FAO-BASED RESPONSIBLE FISHERY MANAGEMENT CERTIFICATION SURVEILLANCE REPORT (NO.2)

For The

Alaska Pacific Halibut Commercial Fishery

Facilitated By the

Alaska Seafood Marketing Institute (ASMI)

Assessors: **Vito Ciccia Romito, Lead Assessor**
Geraldine Criquet, Assessor
Erica Fruh, Assessor

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Global Trust Certification Ltd.
Head Office, 3rd Floor, Block 3,
Quayside Business Park,
Mill Street, Dundalk, Co. Louth.
T: +353 42 9320912
F: +353 42 9386864
web: www.GTCert.com

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I. Summary and Recommendations

The Alaska Seafood Marketing Institute (ASMI), requested an assessment of the Alaska Pacific halibut (*Hippoglossus stenolepis*) commercial fisheries according to the FAO Based Responsible Fisheries Management (RFM) Certification Program. The application was made in April 2010. Assessment commenced in April 2010 with assessment validation before proceeding to full assessment and final certification determination in April 2011. The first surveillance report was carried out in and terminated in mid-2012.

This report is the **2nd Surveillance Report (ref: AK/HAL/001.2/2013)** for the Alaska Pacific Halibut commercial fisheries following Certification award against the FAO-Based RFM Program, on the 28th April 2011. The objective of the Surveillance Report is to monitor for any changes/updates (after 12 months) in the management regime, regulations and their implementation since the previous assessment (in this case 1st Surveillance) and to determine whether these changes (if any) and current practices remain consistent with the overall confidence rating scorings of the fishery allocated during initial certification.
In addition to this, any areas reported as "items for surveillance" or corrective action plans (following identified non-conformance) in the previous assessment are reassessed and a new conclusion on consistency of these items with the Conformance Criteria is given accordingly. Non-conformances were identified neither during the full nor the 1st surveillance assessment. Consequently, no formal corrective action plans were issued. However, a number of issues relating to the estimation of bycatch in the halibut fleet were identified for review as item for surveillance during the 1st surveillance activities.

The certification covers the Pacific halibut (*Hippoglossus stenolepis*) commercial fisheries employing benthic longline gear within the IPHC's Regulatory Areas 2C, 3A, 3B, 4B and 4CDE, within Alaska jurisdiction (200 nautical miles EEZ), under international [International Pacific Halibut Commission (IPHC)], federal [National Marine Fisheries Services (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG)] management.

The surveillance assessment was conducted according to the Global Trust Certification procedures for FAO – Based Responsible Fisheries Management Certification using the FAO – Based RFM Conformance Criteria V1.2 fundamental clauses as the assessment framework.

The assessment was conducted by a team of Global Trust appointed Assessors comprising of one externally contracted fishery expert and Global Trust internal staff. Details of the assessment team are provided in Appendix 1.

The main Key outcomes have been summarized in Section 5 "Assessment Outcome Summary".

II. Assessment Team Details

Vito Ciccia Romito, Lead Assessor
Global Trust Certification Ltd.
Quayside Business Centre,
Dundalk, Co. Louth, Ireland.
T: +353 (0)42 9320912
F: +353 (0)42 9386864

Dr. Géraldine Criquet, Assessor
Global Trust Certification Ltd.
Quayside Business Centre,
Dundalk, Co. Louth, Ireland.
T: +353 (0)42 9320912
F: +353 (0)42 9386864

Erica Fruh, Assessor
Newport, Oregon
United States of America

Dave Garforth, Assessor
Global Trust Certification Ltd.
Quayside Business Centre,
Dundalk, Co.Louth, Ireland,
T: +353 (0)42 9320912
F: +353 (0)42 9386864
M: +353 (0)87 7978480

1. Introduction

This Surveillance Report documents the 2nd Surveillance Assessment (2013) of the Alaska Pacific halibut commercial fisheries originally certified on April 28th 2011, and presents the recommendation of the Assessment Team and the Certification Committee for continued FAO-Based RFM Certification.

Unit of Certification
The Pacific halibut (*Hippoglossus stenolepis*) commercial fisheries employing benthic longline gear within the IPHC's Regulatory Areas 2C, 3A, 3B, 4B and 4CDE, within Alaska jurisdiction (200 nautical miles EEZ), under international [International Pacific Halibut Commission (IPHC)], federal [National Marine Fisheries Services (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG)] management, underwent their 2nd surveillance assessment against the requirements of the FAO-Based RFM Conformance Criteria Version 1.2 Fundamental clauses.

This 2nd Surveillance Report documents the assessment result for the continued certification of commercially exploited Pacific halibut fisheries to the FAO-Based RFM Certification Program. This is a voluntary program that has been supported by ASMI who wishes to provide an independent, third-party accredited certification that can be used to verify that these fisheries are responsibly managed according to the FAO-Based RFM Program.

The assessment was conducted according to the Global Trust procedures for FAO-Based RFM Certification using the fundamental clauses of the FAO-Based RFM Conformance Criteria Version 1.2 (Sept 2011) in accordance with EN45011/ISO/IEC Guide 65 accredited certification procedures. The assessment is based on the fundamental clauses specified in the FAO-Based RFM Conformance Criteria.

The assessment is based on 6 major components of responsible management derived from the FAO Code of Conduct for Responsible Fisheries (1995) and Guidelines for the Eco-labelling of products from marine capture fisheries (2009); including:

A The Fisheries Management System
B Science and Stock Assessment Activities
C The Precautionary Approach
D Management Measures
E Implementation, Monitoring and Control
F Serious Impacts of the Fishery on the Ecosystem

These six major components are supported by 13 fundamental clauses (+ 1 in case of enhanced fisheries) that guide the FAO-Based RFM Certification Program surveillance assessment.

A summary of the site meetings is presented in Section 4. Assessors included both externally contracted fishery experts and Global Trust internal staff (Appendix 1).

1.1. Recommendation of the Assessment Team

Following this 2nd Surveillance Assessment, in 2013, the assessment team recommends that continued Certification under the FAO-Based Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fisheries, the Pacific halibut (*Hippoglossus stenolepis*) commercial fisheries employing benthic longline gear within the IPHC's Regulatory Areas 2C, 3A, 3B, 4B and 4CDE, within Alaska jurisdiction (200 nautical miles EEZ), under international [International Pacific Halibut Commission (IPHC)], federal [National Marine Fisheries Services (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG)] management.

2. Fishery Applicant Details

Applicant Contact Information			
Organization/ Company Name:	**Alaska Seafood Marketing Institute**	Date:	**April 2010**
Correspondence Address:	**International Marketing Office and Administration** **Suite 200**		
Street :	**311 N. Franklin Street**		
City :	**Juneau**		
State:	**Alaska AK 99801-1147**		
Country:	***USA***		
Phone:	**(907) 465-5560**	**E-mail Address:**	***info@alaskaseafood.org***
Key Management Contact Information			
Full Name:	*(Last)* **Rice**	*(First)* **Randy**	
Position:	***Seafood Technical Program Director***		
Correspondence Address:	***U.S. Marketing Office*** ***Suite 310***		
Street :	**150 Nickerson Street**		
City :	***Seattle***		
State:	***Washington 98109-1634***		
Country:	***USA***		
Phone:	**(206) 352-8920**	**E-mail Address:**	*marketing@alaskaseafood.org*
Nominated Deputy:	***As Above***		
Deputy Phone:	**As Above**	**Deputy E-mail Address:**	**rrice@alaskaseafood.org**

3. Unit of Certification

Unit of Certification			
U.S. ALASKA PACIFIC HALIBUT COMMERCIAL FISHERIES			
Fish Species (Common & Scientific Name)	***Geographical Location of Fishery***	***Gear Type***	***Principal Management Authority***
Pacific halibut *(Hippoglossus stenolepis)*	*Gulf of Alaska* *and* *Bering Sea & Aleutian Islands*	*Benthic longline*	*International Pacific Halibut Commission (IPHC)* *National Marine Fisheries Service (NMFS)* *North Pacific Fishery Management Council (NPFMC)* *Alaska Department of Fish and Game (ADFG)*

4. Surveillance Meetings

Date, time	Organization	Representatives	Item discussed
5th March 2013, 13.00-15.00	International Pacific Halibut Commission (IPHC), Seattle,	Bruce Leaman (Executive Director), Stephen Keith (Assistant Director), Gregg Williams (Research Program Manager), Heather Gilroy (Fisheries Statistics Program Manager), Steve Martell (Quantitative Scientist), Ian Stewart (Quantitative Scientist) Vito Romito (GTC), Geraldine Criquet (GTC)	• Commercial and sport fisheries regulations: no changes, a reverse slot limit allowing the retention of halibut if ≤45 in or ≥68 in was adopted for the charter fishery Area 2C, no in-season management in Alaska. • Same geographical distribution of halibut catches. • Fishery independent data collection: same fixed survey stations since 2006, proposal to expand the survey in 2014, no changes in seabird data collection, record of marine mammals depredation, there is no external review of the survey methodology, young halibut caught during the BSAI trawl survey can be used for recruitment evaluation. • Fishery dependent data collection: improvement for taking into account landings outside Alaska (e-landings are now available for Washington), restructured observer program started in January 2013, observer coverage vessels ≥ 40 feet, less observer coverage for trawlers affecting estimation of halibut bycatch in non-target fisheries, data expectation from the new observer program especially catch and release of undersized halibut, no VMS requirement except in the BSAI, logbooks mandatory for vessels ≥ 26 feet, high priority for the IPHC is the bycatch reporting.

			• Halibut stock assessment: retrospective bias has been addressed and the assessment is now consistent with observed trends in abundance, the halibut stock decline have slowed and the stock trajectory is now relatively flat at 35% above target reference point, continued poor size-at-age, no strong recruitment in recent years. • Decision making framework: more inclusion of uncertainties, provide management with a long term integrated alternative, 3 years forecasts. • Industry collaboration in research activities: Research Advisory Board • Bycatch dynamics and avoidance mechanisms • Handling techniques to minimize the mortality of juveniles or sublegal individuals: careful release regulation (3 techniques). • Gear conflicts with other users: occasional conflicts between trawlers and longliners around Kodiak and in the Bering Sea. • Relationship between oceanic/climatic parameters and halibut growth: no relationship between Pacific Decadal Oscillation (PDO) and halibut growth and recruitment. • Ecological importance and role of halibut in relation to food web: Ecosystem SAFE. • New research programs on halibut ecology and biology: intra-specific and inter-specific competition, diet composition, effect on temperature on halibut growth. • Bait: Pollock, salmon, squid, herring, cod, no quantification of

			the amount of bait used for the halibut fishery. All these species are actively managed by either the federal or state managers in Alaska. • Shark bycatch: dogfish, sleeper shark, salmon shark.
7th March 2013, 14:30-16:00	U.S. Coast Guard (USCG), Juneau	Lt Tony Kenne Vito Romito (GTC), Geraldine Criquet (GTC)	• Halibut fleet size: for fiscal year 2012, the active fleet size for IFQ halibut was 1879 vessels. • Enforcement activities: from fiscal year 2008 to the end of 2012, the USCG conducted 632 boardings on IFQ/CDQ halibut vessels, noting 32 violations on 26 vessels. • New observer program: same number of observer days but differently distributed.
7th March 2013	United Fishermen of Alaska (UFA)	Julianne Curry (Executive Director) Vito Romito (GTC), Geraldine Criquet (GTC)	• Industry's concern: increase of arrowtooth flounder biomass in the GOA. • New observer program: problem relating to the cost of the program.
8th March 2013, 15:30-17:00	Alaska Wildlife Troopers (AWT), Juneau	Lt Steve Hall Vito Romito (GTC), Geraldine Criquet (GTC)	• Halibut fishery regulations in state waters: fishery under federal rules but differences rules for bycatch (e.g. lingcod bycatch is allowed in federal waters but not in state waters). • Enforcement: enforcement by USCG but AWT can enforce if regulations are the same in state and federal waters (e.g. seabird avoidance). • Sport charter fleet: logbook requirement (nº halibut caught and released, nº fishing hour), no regulation on gear/hook but vast majority use circle hooks.
15th March 2013,	AWT, Kodiak Island	Lt Will Ellis	• Halibut sport fishing regulations: charter halibut permit (CHP)

9:00-10:00		Vito Romito (GTC), Geraldine Criquet (GTC)	implemented in 2011, state adopts same regulations than IPHC. • New observer program: the immediate issue is the risk of harassment of observers on small vessels, AWT pro-active with USCG and NMFS to inform fisher communities not to see observers like an enforcement tool, but a biological data collection tool. • Halibut sport fishing: logbook requirement (client name, nº halibut caught and released, nº fishing hour).
18th March 2013, 14:00-15:30, phone call	Homer Charter Association	Richard Yamada Vito Romito (GTC), Geraldine Criquet (GTC)	• Sport fishing regulations: a reverse slot limit allowing the retention of halibut if ≤45 in or ≥68 in was adopted for the charter fishery Area 2C (SEAK), allocation of 10% of the total TAC. • IPHC consultation with industry: halibut sport fishing has a seat on the IPHC Board. • Logbooks: logbook program started in 1998, logbooks are mandatory, client signature is required, logbooks are sent to ADFG after the fishing trip. • Enforcement: USCG, AWT, port samplers. • Industry collaboration in halibut management: pool-based catch share plan in process, will allow purchase an IFQ quota share to transfer it in recreational sector. • No ETP species interaction. • Bycatch avoidance mechanism/improved selectivity: barotrauma release device, measuring fish with digital imaging (project funded by NOAA).

			• Violation in sport sector: few and minor violations. • Handling techniques to minimize the mortality of juveniles or sublegal individuals: use of barbless circle hooks, careful release, education program for fishers. • Issues relating to halibut removals from other fleets: trawl fleet halibut bycatch is an issue. • Conflict with the commercial fleet: now more cooperation.

5. Assessment Outcome Summary

1. *The IPHC is a bilateral, international treaty based organization, composed of representatives from the USA and Canada. Its mandate is research (on stock assessment and halibut biology research) and management (allocation between regulatory areas in US and Canada, developing various harvest regulations and setting annual harvest levels) of the stocks of Pacific halibut (Hippoglossus stenolepis) within the convention waters of both nations. The Northern Pacific Halibut Act of 1982 (Halibut Act) at 16 U.S.C 773-773k provides the Secretary of State of the US, with the concurrence of the Secretary of Commerce, the authority and general responsibility to carry out the requirements of the Convention and the Halibut Act. Following IPHC apportionments, the halibut fisheries in the American EEZ off Alaska are managed by the North Pacific Fishery Management Council (NPFMC), the National Marine Fisheries Service (NMFS), and the Alaska Department for Fish and Game (ADFG). The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Pacific halibut fisheries laws and regulations in federal waters. The Alaska Wildlife Troopers (AWT) take part in enforcement activities in state waters.*
2. *The NMFS and NPFMC participate in coastal area management-related institutional frameworks through the federal National Environmental Policy Act (NEPA) processes. The state of Alaska is a cooperating agency in the NEPA process for federal actions, giving it a seat at the table for federal actions. The assessment team considers that the collectivity of: the NEPA process, existing agencies and processes (e.g. ADFG, ADEC, DNM, USFWS, ANILCA, OPMP and BOEM), and the existing intimate and routine cooperation between federal and state agencies managing Alaska's coastal resources is capable of planning and managing coastal developments in a transparent, organized and sustainable way. The IPHC annual meeting, regular meetings of the NPFMC and the Board of Fisheries (BOF) public meetings provide forums for resolution of potential fisheries conflicts.*
3. *The objectives of the initial US and Canada Agreement for the management, conservation and sustainable utilization of Pacific halibut in the North Pacific, signed in 1923 pointed to the first basic regulations for closure of the fishery in determinate periods, halibut bycatch in other fisheries and the need for reporting such removals, enabling prosecutions for violation of the provisions and investigation into the life history of the Pacific halibut. Amendment 15 and 20 to the Fishery Management Plan (FMP) for the Groundfish Fishery of the BSAI and GOA established an individual fishing quota (IFQ) limited access system in commercial fixed gear fisheries for Pacific halibut and sablefish in and off Alaska and implemented a Western Alaska Community Development Quota (CDQ) program for halibut and sablefish fixed gear fisheries. These amendments effectively provide a framework for the management of halibut resources in the BSAI and GOA. These actions were intended by the NMFS to promote the conservation and management of halibut and sablefish resources, and to further the objectives of the Northern Pacific Halibut Act of 1982 (Halibut Act) and the Magnuson Fishery Conservation and Management Act (Magnuson Stevens Act or MSA) that provided authority for regulating these fisheries.*
4. *The IPHC collects yearly data from a variety of sources to characterize the fishery, status and population trends in all regulatory areas, and assist in fitting a population assessment model. The key datasets collected include IFQ e-landings catch, sport catch, bycatch, personal use and wastage data. Every year, the IPHC places a sampler aboard the NMFS EBS*

groundfish/crab trawl survey. The sampler collects biological data on the halibut catches, taking lengths of almost all halibut caught and selecting a subsample for ageing. The biennial GOA survey was not conducted in 2012. The triennial AI survey was conducted in 2012, and the IPHC participated in the survey for the first time since 2000. The swept-area estimates of abundance derived from the three NMFS trawl surveys (BS, GOA, AI) are a valuable independent indicator of long-term trends in halibut biomass. Ten commercial longline vessels, six Canadian and four U.S., were chartered by the IPHC for survey operations in 2012. On the 1,274 stations planned for the 2012 survey, 1,270 survey stations were effective for stock assessment analysis. Seabird occurrence data have also been collected during IPHC stock assessment surveys since 2002. Bycatch data collected during the IPHC surveys are used as proxy to estimate total bycatch in the halibut fishery. However, from January 2013, there are new partial coverage observer requirements for halibut vessels fishing hook and line gear. Halibut vessels are registered with the NMFS and can be selected on a vessel or trip basis.

5. *For 2012, there was a full review of the data, specific model equations and general approach used to assess the stock in recent years. Allowing for time-varying availability in the assessment model removed the retrospective bias in recent status estimates and is consistent with observed geographic and demographic trends. The results of the 2012 stock assessment indicate that the Pacific halibut stock has been declining continuously over much of the last decade. The change to the assessment model resulted in a much more pronounced decline in the estimated stock trend in recent years, a large reduction in the scale of current population estimates, and also a decrease in the estimated average level of productivity. Spawning biomass is estimated to have decreased from 319 to 197 million lb from 2011 to 2012, and exploitable biomass to have decreased from 260 to 219 million lb, over the same period. Using only data updated through 2011, the 2011 model estimate of 2012 spawning biomass was 40.9% of the reference level, which was reduced to 31.8% in the revised model, despite a 40% reduction in the absolute estimates. A review of the 2012 assessment model was done in May, prior to the development of management advice for the 2013 fishing season.*
6. *The IPHC's harvest policy is to harvest 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% (B30 threshold level) of a level defined as the unfished level. The harvest rate is linearly decreased towards a rate of zero as the spawning biomass approaches 20% (B20 limit level) of this estimated unfished level. The unfished female spawning biomass (Bunfished) is computed by multiplying spawning biomass per recruit (SBR, from an unproductive regime) and average coastwide age-six recruitment (from an unproductive regime). This gives a Bunfished of 573 million pounds, a B20 of 115 million, a B30 of 172 million pounds, and the 2012 and 2013 female spawning biomass value of 197 and 201 million pounds, respectively, establish Bcurrent as 34% and 35% of Bunfished in 2012 and 2013, respectively, down from the 2011 end of the year estimate of Bcurrent of 42%.*
7. *Although this is common for many fisheries stock assessment, the degree of pre-model processing and redundancy in the halibut data set likely result in a substantial underestimation of this source of uncertainty. Nonetheless, it is included in the decision-making framework described below. Additional sources of uncertainty include choices made in structuring the assessment model, steps taken during data processing, and many other sources that are not included in the results. During the 2012 assessment process, there was substantial discussion regarding estimates of total removals used in the halibut stock assessment. The IPHC has expressed concern over continued declining catch rates in several*

areas and has taken aggressive action to reduce harvests and recommended to the governments of Canada and the United States catch limits for 2013 totalling 31,028,000 pounds, a 7.5% decrease from the 2012 catch limit of 33,540,000 pounds. For 2013, the IPHC adopted a 24.4% effective coastwide harvest rate, down from the 2012 effective coastwide harvest rate of 25.7%. In addition, the staff has noted a continuing problem of reductions in previous estimates of biomass as additional data are obtained, which has the effect of increasing the realized historical harvest rates on the stock. For 2012 assessment, significant improvements to methods used to forecast future stock size and to calculate the uncertainty associated with these predictions were made. Given the pronounced declining trends in recent size-at-age, alternative projections were run using observed size-at-age from 2012, as well as fitting a linear trend to the most recent three years of data. An element clearly illustrating the precautionary nature of the IPHC management actions is the SUFullD harvest policy currently in place. *This harvest policy, allowing full decrease in catch limits when the stock is projected to decline, but only a third increase in catches (from the previous year) when the stock is projected to increase is clearly a long term management measure aimed at increasing halibut harvestable and spawning biomass.*

8. *The IPHC has developed, refined, and utilized a constant harvest rate policy since the 1980's. The policy was initially designed to harvest 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% of the unfished level. The harvest rate is linearly decreased towards a rate of zero as the spawning biomass approaches 20% of the unfished level. This combination of harvest rate and precautionary levels of biomass protection have, in simulation studies, provided a large fraction of maximum available yield while minimizing risk to the spawning biomass. Following the 2008 Committee of Independent Experts (CIE) review of the assessment and harvest policy, the simulations on which the harvest policy was based were modified to incorporate "assessment error". Under the individual fishing quota share system in place for the Pacific halibut fishery, fishing capacity (vessels and gear) has been reduced, seasons were extended and wastage was reduced. Fishing gear is regulated to longline gear only. In 1983, industry made the operational switch from J-hooks to circle hooks in the commercial fishery. Regulations are in placed to address discards. General spawning areas have been mapped in Alaska. The halibut fishery is closed during peak spawning times, by regulation. The NPFMC has established Marine Protected Areas and additional trawl closures that benefit juvenile fish and adult spawners. Bycatch of seabirds were addressed by specific regulations now including the use of streamer (tory) lines, night setting, lineshooters and lining tubes. Management actions are in place in respect to increasing knowledge on the halibut and non-halibut bycatch dynamics in the directed halibut longline fishery. Moreover, in June 2012, the NPFMC took action to reduce halibut bycatch limits in GOA groundfish fisheries.*
9. *The IPHC and NPFMC objectives for fisheries management are based on the long term maintenance of MSY levels. The policy for achieving this is based on setting biological reference points that determine the annual CEY for the Pacific halibut stock. Under the individual fishing quota share system in place for the Pacific halibut fishery, fishing capacity (vessels and gear) has been reduced and is now stable. In 1983, industry made the operational switch from J-hooks to circle hooks in the commercial fishery, lowering the mortality of undersized halibut caught and released during commercial fishing. Discards of Pacific halibut, considered a Prohibited Species Catch (PSC) by the groundfish fisheries in*

Alaska are regulated, and the NPFMC voted in June 2012 to further reduce the halibut bycatch cap in the GOA groundfish fisheries.

