

5.8 Pacific halibut tagging studies

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Abstract

Since the International Pacific Halibut Commission (IPHC) began tagging studies in 1925, over 462,000 tagged Pacific halibut (*Hippoglossus stenolepis*) have been released and more than 51,000 of these releases have been recovered. Pacific halibut are tagged to study migration, utilization, age, growth, and mortality. The IPHC conducted three tagging experiments in 2016 in which 798 fish were tagged and released. Sixty-four tagged Pacific halibut, representing recoveries from several different IPHC experiments and sport tag releases, were recaptured in 2016. Otoliths were collected from 21 of the fish recovered with tags.

Introduction

Since the International Pacific Halibut Commission (IPHC) began tagging in 1925, over 462,000 tagged Pacific halibut have been released. To date, more than 51,000 of these releases have been recovered. Pacific halibut are tagged to study migration, utilization, age, growth, and mortality. Of the recovered tagged Pacific halibut, over 39,000 were measured for length when recovered, and over 31,000 had otoliths collected for age determination.

Tag releases

IPHC tag experiments

The IPHC tagged and released 763 U32 Pacific halibut (<82 cm fork length) with plastic-coated wire opercular tags in 2016 in the second year of a long-term effort to tag young halibut. Wire-tagging took place on four vessels in 2016. A total of 594 Pacific halibut were tagged on two vessels conducting the National Marine Fisheries Service (NMFS) trawl surveys in the Bering Sea (n=424, Sadorus et al. 2017a) and Aleutian Islands (n=170, Sadorus et al. 2017b). A total of 169 tags were released by the two vessels chartered for the IPHC fishery-independent setline survey in Regulatory Area 4D (Forsberg 2017).

The IPHC also tagged and released 35 Pacific halibut with pop-up satellite transmitting archival (PAT) tags in the Bering Sea in 2016 in a continuation of earlier PAT tag releases (2004-2008) looking at spawning migration and inter-annual dispersal (Loher 2017).

Sport tag releases

The IPHC continued to provide tags on a cost-recovery basis for two Alaskan sport fishing derbies in 2016. The Homer Jackpot Halibut Derby tagged and released 115 fish and the annual Seward Halibut Tournament tagged and released 30 fish. Both the Homer and Seward sport derbies use plastic-coated wire opercular tags. These tags are printed with the year, Derby/Tournament name, and tag number.

Other releases

The IPHC was part of a collaborative effort to investigate discard mortality rates (DMRs) of trawl-caught Pacific halibut in the Bering Sea following expedited release. A total of 160 Pacific halibut were tagged with PAT tags capable of detecting movement (swimming), which could in turn be interpreted as evidence of fish survival. Study details and results will be reported at a later date.

The IPHC issued a permit to Gray FishTag Research (GFTR)¹ to tag up to 250 Pacific halibut out of Seward during June through September, 2016. GFTR was interested in looking at local movement of the fish they tagged. Tagging was conducted from a local sport charter vessel using sport hook-and-line gear. GFTR representatives tagged and released eight Pacific halibut with green spaghetti dart tags.

Tag recoveries

Tag recoveries from a total of 33 Pacific halibut from various IPHC tagging experiments were reported in 2016, as well as 31 tags from sport tagging programs. Otoliths were collected from 21 of the IPHC-tagged Pacific halibut recovered. Recoveries by experiment or tag type are discussed below. Total release and recovery numbers for the most recent major IPHC tagging experiments are presented in [Table 1](#). Current-year recoveries of tagged Pacific halibut from sport tagging programs are presented in [Table 2](#). Sport-tagged halibut are usually measured when recovered but otoliths are not collected.

Recoveries from experiments using wire tags only

In 2016, four tags were recovered from the 2010 Aleutian wire tagging experiment, a study designed to identify potential future tagging sites for archival tag releases in Area 4B (Loher 2011). Six Pacific halibut tagged during the 2015 NMFS trawl survey were recovered (Forsberg et al. 2016); one fish had been released in the Bering Sea and five had been released in the Gulf of Alaska. All six fish were recovered in the same regulatory area they were released in.

