

## CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE REPORT ON RECREATIONAL PACIFIC HALIBUT CATCH ESTIMATES

The California Department of Fish and Wildlife (CDFW) provides the following update on recreational catch estimates of Pacific halibut from California.

### **Corrections to Final Annual Estimates**

California Recreational Fisheries Survey (CRFS) staff regularly review their catch estimation programs to verify and cross-check outputs for accuracy. A recent examination of programming language revealed the conversion from round to net weight for Pacific halibut was inadvertently excluded from the catch estimate calculation. Therefore, CDFW has been reporting round weight rather than net weight for management use in 2015-2017. Prior to 2015, the round to net weight conversions were calculated by hand outside of the programs used to generate catch estimates.

This error has resulted in over-reporting of catch, and closing of fisheries earlier than was necessary. Revised estimates based on net weight are provided below in Table 1. Consistent with west coast and International Pacific Halibut Commission (IPHC) protocols, all future CDFW reporting will occur in net weight.

Table 1. Revised recreational Pacific halibut catch estimates for California from 2015-2017. Corrected net weight estimates are provided below. Data for 2017 are preliminary and incomplete.

	2015		2016		2017	
	Round Weight	Net Weight	Round Weight	Net Weight	Round Weight	Net Weight
<b>May</b>	378	284	2,322	1,746	2,181	1,640
<b>June</b>	1,783	1,341	5,658	4,254	9,230	6,940
<b>July</b>	13,768	10,352	5,558	4,179	6,094	4,582
<b>August</b>	8,977	6,750	11,025	8,290	19,172	14,415
<b>September</b>	-	-	6,331	4,760	3,942	2,964
<b>October</b>	-	-	-	-	-	-
<b>Total</b>	24,906	18,727	30,894	23,229	40,619	30,541

### **2017 Inseason Catch Tracking**

Monthly estimates produced by CRFS serve as CDFW’s best estimate of catch. However, production of these estimates involves a time lag of about six weeks after the month’s end. Therefore, CDFW uses weekly projections to approximate catch for any months for which CRFS estimates are not yet available – allowing for timely estimation of cumulative catch during the season. As the CRFS estimates for a given month became available<sup>1</sup>, those monthly estimates replace the total monthly projection values for that month.

<sup>1</sup> Please see the November 2015 CDFW Report on Recreational Fishing Estimates: [http://www.pcouncil.org/wp-content/uploads/2015/11/B1a\\_Sup\\_CDFW\\_Rpt\\_CRFS\\_Estimates\\_Nov2015BB.pdf](http://www.pcouncil.org/wp-content/uploads/2015/11/B1a_Sup_CDFW_Rpt_CRFS_Estimates_Nov2015BB.pdf)

The 2017 recreational Pacific halibut fishery in California was open May 1-June 15, July 1-15, August 1-15, and September 1-10. The fishery closed for the year on September 11, due to projected attainment of the quota. CDFW coordinated weekly with the NMFS, IPHC, and Pacific Fishery Management Council staff to track catches and take action to close the fishery once the quota was projected to be attained.

In light of the discovery that reported catch estimates for 2015 through 2017 were not in net weight, CDFW updated both the total monthly projections and catch estimates for 2017 (Table 2). CDFW’s 2017 preliminary season catch estimate is 30,541 net pounds, or 88 percent of the 34,580 net pound quota.

Table 2. Corrected 2017 Pacific halibut catch estimates in California by month. CDFW projection values are provided in ~~strikeout~~ to illustrate the process of replacing the projections with CRFS estimates when those estimates became available. Data are from CRFS and are preliminary and subject to change.

Month	Net Pounds Accrued	
	CDFW Projection	CRFS Estimate
May	<del>2,674</del>	1,640
June	<del>4,525</del>	6,940
July	<del>3,805</del>	4,582
August	<del>11,003</del>	14,415
September	<del>2,982</del>	2,964
October	0 (CLOSED)	
<b>Total</b>	<b>30,541</b>	

### **2018 Inseason Projections**

In order to provide weekly catch projections, CDFW uses a regression to determine about how many net pounds of estimated catch are equivalent to one sampled fish<sup>2</sup>. CDFW updated the regression to include data from 2017, and incorporated the corrected net weight estimates of catch from 2015-2017.

CDFW examined the number of sampled fish (kept sampler observed and kept angler reported fish) in each month/year against the corresponding catch estimate for each month/year (

Table 3). There continues to be a very strong correlation (Figure 1) between the number of sampled fish and the resulting monthly catch estimate ( $r^2 = 0.90$ ).

The updated regression analysis indicates that each sampled Pacific halibut in the field equates to 106.3 pounds of estimated catch in net weight pounds– independent of month or year.

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<sup>2</sup> For a detailed description of the inseason projection methodology see the CDFW Supplemental Report 2 from November 2014:

[http://www.pcouncil.org/wp-content/uploads/G1b\\_Sup\\_CDFW\\_Rpt2\\_NOV2014BB.pdf](http://www.pcouncil.org/wp-content/uploads/G1b_Sup_CDFW_Rpt2_NOV2014BB.pdf)

CDFW intends to use this updated regression relationship to monitor catches inseason on a weekly basis in 2018, as in past recent years.