10. *Any aspirant halibut fisherman must have 150 days of halibut fishing experience before being able to purchase halibut IFQs. Obtaining halibut IFQ share most often will require the purchaser (aspirant halibut fisherman) to enter into loan capital arrangements with banks that will require comprehensive fishing business plans supported by competent, professional fishermen with demonstrable fishing experience. Several training opportunities are available to train crew members in Alaska.*
11. *The Northern Pacific Halibut Act, governs the commercial, sport, charter, and subsistence halibut fisheries in the U.S. The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Alaska fisheries laws and regulations, especially 50CFR679. The violations in this fishery are reported to and investigated by NOAA's Office of Law Enforcement's Alaska Division and prosecuted by NOAA's Office of General Counsel's Enforcement Section. The maximum civil penalty under the Northern Pacific Halibut Act is $200,000 for each violation. OLE Special Agents and Enforcement Officers conduct complex criminal and civil investigations, board vessels fishing at sea, inspect fish processing plants, review sales of wildlife products on the internet and conduct patrols on land, in the air and at sea. NOAA Agents and Officers can assess civil penalties directly to the violator in the form of Summary Settlements (SS) or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation (GCEL).*
12. *The Magnuson-Stevens Act (50CFR600.740 Enforcement policy) provides four basic enforcement remedies for violations:* ***1)*** *Issuance of a citation (a type of warning), usually at the scene of the offense,* ***2)*** *Assessment by the Administrator of a civil money penalty,* ***3)*** *for certain violations, judicial forfeiture action against the vessel and its catch,* ***4)*** *Criminal prosecution of the owner or operator for some offenses. In some cases, the Magnuson-Stevens Act requires permit sanctions following the assessment of a civil penalty or the imposition of a criminal fine. The 2011 Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions issued by NOAA Office of the General Counsel – Enforcement and Litigation, provides guidance for the assessment of civil administrative penalties and permit sanctions under the statutes and regulations enforced by NOAA.*
13. *Regulations are in place to address waste, discard, bycatch, and endangered species interactions in the halibut fisheries. Management actions are in place in respect to increasing knowledge on the bycatch dynamics of the directed halibut longline fishery (i.e. methods for the estimation of non-target species catch in the unobserved halibut IFQ fleet and the restructuring the observer program for inclusion of the halibut fleet). Benthic longline gear is not considered to have serious nor irreversible impacts on marine habitats. Bycatch of seabirds has been addressed by specific regulations put in place to reduce the incidental mortality of the short-tailed albatross, a listed species under the Endangered Species Act (ESA), and other seabird species in 1998, then revised in 2008. None have been taken in the commercial halibut fishery in 2011. These measures now include the use of streamer (tory) lines, night setting, lineshooters and lining tubes, have been shown to reduce seabird interactions when setting or retrieving gear very significantly. Seabird occurrence data have been collected during the 2012 IPHC annual setline survey. Bycatch data were also collected this year, indicating that the majority of the bycatch is made up by Pacific cod and spiny dogfish. These species are managed by the NPFMC under tier 3 and 5 respectively, using OFL*

and ABC recommendations and catch limits. It is expected that with the implementation of the restructured observer coverage in a part of the halibut fleet, bycatch data collection will improve and allow management to make better informed decisions, especially for species like sharks and skates that generally tend to have low reproductive rates.

6. Conformity Statement

The Assessment Team recommended and confirmed by the certification committee (27th June 2013) that continued certification under the FAO Based Responsible Fisheries Management Program is granted to the Pacific halibut (*Hippoglossus stenolepsis*) commercial fishery employing benthic longline gear within the IPHC's Regulatory Areas 2C, 3A, 3B, 4B and 4CDE, within Alaska jurisdiction (200 nautical miles EEZ), under international [International Pacific Halibut Commission (IPHC)], federal [National Marine Fisheries Services (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG)] management.

7. FAO-Based Conformance Criteria Fundamental Clauses for Surveillance Reporting

A. The Fisheries Management System

1. There shall be a structured and legally mandated management system based upon and respecting International, National and local fishery laws, for the responsible utilization of the stock under consideration and conservation of the marine environment.

FAO CCRF 7.1.3/7.1.4/7.1.9/7.3.1/7.3.2/7.3.4/7.6.8/7.7.1/10.3.1

FAO Eco 28

Evidence adequacy rating:

☑ High **☐ Medium** **☐ Low**

Rating determination

The IPHC is a bilateral, international treaty based organization, composed of representatives from the USA and Canada. Its mandate is research (on stock assessment and halibut biology research) and management (allocation between regulatory areas in US and Canada, developing various harvest regulations and setting annual harvest levels) of the stocks of Pacific halibut (Hippoglossus stenolepis) within the convention waters of both nations. The Northern Pacific Halibut Act of 1982 (Halibut Act) at 16 U.S.C 773-773k provides the Secretary of State of the US, with the concurrence of the Secretary of Commerce, the authority and general responsibility to carry out the requirements of the Convention and the Halibut Act. Following IPHC apportionments, the halibut fisheries in the American EEZ off Alaska are managed by the North Pacific Fishery Management Council (NPFMC), the National Marine Fisheries Service (NMFS), and the Alaska Department for Fish and Game (ADFG). The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Pacific halibut fisheries laws and regulations in federal waters. The Alaska Wildlife Troopers (AWT) take part in enforcement activities in state waters.

The IPHC is a bilateral, international treaty based organization, composed of representatives from the USA and Canada. Its mandate is research (on stock assessment and halibut biology research) and management (allocation between regulatory areas in US and Canada, developing various harvest regulations and setting annual harvest levels) of the stocks of Pacific halibut (*Hippoglossus stenolepis*) within the convention waters of both nations. Specifically the IPHC main objective is to conserve the biological viability of the stock, while allowing for maximum sustainable yield harvests from commercial, sport and subsistence users. The Northern Pacific Halibut Act of 1982 (Halibut Act) at 16 U.S.C 773-773k provides the Secretary of State of the US, with the concurrence of the Secretary of Commerce, the authority and general responsibility to carry out the requirements of the Convention and the Halibut Act.

Following IPHC apportionments, the halibut fisheries in the American EEZ off Alaska are managed by the North Pacific Fishery Management Council (NPFMC), the National Marine Fisheries Service

(NMFS), and the Alaska Department for Fish and Game (ADFG).
The NPFMC recommends regulations to govern the directed halibut fisheries in waters off Alaska and makes allocation decisions among halibut users and user groups fishing off Alaska. The NMFS works closely with the NPFMC and the IPHC, performing scientific research and being responsible for developing, implementing, and enforcing regulations pertaining to management of halibut fisheries in US waters. NMFS also manages the halibut subsistence program for Native, rural, ceremonial and educational purposes. Additionally, ADFG licenses halibut anglers, sport anglers, fishing businesses and guides, monitors and reports on sport and subsistence halibut harvests, and assists federal agencies with preparation of regulatory analyses. These agencies, and all of their activities and decisions regarding halibut, are subject to the North Pacific Halibut Act.
The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Pacific halibut fishery laws and regulations. The Alaska Wildlife Troopers (AWT) take part in enforcement activities in state waters.

The primary purpose of IPHC is to conduct research on the halibut stock for the biological conservation of the halibut resource for fishery use in the area through which the species migrates during its life cycle, by taking into account the whole stock unit over its entire area of distribution (from California to the Bering Sea). The halibut within the IPHC convention area are considered to be one stock, which is studied, managed and enforced by IPHC, NPFMC, NMFS, ADFG and the US coast guard (USCG)/Alaska Wildlife Troopers (AWT). The NMFS Alaska Region and the NPFMC gather data on all sources of halibut removals and mortality off Alaska: fishing (directed and incidental) and natural. All IFQ share holders must report their catches via an electronic filing (“e-landing”) method.

Sport charter vessels keep and submit a Charter Logbook to ADFG. The operators must submit their harvest information weekly, and ADFG summarizes the data in October and submits it to the NPFMC and NMFS. In addition, ADFG collects data from halibut sport fishermen (both guided/charter and un-guided), through an annual survey. Subsistence halibut data are gathered by NMFS under its Subsistence Halibut Registration Certificate (SHARC) program. Those data are reported to IPHC which also collects its own data through employment of port samplers and at-sea sampling agents for the commercial harvest.

Halibut management is an active public process. The IPHC receives extensive input and guidance from stakeholders and researchers. Also, the NPFMC and the NMFS provide a great deal of information on their websites, including agenda of meetings, discussion papers, and records of decisions. The NPFMC actively encourages stakeholder participation, and all NPFMC deliberations are conducted in open, public sessions.

IPHC 2013 Annual Meeting

The International Pacific Halibut Commission (IPHC) completed its Eighty-ninth (January, 2013) Annual Meeting in Victoria, B.C. The Commission recommended to the governments of Canada and the United States catch limits for 2013 totalling 31,028,000 pounds, a 7.5% decrease from the 2012 catch limit of 33,540,000 pounds.

In addition to setting catch limits for 2013, the Commission addressed a wide range of regulatory issues and took important actions regarding the IPHC performance review, management strategy evaluation, the structure of its advisory bodies, and bycatch management.

Stock Assessment and Harvest Rates

During 2012, the assessment staff at the IPHC conducted a full review of the data, specific model equations, and the general approach used to assess the stock in recent years. The retrospective bias seen in recent assessments was found to occur because the model did not correctly account for variation in the availability of different sizes of fish in different areas. A peer review team, including the U.S. and Canadian Science Advisors, agreed that the staff's more flexible model structure could be adopted to address this problem and correct the retrospective bias. The assessment model results are now more consistent with observed fishery and survey results. As a result of changes to the assessment model, estimates of recent recruitment are much lower than previously thought.

The Pacific halibut biomass has been declining over much of the last decade as a result of decreasing size at age as well as below-average recruitment. Including 2012 data, the stock assessment estimates that the population decline has now slowed and the stock trajectory is relatively flat, with spawning biomass about 5% higher than a level which would require a reduction in harvest rate. The report of the 2012 stock assessment is available on the IPHC website at: http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf.

As described in Information Bulletin 70 (http://iphc.int/library/bulletins/300-ib0070.html) and the IPHC Interim Meeting news release (http://www.iphc.int/news-releases/306-nr20121218.html), the IPHC staff harvest advice was reformatted this year into a decision table which provides the probabilities of risks and benefits associated with specific harvest choices. This decision table allowed a comparison of alternative stock biomass and fishery outcomes at different increments of total removals, providing more information for consideration by the Commissioners as they set the annual catch limits.

Regulatory Changes and Issues

Control of Charter Harvest in Area 2C

The Commission received a request from the NPFMC to continue for 2013 the Commission's existing one-fish bag limit with a U45/O68 reverse-slot limit length restriction (only halibut ≤ 45 in or ≥ 68 in, head on may be retained) that was adopted in 2012. This proposal is intended to keep the removals by the charter fishery within the Council's 0.931 Mlb Guideline Harvest Level for Area 2C. In addition, the entire carcass must be retained on board the vessel until all fillets are offloaded.

Sport Fishery Management

The Commission forwarded proposals for developing an Alaska sport harvest ticket and an Oregon charter tag to the respective state agencies for their consideration, since these proposals should be appropriately considered by these agencies.

Other Proposals

The Commission reviewed other proposals concerning hook requirements, preserved fish aboard vessels, careful release of fish, direct assessment of U32 fish, hook and release mortality, Area 2A biomass, and halibut in Prince William Sound, but took no regulatory action concerning these proposals. The Commission directed staff to work with proponents of several of these proposals to accommodate the intents of the proposals to the extent practicable.

Other Actions

Performance Review

The Commission reviewed the recommendations of the 2012 Performance Review, as well as stakeholder response and advice. The Commission has already taken action on several recommendations concerning increased openness and transparency in Commission meetings and operations. Action on other recommendations will be incorporated into ongoing work to improve the Commission's procedures and processes, including the development of scientific advice, planning and review of research, and operation of the advisory bodies. The Performance Review final report can be found on the Commission's website at: (http://www.iphc.int/documents/review/FINAL_IPHC_Performance_Review-April30.pdf).

Management Strategy Advisory Board and Scientific Review Board

The Commission approved the formation of a Management Strategy Advisory Board (MSAB) to advise on the development and evaluation of candidate objectives and strategies for managing the halibut resource. The MSAB will be a cross-disciplinary group, with representatives from industry, science, fisheries management, and Commission staff. The Commission is accepting nominations for the MSAB until February 28, 2013, and the membership should be finalized by the end of March. The Commission expects the MSAB to meet for the first time in late spring of this year.

The Commission is also adding a new Scientific Review Board (SRB) to fulfill the need for ongoing scientific peer review of the stock assessment, harvest advice, and research. The SRB will be a small technical body of members invited by the Commission, and is expected to begin work during this year.

The two new advisory bodies are dedicated to particular organizational needs and are complementary to the existing advisory structure. They do not supplant or replace the functions of the Conference Board, Processor Advisory Group, or Research Advisory Board, but will work with them in advising the Commission.

Halibut Bycatch

The Commission expressed its continued concern about the yield and spawning biomass losses to the halibut stock from mortality of halibut in non-directed fisheries. Significant progress in reducing this bycatch mortality has been achieved in Areas 2A and 2B, using individual bycatch quotas for vessels in some fisheries. Reductions have also occurred in Alaska, and new measures aimed at improving bycatch estimation, scheduled to begin in 2013, should help to refine these estimates.

The Commission received a motion from the Conference Board concerning bycatch, which it is incorporating into the ongoing work of its Bycatch Project team and the Commission staff.

The Commission received a report from its Bycatch Project Team, which outlined its progress on its four project objectives: quantifying bycatch, documenting impacts to the fishery and resource, exploring options to mitigate impacts, and identifying options to reduce bycatch. The Project Team identified its next steps, to include refinement of the immediate term options, subsequent discussion on longer-term options, completion of a report by summer 2013, and an implementation plan for agreed-upon strategies. http://www.iphc.int/index.php/news-releases/312-nr20130204a.html

Evidence
http://www.iphc.int/about-iphc.html
http://www.adfg.alaska.gov/index.cfm?adfg=halibut.main
http://www.fakr.noaa.gov/npfmc/halibut/sablefish-ifq-program.html
http://www.fakr.noaa.gov/ram/ifq.htm

2. Management organizations shall participate in coastal area management institutional frameworks, decision-making processes and activities related to the fishery and its users, in support of sustainable and integrated resource use, and conflict avoidance.
FAO CCRF 10.1.1/10.1.2/10.1.4/10.2.1/10.2.2/10.2.4

Evidence adequacy rating:

☑ High **☐ Medium** **☐ Low**

Rating determination
NMFS and NPFMC participate in coastal area management-related institutional frameworks through the federal National Environmental Policy Act (NEPA) processes. The state of Alaska is a cooperating agency in the NEPA process for federal actions, giving it a seat at the table for federal actions. The assessment team considers that the collectivity of: the NEPA process, existing agencies and processes (e.g. ADFG, ADEC, DNM, USFWS, ANILCA, OPMP and BOEM), and the existing intimate and routine cooperation between federal and state agencies managing Alaska's coastal resources is capable of planning and managing coastal developments in a transparent, organized and sustainable way. The IPHC annual meeting, regular meetings of the NPFMC and the Board of Fisheries (BOF) public meetings provide forums for resolution of potential fisheries conflicts.

NEPA
The NMFS and NPFMC, cooperating with IPHC in Alaska to effectively manage halibut stocks within state and federal jurisdiction (200 mile EEZ), participate in coastal area management-related institutional frameworks through the federal National Environmental Policy Act (NEPA) processes.

The state of Alaska is a cooperating agency in the NEPA process for federal actions, giving it a seat at the table for federal actions. The NEPA process is essentially a biological/environmental, and socio-economic impact assessment where proposed options for significant developments and/or changes in current management practices are evaluated, before a final decision is taken. The NEPA process includes decision-making processes and activities relevant to the fishery resource and its users in support of sustainable and integrated use of living marine resources and avoidance of conflict among users. A very recent example of the NEPA process concerning the halibut fishery is the restructuring of the observer program that starting January 2013, partially covers the previously unobserved Alaska halibut fleet.

DEC

The Alaska Department of Environmental Conservation (DEC) implements statutes and regulations affecting air, land and water quality. DEC is the lead state agency for implementing the federal Clean Water Act and its authorities provide considerable opportunity to maintain high quality fish and wildlife habitat through pollution prevention (http://dec.alaska.gov/).

ADFG

ADFG protects estuarine and marine habitats primarily through cooperative efforts involving other state and federal agencies and local governments. ADFG has jurisdiction over the mouths of designated anadromous fish streams and legislatively designated state special areas (critical habitat areas, sanctuaries and refuges). Some marine species also receive special consideration through the state's Endangered Species program.

DNR

The Alaska Department of Natural Resources (DNR) manages all state-owned land, water and natural resources except for fish and game. This includes most of the state's tidelands out to the three mile limit and approximately 34,000 miles of coastline. DNR authorizes the use of log-transfer sites, access across state land and water, set-net sites for commercial gill net fishing, mariculture sites for shellfish farming, lodge sites and access for the tourism industry, and water rights and water use authorizations. DNR also uses the state Endangered Species Program to preserve natural habitat of species or subspecies of fish and wildlife that are threatened with extinction (http://dnr.alaska.gov/).

USFWS

The U.S. Fish and Wildlife Service (USFWS) is a bureau within the Department of the Interior. Its objectives include 1) Assisting in the development and application of an environmental stewardship ethic based on ecological principles, scientific knowledge of fish and wildlife, and a sense of moral responsibility; 2) Guide the conservation, development, and management of the US's fish and wildlife resources. 3) Administer a national program to provide the public opportunities to understand, appreciate, and wisely use fish and wildlife resources. The USFWS functions include enforcement of federal wildlife laws, protection of endangered species, management of migratory birds, restoration of nationally significant fisheries, conservation and restoration of wildlife habitat such as wetlands, help of foreign governments with their international conservation efforts. Additionally, the USFWS distributes of hundreds of millions of dollars, collected through the Sport Fish and Restoration Program. These funds are derived from an excise taxes on fishing equipment,

motorboat and small engine fuels and import duties. Funds are distributed to State fish and wildlife agencies for fishery projects, boating access and aquatic education (http://www.fws.gov/help/about_us.html).

ANILCA

The Alaska National Interest Lands Conservation Act (ANILCA) conveyed large sections of federal land to settle Alaska native lands claims and provide the State of Alaska title to other large sections promised under Statehood. Additionally, it enclosed large swaths of land into federal parks and monuments for ecological protection for future generations. ANILCA directs federal agencies to consult and coordinate with the state of Alaska. State agencies responsible for natural resources, tourism, and transportation work as a team to provide input throughout federal planning processes (http://dnr.alaska.gov/commis/opmp/anilca/anilca.htm).

OPMP

The Department of Natural Resources (DNR) Office of Project Management and Permitting (OPMP) coordinates the review of larger scale projects in the state. Because of the complexity and potential impact of these projects on multiple divisions or agencies, these projects typically benefit from a single primary point of contact. A project coordinator is assigned to each project in order to facilitate interagency coordination and a cooperative working relationship with the project proponent. The office deals with a diverse mix of projects including transportation, oil and gas, mining, federal grants, ANILCA coordination, and land use planning. Every project is different and involves a different mix of agencies, permitting requirements, statutory responsibilities, and resource management responsibilities (http://dnr.alaska.gov/commis/opmp/).

BOEM

The Bureau of Ocean Energy Management (BOEM) (previously Minerals and Management) is responsible for managing environmentally and economically responsible development and provide safety and oversight of the offshore oil and gas leases. The activities of BOEM and the process for application and approval of oil exploration permits overlaps extensively with evaluations by ADNR, ADFG and ADEC given the potential impacts of such activities on anadromous and other marine resources and their habitat. An example of this is provided by the *Cook Inlet Offshore Oil & Gas Exploration Permit Application & Approval Process* available at:
http://dog.dnr.alaska.gov/Permitting/Documents/Arcadis/Arcadis_Flowchart_CookInletOffshore_Draft.pdf
http://www.boem.gov/uploadedFiles/Proposed_OCS_Oil_Gas_Lease_Program_2012-2017.pdf

NEPA

Virtually every development affecting the natural environment, by regulation, has to go through the NEPA environmental impact assessment process which identifies its potential environmental, social and economic impacts and/or benefits. The NEPA processes provide public information and opportunity for public and agencies involvement that are robust and inclusive at both the state and federal levels.

The ACMP was defeated in the August 2012 ballot election

The Alaska Coastal Management Plan, or Ballot Measure 2, was defeated (76,440 votes to 46,678

votes) in the August 28th, 2012 ballot in the state of Alaska as an indirect initiated state statute. The measure would have established a new coastal management program in the state; given that the prior coastal management program expired on July 1, 2011, after the legislature adjourned the second of two special sessions without passing legislation required to extend the program. The failure of this ballot measure leaves Alaska as the only coastal state in the U.S. without a formal coastal management program. As of February 1, 2013 the Alaskan legislature has not reintroduced any bill regarding the ACMP.
http://housemajority.org/press.php?p=media&id=35&leg=28

The assessment team considers that the collectivity of: the NEPA process, existing agencies and processes (e.g. ADFG, ADEC, DNM, USFWS, ANILCA, OPMP and BOEM), and the existing intimate and routine cooperation between federal and state agencies managing Alaska's coastal resources is capable of planning and managing coastal developments in a transparent, organized and sustainable way. However, effects of the failure to re-establish a formal coastal management program previously in place 30 years have yet to be determined.

IPHC and NPFMC meetings

The IPHC annual meeting, and the regular meetings of the NPFMC provide forums for resolution of potential international and national fisheries conflicts. The IPHC accepts regulatory proposals in the fall of each year, and users can testify in person or in writing at IPHC and NPFMC meetings. In addition, stakeholders may review and submit written comments to the NMFS on proposed rules published in the Federal Register. The NPFMC works closely with ADFG and the BOF to coordinate fishery management programs in state and federal waters off Alaska to address fish habitat concerns, catch limits, allocation issues and other conservation management issues. (http://www.adfg.alaska.gov/index.cfm?adfg= halibut.getinvolved).

The NPFMC is responsible for allocation of the halibut resource among user groups in Alaska waters. In addition, the Board of Fisheries (BOF) public meetings process provides a regularly scheduled public forum for all interested individuals, fishermen, fishing organizations, environmental organizations, Alaskan Native organizations and other governmental and non-governmental entities to participate in the development of legal regulations for the commercial and sport fisheries off Alaska that bycatch halibut.

Advisory Committees (AC) are local "grass roots" citizen groups intended to provide a local voice for the collection and expression of public opinions and recommendations on matters relating to the management of fish and wildlife resources in Alaska. ADFG staff regularly attends the AC meetings in their respective geographic areas to provide information to the public and hear local opinions on fisheries related activities. Currently, there are 82 advisory committees in the state. Of these, approximately 80% to 85% are "active", meaning they regularly meet, write proposals, comment and attend BOF meetings. The enabling statute for the AC system is AS 16.05.260. Regulations governing the ACs are found in the Alaska Administrative Code (AAC) Title 5, Chapters 96 – 97 http://www.boards.adfg.state.ak.us/bbs/what/prps.php.