Recoveries from archival and dummy archival tag experiments

Tags from 22 fish from the 2013 dummy archival tag experiment in Regulatory Area 3A designed to evaluate different tag attachment methods (Loher and Geernaert 2014) were returned in 2016. Seventeen of these fish had been tagged with both a dummy archival dart tag and a plastic-coated wire cheek tag, and five had been tagged with only an external dummy archival tag attached to the operculum; the purpose of this study was to evaluate different attachment methods for archival tags.

Recoveries from pop-up satellite transmitting archival (PAT) tag experiments

In 2016, one PAT tag leader was recovered from a fish tagged as part of the 2014 Salish Sea PAT tag study (Loher 2015).

¹Gray FishTag Research. 803 SW 14th Court, Pompano Beach, FL 33060, USA <http://grayfishtagresearch.org/>

Sport tag recoveries

Sixteen tags from the 2016 Homer Derby were recovered. Additionally, 13 tags from previous Homer Derby releases were recovered in 2016: four from each of the 2015 and 2014 derbies, three from the 2013 derby, and two from the 2012 derby. Twenty-seven of the Homer Derby tags recovered in 2016 were recovered by sport fishers out of Homer and most were caught during the Derby. One Homer Derby tag was recovered on the IPHC setline survey in Area 3A and one was recovered on a sport fishing trip out of Seward.

Two tags from the 2016 Seward Halibut Tournament were recovered by sport fishers during the tournament.

References

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Table 1. Total recovery rates for the most recent major Pacific halibut tagging experiments.

Experiment	Reg. Area of release	Release year(s)	Number released	Number recovered to date	Number reported in 2016	Recov. rate
Longline mortality	3A, 3B	1993-94	13,096	1,123	0	9%
Trawl mortality	3A	1995	4,852	178	0	4%
Wire/PIT double-tagging (3A)	3A	2001	281	30	0	11%
Wire/PIT double-tagging (2B)	2B	2003	2,661	731	0	27%
PIT tagging (coastwide)	2A through 4D	2003	43,999	2,266	0	5%
PIT tagging (2B and 3A)	2B, 3A	2004	23,437	1,179	0	5%
PAT tagging Gulf spawning	2B, 2C, 3A, 3B	2002	12	0*	0	0%
PAT tagging Bering Sea spawning	4C, 4D	2002	12	0*	0	0%
PAT tagging Bering Sea spawning	4B	2004	25	1*	0	4%
PAT tagging Gulf migration timing	2B, 2C, 3A, 3B	2005	49	15*	0	31%
PAT tagging Bering Sea spawning	4A, 4D	2006	24	2*	0	8%
PAT tagging Area 2 dispersal	2A, 2B	2006	78	12*	0	15%
PAT tagging Bering Sea dispersal	4A, 4B, 4C, 4D	2008	115	7*	0	4%
PAT tagging Bering Sea dispersal	4A, 4C, 4D	2009	17	1*	0	6%
Archival tagging (2B)	2B	2008	166	22	0	13%
Wire/dummy archival double-tagging	3A	2009	200	48	0	24%
Aleutian wire tagging	4B	2010	773	47	4	6%
Geomagnetic-sensing archival	2C, 3A	2011	30	2	0	7%
External dummy archival attachment	3A	2013	901	93	22	10%
PAT tagging Salish Sea dispersal	2A	2014	12	3*	1*	25%
Gulf of Alaska NMFS trawl tagging	2C, 3, 4A	2015	1,491	5	5	<1%
Bering Sea NMFS trawl tagging	4A, 4CDE, CLS	2015-16	910	4	1	<1%
Aleutian Islands NMFS trawl tagging	4B	2016	170	0	0	0
Setline survey U32 wire tagging	4D	2016	169	0	0	0
PAT tagging Bering Sea spawning	4D	2016	20	0*	0	0
PAT tagging Bering Sea dispersal	4D	2016	15	0*	0	0

* refers to physical recovery of tagged fish, not pop-up data broadcast to satellite

Table 2. Recoveries of sport-tagged Pacific halibut in 2016.

Release source	Number recovered in 2016
Homer Jackpot Halibut Derby	29
Seward Halibut Tournament	2