA

<sup>a</sup> – No size data were available from Areas 3B and 4, so the combined charter/noncharter average weight from Kodiak was substituted.

Table 2. Preliminary estimates of the 2015 sport halibut harvest (numbers of fish), average net weight (pounds), and yield (millions of pounds net weight) in Areas 2C, 3A, 3B, and 4.

IPHC Area	Sector	Harvest (no. fish)	Average Net Wt. (lb)	Yield (M lb)	95% CI for Yield (M lb)
Area 2C	Charter	68,092	11.75	0.800	0.753 – 0.847
	Noncharter	64,124	17.52	1.124	0.877 – 1.371
	Total	132,216	14.55	1.924	1.672 – 2.175
Area 3A	Charter	160,353	12.69	2.035	1.878 – 2.193
	Noncharter	126,057	11.86	1.495	1.233 – 1.756
	Total	286,410	12.33	3.530	3.225 – 3.835
Area 3B	Total	733	13.53 <sup>a</sup>	0.010	0.000 – 0.023
Area 4	Total	1,225	13.53 <sup>a</sup>	0.017	0.000 – 0.044

<sup>a</sup> – No size data were available from Areas 3B and 4, so the combined charter/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 2014. 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 Weight (lb)	Release Mortality (M lb)
Area 2C	U26	Charter	8,742	6.0%	524	3.60	0.002
		Noncharter	9,881	7.0%	692	3.61	0.002
		Total	18,623		1216	3.61	0.004
	O26	Charter	36,347	6.0%	2,181	19.98	0.044
		Noncharter	20,765	7.0%	1,454	9.66	0.014
		Total	57,112		3,634	15.85	0.058
Area 3A	U26	Charter	48,308	5.0%	2,415	3.91	0.009
		Noncharter	22,998	6.0%	1,380	3.30	0.005
		Total	71,307		3,795	3.69	0.014
	O26	Charter	94,023	5.0%	4,701	7.33	0.034
		Noncharter	40,694	6.0%	2,442	8.65	0.021
		Total	134,717		7,143	7.78	0.056
Area 3B	U26	Total	10	6.0%	1	3.14	0.000
	O26	Total	17	6.0%	1	7.96	0.000
Area 4	U26	Total	141	6.0%	8	3.17	0.000
	O26	Total	265	6.0%	16	8.87	0.000

Table 4. Breakdown of Area 2C estimates of O26 charter release mortality by size class for 2014 (final) and 2015 (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 Weight (lb)	Release Mortality (M lb)
2014	O26U44	29,677	6.0%	1,781	8.67	0.015
	O44U76	6,328	6.0%	380	61.50	0.023
	O76	343	6.0%	21	232.84	0.005
	Total O26	36,347		2,181	19.98	0.044
2015	O26U42	22,057	6.0%	1,323	9.40	0.012
	O42U80	6,763	6.0%	406	56.35	0.023
	O80	825	6.0%	49	244.70	0.012
	Total O26	29,645		1,779	26.66	0.047

Table 5. Preliminary estimates of release mortality for sport fisheries in Areas 2C, 3A, 3B, and 4 in 2015. 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 Weight (lb)	Release Mortality (M lb)
Area 2C	U26	Charter	5,635	6.0%	338	3.26	0.001
		Noncharter	10,124	7.0%	709	3.24	0.002
		Total	15,759		1,047	3.25	0.003
	O26	Charter	29,645	6.0%	1,779	26.66	0.047
		Noncharter	23,600	7.0%	1,652	10.34	0.017
		Total	53,245		3,431	18.80	0.064
Area 3A	U26	Charter	47,719	5.0%	2,386	3.72	0.009
		Noncharter	26,178	6.0%	1,571	3.46	0.005
		Total	73,898		3,957	3.62	0.014
	O26	Charter	71,309	5.0%	3,565	7.65	0.027
		Noncharter	63,052	6.0%	3,783	7.71	0.029
		Total	134,361		7,349	7.68	0.056
Area 3B	U26	Total	198	6.0%	12	3.12	0.000
	O26	Total	428	6.0%	26	8.27	0.000
Area 4	U26	Total	402	6.0%	24	3.22	0.000
	O26	Total	1,123	6.0%	67	8.39	0.001

Table 6. Estimated sport harvest prior to the mean IPHC survey dates in 2014 (final) and 2015 (preliminary) in Areas 2C and 3A.

Year	Area	Mean Survey Date	Charter		Noncharter		Total	
			Percent	Harvest (M lb)	Percent	Harvest (M lb)	Percent	Harvest (M lb)
2014	2C	July 1	27.5%	0.215	27.5%	0.322	27.5%	0.537
	3A	July 7	37.0%	0.752	46.4%	0.712	41.1%	1.464
2015	2C	July 3	28.3%	0.227	32.5%	0.366	30.8%	0.592
	3A	June 18	17.7%	0.360	21.3%	0.319	19.2%	0.678

Revised estimates for 2014 (revised 11/23/15):

Table 1. Final estimates of the 2014 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 (M lb)	95% CI for Yield (M lb)
Area 2C	Charter	65,036	12.04	0.783	0.757 – 0.810
	Noncharter	69,060	16.95	1.170	1.035 – 1.306
	Total	134,096	14.57	1.954	1.816 - 2.092
Area 3A	Charter	174,351	<b>11.67</b>	<b>2.034</b>	<b>1.899 – 2.170</b>
	Noncharter	127,125	12.06	1.533	<b>1.380 – 1.686</b>
	Total	301,476	<b>11.83</b>	<b>3.567</b>	<b>3.364 – 3.772</b>
Area 3B	Total	469	14.70 <sup>a</sup>	0.007	NA
Area 4	Total	627	14.70 <sup>a</sup>	0.009	NA

<sup>a</sup> – No size data were available from Areas 3B and 4, so the combined charter/noncharter average weight from Kodiak was substituted.

This table was not provided earlier, but you may find it useful. Discard mortality estimates were unchanged, therefore total sport removals for Area 3A are as follows:

Sector	Yield (M lb)	RelMort (all sizes, M lb)	Total Removals (M lb)
Charter	<b>2.034</b>	0.043	<b>2.077</b>
Noncharter	1.533	0.026	1.559
Total	<b>3.567</b>	0.070	<b>3.637</b>