The IPHC has already taken action on several recommendations concerning increased openness and

transparency in Commission meetings and operations. Action on other recommendations will be incorporated into ongoing work to improve the Commission's procedures and processes, including the development of scientific advice, planning and review of research, and operation of the advisory bodies. The 2011 CONCUR Performance Review final report on IPHC structure and performance can be found on the Commission's website at:
http://www.iphc.int/documents/review/FINAL_IPHC_Performance_Review-April30.pdf

An update on the IPHC performance review and how the Commission was instituting some of the suggested changes was made at the Interim Meeting in November, 2012. Items addressed include the adoption of clear protocols, rules and roles, the improvement of Commission transparency and inclusion of the public, developing a strategic approach to research and strengthening the stock assessment process.
http://www.iphc.int/meetings/2012im/im2012_performance_review.pdf

3. Management objectives shall be implemented through management rules and actions formulated in a plan or other framework.

FAO CCRF 7.3.3/7.2.2

Evidence adequacy rating:

☑ **High** ☐ **Medium** ☐ **Low**

Rating determination

The objectives of the initial US and Canada Agreement for the management, conservation and sustainable utilization of Pacific halibut in the North Pacific, signed in 1923 pointed to the first basic regulations for closure of the fishery in determinate periods, halibut bycatch in other fisheries and the need for reporting such removals, enabling prosecutions for violation of the provisions and investigation into the life history of the Pacific halibut. Amendment 15 and 20 to the Fishery Management Plan (FMP) for the Groundfish Fishery of the BSAI and GOA established an individual fishing quota (IFQ) limited access system in commercial fixed gear fisheries for Pacific halibut and sablefish in and off Alaska and implemented a Western Alaska Community Development Quota (CDQ) program for halibut and sablefish fixed gear fisheries. These amendments effectively provide a framework for the management of halibut resources in the BSAI and GOA. These actions were intended by the NMFS to promote the conservation and management of halibut and sablefish resources, and to further the objectives of the Northern Pacific Halibut Act of 1982 (Halibut Act) and the Magnuson Fishery Conservation and Management Act (Magnuson Stevens Act or MSA) that provided authority for regulating these fisheries.

The initial US and Canada Agreement for the management, conservation and sustainable utilization

of Pacific halibut in the North Pacific, signed in 1923 stated that "*The Commission (IPHC) shall report the results of its investigation to the two Governments and shall make recommendations as to the regulation of the halibut fishery of the North Pacific Ocean, including the Bering Sea, which may seem desirable for its preservation and development.*" Objectives of this agreement pointed to the first basic regulations for closure of the fishery in determinate periods, halibut bycatch in other fisheries and the need for reporting such removals, enabling prosecutions for violation of the provisions and investigation into the life history of the Pacific halibut.

Control of removal rate, or the amount of fishing on each stock, was made possible by amendments in the Treaties of 1930 and 1937, which authorized the division of the coast into areas and the limitation of the catch in each area. In 1953, a further Agreement of the Commission expanded on previous objectives of the IPHC as follows: "*The Contracting Parties agree that for the purpose of developing the stocks of halibut of the Northern Pacific Ocean and Bering Sea to levels which will permit the maximum sustained yield from that fishery and for maintaining the stocks at those levels, the IPHC, with the approval of the President of the United States of America and of the Governor General in Council of Canada, may, after investigation has indicated such action to be necessary, in respect of the nationals and inhabitants and fishing vessels and boats of the United States of America and of Canada, and in respect of halibut:*

(a) *divide the Convention waters into areas;*
(b) *establish one or more open or closed seasons, as to each area;*
(c) *limit the size of the fish and the quantity of the catch to be taken from each area within any season during which fishing is allowed;*
(d) *during both open and closed seasons, permit, limit, regulate or prohibit, the incidental catch of halibut that may be taken, retained, possessed, or landed from each area or portion of an area, by vessels fishing for other species of fish;*
(e) *prohibit departure of vessels from any port or place, or from any receiving vessel or station, to any area for halibut fishing, after any date when in the judgment of the IPHC the vessels which have departed for that area prior to that date or which are known to be fishing in that area shall suffice to catch the limit which shall have been set for that area under section (c) of this paragraph;*
(f) *fix the size and character of halibut fishing appliances to be used in any area;*
(g) *make such regulations for the licensing and departure of vessels and for the collection of statistics of the catch of halibut as it shall find necessary to determine the condition and trend of the halibut fishery and to carry out the other provisions of this Convention;*
(h) *close to all taking of halibut such portion or portions of an area or areas as the IPHC finds to be populated by small, immature halibut and designates as nursery grounds.*

In November 1993, the NMFS issued a final rule to implement Amendment 15 to the Fishery Management Plan (FMP) for the Groundfish Fishery of the BSAI Area and Amendment 20 to the FMP for Groundfish of the GOA Area. These are regulatory amendments affecting the fishery for Pacific halibut in and off Alaska. These regulations established an individual fishing quota (IFQ) limited access system in commercial fixed gear fisheries for Pacific halibut and sablefish in and off Alaska. In addition, this action implemented a Western Alaska Community Development Quota (CDQ) program for halibut and sablefish fixed gear fisheries. These actions were intended by the NMFS to promote

the conservation and management of halibut and sablefish resources, and to further the objectives of the Northern Pacific Halibut Act of 1982 (Halibut Act) and the Magnuson Fishery Conservation and Management Act (Magnuson Stevens Act or MSA) that provided authority for regulating these fisheries. The IFQ program was intended to resolve various conservation and management problems that stemmed from the "open access" regulatory regime in place at that time. The CDQ program was intended to help develop commercial fisheries in Western Alaskan communities on the Bering Sea coast by allowing them exclusive access to specified amounts of halibut and sablefish in the BSAI. Amendments 15 and 20 implemented halibut and sablefish IFQ program to the Groundfish FMPs of Alaska. These amendments effectively provide a framework for the management of halibut resources in the BSAI and GOA.

The Alaska halibut fishery is managed cooperatively by the IPHC, NMFS and the NPFMC.
The NPFMC and NMFS manage the halibut fishery in the Alaska region of the American EEZ. Management decisions are made by the NPFMC, and implemented and enforced by NMFS. The NPFMC has developed Pacific halibut regulations that are in addition to, and not in conflict with, the regulations of the IPHC. These NPFMC regulations generally address domestic allocation concerns (e.g., catch sharing between sectors, subsistence, local area management planning), some of which had profound management and conservation impact. For example, the IFQ program regulations developed by the NPFMC facilitated the maintenance of total commercial harvest within the catch limits specified by the IPHC while addressing domestic allocation concerns in the fishery.

The NPFMC develops its Pacific halibut fishery regulations pursuant to the authority in section 5(c) of the Northern Pacific Halibut Act of 1982 (Halibut Act). The NPFMC's Halibut Act regulations are implemented only after review and rulemaking conducted by the NMFS.

The IPHC outputs (Annual Reports, Reports of Assessment and Research Activities, Scientific Reports, Technical Reports, Regulations, Information Bulletins, Annual Meeting Reports) seek to address the fishery development and conservation objectives set out in the various Agreements between US and Canada to manage the Pacific halibut stock. The Commission's Annual Report details the performance of the fisheries (commercial, sport, and personal use), with emphasis on the biological considerations, stock assessment, management issues (e.g. bycatch), and scientific research. The Report also presents the results of the Commission's annual meeting (usually held in January), at which the catch limits for upcoming season are determined.

Evidence
www.iphc.washington.edu/home.html
http://www.fakr.noaa.gov/frules/76fr14300.pdf
http://iea.uoregon.edu/pages/view_treaty.php?t=1923-Halibut.EN.txt&par=view_treaty_html
http://iea.uoregon.edu/pages/view_treaty.php?t=1953-Halibut.EN.txt&par=view_treaty_html
www.iphc.washington.edu/library/annual-reports.html
www.fakr.noaa.gov/npfmc/default.htm
http://www.fakr.noaa.gov/regs/summary.htm
www.nmfs.noaa.gov/sfa/magact
www.fakr.noaa.gov/ram/ifq.htm

http://www.iphc.washington.edu/papers/sa10.pdf
http://alaskafisheries.noaa.gov/frules/fr59375.pdf

B. Science and Stock Assessment Activities

4. There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.

FAO CCRF 7.1.9/7.4.4/7.4.5/7.4.6/8.4.3/12.4
ECO 29.1-29.3

Evidence adequacy rating:

☑ High **☐ Medium** **☐ Low**

Rating determination

The IPHC collects yearly data from a variety of sources to characterize the fishery, status and population trends in all regulatory areas, and assist in fitting a population assessment model. The key datasets collected include IFQ e-landings catch, sport catch, bycatch, personal use and wastage data. Every year, the IPHC places a sampler aboard the NMFS EBS groundfish/crab trawl survey. The sampler collects biological data on the halibut catches, taking lengths of almost all halibut caught and selecting a subsample for ageing. The biennial GOA survey was not conducted in 2012. The triennial AI survey was conducted in 2012, and the IPHC participated in the survey for the first time since 2000. The swept-area estimates of abundance derived from the three NMFS trawl surveys (BS, GOA, AI) are a valuable independent indicator of long-term trends in halibut biomass. Ten commercial longline vessels, six Canadian and four U.S., were chartered by the IPHC for survey operations in 2012. On the 1,274 stations planned for the 2012 survey, 1,270 survey stations were effective for stock assessment analysis. Seabird occurrence data have also been collected during IPHC stock assessment surveys since 2002. Bycatch data collected during the IPHC surveys are used as proxy to estimate total bycatch in the halibut fishery. However, from January 2013, there are also new partial coverage observer requirements for halibut vessels fishing hook and line gear. Halibut vessels are registered with the NMFS and can be selected on a vessel or trip basis.

Observations from the survey, commercial and other fisheries

The IPHC collects yearly data from a variety of sources to characterize the fishery, status and population trends in all regulatory areas, and assist in fitting a population assessment model. Some of the more important datasets are summarized below.

Halibut removals

Total removals from the halibut populations come from five categories (Figure 1):

1) commercial catch (IFQ e-landings & IPHC port survey data are included in this category),
2) sport catch (Charter boat logbook, ADFG port samplers and annual mail-in survey),
3) bycatch (observer data and logbooks from a variety of fisheries targeting species other than halibut),
4) personal use (port samplers, subsistence interviews and SHARC reports), and
5) wastage from the commercial fishery (on board observers).

Bycatch and wastage are subdivided into O26 (over 26 inches) and U26 (under 26 inches) components as the U26 components are not used for purposes of determining fishery CEY (they are factored into the harvest rate). Detailed descriptions of each category are contained in the Fishery Removals section of the annual Report of Assessment and Research Activities (Stewart et al. 2012). http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf

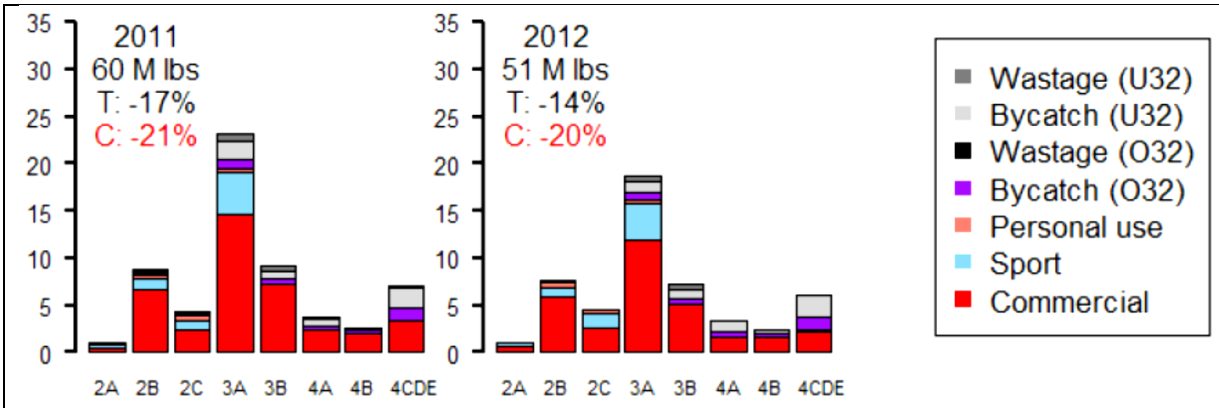


Figure 1. Halibut removals (millions lb) by regulatory areas and source in 2011 and 2012. Values below the year labels indicate the total removals from all sources, the percent change in the total from the previous year (T) and the percent change from the directed fishery removals in the previous year (C).

Fishery-independent data

NMFS and ADFG trawl surveys

Bering Sea

Every year, the IPHC places a sampler aboard the NMFS Eastern Bering Sea (EBS) groundfish/crab trawl survey. The sampler collects biological data on the halibut catches, taking lengths of almost all halibut caught and selecting a subsample for aging. The EBS groundfish trawl survey is used to assess halibut because of the high cost, and very low catch rate when conducting setline survey for halibut in the EBS. For this reason, the IPHC does not conduct the Standardized Stock Assessment (SSA) grid survey in that region. While the IPHC survey does operate along the Area 4D shelf edge, that region is not indicative of densities and trends across the broad shelf.

The traditional NMFS survey (i.e., as operated from 1982-present) generates swept area estimates of abundance for the southern part of the EBS shelf (equivalent to operational IPHC area 4S, the southern part of the EBS shelf). Beginning in 2010, Area 4S comprises the part of the shelf covered by the traditional NMFS EBS shelf survey, including the southern parts of IPHC regulatory areas 4D and 4E. This differs from the definition of Area 4S utilized in 2009. The reason for the change is that starting in 2010 the NMFS expanded the EBS trawl survey north to 65.5 ˚N and covering the entire remainder of the EBS shelf. ADFG also conducts trawl surveys and that are included in the IPHC assessment.

From the NMFS trawl survey IPHC obtains swept area estimates of abundance at length and can then apply the stock assessment estimated survey selectivity at length schedule to the full catch to provide an index of survey catch rate, comparable to the SSA survey fishing gear.

Gulf of Alaska/Aleutian Islands

The triennial Aleutian Islands survey was conducted in 2012, however, insufficient time was available to process and analyze these data for the 2012 stock assessment document. The IPHC participated in the NMFS Aleutian Islands trawl survey in 2012 for the first time since 2000. A total of 630 Pacific

halibut were sampled for length, age structures, sex, and maturity. In the Aleutian Islands, swept area estimates of total biomass show that the halibut population index peaked in 1997 with a biomass estimate of 146 million pounds and has been steadily declining since that time. The 2012 estimate of 69.6 million pounds is the lowest since 1986. The Gulf of Alaska survey was not conducted in 2012.

Alaska trawl swept-area estimates of abundance

The swept-area estimates of abundance derived from the three NMFS trawl surveys (Bering Sea, Gulf of Alaska, Aleutian Islands) are a valuable independent indicator of long-term trends in halibut biomass. While the survey regions do not correspond precisely to IPHC regulatory areas nor are the trawl surveys each conducted in all years, nevertheless they provide a useful estimates of abundance trends.

IPHC setline survey

Ten commercial longline vessels, six Canadian and four U.S., were chartered by the IPHC for survey operations in 2012. During a combined 70 trips and 686 charter days, these vessels fished 27 charter regions, covering habitat from southern Oregon to the island of Attu in the Aleutian Islands, and north along the Bering Sea continental shelf edge. All vessels participated in a coastwide bait comparison study that was expanded from the 2011 bait experiment. On the 1,274 stations planned for the 2012 survey, 1,270 survey stations were effective for stock assessment analysis. Approximately 731,548 pounds of halibut, 96,758 pounds of Pacific cod, and 47,362 pounds of rockfish were landed from the standardized survey stations. Compared to the 2011 survey,halibut weight per unit effort (WPUE) increased in Regulatory Areas 2A, 2B, 2C, 3A, 3B and 4A. WPUE decreased in areas 4B and 4C. WPUE in Area 4D was unchanged (Figure 2).

http://www.iphc.int/publications/rara/2012/rara2012503_ssa_survey.pdf

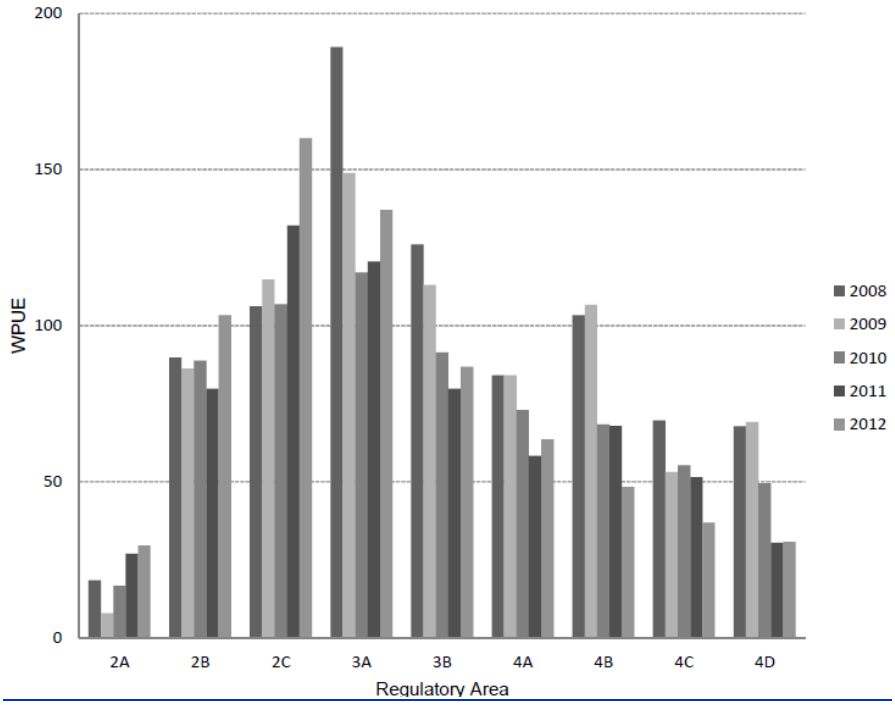
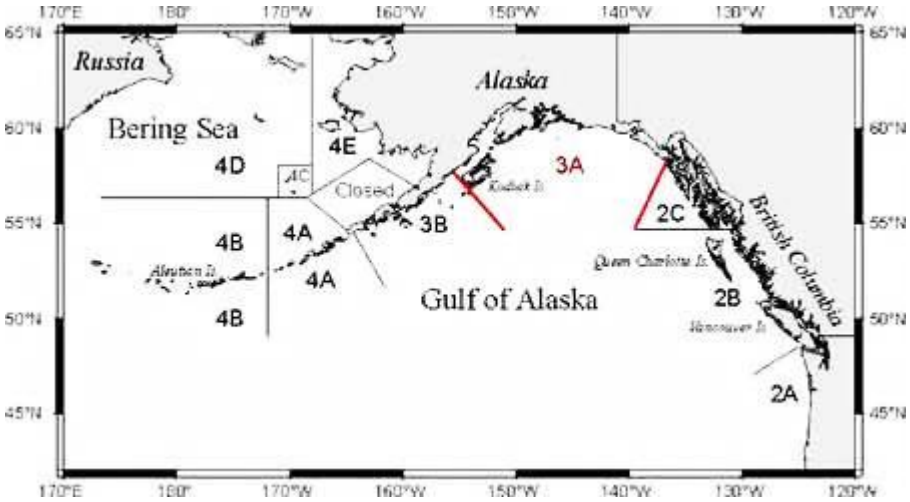


Figure 2. Average WPUE (lbs/skate) of halibut by IPHC regulatory area from effective SG stations

occupied on 2008 (left)-2012 (right) setline surveys.

The current SSA survey has been conducted since 1996 in almost all areas and in all years. A triangular design was used in 1996 and 1997, with the current 10 nmi regular grid used from 1998 to the present. The surveys prior to 1984 used "J" hooks while all surveys from 1984 onwards were based on use of "Circle" hooks. In its current configuration, stations are placed on a 10-nautical mile grid between depths of 20 and 275 fm, resulting in a total of approximately 1280 stations. The 2012 SSA survey is fully described in Henry et al. (2012). A key indicator of stock status in each regulatory area is the weight of O32 halibut caught per standardized skate, termed the survey WPUE. Some interesting trends can be seen when number per unit effort (NPUE) is observed by region. In particular, Areas 2B, 2C and 4A all had an increase in the rate of capture of both large and small halibut. Area 3A continues to show a very gradual increase of U32 halibut NPUE, with O32 halibut NPUE also increasing in the past 3 years. Area 3B continues to have the largest gap between U32 and O32 catch rates, with roughly 50% more U32 than O32 animals.



The survey catch of halibut is sampled to obtain biological information about the stock including sex and age distribution and is described in Forsberg (2013a). In 2012, as in the last several years, there is a general tendency for an older age structure in the western areas, relative to the eastern areas.
The age-specific catch rates are affected by the change in size at age thus the survey indexes numbers of fish selected to the gear and not necessarily total numbers of fish in the population compared across years. The 2002 year class (10 year olds) was found to be the most abundant in the 2012 survey, followed by the 2000 (12 year olds), and the 2001 (11 year olds), respectively (Figure 3). Declining size at age is likely responsible for the delay in recruitment to the survey and it may still be a few years before these year classes fully enter the commercial fishery as most currently fall into the U32 category.
http://www.iphc.int/publications/rara/2012/rara2012549_ssa_agedist.pdf

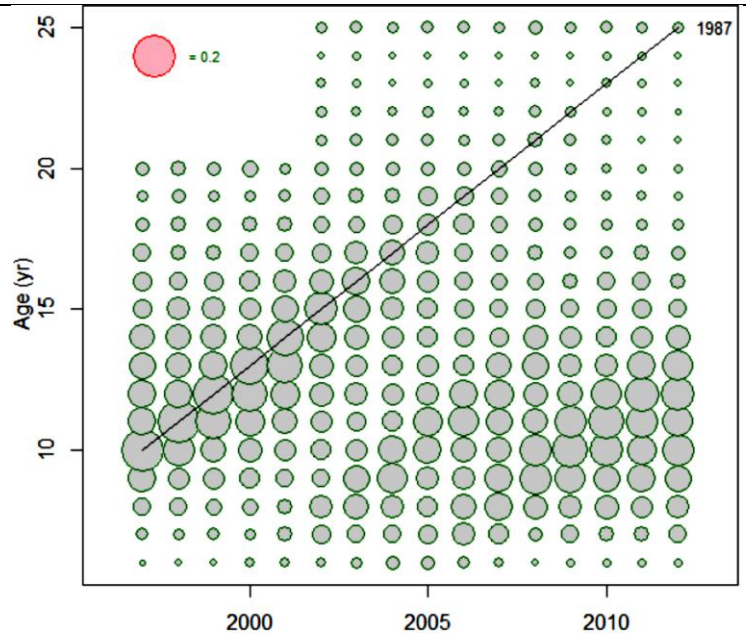


Figure 3. Observed proportions-at-age from the setline survey, 1997-2012. The area of each circle is scaled relative to the legend value in the upper left. The 1987 year-class is identified by the diagonal line for visual reference.