Table 3a-b. Numbers of sampled fish (kept sampler observed and kept angler reported fish) (a) and total catch estimates (b; net pounds) for recreationally caught Pacific halibut in California by month and year from 2013-2017 for PR and PC modes. Data from CRFS; 2017 data are preliminary.

(a)

	2013	2014	2015	2016	2017
<b>May</b>	18	45	3	37	26
<b>June</b>	34	21	15	40	44
<b>July</b>	56	198	113	44	37
<b>August</b>	176	NA	86	82	107
<b>September</b>	23	44	NA	66	29
<b>October</b>	13	3	NA	NA	NA
<b>Yearly Total</b>	320	308	217	269	243

(b)

	2013	2014	2015	2016	2017
<b>May</b>	1,282	4,795	284	1,746	1,640
<b>June</b>	5,419	2,779	1,341	4,254	6,940
<b>July</b>	12,446	20,124	10,352	4,179	4,582
<b>August</b>	19,179	NA	6,750	8,290	14,415
<b>September</b>	2,554	3,293	NA	4,760	2,964
<b>October</b>	2,374	235	NA	NA	NA
<b>Yearly Total</b>	<b>43,254</b>	<b>31,227</b>	<b>18,727</b>	<b>23,229</b>	<b>30,541</b>

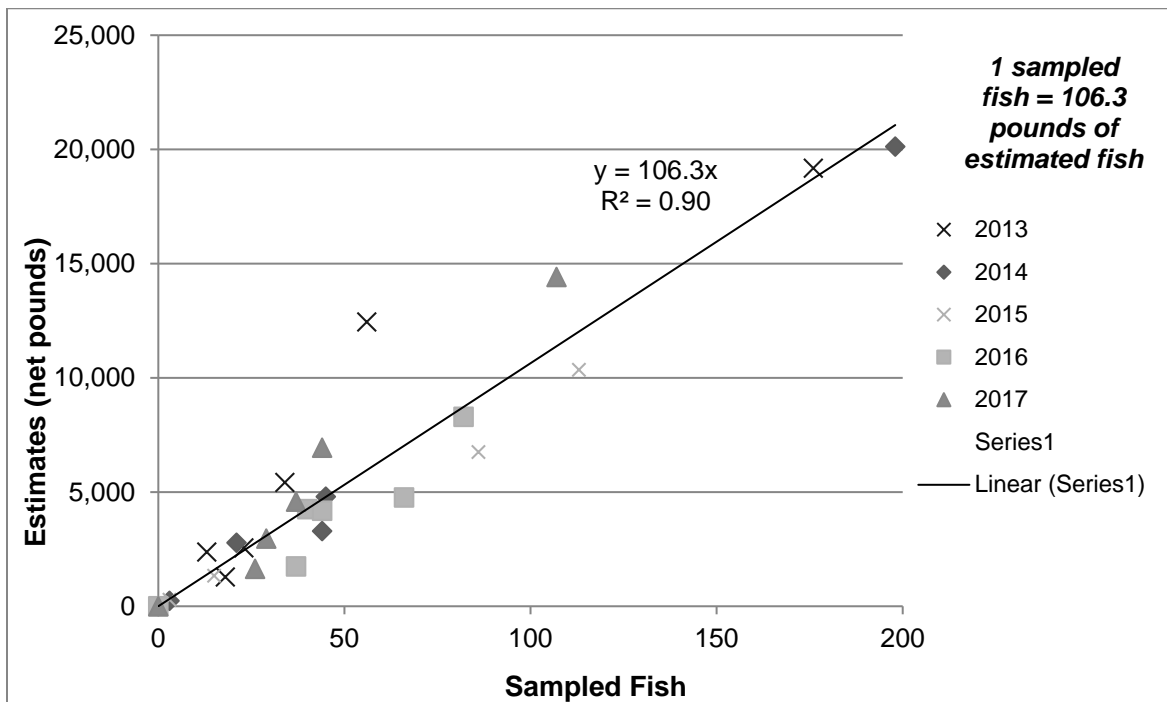


Figure 1. Regression of sampled (sampler examined, A, and angler reported kept, B1) Pacific halibut and monthly catch estimates from 2013-2017 (net pounds) for PR and PC modes. Data from CRFS; 2017 data are preliminary.

### **Upcoming Plans for Review of Estimation Methods**

Catch estimates are produced at a District level, with most Pacific halibut catch coming from District 6 (OR/CA border to Cape Mendocino). As monthly catch estimates became available throughout the 2017 season, staff subsequently identified a larger than expected difference between the total projected catch amounts in some months compared to the monthly catch estimates that are produced by CRFS six weeks after the month's end. In addition to the net weight – round weight issue (previously discussed), there may be an issue with low sample sizes in the Party/Charter (PC) mode in District 5 (covering Cape Mendocino to Point Arena), which resulted in unrealistic estimates in some months.

CDFW Groundfish and CRFS staff will undertake a review of PC sampling levels and estimation procedures for Pacific halibut to determine if additional steps can be taken to reduce discrepancies between weekly catch projections and monthly CRFS catch estimates.

CDFW also plans to revisit the Private/Rental (PR) Private Access or Night (PAN) mode estimates that were identified in 2012 as being too uncertain for use in estimating the state's recreational Pacific halibut catch in these areas/modes. The PR-PAN component was expected to be a minor contribution to the Pacific halibut catch; and information available from CRFS in the most recent years should allow for review of this assumption.