Bycatch data collection

Approximately 107 species of fish and invertebrates were caught as bycatch during the survey. Though skippers on survey vessels take precautions to avoid marine mammal and bird catch, one black-footed albatross (*Phoebastria nigripes*) was captured in 3A and was provided to the U.S Fish & Wildlife Service in Anchorage. No marine mammals were caught on survey. Hook occupancy of species-groups varied by regulatory area (Figure 4). Halibut were the most commonly caught species in Areas 2C, 3A, and 3B. The most frequently incidentally-captured species overall was Pacific cod, followed by sharks. The most common bycatch in Areas 2A, 2B, 2C, and 3A was sharks, primarily dogfish. The most frequent bycatch in Areas 3B and 4A was Pacific cod.

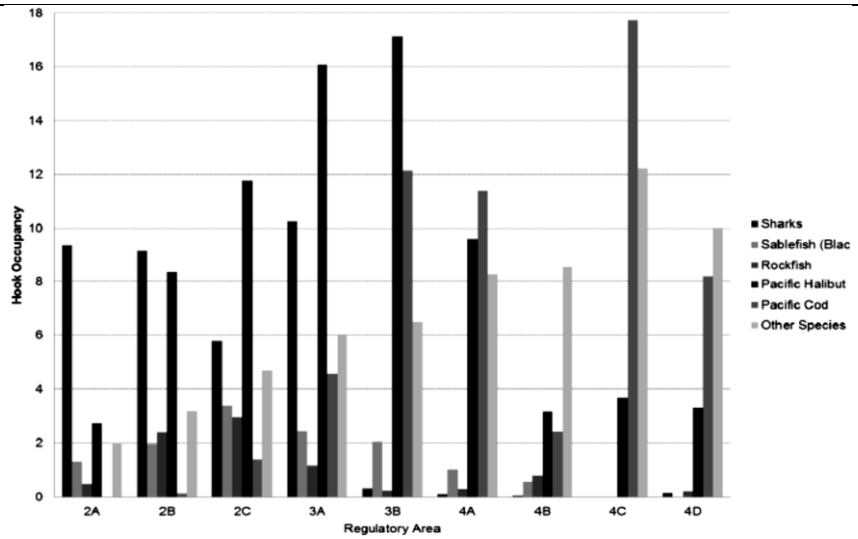


Figure 4. Percent hook occupancy by major species categories from catches in the 2012 setline survey by regulatory area. Species are in order from the left (sharks) to right (other species) in each regulatory area.

In Areas 4A, 4B, 4C, and 4D, the "other species," category was comprised primarily of arrowtooth flounder (*Atheresthes stomias)*, white-blotched skates (*Bathyraja maculata),* Alaska skates *(Bathyraja parmifera),* grenadiers (*Corypaenoididae* spp.), yellow Irish lord sculpins (*Hemilepidotus jordani*), and great sculpins *(Myoxocephalus polyacanthocephalus).*

- Dogfish were the largest component of the shark species category in Areas 2A (98%), 2B (99.7%), 2C (96%), 3A (98%), and 4A (67%).

- Sleeper sharks (*Somniosus pacificus*) made up the largest component of the shark species category in 3B (75%), and 4D (100%).

- Bocaccio (*Sebastes paucispinus*), canary rockfish (*S. pinniger*), and yelloweye rockfish (*S. ruberrimus*) populations are of concern in Areas 2A, 2B, and 2C and their numbers often drive catch regulations. Catch rates of bocaccio and canary rockfish are so low on IPHC surveys that it is difficult to make any inferences; however, the encounter rate for bocaccio in all three areas were lower in 2012 than in 2011.

Trends in bycatch NPUE over the last ten years for the other major incidentally captured species and species groups show that the encounter rate for most remained relatively constant over time. In Area 4D, arrowtooth flounder are more common than in all other Areas, however Area 4B displayed a 76% decrease in 2012 from 2011. Pacific cod in Area 4D have been generally declining since 2008 but showed a slight increase in 2012. All other Areas that had occurrences of Pacific cod decreased in NPUE for 2012 compared to 2011.
http://iphc.int/publications/rara/2012/rara2012503_ssa_survey.pdf

Trends in seabird occurrence on stock assessment surveys (2002-2012)
Seabird occurrence data have been collected during IPHC stock assessment surveys since 2002 from the west coast of Washington, Oregon, British Columbia (B.C.), southeast Alaska (inside and outside waters), the central and western Gulf of Alaska, Aleutian Islands, and the southeastern Bering Sea Edge. Samplers aboard research vessels counted the number of seabirds in the vicinity of the

vessel's stern immediately following gear retrieval (i.e., haul). Sampling seabird occurrence after the haul addresses the question of where and when certain seabird species occur. It also aids in the assessment of individual species at risk by providing information that may reflect population trends over time. Seabird counts were performed within a 50-meter hemisphere (count zone) at the stern, immediately after the longline gear was hauled.

A total of 13,741 observations were conducted over the last ten years, and the number of stations where bird counts were performed ranged from a low of 1,218 to a high of 1,284 per year. More than 640,000 birds were recorded since 2002. Start dates for each year's survey ranged from May 25 to June 7 and the end dates from August 27 to September 14, but the bulk of observations took place from June through August.

The most common species during all years was the northern fulmar (*Fulmarus glacialis*), making up 72% of the sightings. Glaucous-winged gulls (*Larus glaucescens*) made up nine percent of the overall sightings, with black-footed albatrosses (*Phoebastria* nigripes) and fork-tailed storm petrels (*Oceanodroma furcata*) representing seven and two percent of sightings, respectively. Over time, the observed number of unidentified gulls has continually decreased, inversely correlated with an increased number of observations of glaucous-winged gulls and herring gulls (*L. argentatus*), the most common of the gull species on the eastern Pacific coast. This shift is likely the result of increased focus on gull identification during annual IPHC sampler training. Overall, the number of unidentified birds has decreased, indicating that the IPHC sea samplers have improved their identification skills. Black-footed albatross (*P. nigripes*) were more commonly observed in Washington/Oregon and northward into the Gulf of Alaska, whereas Laysan albatross (*P. immutabilis)* were seen in greatest numbers in the central and western Aleutian Islands and only rarely east of Kodiak Island. A total of 221 endangered short-tailed albatross (*P. albatrus)* were sighted in Area 3A and regions westward, more often in July and August than in June. The survey is not conducted at the same time in each area, and this may affect the bird sighting information. Further work is needed to more fully examine the potential influence of charter timing on bird observation trends. Because of the large geographic scope and consistent spatial pattern of the surveys, these data are helpful to scientists studying populations of threatened and endangered birds commonly seen during the counts.
http://iphc.int/publications/rara/2012/rara2012539_ssa_seabird.pdf

Fishery-dependent data

Commercial catch

The second major component of the annual IPHC data collection is sampling the commercial catch. The port sampling program is detailed in Erikson and MacTavish (2013) and age sampling in Forsberg (2013b).
http://www.iphc.int/publications/rara/2012/rara2012071_commsampling.pdf
http://www.iphc.int/publications/rara/2012/rara2012085_commage.pdf
From commercial fishing logs, commercial CPUE is computed for each regulatory area. As with the survey WPUE, there has been a consistent coastwide decline in commercial WPUE though not quite as pronounced. This is not unexpected however, as commercial fishers tend to move their effort to

maintain their catch rate, whereas the survey maintains the same fishing locations every year. Approximately 1500 otoliths are collected and aged from each regulatory area (smaller samples in Areas 2A). Because these fish have been gutted at sea the sex cannot be determined at the time of sampling. Sex-ratios observed in the setline survey generally show a tight relationship with size within a given age, due to the pronounced sexually dimorphic growth pattern of females attaining much larger sizes than males. Because of this consistency, the relationship between sex ratio and size by age has historically been estimated from the survey and then applied to the fishery biological samples in order to infer the ages and lengths-at-age by sex. Although representing a very reasonable approach, this processing step has implications for calculation of uncertainty and was recommended for revisiting in the future by the Scientific Review Meeting (Stewart et al. 2013). Logbooks collected from the commercial fishery generate indices of both WPUE and NPUE. These indices indicate very similar trends to those observed in the setline survey (Table 1).

Table 1. Indices of O32 abundance used in the stock assessment (WPUE in lb/skate, NPUE in number/skate).

Year	Setline survey WPUE	Setline survey WPUE SE	Setline survey NPUE	Setline survey NPUE SE	Fishery WPUE	Fishery WPUE SE	Fishery NPUE	Fishery NPUE SE
1996	NA	NA	NA	NA	415	9	14.4	0.32
1997	138.2	4.0	8.0	0.2	423	9	14.4	0.31
1998	133.9	3.7	7.6	0.2	429	9	15.3	0.33
1999	126.1	3.7	6.9	0.2	398	9	15.1	0.34
2000	120.6	3.3	6.8	0.2	417	9	15.2	0.34
2001	112.3	3.3	6.6	0.2	382	9	14.0	0.32
2002	108.8	3.2	6.6	0.2	379	9	13.8	0.33
2003	91.6	2.7	6.0	0.2	346	8	12.8	0.31
2004	88.4	2.6	6.6	0.2	338	8	13.1	0.31
2005	82.1	2.4	6.1	0.2	314	7	12.5	0.30
2006	71.1	2.2	5.6	0.1	283	7	11.5	0.28
2007	65.8	1.9	5.8	0.1	268	6	11.3	0.28
2008	60.2	1.7	5.7	0.1	249	6	10.6	0.26
2009	55.4	1.6	5.5	0.1	236	5	10.3	0.24
2010	47.0	1.5	5.2	0.1	210	5	9.5	0.23
2011	44.7	1.3	5.1	0.1	209	5	9.6	0.24
2012	49.9	1.5	5.5	0.1	209	5	9.5	0.23

Many of the general patterns observed in the logbooks are also similar to those from the setline survey, particularly the observed recent increasing trends throughout Area 2. However, unlike the survey WPUE, the coastwide commercial fishery WPUE was almost unchanged from 2011 to 2012, and there were somewhat more pronounced declines in Area 3. Age distributions for most years observed in the commercial fishery are very similar to those observed in the setline survey, but generally show fewer fish less than age-10 (due to a high proportion of these fish being sublegal). This was again the case in 2012 (Figure 5).

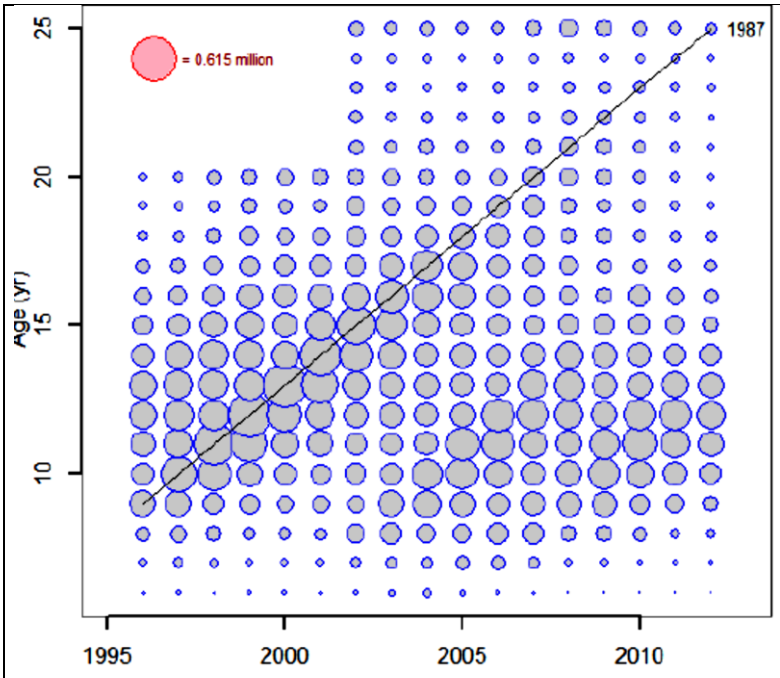


Figure 5. Observed numbers-at-age from the commercial fishery, 1996-2012. The area of each circle is scaled relative to the legend value in the upper left. The 1987 year-class is identified by the diagonal line for visual reference.

Also discernible in the commercial age-frequency distribution for 2012 are relatively fewer males (again, a greater proportion are sublegal) as well as slightly more of the oldest fish at age-25 or greater. These old fish were observed primarily in Areas 4A and 4B, with fish greater than age-20 almost entirely absent from Area 2. As in the survey data, recent age distributions have been relatively stable, with most of the commercial catch ranging from 8-15 years old (Figure 5). The coastwide average weight and age of commercially caught fish are consistently greater than those observed in the survey (Table 1, Figures 3 and 5), but area-specific patterns are very pronounced. The average commercial landed fish weight has declined over the recent time-series; however, this trend has not been consistent across all regulatory areas. Specifically, average weight in Areas 2B, 2C and 4A has been increasing for the last several years, while in Areas 3, 4B and 4D there have been very strong and consistent declines. The heaviest average fish observed in 2012 were found in Area 2C. Declines in length- and weight-at-age for both females and males appear to have been more pronounced in commercially caught fish than was observed in the survey data. Note that for some ages there are very few observations and therefore historically fixed values are assigned; however these values are applied to so few fish they are virtually irrelevant in subsequent calculations. In general, there also seems to have been less flattening of the declines in size-at-age in the commercial data between 2011 and 2012 than in the survey observations.
http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf

Incidental mortality of halibut in the commercial halibut fishery (wastage)

Commercial fishery wastage includes a proportion of U32 halibut that must be released by regulation but subsequently die, and O32 halibut that die from lost or abandoned gear. From 1997 through 2009, only commercial fishery wastage from O32 halibut was deducted and the estimated mortality of discarded U32 halibut was accounted for when setting exploitation rates instead of being treated as a direct removal. Starting in 2010, for the IPHC staff catch limits recommendations, wastage mortality of O32 halibut and halibut between 26 and 32 inches were directly deducted to determine the fishery CEY and the mortality of U26 halibut was accounted for when setting exploitation rates. The intent of this modification was to standardize the treatment of removals, given that sport and personal use fishery removals, included U26 halibut, are directly deducted when setting catch limits.

Information on the amount of gear lost or abandoned in the halibut longline fishery was collected through logbook interviews of from fishing logs received via mail. Fishery-wide estimates were then extrapolated to total catch values using standardized logbook catch and effort statistics.

Because the directed commercial halibut fishery did not carry fisheries observers until January 2013, the weight of U32 halibut discarded must be estimated by indirect methods. In 2007, U32 halibut mortality was re-estimated for all years back to 1974 using catch-per-skate data from IPHC SSA survey stations that ranked in the top third for catch rate (by weight) in each regulatory area. A mortality rate of 16% was applied in years since the beginning of individual quota fisheries. To estimate the pounds of U32 halibut captured in the commercial halibut fishery, the area-specific U32:O32 ratio was multiplied by the estimated commercial catch in each regulatory area, for each year. The resulting poundage was then multiplied by the discard mortality rate to obtain the estimated poundage of U32 halibut killed in the commercial fishery. The mortality of U32 halibut needed to be further subdivided to standardize the treatment of halibut between the sizes of 26 and 32 inches in the determination of catch limits.

Tables 2, 3 and 4 provide estimates of halibut mortality of O32, U32 and U26 halibut, respectively.

Table 2. Estimates of O32 halibut discard mortality, in thousands of net pounds, killed by lost or abandoned longline gear in the commercial halibut fishery, IPHC by regulatory area.

	Regulatory Area			
Year	**2C**	**3A**	**3B**	**4**
2011	5	29	7	32
2012[1]	16	12	10	16

[1]Preliminary as of November 7, 2012.

Table 3. Estimates of U32 halibut discard mortality, in thousands of net pounds, killed in the commercial halibut fishery, by IPHC regulatory area.

	Regulatory Area						
Year	**2C**	**3A**	**3B**	**4B**	**4C**	**4D**	**4E**
2011	65	881	752	33	40	109	23
2012	67	579	514	36	20	49	11

Table 4. Estimated of U26 halibut discard mortality, in thousands of net pounds, killed in the commercial halibut fishery, by IPHC regulatory area.

	Regulatory Area				
Year	**2C**	**3A**	**3B**	**4B**	**4CDE**
2011	4	41	74	4	17
2012	5	30	57	4	10

http://iphc.int/publications/rara/2012/rara2012053_commwastage.pdf

Incidental catch (bycatch) and mortality in non-directed fisheries

IPHC relies upon information supplied by observer programs run by domestic agencies for bycatch estimates in most fisheries. Research survey information is used to generate bycatch estimates in the few cases where fishery observations are unavailable. Estimates of bycatch off Alaska for 2012 were based on bycatch reported from fishing conducted through mid-October and projections by IPHC staff for the remainder of the year. Observer coverage in the GOA groundfish fisheries remained at lower than necessary levels, therefore estimates for some of these fisheries can be considered to be only minimum estimates of halibut mortality. Across Alaska, bycatch has been attributed to a few fisheries conducted in state waters and/or under state management. The lack of comprehensive observer coverage to provide bycatch data for these fisheries led IPHC to estimate bycatch using data collected on research surveys. Analyses to update estimates of bycatch taken by fishing within state waters or those managed by the State are not yet completed.

Discard mortality rates (DMRs), used to determine the fraction of estimated bycatch that dies, vary by fishery and area. Where observers are used for fishery monitoring, DMRs are calculated from data collected on the release viability or injury of halibut.

Estimates of bycatch mortality by fishery and IPHC Regulatory Area for 2011 and 2012 are shown in Table 5.

http://www.iphc.int/publications/rara/2012/rara2012315_incidental.pdf

Table 5. Estimates (thousands of pounds, net weight) of bycatch mortality of Pacific halibut by area, and fishery, for 2011 and 2012. Estimates for 2012 are preliminary and subject to changes as new information becomes available.

Regulatory Area		2011	2012
AREA 2C			
Crab pot/Shrimp trawl		303	n/a
Groundfish trawl		0	0
Hook & line (non-IFQ)		3	4
Hook & line (IFQ)		3	3
Chatham Str. sablefish		8	n/a
Clarence Str. sablefish		25	n/a
	Total	342	7
AREA 3A			
Crab pot/Shrimp trawl		250	n/a
Groundfish trawl		2,232	1,625
Hook & line (non-IFQ)		92	165
Hook & line (IFQ)		119	119
Groundfish pot		23	31
Prince William Sound sablefish		10	n/a
	Total	2,726	1,940
AREA 3B			
Crab pot/Shrimp trawl		50	n/a
Groundfish trawl		806	1,336
Hook & line (non-IFQ)		172	94
Hook & line (IFQ)		116	116
Groundfish pot		21	33
	Total	1,165	1,579
Area 3 Subtotal		**3,891**	**3,519**
AREA 4			

Crab pot/Shrimp trawl		300	n/a
Groundfish trawl		4,185	5,059
Hook & line (non-IFQ)		820	920
Hook & line (IFQ)		60	60
Groundfish pot		17	9
CDQ trawl		0	0
CDQ hook & line		0	0
CDQ pot		0	0
	Total	5,382	6,048
GRAND TOTAL		**9,615**	**9,574**

Sport catch

The IPHC depends on state and federal agencies for estimates of halibut sport fishery harvests. Management and data collection methods vary by area. For the Alaska sport fishery, different methodologies are used for estimating harvests in the current year versus the previous year, and also vary between the unguided (private) and guided (charter) fisheries. Charter vessel operators are required to record client catches in a daily logbook. In addition, a sample of licenced anglers receives a post-season mail survey, administered by ADFG. Data on the size of halibut caught are collected by an ADFG dockside creel sampling program in major ports, but excludes many lodges in Area 2C due to the remoteness of their locations.

Coastwide harvest remains below the historic high levels seen during 2004-2008. Harvest in Area 2C increased, whereas decreases were observed in Areas 3A, 3B and 4, although the changes in the latter two areas were very minor (Table 6).

http://www.iphc.int/publications/rara/2012/rara2012043_sportreview.pdf

Table 6. Harvest of Pacific halibut by sport fishers (millions of pounds, net weight) by regulatory area, for 2011 and 2012. Estimates for 2012 are preliminary.

Year	Area 2C	Area 3A	Area 3B	Area 4	Total
2011	1.029	4.408	0.014	0.017	5.468
2012	1.405	3.938	0.013	0.016	5.372

The personal use harvest through 2012

In Alaska, personal use harvests are taken in the federal subsistence fishery and the U32 halibut retained in Areas 4D/4E CDQ fishery under IPHC regulations. 2011 is the most recent year for which full information is available, 2012 data are incomplete. The personal use harvest is estimated by ADFG household interviews and postal surveys. The 2011 personal use harvests in Alaska were down 11.5% relative to 2010.

Estimates of the personal use harvest by fishery and Regulatory Area for 2011 and 2012 are shown in Table 7.

http://www.iphc.int/publications/rara/2012/rara2012061_personaluse.pdf

Table 7. Estimates of the personal use harvest (thousands of pounds, net weight) of Pacific halibut by regulatory area, for 2011 and 2012.

Year	2C	3A	3B	4B	4C	4D	4E	4D/4E CDQ	Total
2011	387.0	266.1	22.0	0.5	1.6	0.6	6.2	16.9	700.9
2012	n/a	n/a	n/a	n/a	n/a	n/a	n/a	20.2	n/a

Developments of the observer program in regards to non-halibut bycatch in the directed halibut fishery.

Beginning January 1, 2013, amendment 86 (BSAI) and amendment 76 (GOA) were added to the Federal Fisheries Regulations 50 CFR Part 679: Fisheries of the Exclusive Economic Zone Off Alaska. There are new partial coverage observer requirements for halibut vessels fishing hook and line gear. Halibut vessels are registered with the NMFS and can be selected on a vessel or trip basis. The program is covered by fees assessed on landings from both the CDQ and IFQ fisheries.

http://www.fakr.noaa.gov/regs/679e55.pdf

http://www.fakr.noaa.gov/regs/679e51.pdf

Ecosystem considerations

To better understand factors driving fluctuations in growth and recruitment of fish populations, researchers are paying increasing attention to climatic and oceanic conditions.

In 2012, each of the 10 fishing vessels chartered to complete the IPHC setline survey was outfitted with a profiling unit collecting oceanographic data (dissolved oxygen, temperature, salinity, pH, chlorophyll concentration). Coupling oceanographic observations with catch estimates from the IPHC setline survey over time is a necessary step in understanding the impacts of the environmental changes on the halibut resource. There is evidence that both dissolved oxygen and temperature play a role in halibut distribution within the survey area.

In addition, ecosystem characteristics of the BS, AI and the GOA are assessed annually by the NMFS in the Ecosystem Considerations appendix to the BSAI and GOA SAFE report. Since 1995, this document has been prepared in order to provide information about effects of fishing from an ecosystem perspective, and the effects of environmental change on fish stocks.

http://www.iphc.int/publications/rara/2012/rara2012389_oceanmonitoring.pdf

http://www.iphc.int/publications/rara/2012/rara2012401_environ_haldist.pdf

http://www.afsc.noaa.gov/REFM/docs/2012/ecosystem.pdf

Research project (Bruce Leaman, *pers. comm.* during site visit)

Project title: Fishery, Climate and Ecological effects on Pacific halibut Size-at-Age (SAA).

In the past two decades, the size-at-age (SAA) of halibut has undergone an extensive reduction. Reduction in SAA could reflect demographic, trophic, and genetic fishery impacts or may be the result of changing environmental and ecological conditions. This study proposes a comprehensive investigation and analysis of candidate causes for SAA changes in Pacific halibut, as well as an integrated approach to incorporating SAA dynamics into the assessment and management of the halibut stock. The project develops new understanding of ecosystem influences on growth, assesses the impact of fishery-induced changes, and creates a flexible modeling framework to integrate SAA changes into development of optimum harvest policies for Pacific halibut. Regarding climate change,

the project will analyze the effects of climate-driven changes in temperature on halibut SAA through bioenergetic modeling and an integrated growth model.
The proposal responds directly to research priority *1b(viii) Halibut* in the NPRB 2013 Request for Proposals. Under this priority, NPRB seeks *proposals to evaluate potential factors that have caused the reduced size-at-age (SAA) and consequences for the halibut in Alaska.*

5. There shall be regular stock assessment activities appropriate for the fishery, its range, the species biology and the ecosystem, undertaken in accordance with acknowledged scientific standards to support its optimum utilization.

FAO CCRF 7.2.1/12.2/12.3/12.5/12.6/12.7/12.17
FAO Eco 29-29.3

Evidence adequacy rating:

☑ High **☐ Medium** **☐ Low**

Rating determination

For 2012, there was a full review of the data, specific model equations and general approach used to assess the stock in recent years. Allowing for time-varying availability in the assessment model removed the retrospective bias in recent status estimates and is consistent with observed geographic and demographic trends. The results of the 2012 stock assessment indicate that the Pacific halibut stock has been declining continuously over much of the last decade. The change to the assessment model resulted in a much more pronounced decline in the estimated stock trend in recent years, a large reduction in the scale of current population estimates, and also a decrease in the estimated average level of productivity. Spawning biomass is estimated to have decreased from 319 to 197 million lb from 2011 to 2012, and exploitable biomass to have decreased from 260 to 219 million lb, over the same period. Using only data updated through 2011, the 2011 model estimate of 2012 spawning biomass was 40.9% of the reference level, which was reduced to 31.8% in the revised model, despite a 40% reduction in the absolute estimates. A review of the 2012 assessment model was done in May, prior to the development of management advice for the 2013 fishing season.

2012 Pacific Halibut Stock Assessment by the IPHC

For 2012, there was a full review of the data, specific model equations and general approach used to assess the stock in recent years. This effort consisted of three parts: 1) investigate and address the cause of the retrospective pattern observed in recent assessments, 2) improve the way uncertainty is propagated through data processing, model estimation and into the results used for management, and 3) identify additional work needed to create a more stable and easily reviewed stock assessment for the future. This work culminated in a successful Scientific Review Meeting, 24-26 October, 2012. Allowing for time-varying availability in the assessment model removed the retrospective bias in recent status estimates and is consistent with observed geographic and demographic trends. This change to the assessment model resulted in a much more pronounced decline in the estimated stock trend in recent years, a large reduction in the scale of current population estimates, and also a decrease in the estimated average level of productivity.

http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf

As noted in Issue 4, the EBS, GOA and AI trawl surveys conducted by NMFS provide important verification of abundance trends and support or replace the setline survey in some areas; however some of these data were not included in the 2012 assessment due to time constraints. This, in addition to the IPHC's setline survey, port sampling and e-landings provide the data for model assessment. The following table summarizes the data used for the 2012 halibut stock assessment.

Table 8. List of data sources included in the 2012 halibut stock assessment.

Years	Range	Resolution	Data
Setline survey data			
1997-2001, 2002-2011	Ages: 6-20+, 6-25+	Males, Females, Total	Proportions-at-age, Standard Error (SE) proportions-at-age, Numbers-per-unit-effort (NPUE)-at-age, SE of NPUE-at-age, Mean length-at-age, Ageing bias-corrected mean length-at-age, Mean weight-at-age, Ageing bias-corrected mean weight-at-age, Proportion legal (over 32"), Legal weight-at-age
1996-2011	Aggregated	Aggregated	NPUE, SE of NPUE, Weight-per-unit-effort (WPUE), SE of WPUE
Commercial fishery data			
1996-2001, 2002-2011	Ages: 6-20+, 6-25+	Males, Females, Total	Numbers-at-age, SE of Numbers-at-age, NPUE-at-age, SE of NPUE-at-age, Mean weight-at-age, Ageing bias-corrected mean weight-at-age
1996-2011	Aggregated	Aggregated	NPUE, SE of NPUE, WPUE, SE of WPUE
Bycatch data			
1996-2011	Lengths: 0-120 cm, 10-cm bins	Aggregated	Numbers, SE of numbers
1996-2011	Ages: 6-30	Males, Females, Total	Ageing bias-corrected mean length-at-age, SE of ageing bias-corrected mean length-at-age, Ageing bias-corrected mean weight-at-age
Removals data			
1996-2011	Aggregated	Aggregated	Total weight of removals for: commercial, discard, bycatch, sport, personal use
Ageing imprecision data			
Aggregated	Ages: 1-20, 1-30	Aggregated	Transition matrix from observed: surface to canonical age, break-and-bake to canonical age
Maturity data			
Aggregated	Ages:6-30+	Females	Maturity-at-age

Summary of the 2012 halibut stock assessment model

Catchability and fishery selectivity

Little change was made to the 2011 model framework other than the addition of time varying availability, and making aggregate catchability a single estimated quantity. The annual curves remained quite similar for the commercial fishery over time; however the setline survey is estimated to have experienced increasing availability of smaller halibut and decreasing availability of larger fish. These estimates are consistent with observed increases in abundance in Area 2 and decreases

in Areas 3-4, and the biological characteristics generally observed in those areas. As has been the case in recent assessments, the sport and personal use/subsistence fleets are assigned the same selectivity pattern as the survey. Bycatch mortality is assumed to follow a fixed selectivity pattern with a dome-shape, selecting more 40-50 cm halibut than 60+ cm. Commercial fishery catchability is allowed to vary over time, with the estimated trend for both males and females similar to that seen in previous assessments.

Mortality

Natural mortality is fixed at a value of 0.15/year for females and estimated to be 0.143 for males.

Likelihood

Likelihood equations and model dynamics were also unchanged from previously documented equations (Clark and Hare 2006a). An effort to fully document all steps involved with data preparation, and the stock assessment model itself, was begun during 2012; however, it was deemed inefficient to proceed with this process until clear guidance on future improvements could be identified. This was achieved during the Scientific Review Meeting (Stewart et al. 2013), and will be completed for the 2013 process. This effort will also focus on developing models with implicit treatment of spatial patterns, better use of data collected prior to 1996, and other improvements identified during the Scientific Review Meeting.

Retrospective pattern

The most pressing issue to resolve for 2012 was the pronounced retrospective pattern (Figure 6) observed among recent Pacific halibut stock assessments (Clark and Hare 2006b, 2007, Hare and Clark 2008, Hare 2009, 2010, 2011). This retrospective pattern resulted in each stock assessment estimating a lower absolute stock level than the previous assessment, which can have strong potential implications for harvest policy (Valero 2011). However, it is difficult to correct adequately for such a bias when the cause is unknown.

The retrospective pattern was clearly evident within the 2011 model (the wobblesq configuration, on which most of the 2011 results were focused) when evaluated by sequentially removing the terminal year of data and re-estimating the time-series of spawning biomass. As was documented in the 2011 assessment, the retrospective bias in stock size was a direct result of transient overestimation of incoming year-class strengths during the period for which they were relatively poorly informed by the data but contributing significantly to the spawning biomass (i.e., the 1998-2000 cohorts in 2011.

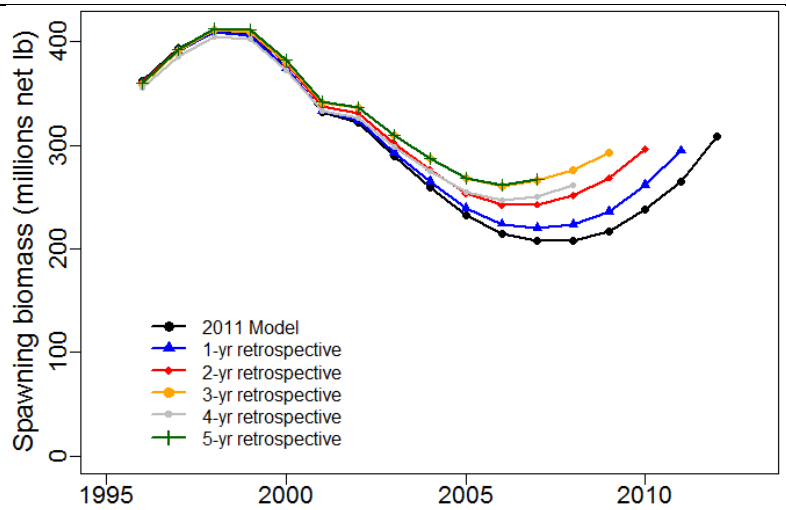


Figure 6. Retrospective analysis for the 2011 "wobblesq" model.

In order to resolve the retrospective pattern, a detailed investigation of the stock assessment model code and structural assumptions was performed during August and September, 2012. No significant coding errors or inconsistencies in data preparation that appeared to be contributing to the retrospective bias were discovered. Treatment of bycatch mortality (selectivity and magnitude), commercial and survey catchability (identified as a potential factor during the 2011 process; Valero, unpublished analyses), the translation of length- to age-based selectivity, smoothing of recruitment estimates as well as many other potential mechanisms were tested, but none showed any strong correlation with retrospective performance.

The most informative tests conducted consisted of: 1) directly penalizing large recruitments, 2) substantially increasing the relative weight placed on the survey trend during model fitting, and 3) evaluating the potential for time-varying availability. It was discovered that the retrospective bias was removed if the survey WPUE trend was substantially upweighted (thereby decreasing the relative weight on the age data). Although informative, neither of these tests provided an explanation for the retrospective patterns, only a highlighting of which data (the age information) was most closely implicated.

Availability (also called 'selectivity') provides the link between the underlying estimated population age-structure and the observed age data in a stock assessment model. When modeled at a small spatial scale the dominant component of this process is represented by vulnerability: which demographic components (i.e., small vs. large fish, old vs. young fish) are most likely to be captured when the gear is deployed. At a coastwide scale, availability includes not only the capture efficiency of the fishing gear, but also the interaction between the spatial distribution of the stock and the differences in population characteristics (i.e., age, length, weight- or length-at age) among areas. Historical closed area assessment models had maintained a rigid assumption that availability could not vary over time, and this assumption had been carried forward to the current coastwide model, despite the difference in effective application of the relationship at over a much broader spatial scale. Further, the large amount of weight carried by the age-composition data in the assessment model relative to the survey index of abundance was both found to have contributed the observed retrospective bias and the difficulty in identifying it. The age data were largely responsible for stock estimates. As has been the case twice before in the history of the halibut stock assessment (1994 and 2002), a change in the parameterization of availability was required to improve model

performance, and remove the retrospective bias. Several different approaches to implementation of time-varying availability were investigated, and all produced results that much more closely matched the observed time-series of survey catch rates than did the 2011 model. The selected approach successfully removed the retrospective bias (Figure 7) in recent status estimates and is consistent with observed geographic and demographic trends.

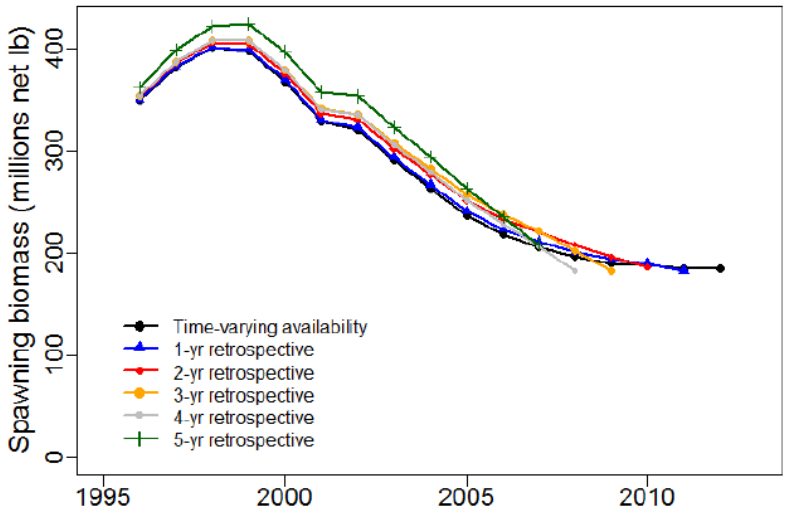


Figure 7. Retrospective analysis for the model allowing time-varying availability, and using data through 2011.

Goodness of fit

The 2012 stock assessment model is able to fit the primary indices of abundance (WPUE and NPUE) from both the setline survey and commercial fishery reasonably well, similar to those fits reported for previous models. The fit to the total setline survey proportion-at-age captures the general modal structure of the observed data, and is similar for both females and males. The fit to the commercial fishery total catch-at-age, as well as the females and males separately is similar to that of the setline survey.

Results

The results of the 2012 stock assessment indicate that the Pacific halibut stock has been declining continuously over much of the last decade (Figure 8). The change to the assessment model resulted in a much more pronounced decline in the estimated stock trend in recent years, as a result of much lower estimates of recent recruitments (Figure 9 and 10).

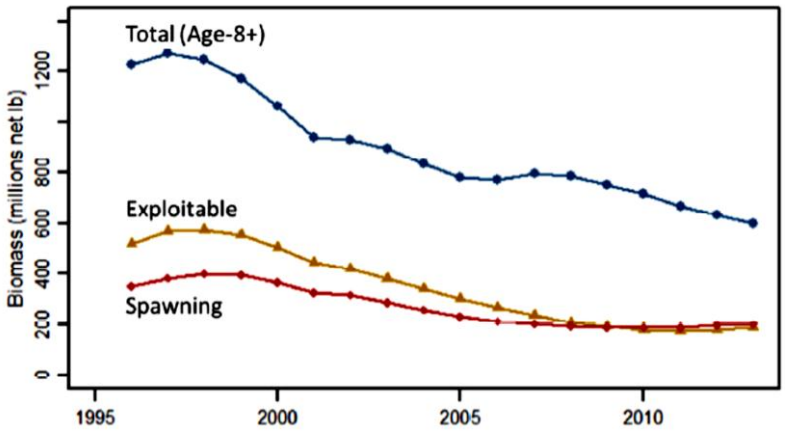


Figure 8. Time series of biomass results.

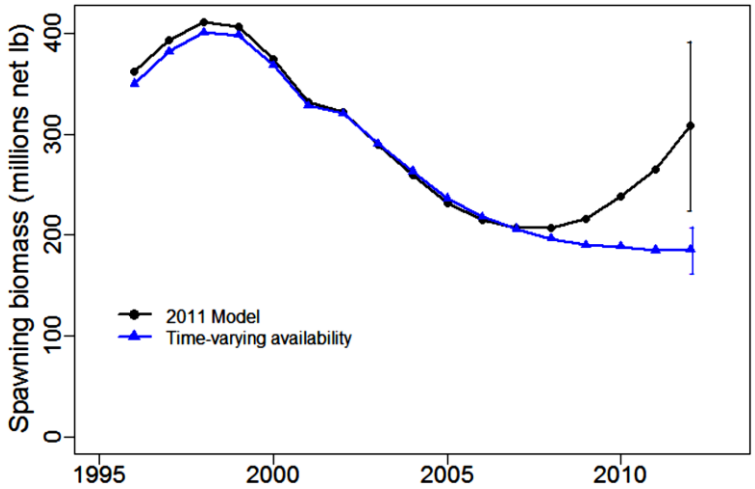


Figure 9. Comparison of the 2011 and revised stock assessment models using data updated through 2011.

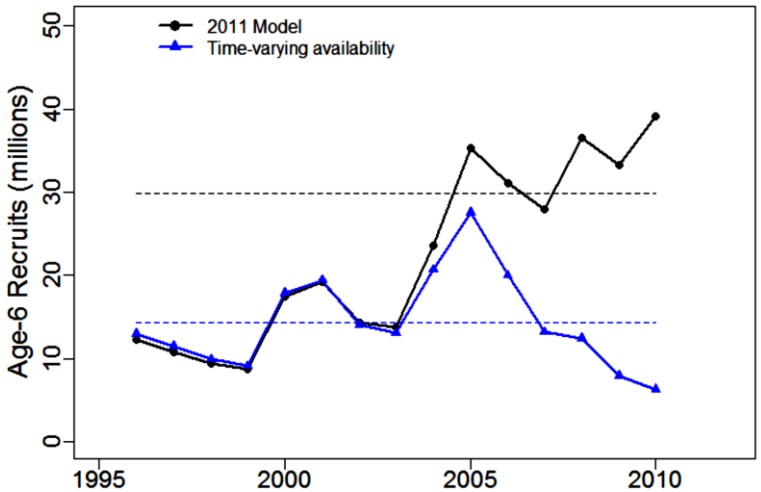


Figure 10. Comparison of the 2011 and revised stock assessment model estimates of recruitment using data updated through 2011.

Spawning biomass is estimated to have decreased from 319 to 197 million lb from 2011 to 2012, but slightly increased from 197 to 201 million lb from 2012 to 2013 and exploitable biomass is estimated to have decreased from 260 to 219 million lb from 2011 to 2012, and also decreased from 219 to 186 million lb from 2012 to 2013 (Table 8).

Table 8. Results of the bridging analysis, comparing the 2011 (wobblesq) model with data through 2011, data through 2011 but updated in 2012, data through 2012 and the current assessment model results (right-hand column).

Model	2011 (wobblesq)			2012
End year	2011	2011	2012	2012
Data finalized in:	November 2011	November 2012	November 2012	November 2012
Quantity				
2012 Spawning biomass	319	309	272	197
2012 Relative spawning biomass	42%	41%	38%	34%
2013 Spawning biomass	--	--	324	201
2013 Relative spawning biomass	--	--	46%	35%
2012 Exploitable biomass	260	252	219	179
2013 Exploitable biomass	--	--	258	186
2012 Coastwide harvest rate	19.4%	18.9%	21.8%	26.7%

These revised estimates also correspond to a large reduction in the average level of productivity, and therefore the absolute value of the spawning biomass reference points. In tandem, these results suggest only a modest decrease in stock status relative to the harvest policy target. Using only data updated through 2011, the 2011 model estimate of 2012 spawning biomass was 40.9% of the reference level, which was reduced to 31.8% in the revised model, despite a 40% reduction in the absolute estimates (Figure 11).

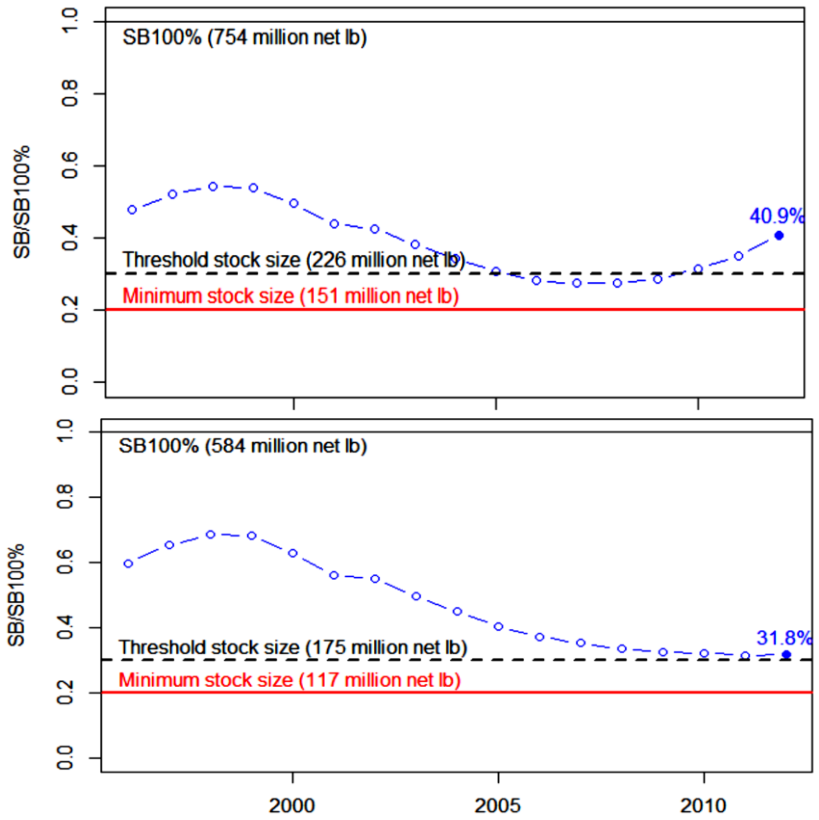


Figure 11. Comparison of the relative spawning biomass estimates from 2011 (wobblesq) model (top panel) and the current assessment (bottom panel) using data through 2011.

The retrospective bias was a major problem that resulted in over inflated stock estimates, made the models inconsistent with observed trends and that predicted stock increases that never appeared. The 2012 model addresses this issue and results now track with observed trends. However, these changes also show a stock size estimate of ~30% less than previous models.

Future research

Building upon the work completed for 2012, and following the guidance of the Scientific Review Meeting, future efforts will focus on several key aspects of the stock assessment:

1. Improved accounting for additional sources of uncertainty through reduced data processing, use of more flexible model structures capable of directly including alternate structural hypotheses, Bayesian methods for fully integrating parameter uncertainty and model averaging.
2. Development of implicitly and explicitly spatial models to better incorporate the spatial variability observed for halibut.
3. Further investigation of the factors contributing to recruitment strength and observed size-at-age in order to better forecast trends in these quantities.
4. Stimulation testing the stock assessment model based on data generated from research model.

Additional work during 2013 will address the specific items relating to data processing and model details listed in the report form the Scientific Review.
http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf

Management Strategy Evaluation and Management Strategy Advisory Body

The objective of this body is to develop a formal process in which to evaluate the performance of alternative management procedures for the Pacific halibut stock against a range of scenarios that encompass observation and process uncertainty in stock assessments, alternative hypotheses about stock dynamics and structural assumptions. The MSE process will be overseen by a Management Strategy Advisory Body (MSAB) that is comprised of harvesters (commercial, sport, and subsistence), fisheries managers (DFO and NMFS), processors, IPHC staff, commissioners and academia.

The MSE framework was introduced at the Commission's interim meeting in November 2012, and the process of forming the MSAB has been initiated at the Annual meeting in January 2013. For the initial formation of the MSAB, the IPHC solicited nominations from existing Commission advisory bodies (RAB, CB, PAG) and direct application from the public. Following, the list of nominations will be categorized (processors, harvesters, managers, etc.) and ranked by the IPHC staff, and then submitted for final selection by the IPHC Commissioners. The initial meeting will also serve the purpose of defining objectives for the halibut fishery, scoping out performance measures in which to compare alternative harvest policies, and flush out key operating model components that will be required to address alternative management procedures.

The development of an operating model is currently underway by IPHC staff, and this work will evolve continuously with the development and revisions of the MSE framework. Input from the MSAB, as well as the available historical data, will help shape the structure of the reference and observation models to be used in the MSE efforts. In addition to the current coast-wide assessment model, alternative assessment models will also undergo simulation testing using the MSE framework. The reference and observation model platforms provide "known" state variables in which to evaluate alternative assessment models, or changes to the current assessment model. Prior to the second MSAB meeting, it is anticipated that the "alpha"version of the MSE software will have the capability of exploring alternative estimators (or structural assumptions), alternative harvest control rules, and establish base-line metrics based on "perfect information" over a range of alternative hypotheses about stock structure.

Applications for the MSAB have been accepted until 15th March 2013 and the first meeting is scheduled for May, 2013.

http://www.iphc.int/news-releases/314-nr20130205.html

http://www.iphc.int/meetings/2013am/documents/P02_MSEFramework.pdf

http://www.iphc.int/meetings/2013am/documents/3.4_MSAB_FL.PDF

C. The Precautionary Approach

6.	**The current state of the stock shall be defined in relation to reference points or relevant proxies or verifiable substitutes allowing for effective management objectives and target. Remedial actions shall be available and taken where reference point or other suitable proxies are approached or exceeded.** ***FAO CCRF 7.5.2/7.5.3*** ***Eco 29.2/29.2bis/30-30.2***

Evidence adequacy rating:

☑ **High** ☐ **Medium** ☐ **Low**

Rating determination

IPHC's harvest policy is to harvest 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% (B30 threshold level) of a level defined as the unfished level. The harvest rate is linearly decreased towards a rate of zero as the spawning biomass approaches 20% (B20 limit level) of this estimated unfished level. The unfished female spawning biomass (Bunfished) is computed by multiplying spawning biomass per recruit (SBR, from an unproductive regime) and average coastwide age-six recruitment (from an unproductive regime). This gives a Bunfished of 573 million pounds, a B20 of 115 million, a B30 of 172 million pounds, and the 2012 and 2013 female spawning biomass value of 197 and 201 million pounds, respectively, establish Bcurrent as 34% and 35% of Bunfished in 2012 and 2013, respectively, down from the 2011 end of the year estimate of Bcurrent of 42%.

Since 1985, the IPHC has followed a constant harvest rate (CHR) policy to determine annual available yield, termed the Constant Exploitation Yield (CEY). A biological target level for total removals from each regulatory area is calculated yearly by applying a fixed harvest rate to the estimate of exploitable biomass in each IPHC regulatory area. IPHC's harvest policy is to harvest 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% (threshold level) of a level defined as *the unfished level*. The harvest rate is linearly decreased towards a rate of zero as the spawning biomass approaches 20% (limit level) of this estimated *unfished* level. That is, fishing ceases completely if the stock is below 20% of the unfished biomass.

This combination of harvest rate and precautionary levels of biomass protection have, in simulation model studies, provided a large fraction of maximum available yield minimizing risk to the spawning biomass, while allowing for the quickest stock recovery to at least, threshold levels. The minimum observed spawning biomasses for the three IPHC core areas all occurred in the mid-1970s, approximately 9 million pounds in 2B, 13 million pounds in 2C and 42 million pounds in 3A. By definition, these become the observed spawning biomass limits. The current harvest policy for Pacific halibut utilizes a ramp from target harvest rates to no fishing between 30% relative spawning biomass and 20% relative spawning biomass. At the beginning of 2013, the stock is estimated to be at 35% of the reference level, just above the harvest policy threshold (Figure 12). The details of the

calculation of relative spawning biomass have not changed from recent assessments. Briefly, this calculation relies on a historical estimate of spawning-biomass-per-recruit (118.5 lb/age-6 recruit), using size-at-age from the 1960s to 1970s (Hare 2012). Average estimated age-6 recruitment is calculated from the assessment, corrected for environmental regime (Clark and Hare 2006), and then multiplied by the historical spawning-biomass-per-recruit to produce and estimate of the average spawning biomass in the absence of fishery removals.

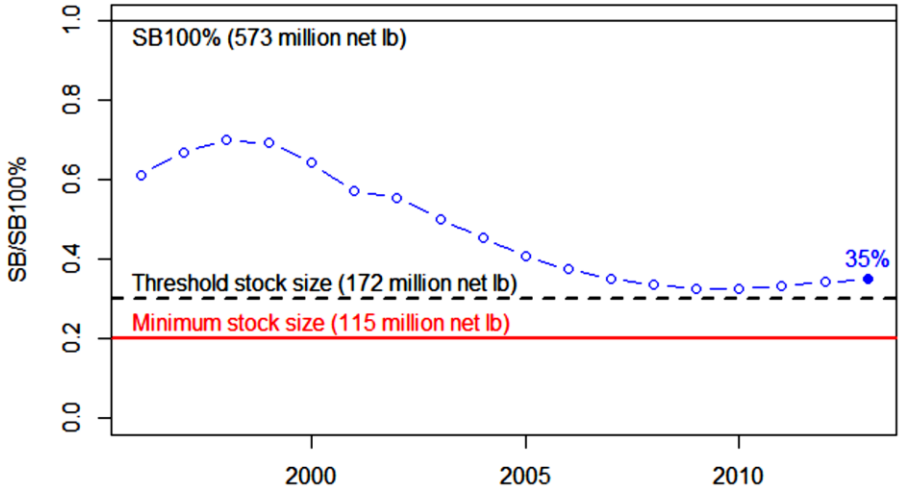


Figure 12. Time-series of spawning biomass relative to harvest policy reference points.

Because the harvest policy is defined at the Area-specific level, the results of apportionment calculations must be used (Webster and Stewart 2013), to evaluate the relative fishing intensity, even though the assessment is conducted at a coastwide scale. Specifically, in order to compare the effective coastwide harvest rate (ECHR) estimated in the stock assessment to a target level, exploitable biomass must be apportioned to area, with area-specific catch limits aggregated back to the coastwide level. Using this method, harvest rates are estimated to have been well above targets for the last decade. This calculation is made in hindsight, and does not correspond to the estimates and targets as historical management decisions were being made, but to the realized harvest rates now estimated in the 2012 stock assessment. Reductions in harvest levels in 2011 and 2012 have brought realized harvest rates much of the way back toward the coastwide target, and declines in spawning biomass appears to have moderated and reversed slightly in 2012 (Figure 13).

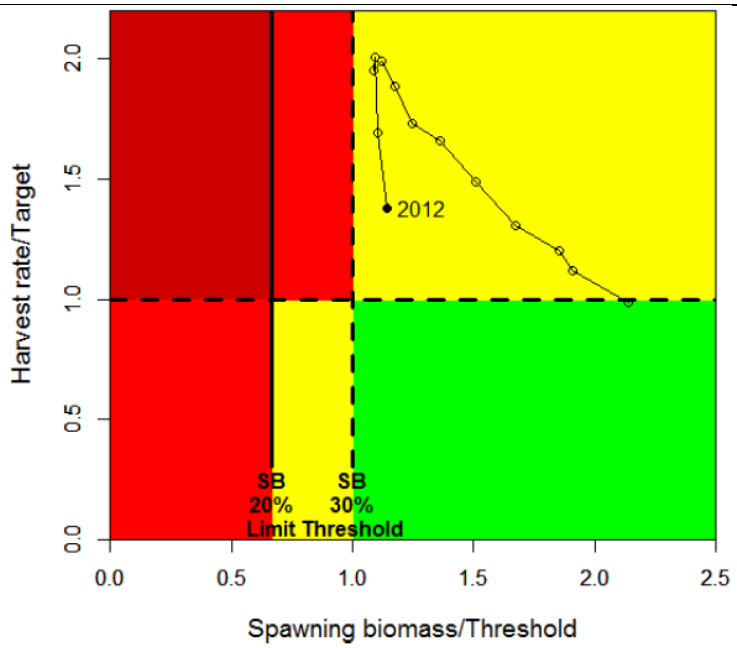


Figure 13. Phase plot of relative stock size and fishing intensity.

Evidence

http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf

http://iphc.int/publications/rara/2012/rara2012187_apportionment.pdf

7. **Management actions and measures for the conservation of stock and the aquatic environment shall be based on the Precautionary Approach. Where information is deficient a suitable method using risk assessment shall be adopted to take into account uncertainty.**

FAO CCRF 7.5.1/7.5.4/7.5.5
FAO ECO 29.6/32

Evidence adequacy rating:

☑ **High** ☐ **Medium** ☐ **Low**

Rating Determination

Although this is common for many fisheries stock assessment, the degree of pre-model processing and redundancy in the halibut data set likely result in a substantial underestimation of this source of uncertainty. Nonetheless, it is included in the decision-making framework described below. Additional sources of uncertainty include choices made in structuring the assessment model, steps taken during data processing, and many other sources that are not included in the results. During the 2012 assessment process, there was substantial discussion regarding estimates of total removals used in the halibut stock assessment. The IPHC has expressed concern over continued declining catch rates in several areas and has taken aggressive action to reduce harvests and recommended to the governments of Canada and the United States catch limits for 2013 totalling 31,028,000 pounds, a 7.5% decrease from the 2012 catch limit of 33,540,000 pounds. For 2013, the IPHC adopted a 24.4% effective coastwide harvest rate, down from the 2012 effective coastwide harvest rate of 25.7%. In addition, the staff has noted a continuing problem of reductions in previous estimates of biomass as additional data are obtained, which has the effect of increasing the realized historical harvest rates on the stock. For 2012 assessment, significant improvements to methods used to forecast future stock size and to calculate the uncertainty associated with these predictions were made. Given the pronounced declining trends in recent size-at-age, alternative projections were run using observed size-at-age from 2012, as well as fitting a linear trend to the most recent three years of data. An element clearly illustrating the precautionary nature of the IPHC management actions is the SUFullD harvest policy currently in place. *This harvest policy, allowing full decrease in catch limits when the stock is projected to decline, but only a third increase in catches (from the previous year) when the stock is projected to increase is clearly a long term management measure aimed at increasing halibut harvestable and spawning biomass.*

Major sources of uncertainties, Stock Assessment and Harvest Rates

Estimation of uncertainty, or the portion of uncertainty associated with estimating the most likely values for the parameters of the stock assessment from the available data, is relatively small. Although this is common for many fisheries stock assessment, the degree of pre-model processing and redundancy in the halibut data set likely result in a substantial underestimation of this source of uncertainty. Nonetheless, it is included in the decision-making framework described below. Additional sources of uncertainty include choices made in structuring the assessment model, steps taken during data processing, and many other sources that are not included in the results. During the 2012 assessment process, there was substantial discussion regarding estimates of total removals used in the halibut stock assessment. Some of these removals are observed directly through landings, but many others, such as discard mortality and some sources of bycatch in non-target fisheries are inferred from sparse or incomplete data. This stock assessment includes estimates of

removals including all sizes of halibut from all sources for which an estimate is available. To the extent that these estimates are incorrect or incomplete, the results of the assessment will be biased. It is difficult to predict how changes in estimated removals might influence model results, and potential effects are likely to depend on the trends and absolute scale of such changes. If uncertainty estimates can be generated for currently used values, or even if plausible ranges removals can be identified, this is a source of uncertainty that could be directly incorporated into decision-making framework outlined below.

Recent trends of below average recruitment and decreasing size-at-age have been important contributing factors in the overall stock decline. The effects of recent poor recruitment are likely to influence spawning biomass trends in the near-term, as these weak cohorts mature. Regardless of harvest levels, potential increases in stock biomass will also be very sensitive to future trends in size-at-age and recruitment. Until these processes are better understood, they represent a substantial source of uncertainty that is difficult to include in the forecast projections.

The IPHC has expressed concern over continued declining catch rates in several areas and has taken aggressive action to reduce harvests. In addition, the staff has noted a continuing problem of reductions in previous estimates of biomass as additional data are obtained, which has the effect of increasing the realized historical harvest rates on the stock.

The IPHC recommended to the governments of Canada and the United States catch limits for 2013 totalling 31,028,000 pounds, a 7.5% decrease from the 2012 catch limit of 33,540,000 pounds (Table 9). For 2013, the IPHC adopted a 24.4% effective coastwide harvest rate, down from the 2012 effective coastwide harvest rate of 25.7% (Table 9). In addition to setting catch limits for 2013, the IPHC dealt with a wide range of catch limit and regulatory issues, and also took important actions regarding bycatch management, scientific assessment review, and the IPHC performance review.

The halibut fleet is highly regulated and subjected to defined fishery data collection systems, operating under an IFQ system, with conservatively defined catch quotas, gear specifications and restrictions, size limits, and closed seasons and areas. In addition, if halibut bycatch limits (Prohibited Species Catch) are reached in the groundfish fisheries, or if areas with high concentrations of juvenile halibut are recorded, fishery and area closure measures are adopted respectively.

New Format for IPHC Staff Harvest Advice

The IPHC staff harvest advice is being restructured to present more information and more options for consideration by Commissioners as they set the annual catch limits. This change is in response to the IPHC direction at the 2012 Annual Meeting, reinforced by the 2012 Performance Review and stakeholder feedback. Although this restructured advice format is new to the IPHC, it is becoming common practice in world fishery management. This procedural approach provides a more transparent delineation between scientific results and management/policy decisions, ultimately enabling a better understanding of the risks associated with different fishery harvest options.

In the past, IPHC staff harvest advice centered on point biomass estimates and catch limit recommendations (i.e., single numbers for each). This format does not adequately convey the uncertainties around stock estimates and the risks of various possible outcomes at different catch levels. This year, the IPHC staff harvest advice will be summarized in a table which integrates uncertainty surrounding the stock assessment as it relates outcomes to estimates of risk (Figure 14 and Table 9). The new format will give the Commissioners a wider range of advice to consider as

they set catch limits for 2013. For example, different catch levels (outcomes) can be evaluated and presented in terms of their impact (risk) on the stock and harvest rates. The Commissioners will be able to examine a range of harvest options and the probable impacts on the stock as they deliberate. Figure 14 illustrates the structure of how the staff will be providing advice to the Commission and stakeholders.

Stock projections rely on the results from the stock assessment, summaries of the removals in 2012, as well as the results of apportionment calculations. The projected removals consistent with the current harvest policy are identified as the Blue Line in the decision-making table and forecast results (Table 9). There is a 25% probability that the stock will be below the harvest policy threshold of 30% of the reference level of spawning biomass, regardless of the removals in 2013 (column b); however there is less than a 1% probability that the stock is below the harvest policy limit of 20% relative spawning biomass (column c). There is a 23% probability that the stock will be smaller in 2014 than it is estimated to be in 2013 in the absence of any removals. Because the stock trajectory is estimated to be very flat, any removals in 2013 yield a much larger probability of a smaller stock in 2014 than 2013, ranging from 76% to 86% over the range of alternative evaluated (column d). Despite the high probability of a one-year decline in the stock abundance, there is a very low probability that this decline will be large. Probabilities of greater than 5% stock decline are all 4% or less (column e). Given recent poor recruitment, declines in spawning biomass are projected to be very likely over a three-year projection, with a probability of 41% in the absence of harvest, increasing rapidly to 95-99% over the alternatives considered (column f). However, the probabilities of dropping below management reference points by 2016 do not change appreciably from those for 2014. Given the current harvest policy, if the fishery CEY of 22.7 million pounds (the Blue Line) is removed in 2013, there is an almost even chance (48%) that the exploitable biomass in 2014 could produce a catch at least as large (column g). All harvest smaller than 17.7 million pounds result in a very low probability (1% or less) of exceeding the coastwide target, but those above 22.7 have high probabilities (75% to >99%; column a).

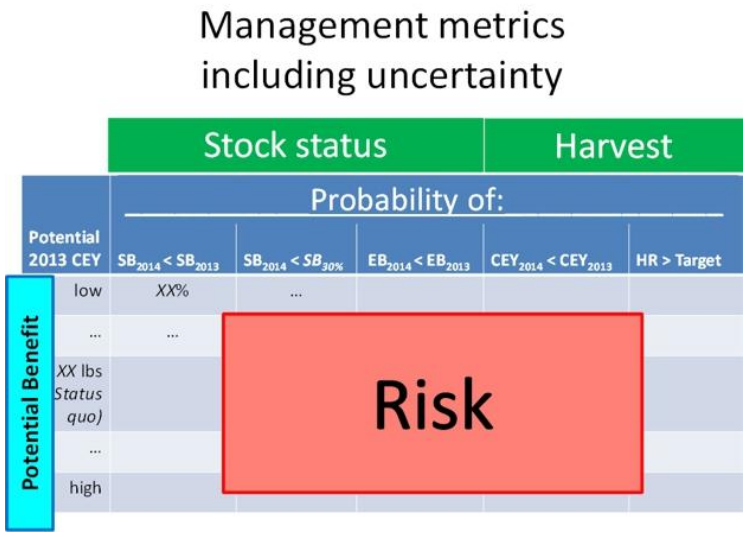


Figure 14. Decision-making table enables transparent risk-benefit evaluation based on specific performance metrics.

Table 9. Extended decision-making table. Values indicate the probability of the outcome in each column given the level of removals for that row. The grey line represents FCEY=0; the Blue Line represents projected removals consistent with the current harvest policy; the red line represents 2013 adopted catch limits; and the green line represents 2012 catch limits.

	Fishing Intensity	Stock status		Stock trend			Catch trend		
	Effective coastwide HR	Spawning biomass					Fishery CEY		
Coastwide Fishery CEY (total removals) millions lb	2013	2014				2016	2014		
	Is greater than target	Is less than 30%	Is less than 20%	Is less than 2013	Is 5% less than 2013	Is less than 2013	Is less than 2013	Is 10% less than 2013	Effective coastwide harvest rate
0.0 (0.0)	0%	25%	<1%	23%	<1%	41%	0%	0%	0.0%
0.0 (16.5)	<1%	25%	<1%	76%	2%	95%	0%	0%	6.9%
3.4 (20.0)	<1%	25%	<1%	77%	2%	96%	<1%	<1%	8.8%
12.9 (30.0)	1%	25%	<1%	79%	2%	97%	1%	1%	14.2%
17.7 (35.0)	23%	25%	<1%	80%	2%	97%	19%	10%	16.8%
22.7 (40.2)	50%	25%	<1%	82%	3%	97%	48%	31%	19.6%
27.3 (45.0)	75%	25%	<1%	83%	3%	98%	75%	64%	22.2%
28.1 (45.9)	76%	25%	<1%	83%	3%	98%	76%	68%	22.6%
29.9 (47.7)	78%	25%	<1%	83%	3%	98%	78%	74%	23.7%
31.0 (48.9)	81%	25%	<1%	84%	3%	98%	83%	76%	24.4%
32.1 (50.0)	84%	25%	<1%	84%	3%	98%	85%	77%	24.8%
33.5 (51.1)	90%	25%	<1%	84%	3%	98%	90%	79%	25.7%
36.2 (54.3)	97%	25%	<1%	85%	4%	98%	97%	87%	27.2%
41.6 (60.0)	>99%	25%	<1%	86%	4%	99%	>99%	99%	30.2%
	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	

SUFullD Harvest Policy

An element clearly illustrating the precautionary nature of the IPHC management actions is the SUFullD harvest policy currently in place. Given the last decade of decreasing trends in halibut harvestable biomass, the IPHC staff recommended in 2010 the incorporation of the existing harvest policy of a 33% increase from previous year's catch limits when stock yields was projected to increase but the use a 100% decrease in recommended catch, when stock yields where projected to decrease. The SUFullD policy was adopted in January 2011 and is now on the second year of implementation. This harvest policy, allowing full decrease in catch limits when the stock is projected to decline, but only a third increase in catches (from the previous year) when the stock is projected to increase is clearly a long term management measure aimed at increasing halibut harvestable and spawning biomass.

Evidence

http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf
http://iphc.int/publications/rara/2012/rara2012187_apportionment.pdf

D. Management Measures

8. Management shall adopt and implement effective measures including; harvest control rules and technical measures applicable to sustainable utilization of the fishery and based upon verifiable evidence and advice from available scientific and objective, traditional sources.

FAO CCRF 7.1.1/7.1.2/7.1.6/7.4.1/7.6.1/7.6.9/12.3
FAO Eco 29.2/29.4/30

Evidence adequacy rating:

☑High **☐ Medium** **☐ Low**

Rating determination

The IPHC has developed, refined, and utilized a constant harvest rate policy since the 1980's. The policy was initially designed to harvest 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% of the unfished level. The harvest rate is linearly decreased towards a rate of zero as the spawning biomass approaches 20% of the unfished level. This combination of harvest rate and precautionary levels of biomass protection have, in simulation studies, provided a large fraction of maximum available yield while minimizing risk to the spawning biomass. Following the 2008 Committee of Independent Experts (CIE) review of the assessment and harvest policy, the simulations on which the harvest policy was based were modified to incorporate "assessment error". Under the individual fishing quota share system in place for the Pacific halibut fishery, fishing capacity (vessels and gear) has been reduced, seasons were extended and wastage was reduced. Fishing gear is regulated to longline gear only. In 1983, industry made the operational switch from J-hooks to circle hooks in the commercial fishery. Regulations are in placed to address discards. General spawning areas have been mapped in Alaska. The halibut fishery is closed during peak spawning times, by regulation. The NPFMC has established Marine Protected Areas and additional trawl closures that benefit juvenile fish and adult spawners. Bycatch of seabirds were addressed by specific regulations now including the use of streamer (tory) lines, night setting, lineshooters and lining tubes. Management actions are in place in respect to increasing knowledge on the halibut and non-halibut bycatch dynamics in the directed halibut longline fishery. Moreover, in June 2012, the NPFMC took action to reduce halibut bycatch limits in GOA groundfish fisheries.

Nearly all of the research done by the Commission staff is directed toward one of three continuing objectives of the IPHC. These are improving the annual stock assessment and quota recommendations, developing information on current management issues, and adding to knowledge of the biology and life history of halibut.
Management of the fishery is based upon this, and other research. The fishery continues to harvest only those fish surplus to sustaining reproductive capacity.

Harvest rate policy and catch limits management

The IPHC has developed, refined, and utilized a constant harvest rate policy since the 1980's. The

policy was fully described in Clark and Hare (2006) and further modified as described in Hare and Clark (2008), and Hare (2011b). Stated succinctly, the policy was initially designed to harvest 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% of the unfished level. The harvest rate is linearly decreased towards a rate of zero as the spawning biomass approaches 20% of the unfished level. This combination of harvest rate and precautionary levels of biomass protection have, in simulation studies, provided a large fraction of maximum available yield while minimizing risk to the spawning biomass.

Following the Committee of Independent Experts (CIE) review of the assessment and harvest policy (Francis 2008, Medley 2008), the simulations on which the harvest policy was based were modified to incorporate "assessment error" (Hare and Clark 2008). This was implemented by adding autocorrelated error in estimation of the SBio, and having the harvest rates set according to the "perceived" state, as opposed to the "true" state, of the SBio. This form of robustification of the harvest policy is designed to protect the stock in the common situation where assessments tend to be consistently too high or too low for a sequence of years, which corresponds to the current situation regarding the halibut assessment.

Total and fishery yield calculations were performed using methods consistent with recent analyses. This process begins with the estimated 2013 coastwide exploitable biomass from the stock assessment. Based on results of the survey apportionment calculations, the estimated proportions from 2012 are used to infer the distribution of the EBio among areas at the beginning of 2013. The current harvest policy uses different target exploitation rates by regulatory area. These rates are 21.5% for Areas 2A, 2B, 2C and 3A and 16.125% for Areas 3B, 4A, 4B, and 4CDE. Based on the observed distribution of biomass in 2012, application of these target rates results in an effective coastwide harvest rate of 19.6%. The coastwide TCEY is therefore 36.63 M lb, based on the coastwide EBio estimate of 186.49 M lb. The IPHC recommended catch limits for 2013 totalling 31.0 M lb, a 7.5% decrease from the 2012 catch limit of 33.5 M lb.

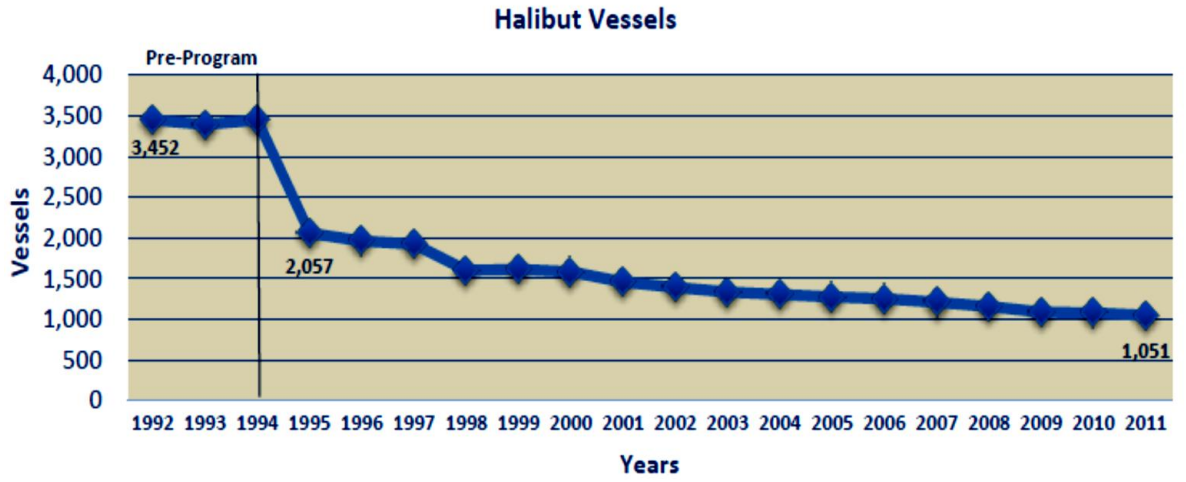
The IPHC staff harvest advice is being restructured to present more information and more options for consideration by Commissioners as they set the annual catch limits. This change is in response to the IPHC direction at the 2012 Annual Meeting, reinforced by the 2012 Performance Review and stakeholder feedback (See Clause 7).

http://iphc.int/publications/rara/2012/rara2012187_apportionment.pdf
http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf

Regulations

Individual fishing quota program

Under the individual fishing quota (IFQ) share program in place for the Pacific halibut and sablefish fishery since 1995, fishing capacity (vessels and gear) has been significantly reduced in Alaska (see below).



With the implementation of IFQs in the fishery, the derby type fishery was eliminated, seasons were extended and wastage was reduced in the halibut fishery. Regulations in place address waste, discard, bycatch, and endangered species interactions in the halibut fisheries. The IPHC, the NMFS, and ADFG promulgate these regulations through the Commission, the NPFMC, and the Alaska Board of Fisheries.

http://www.fakr.noaa.gov/regs/679d42.pdf
http://www.iphc.int/publications/regs/2012iphcregs.pdf
https://www.fakr.noaa.gov/ram/ifq/rtf11.pdf

In-season actions

The IPHC is authorized to establish or modify regulations during the season. In-season actions may include, but are not limited to, establishment or modification of the following:

(a) Closed areas;
(b) Fishing periods;
(c) Fishing periods limits
(d) Gear restrictions
(e) Recreational bag limits
(f) Size limits; or
(g) Vessel clearances

http://www.fakr.noaa.gov/regs/679d42.pdf

Gear

Fishing gear is regulated to longline gear only. Longline gear and the manner of fishing have been developed over a long period of time to be selective of target species.

In the early 1980s the IPHC conducted research on capture efficiency of circle vs **J** hooks and determined that using circle hooks lowered the mortality of undersized halibut caught and released during fishing. In 1983, industry made the operational switch from J-hooks to circle hooks in the commercial fishery.

Bycatch of seabirds were addressed by specific regulations put in place to reduce the incidental mortality of the short-tailed albatross, a listed species under the Endangered Species Act (ESA), and other seabird species in 1998, then revised in 2008. These measures now include the use of

streamer (tory) lines, night setting, lineshooters and lining tubes, have been shown to reduce seabird interactions when setting or retrieving gear.
http://www.fakr.noaa.gov/protectedresources/seabirds/national.htm
http://www.iphc.int/publications/bulletins/ib0028.pdf

Size limits
The commercial halibut fishery is limited to retention of fish, with head on, of 32 inches (81.3 cm) or greater in length (with head removed, 24 inches or 61 cm). Biologically, and for continued sustainability, this is the preferred portion of the spawning population available for harvest.
http://www.iphc.int/publications/regs/2012iphcregs.pdf

Time restrictions
Seasons are established in regulation by the IPHC. Open and closed periods, as well as fishing period limits are set in regulation. The halibut fishery is closed during peak spawning times. The fishing period in Areas 2B, 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E usually begins at 1200 hours local time on March 17 and terminate at 1200 hours local time on November 7, unless the Commission specifies otherwise.
http://www.iphc.int/publications/regs/2012iphcregs.pdf

Geographical closures
Regulations are in placed to address discards. General spawning areas have been mapped in Alaska. The NPFMC has established Marine Protected Areas that benefit juvenile fish and adult spawners. The Halibut Longline Closure Area is 36,300 square miles in size. Additional trawl closures for areas in the waters of Bristol Bay (19,000 sq mi), the Pribilof Island Habitat Conservation Area (7,000 sq mi), the Aleutian Island (277,000 sq mi), the Northern Bering Sea Research Area (85,000 sq mi), the Eastern Gulf of Alaska (53,000 sq miles) and Cook Inlet (7,000 sq mi) closed thousands of square miles of sea bottom to bottom trawling which provides a significant degree of refuge for juvenile halibut.
http://www.iphc.int/publications/regs/2012iphcregs.pdf

Observer program
In the directed longline fisheries for Pacific halibut, bycatch of other fish species is not well documented. However, management actions are in place in respect to increasing knowledge on the bycatch dynamics of the directed halibut longline fishery.
Beginning January 1, 2013, amendment 86 (BSAI) and amendment 76 (GOA) were added to the Federal Fisheries Regulations 50 CFR Part 679: Fisheries of the EEZ Off Alaska. There are new partial coverage observer requirements for halibut vessels fishing hook and line gear. Halibut vessels are registered with the NMFS and can be selected on a vessel or trip basis. The program is covered by fees assessed on landings from both the CDQ and IFQ fisheries. At the beginning of 2014, one year of reliable data shall accrue from the restructured observer program about the halibut and non-halibut bycatch dynamics in the directed halibut IFQ fleet of Alaska, something that until now was only estimated from survey bycatch and later extrapolated to commercial catches in the various IPHC regulatory areas.
http://www.fakr.noaa.gov/regs/679e55.pdf
http://www.fakr.noaa.gov/regs/679e51.pdf

https://alaskafisheries.noaa.gov/sustainablefisheries/observers/overview.pdf

Electronic monitoring

It is intention of NMFS to initiate a program for the implementation of electronic monitoring of the Alaska fleets (including halibut and sablefish) to improve data collection. The NMFS Policy on Electronic Monitoring Technologies and Fishery Dependant Data Collection published in May 2013 provides guidance on the adoption of electronic technology solutions in fishery-dependent data collection programs. Electronic technologies include the use of vessel monitoring systems (VMS), electronic logbooks, video cameras for electronic monitoring (EM), and other technologies that provide EM and electronic reporting (ER). The policy also includes guidance on the funding for electronic technology use in fishery-dependent data collection programs.

The implementation of fisheries management regulations that require near real-time monitoring of catch by species at the vessel level have challenged the methodological and budgetary limits of data collection methods such as self-reporting, on-board observers, and dockside monitoring. A policy and process to consider the adoption of electronic technology options can help ensure the agency's fishery-dependent data collection programs are cost-effective and sustainable.

http://www.fakr.noaa.gov/regs/679e55.pdf
http://www.fakr.noaa.gov/regs/679e51.pdf
https://alaskafisheries.noaa.gov/sustainablefisheries/observers/overview.pdf
http://www.nmfs.noaa.gov/op/pds/documents/30/30-133.pdf

Halibut Prohibited Species Catch (PSC)

The Pacific halibut longline fishery was one of the first fully domestic fisheries to become established off Alaska. As the groundfish fisheries developed, regulations were implemented to limit bycatch of halibut, so as to minimize impacts on the domestic halibut fisheries. Interception of juvenile halibut (~30 cm and greater) often occurs in trawl fisheries targeting other groundfish species (such as rock sole, pollock, yellowfin sole, and Pacific cod). Incidental catch of halibut also occurs in groundfish hook and line and pot fisheries. Regulations require that all halibut caught incidentally must be discarded, regardless of whether the fish is living or dead.

GOA Halibut PSC

The NPFMC voted in June 2012 to reduce the halibut bycatch cap in the GOA groundfish fisheries, and adopted the following alternative:

Alternative 2. Amend the GOA Groundfish FMP to remove setting GOA halibut PSC limits from the annual groundfish harvest specifications process. GOA halibut PSC limits would be established (and amended) in federal regulation.

The halibut PSC limit will be reduced by 7%, 15%, and 15% for hook and line gear CP, for hook and line gear CV, and for trawl gear, respectively.

The 15% reduction for the trawl and non-demersal shelf rockfish hook and line CV sectors would be phased in over three years, as follows: 7% (first year); additional 5% (second year); and additional 3% (third year). In the third year and after, the revised total non-DSR hook and line halibut PSC limit would be reduced and the total trawl limit would be 1,705 mt.

BSAI Halibut PSC

Amendment 61 in 2000 to the BSAI Groundfish FMP Established halibut and crab PSC sideboard limits for AFA catcher vessels and AFA catcher/processors operating in the BSAI pollock fishery. Later on in 2008, Amendment 80 to the same GFMP Established a halibut PSC limit for the non-AFA trawl catcher/processor (Amendment 80) sector of 2,525 mt in 2008, 2,475 mt in 2009, 2,425 mt in 2010, 2,375 mt in 2011 and 2,325 mt in 2012 and thereafter. Established an 875 mt PSC limit halibut for the trawl limited access sector.

Halibut excluder device to reduce halibut bycatch in the groundfish trawl fisheries

Research has shown that the groundfish trawl industry in Alaska can deploy halibut excluder device in their gear with success. Un project, implemented in Oregon and California, entitled "Improving the Selectivity of Bottom Trawls to Reduce Bycatch of Pacific Halibut in the West Coast Groundfish Trawl Fishery" responded to fishermen's concern for Pacific halibut bycath. The NMFS, in collaboration with the Pacific States Marine Fisheries Commission (PSMFC) and the fishing industry, tested the efficacy of a flexible sorting grate bycatch reduction device (BRD) designed to reduce halibut bycatch. The results showed that halibut bycatch was reduced numerically by 57% and by 62% by weight. Target species loss ranged from 9% to 22%.

While halibut excluder usage already occurs in many BS bottom trawl fisheries, GOA trawlers represent a challenge because the rigid halibut excluder devices used in the BS were developed for large vessels with ample deck space, while GOA vessels have relatively short decks and the widespread use of aft net reels.

Practically speaking, GOA trawlers need an excluder that can withstand being rolled onto a net reel. Such a device must therefore be made of flexible materials that allow it to regain its original shape and function during fishing.

When this collaborative (between NMFS and industry associations) development process was originally initiated, the performance goal for the excluder device was to reduce halibut bycatch in the GOA cod fisheries by at least 40% (by weight) while minimizing loss of target catch (cod catch per hour) compared to an unmodified net.

The result of this collaborative effort is that vessel tows with the excluder had 57% less halibut bycatch by weight on average than tows without the excluder. At the same time, the overall catch of groundfish measured by the groundfish trip weights delivered to the plant was 39% lower on average for vessel trips with the excluder compared to those without.

http://www.nmfs.noaa.gov/by_catch/docs/brep_report_2012.pdf
http://www.marineconservationalliance.org/?p=1362

Evidence

http://www.fakr.noaa.gov/npfmc/PDFdocuments/newsletters/NEWS612.pdf
http://alaskafisheries.noaa.gov/npfmc/PDFdocuments/bycatch/GOAPSCmotion612.pdf
http://alaskafisheries.noaa.gov/npfmc/PDFdocuments/halibut/BSAIPSC_discpaper512.pdf

9. There shall be defined management measures designed to maintain stocks at levels capable of producing maximum sustainable levels.

FAO CCRF 7.1.8/7.6.3/7.6.6/8.4.5/8.4.6/8.5.1/8.5.3/8.5.4/8.11.1/12.10

FAO Eco 29.2bis

Evidence adequacy rating:

☑ **High** ☐ **Medium** ☐ **Low**

Rating determination

The IPHC and NPFMC objectives for fisheries management are based on the long term maintenance of MSY levels. The policy for achieving this is based on setting biological reference points that determine the annual CEY for the Pacific halibut stock. Under the individual fishing quota share system in place for the Pacific halibut fishery, fishing capacity (vessels and gear) has been reduced and is now stable. In 1983, industry made the operational switch from J-hooks to circle hooks in the commercial fishery, lowering the mortality of undersized halibut caught and released during commercial fishing. Discards of Pacific halibut, considered a Prohibited Species Catch (PSC) by the groundfish fisheries in Alaska are regulated, and the NPFMC voted in June 2012 to further reduce the halibut bycatch cap in the GOA groundfish fisheries.

The IPHC and NPFMC objectives for fisheries management are based on the long term maintenance of MSY levels. The policy for achieving this is based on setting biological reference points that determine the annual CEY for the Pacific halibut stock.
http://iphc.int/publications/rara/2012/rara2012187_apportionment.pdf
http://www.iphc.int/publications/rara/2012/rara2012093_assessment.pdf

The IPHC has developed, refined, and utilized a constant harvest rate policy since the 1980's. The policy was fully described in Clark and Hare (2006) and further modified as described in Hare and Clark (2008), and Hare (2011b). Stated succinctly, the policy was initially designed to harvest 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% of the unfished level. The harvest rate is linearly decreased towards a rate of zero as the spawning biomass approaches 20% of the unfished level. This combination of harvest rate and precautionary levels of biomass protection have, in simulation studies, provided a large fraction of maximum available yield while minimizing risk to the spawning biomass. This, in combination with the SUFullD harvest policy that allows a 33% rise in catch limit from the previous year when the exploitable biomass is projected to increase, and a full 100% decrease when the projections are for a biomass decrease, should result in a long term increase in available biomass, and therefore more reliable MSY levels.

Further to the HCR and the SUFullD harvest policy there are other technical measures in place to allow maintenance of MSY levels. In 1983, industry made the operational switch from J-hooks to circle hooks in the commercial fishery, lowering the mortality of undersized halibut caught and released during commercial fishing.
Under the IFQ share program in place for the Pacific halibut fishery, fishing capacity (vessels and gear deployed) has been reduced; less longline sets have been lost (contributing to ghostfishing of halibut and other species); and the fishery was generally allowed to proceed at a slower pace allowing for increased selectivity and decreased bycatch and discards. The number of vessels, and the class of those vessels, established qualifications for a fishing fleet with less capacity and with ownership in the resource.

http://www.fakr.noaa.gov/regs/679d42.pdf
http://www.iphc.int/publications/regs/2012iphcregs.pdf
http://www.iphc.int/publications/bulletins/ib0028.pdf

Discards of Pacific halibut, considered a Prohibited Species Catch (PSC) by the groundfish fisheries in Alaska, are regulated. When PSC limits are reached, groundfish target species closures result. In the most recent change in regulation, the NPFMC voted in June 2012 to reduce the halibut bycatch cap in the GOA groundfish fisheries (see Clause 7). Halibut PSC limits are also set in the BSAI fisheries.
http://www.fakr.noaa.gov/npfmc/PDFdocuments/newsletters/NEWS612.pdf
http://alaskafisheries.noaa.gov/npfmc/PDFdocuments/bycatch/GOAPSCmotion612.pdf

In a NMFS report on a working group reviewing ghost fishing, the group determined that longline fishing under IFQ management garnered a "Low Priority Recommendations" when compared to pot and net gears. The IPHC makes available all regulatory notices, developments, and requirements through electronic and paper sources. Regulations specifically define legal gear. These have not been circumvented with regard to technical devices in the IFQ Pacific halibut fishery.
http://www.fakr.noaa.gov/regs/summary.htm

10. Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards and guidelines and regulations.

FAO CCRF 8.1.7/8.1.10/8.2.4/8.4.5

Evidence adequacy rating:

☑ High **☐ Medium** **☐ Low**

Rating determination

Any aspirant halibut fisherman must have 150 days of halibut fishing experience before being able to purchase halibut IFQs. Obtaining halibut IFQ share most often will require the purchaser (aspirant halibut fisherman) to enter into loan capital arrangements with banks that will require comprehensive fishing business plans supported by competent, professional fishermen with demonstrable fishing experience. Several training opportunities are available to train crew members in Alaska.

To increase communications and understanding between the regulated users and enforcement personnel and to minimize harm to fishery resources, the Alaska Enforcement Division (AKD) of NOAA Fisheries Office of Law Enforcement (OLE) strives to maintain a positive and productive relationship with all harvesters and industry personnel. In addition to daily personal interactions on the water, docks, and in processing facilities, AKD contacted thousands of harvesters and industry personnel at organized events, including trade shows, and responded to email and telephone inquiries, providing current regulatory information and guidance to promote compliance and communications.

Any aspirant halibut fisherman must have 150 days of halibut fishing experience before being able to

purchase halibut IFQs. Obtaining halibut IFQ share most often will require the purchaser (aspirant halibut fisherman) to enter into loan capital arrangements with banks that will require comprehensive fishing business plans supported by competent, professional fishermen with demonstrable fishing experience. This competence and professionalism is a learned experience with the culmination of entrants into the fishery starting at deck hand level working their way up through proof of competence.

The State of Alaska, Department of Labor & Workforce Development (ADLWD) includes AVTEC (formerly called Alaska Vocational Training & Education Center, now called Alaska's Institute of Technology). One of AVTEC's main divisions is the Alaska Maritime Training Center. The goal of the Alaska Maritime Training Center is to promote safe marine operations by effectively preparing captains and crew members for employment in the Alaskan maritime industry.
The Alaska Maritime Training Center is a United States Coast Guard (USCG) approved training facility located in Seward, Alaska, and offers USCG/STCW-compliant maritime training (STCW is the international Standards of Training, Certification, & Watchkeeping). In addition to the standard courses offered, customized training is available to meet the specific needs of maritime companies. Courses are delivered through the use of their world class ship simulator, state of the art computer based navigational laboratory, and modern classrooms equipped with the latest instructional delivery technologies.
The Center's mission is to provide Alaskans with the skills and technical knowledge to enable them to be productive in Alaska's continually evolving maritime industry. Supplemental to their on-campus classroom training, the Alaska Maritime Training Center has a partnership with the Maritime Learning System to provide mariners with online training for entry-level USCG Licenses, endorsements, and renewals.

The University of Alaska Sea Grant Marine Advisory Program (MAP) provides education and training in several sectors, including fisheries management, in the forms of seminars and workshops. In addition, MAP conducts sessions of their Alaska Young Fishermen's Summit (AYFS). Each Summit is an intense, 2/3-day course in all aspects of Alaska fisheries, from fisheries management & regulation, to seafood markets & marketing. The target audience for these Summits is young Alaskans from coastal communities. The 2012 AYFS was held Feb. 13 and 14 in Juneau, and the 2013 AYFS will be held in December in Anchorage. The two-day conference aimed at providing crucial training and networking opportunities for fishermen entering the business or wishing to take a leadership role in their industry. The event took advantage of the Juneau location by introducing participants to the legislative process, and introducing the fish caucus of the legislature to the issues and concerns of Alaska's emerging fishermen.

Only one gear type may be used to harvest halibut in the GOA and BSAI – benthic longline (a passive gear type). All longline fishing gear must be marked and operated in accordance with federal fisheries regulations – 50 CFR Part 679: Fisheries of the Exclusive Economic Zone off Alaska.

Evidence
http://www.avtec.edu/AMTC.htm
http://www.stcw.org/
http://seagrant.uaf.edu/map/

http://seagrant.uaf.edu/map/fishbiz/index.php
http://www.sfos.uaf.edu/fitc/academicprograms/
http://seagrant.uaf.edu/map/workshops/2013/ayfs/

E. Implementation, Monitoring and Control

11. An effective legal and administrative framework shall be established and compliance ensured through effective mechanisms for monitoring, surveillance, control and enforcement for all fishing activities within the jurisdiction.

FAO CCRF 7.1.7/7.7.3/7.6.2/8.1.1/8.1.4/8.2.1
FAO Eco 29.5

Evidence adequacy rating:

☑ **High** ☐ **Medium** ☐ **Low**

Rating determination

The Northern Pacific Halibut Act, governs the commercial, sport, charter, and subsistence halibut fisheries in the U.S. The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Alaska fisheries laws and regulations, especially 50CFR679. The Alaska Wildlife Troopers enforce halibut regulations in state waters. The violations in this fishery are reported to and investigated by NOAA's Office of Law Enforcement's Alaska Division and prosecuted by NOAA's Office of General Counsel's Enforcement Section. The maximum civil penalty under the Northern Pacific Halibut Act is $200,000 for each violation. OLE Special Agents and Enforcement Officers conduct complex criminal and civil investigations, board vessels fishing at sea, inspect fish processing plants, review sales of wildlife products on the internet and conduct patrols on land, in the air and at sea. NOAA Agents and Officers can assess civil penalties directly to the violator in the form of Summary Settlements (SS) or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation (GCEL).

The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Alaska fisheries laws and regulations, especially 50CFR679.

The *Northern Pacific Halibut Act* governs the commercial, sport, charter, and subsistence halibut fisheries in the U.S. The violations in this fishery are reported to and investigated by NOAA's Office of Law Enforcement's Alaska Division and prosecuted by NOAA's Office of General Counsel's Enforcement Section. The maximum civil penalty under the *Northern Pacific Halibut Act* is $200,000 for each violation.

Patrols, Partnerships, and Inspections

The U.S. Coast Guard and NMFS's OLE enforce the regulations that govern fishing under the IFQ Program. The Alaska Division patrols provide compliance inspections, a visible deterrent to would-be violators, and availability to stakeholders to receive information and guidance. NOAA OLE works closely with the State of Alaska Wildlife Troopers (AWT) and the US Coast Guard to maximize compliance by sharing information, intelligence, knowledge, and resources. The formalized Cooperative Enforcement Agreement and Joint En-forcement Agreement with the Wildlife Troopers provide the state with federal funding for personnel, equipment, operations, and authorization for State Troopers to enforce federal fishing regulations while engaged in their regular duties.

USCG

The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Alaska fisheries laws and regulations, especially 50CFR679. The U.S. Coast Guard (USCG) is the lead federal maritime law enforcement agency for enforcing national and international law on the high-seas, outer continental shelf and inward from the U.S. Exclusive Economic Zone (EEZ) to inland waters. The USCG also patrols US waters to reduce foreign poaching, and inspects fishing vessels for compliance with safety requirements. The U.S. Coast Guard now focuses its efforts at sea. Since 2006 NMFS'OLE Alaska Division (AKD) has monitored offloads and provided after-hours surveillance.

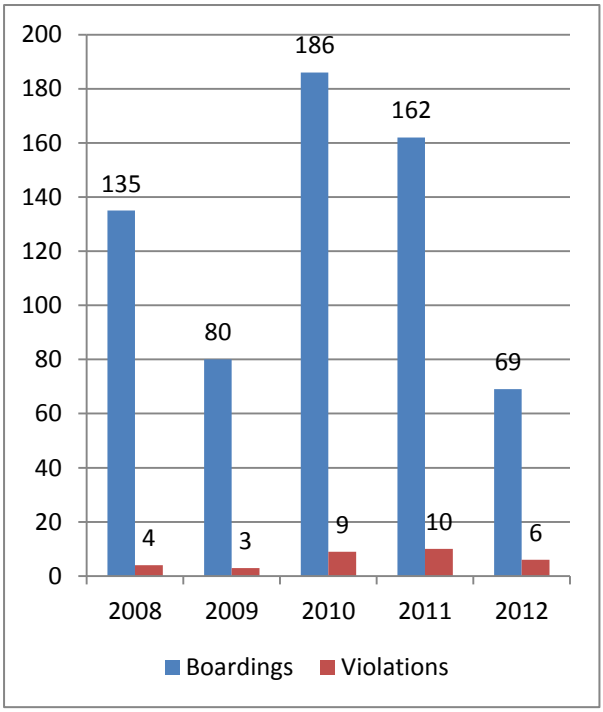
IFQ/CDQ halibut is only permitted to be harvested with hook and line gear. In general, this means longline gear, although it is permissible for salmon trollers with IFQ halibut permits to retain troll caught halibut, and jig vessels with IFQ can also retain halibut if they hold IFQs as these are all considered hook and line gear. The active fleet size is a difficult number to quantify as IFQ permits are not allocated to a vessel but to an individual, and those individuals may fish on any boat that meets their specific permit size or lower. The USCG works with the NOAA Alaska Region Restricted Access Management (RAM) division to determine the number of vessels that landed IFQ halibut in the previous year to determine the active fleet size.

IFQ At-Sea and Dockside Effort

The USCG eliminated shoreside enforcement in 2006, protecting resources through at-sea boardings. This focus was possible because of OLE AKD's increased capacity to monitor offloads with their personnel and with the State of Alaska. Historically, shoreside violations detected by the USCG have consistently been minor and generally administrative. Consequently, the USCG determined that more significant resource protection was possible by at-sea boardings conducted jointly with NOAA.

For fiscal year 2012, the active vessel fleet size for IFQ halibut was 1879 vessels, and the USCG had a goal to board 386 of these vessels. For the most part (GOA) IFQ halibut vessels are not on VMS, so determining their locations is difficult, and requires a significant amount of effort from law enforcement assets to facilitate at-sea boardings.

From fiscal year 2008 through the end of fiscal year 2012, the USCG conducted 632 boardings on IFQ/CDQ halibut vessels, noting 32 violations on 26 vessels resulting in a detected violation rate for this fleet of 4.11%. A detail of the boardings and violations detected by fiscal year is provided below.



- Annual Averages
  - 126 boardings
  - 6.4 violations
  - 4.27% of vessels had fisheries violations
- Violations (Over 5 years)
  - Logbook errors (8)
  - Permits not on board (7)
  - Fishing without an IFQ Permit (3)
  - Failure to use required logbooks (6)
  - Bycatch (3)
  - Closed Areas (2)
  - Seabird Avoidance Gear (1)
  - Vessel Monitoring System (1)
  - Observer Coverage (2)

In 2012, the USCG conducted 69 boardings on IFQ/CDQ halibut vessels, noting 6 violations on 6 vessels. Violations included 1 for fishing without their FFP on board, 1 for fishing without their IFQ

permit on board, 1 for fishing in a closed area, 2 for fishing without an IFQ permit, and 1 for actively fishing in federal waters without seabird avoidance gear deployed.

NMFS OLE

NOAA Office of Law Enforcement Special Agents and Enforcement Officers perform a variety of tasks associated with the protection and conservation of Alaska's living marine resources. In order to enforce these laws, OLE special agents and enforcement officers use OLE patrol vessels to board vessels fishing at sea, and conduct additional patrols on land, in the air and at sea in conjunction with other local, state and Federal agencies.

In any given year, OLE Agents and Officers spend an average 10,000-11,000 hours conducting patrols and investigations, and an additional 10,000-11,000 hours on outreach activities. The OLE maintains 19 patrol boats around the country to conduct a variety of patrols including Protected Resources Enforcement Team (PRET) boardings, protection of National Marine Sanctuaries and various undercover operations.

OLE Special Agents and Enforcement Officers conduct complex criminal and civil investigations, board vessels fishing at sea, inspect fish processing plants, review sales of wildlife products on the internet and conduct patrols on land, in the air and at sea. NOAA Agents and Officers can assess civil penalties directly to the violator in the form of Summary Settlements (SS) or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation (GCEL).

GCEL can then assess a civil penalty in the form of a Notice of Permit Sanctions (NOPs) or Notice of Violation and Assessment (NOVAs), or they can refer the case to the U.S. Attorney's Office for criminal proceedings. For perpetual violators or those whose actions have severe impacts upon the resource criminal charges may range from severe monetary fines, boat seizures and/or imprisonment may be levied by the United States Attorney's Office.

All landings of halibut must be reported to NMFS via its mandatory "e-landings" reporting system. Commercial harvests of halibut are the primary enforcement responsibilities of OLE. The Individual Fishing Quota (IFQ), Observer and Record Keeping/Reporting programs are the foundations of the Alaska Division program responsibilities.

Alaska Division: NMFS OLE 2013 Enforcement Priorities

Magnuson-Stevens Act

HIGH PRIORITY

- Observer assault, harassment, or interference violations.
- Felony and major civil cases involving significant damage to the resource or the integrity of management schemes.
- Commercialization of sport-caught or subsistence halibut.
- Maritime Boundary Line incursions by foreign fishing or transport vessels.
- Outreach and education.

MEDIUM PRIORITY

• Misdemeanor and civil cases involving observer coverage violations.
• Closed Area/VMS Violations, ongoing.
• Commercial vessel incursions into closure areas or other Marine Protected Areas.
• Recordkeeping and reporting violations that impact data consistency or integrity.
• Violations involving lesser damage to the resource or the integrity of management schemes.

LOW PRIORITY

• Catch Reporting and Trip Limits.
• Noncompliance with trip and cumulative limits, and record keeping requirements for landings of federally managed marine species, and specifically catch share programs.
• Gear Violations.
• Deployment of unlawful gear utilized in commercial fisheries under NOAA's jurisdiction.
• Lesser permit violations.

Endangered Species Act and Marine Mammal Protection Act

HIGH PRIORITY

• Violations wherein responsible subject and species are identifiable.
• Lethal Takes, Level "A" Harassment with the potential to injure marine mammal stock.
• Species of interest are Cook Inlet Beluga, other whale species, Northern fur seal, or Steller sea lion.
• Any violation involving injury or potential injury to people, such as a vessel-whale collision.
•Outreach and education.

MEDIUM PRIORITY

• Non-lethal takes, Level "B" Harassment with the potential to disturb a marine mammal stock in the wild by causing a disruption of behavioral patterns including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.
• Species is threatened rather than endangered.

LOW PRIORITY

• Violations wherein responsible subject is not identifiable.
• Injured or dead animal cannot be located.
• Objective evidence is not obtainable.
• Takes of individual marine mammal species that appear consistent with legal harvest by Alaska Natives.

International/Lacey Act

HIGH PRIORITY

• Felony and major civil violations. For example, interstate or foreign trafficking of commercial quantities of illegally harvested fish or marine resources.
• Harvest or transhipment of marine resources by foreign fishing vessels.
• Domestic or international violations involving seafood safety; substantive mislabeling of product in domestic or international commerce.
• IUU listed vessels.

MEDIUM PRIORITY

• Misdemeanor and civil violations. For example, interstate or foreign trafficking of small quantities of illegally harvested fish or marine resources.
• Mislabeling violations.
• IUU identified product.

LOW PRIORITY

• Minor mislabeling violations.
• Violations wherein responsible subject/vessel not identifiable.

In addition to enforcing legislation for the commercial halibut fishery, OLE has responsibility for enforcement of the crab rationalization program, subsistence halibut fishing and charter halibut fishing. In addition, OLE's officers inspect and cross check at landings and processors records for reconciliation, and closely monitor Prohibited Species Catch in non halibut fisheries.

AWT

The Alaska Wildlife Troopers conduct undercover operations in the sport charter fleet. Fines are high and revocation of sport fishing license as well as sport guide licence for several years are occuring penalties in this program.

Evidence

www.fakr.noaa.gov/regs/default.htm
www.nmfs.noaa.gov/ole/ak_alaska.html
www.uscg.mil/d17/
www.fakr.noaa.gov/ram/ifq.htm
www.fakr.noaa.gov/ram/webapps.htm
http://elandings.alaska.gov/
http://www.fakr.noaa.gov/frules/76fr14300.pdf
http://www.gc.noaa.gov/enforce-office3.html
http://www.nmfs.noaa.gov/ole/docs/2013/ole-division-priorities-2013-final.pdf
http://www.nmfs.noaa.gov/ole/investigations.html
http://deckboss-thebrig.blogspot.com/2010_04_01_archive.html

12. There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.

FAO CCRF 7.7.2/8.2.7

Evidence adequacy rating:

☑ High **☐ Medium** **☐ Low**

Rating determination

The Magnuson-Stevens Act (50CFR600.740 Enforcement policy) provides four basic enforcement remedies for violations: ***1)*** *Issuance of a citation (a type of warning), usually at the scene of the offense,* ***2)*** *Assessment by the Administrator of a civil money penalty,* ***3)*** *for certain violations, judicial forfeiture action against the vessel and its catch,* ***4)*** *Criminal prosecution of the owner or operator for some offenses. In some cases, the Magnuson-Stevens Act requires permit sanctions following the*

assessment of a civil penalty or the imposition of a criminal fine. The 2011 Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions issued by NOAA Office of the General Counsel – Enforcement and Litigation, provides guidance for the assessment of civil administrative penalties and permit sanctions under the statutes and regulations enforced by NOAA.

The *Northern Pacific Halibut Act* governs the commercial, sport, charter, and subsistence halibut fisheries in the U.S. The violations in this fishery are reported to and investigated by NOAA's Office of Law Enforcement's Alaska Division and prosecuted by NOAA's Office of General Counsel's Enforcement Section. The maximum civil penalty under the *Northern Pacific Halibut Act* is $200,000 for each violation

The Magnuson-Stevens Act provides four basic enforcement remedies for violations (50CFR600.740 Enforcement policy).

(1) Issuance of a citation (a type of warning), usually at the scene of the offense (see 15 CFR part 904, subpart E).

(2) Assessment by the Administrator of a civil money penalty.

(3) For certain violations, judicial forfeiture action against the vessel and its catch.

(4) Criminal prosecution of the owner or operator for some offenses.

In some cases, the Magnuson-Stevens Act requires permit sanctions following the assessment of a civil penalty or the imposition of a criminal fine. In sum, the Magnuson-Stevens Act treats sanctions against the fishing vessel permit to be the carrying out of a purpose separate from that accomplished by civil and criminal penalties against the vessel or its owner or operator.

Magnuson-Stevens Penalty Matrix

	Level of Intent			
Harm to the Resource or Regulatory Program, Offense Level	A Unintentional	B Negligent	C Reckless	D Willful
I	Written warning-$1,000	Written warning-$1,500	Written warning-$2,000	Written warning-$2,500
II	Written warning-$2,000	$2,000-$5,000	$5,000-$10,000	$10,000-$15,000
III	$2,000-$5,000	$5,000-$10,000	$10,000-$15,000	$15,000-$25,000
IV	$5,000-$15,000	$15,000-$25,000	$25,000-$50,000 and permit sanction of 10-20 days*	$50,000-$80,000 and permit sanction of 20-60 days*
V	$15,000-$25,000	$25,000-$50,000 and permit sanction of 10-20 days*	$50,000- $80,000 and permit sanction of 20-60 days*	$60,000- $100,000 and permit sanction of 60-180 days*
VI	$25,000-$50,000	$50,000-$80,000 and permit sanction of 20-60 days*	$60,000-$100,000 and permit sanction of 60-180 days*	$100,000-statutory maximum and permit sanction of 1 year-permit revocation*

http://www.nmfs.noaa.gov/sfa/reg_svcs/Councils/ccc_2011/Tab%20L%20-

%20Enforcement%20Issues/Enforcement%20Issues.pdf

in the "Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions" issued by NOAA Office of the General Counsel – Enforcement and Litigation - March 16, 2011. This Policy provides guidance for the assessment of civil administrative penalties and permit sanctions under the statutes and regulations enforced by NOAA. The purpose of this Policy is to ensure that: (1) civil administrative penalties and permit sanctions are assessed in accordance with the laws that NOAA enforces in a fair and consistent manner; (2) penalties and permit sanctions are appropriate for the gravity of the violation; (3) penalties and permit sanctions are sufficient to deter both individual violators and the regulated community as a whole from committing violations; (4) economic incentives for noncompliance are eliminated; and (5) compliance is expeditiously achieved and maintained to protect natural resources. Under this Policy, NOAA expects to improve consistency at a national level, provide greater predictability for the regulated community and the public, improve transparency in enforcement, and more effectively protect natural resources.

For significant violations, the NOAA attorney may recommend charges under NOAA's civil administrative process (*see* 15 C.F.R. Part 904), through issuance of a Notice of Violation and Assessment of a penalty (NOVA), Notice of Permit Sanction (NOPS), Notice of Intent to Deny Permit (NIDP), or some combination thereof. Alternatively, the NOAA attorney may recommend that there is a violation of a criminal provision that is sufficiently significant to warrant referral to a U.S. Attorney's office for criminal prosecution.

http://www.noaanews.noaa.gov/stories2011/pdfs/Penalty%20Policy%20--%20FINAL.pdf

NOAA's OLE Agents and Officers can assess civil penalties directly to the violator in the form of Summary Settlements (SS) or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation (GCEL). GCEL can then assess a civil penalty in the form of a Notice of Permit Sanctions (NOPs) or Notice of Violation and Assessment (NOVAs), or they can refer the case to the U.S. Attorney's Office for criminal proceedings. For perpetual violators or those whose actions have severe impacts upon the resource criminal charges may range from severe monetary fines, boat seizures and/or imprisonment may be levied by the United States Attorney's Office.

There are very few repeat offenders. Sanctions include the possibility of temporary or permanent revocation of fishing privileges. Withdrawal or suspension of authorizations to serve as masters or officers of a fishing vessel are also among the enforcement options. Within the USA EEZ, penalties can range up through forfeiture of the catch to forfeiture of the vessel, including financial penalties and prison sentences.

Finally, the cooperation of citizens and industry is cultivated through programs such as AWT's Fish & Wildlife Safeguard program, which encourages the reporting of violations, and "leverages" the range of enforcers.

Evidence

50CFR600.740 Enforcement policy

http://www.nmfs.noaa.gov/ole/investigations.html

http://www.noaanews.noaa.gov/stories2011/pdfs/Penalty%20Policy%20--%20FINAL.pdf

F. Serious Impacts of the Fishery on the Ecosystem

13.	**Considerations of fishery interactions and effects on the ecosystem shall be based on best available science, local knowledge where it can be objectively verified and using a risk based management approach for determining most probable adverse impacts. Adverse impacts on the fishery on the ecosystem shall be appropriately assessed and effectively addressed.** ***FAO CCRF 7.2.3/8.4.7/8.4.8/12.11*** ***Eco 29.3/31***

Evidence adequacy rating:

☑ **High** ☐ **Medium** ☐ **Low**

Rating determination

Regulations are in place to address waste, discard, bycatch, and endangered species interactions in the halibut fisheries. Management actions are in place in respect to increasing knowledge on the bycatch dynamics of the directed halibut longline fishery (i.e. methods for the estimation of non-target species catch in the unobserved halibut IFQ fleet and the restructuring the observer program for inclusion of the halibut fleet). Benthic longline gear is not considered to have serious nor irreversible impacts on marine habitats. Bycatch of seabirds has been addressed by specific regulations put in place to reduce the incidental mortality of the short-tailed albatross, a listed species under the Endangered Species Act (ESA), and other seabird species in 1998, then revised in 2008. None have been taken in 2011. These measures now include the use of streamer (tory) lines,

night setting, lineshooters and lining tubes, have been shown to reduce seabird interactions when setting or retrieving gear very significantly. Seabird occurrence data have been collected during the 2012 IPHC annual setline survey. Bycatch data were also collected this year, indicating that the majority of the bycatch is made up by Pacific cod and spiny dogfish. These species are managed by the NPFMC under tier 3 and 5 respectively, using OFL and ABC recommendations and catch limits. It is expected that with the implementation of the restructured observer coverage in a part of the halibut fleet, bycatch data collection will improve and allow management to make better informed decisions, especially for species like sharks and skates that generally tend to have low reproductive rates.

Impacts of fishing gear on the habitat

Benthic longline is considered a passive gear (not towed). There are no serious, irreversible concerns of halibut gear interaction on the habitat that are presented in the recent (2010) NPFMC Essential Fish Habitat review.

http://www.fakr.noaa.gov/habitat/efh/review/efh_5yr_review_sumrpt.pdf
http://www.fakr.noaa.gov/habitat/efh/review.htm

Regulations

Regulations are in place to address waste, discard, bycatch, and endangered species interactions in the halibut fisheries. The IPHC, the NMFS, and ADFG promulgate these regulations through the Commission, the NPFMC, and the Alaska Board of Fisheries. In the directed longline fisheries for Pacific halibut, bycatch of other fish species has not been well documented until the end of 2012. However, since January 2013, the halibut fleet is partially covered by the newly restructured North Pacific Groundfish Observer Program. Bycatch data from this program should accrue for evaluation in the next surveillance assessment (2014).Currently bycatch is extrapolated for the commercial fishery based on the yearly IPHC setline survey.

Bycatch of seabirds has been addressed by specific regulations put in place to reduce the incidental mortality of the short-tailed albatross, a listed species under the Endangered Species Act (ESA), and other seabird species in 1998, then revised in 2008. These measures now include the use of streamer (tory) lines, night setting, lineshooters and lining tubes, have been shown to reduce seabird interactions when setting or retrieving gear.

In the early 1980s the IPHC conducted research on capture efficiency of circle vs J hooks and determined that using circle hooks lowered the mortality of undersized halibut caught and released during fishing. In 1983, industry made the operational switch from J-hooks to circle hooks in the commercial fishery.

General spawning areas have been mapped in Alaska. The halibut fishery is closed during peak spawning times, by regulation. The NPFMC has established Marine Protected Areas that benefit juvenile fish and adult spawners. The Halibut Longline Closure Area is 36,300 square miles in size. Additional trawl closures for areas in the Bering Sea, AI and GOA provide a significant degree of refuge for juvenile halibut.

Impact of fishing gear on seabirds

The short-tailed albatross (*Phoebastria albatrus*) is a listed species under the Endangered Species Act (ESA). As such, incidental takes in the longline fishery are regulated and limits are set. The limit set by NMFS under the current ESA biological opinion is a maximum of four birds in a two- year cycle. If that level is exceeded, it automatically initiates an ESA Section 7 Consultation, which involves a consultation between the US Fish and Wildlife Service and the National Marine Fisheries Service. New regulations and further avoidance measures can be placed on the fishery by NMFS.

Trends in seabird occurrence on stock assessment surveys (2002-2012)

Seabird occurrence data have been collected during IPHC stock assessment surveys since 2002 from the west coast of Washington, Oregon, British Columbia (B.C.), southeast Alaska (inside and outside waters), the central and western Gulf of Alaska, Aleutian Islands, and the southeastern Bering Sea Edge. Samplers aboard research vessels counted the number of seabirds in the vicinity of the vessel's stern immediately following gear retrieval (i.e., haul). Sampling seabird occurrence after the haul addresses the question of where and when certain seabird species occur. It also aids in the assessment of individual species at risk by providing information that may reflect population trends over time. Seabird counts were performed within a 50-meter hemisphere (count zone) at the stern, immediately after the longline gear was hauled.

A total of 13,741 observations were conducted over the last ten years, and the number of stations where bird counts were performed ranged from a low of 1,218 to a high of 1,284 per year. More than 640,000 birds were recorded since 2002. Start dates for each year's survey ranged from May 25 to June 7 and the end dates from August 27 to September 14, but the bulk of observations took place from June through August.

The most common species during all years was the northern fulmar (*Fulmarus glacialis*), making up 72% of the sightings. Glaucous-winged gulls (*Larus glaucescens*) made up nine percent of the overall sightings, with black-footed albatrosses (*Phoebastria* nigripes) and fork-tailed storm petrels (*Oceanodroma furcata*) representing seven and two percent of sightings, respectively. Over time, the observed number of unidentified gulls has continually decreased, inversely correlated with an increased number of observations of glaucous-winged gulls and herring gulls (*L. argentatus*), the most common of the gull species on the eastern Pacific coast. This shift is likely the result of increased focus on gull identification during annual IPHC sampler training. Overall, the number of unidentified birds has decreased, indicating that the IPHC sea samplers have improved their identification skills. Black-footed albatross (*P. nigripes*) were more commonly observed in Washington/Oregon and northward into the Gulf of Alaska, whereas Laysan albatross (*P. immutabilis)* were seen in greatest numbers in the central and western Aleutian Islands and only rarely east of Kodiak Island. A total of 221 endangered short-tailed albatross (*P. albatrus)* were sighted in Area 3A and regions westward, more often in July and August than in June. The survey is not conducted at the same time in each area, and this may affect the bird sighting information. Further work is needed to more fully examine the potential influence of charter timing on bird observation trends. Because of the large geographic scope and consistent spatial pattern of the surveys, these data are helpful to scientists studying populations of threatened and endangered birds commonly seen during the counts.

http://iphc.int/publications/rara/2012/rara2012539_ssa_seabird.pdf

Bycatch data collection

Approximately 107 species of fish and invertebrates were caught as bycatch during the IPHC survey. Though skippers on survey vessels take precautions to avoid marine mammal and bird catch, one black-footed albatross (*Phoebastria nigripes*) was captured in 3A and was provided to the U.S Fish& Wildlife Service in Anchorage. No marine mammals were caught on survey. Hook occupancy of species-groups varied by regulatory area. Halibut were the most commonly caught species in Areas 2C, 3A, and 3B. The most frequently incidentally-captured species overall was Pacific cod, followed by sharks. The most common bycatch in Areas 2A, 2B, 2C, and 3A was sharks, primarily dogfish. The most frequent bycatch in Areas 3B and 4A was Pacific cod. In Areas 4A, 4B, 4C, and 4D, the "other species," category was comprised primarily of arrowtooth flounder (*Atheresthes stomias)*, white-blotched skates (*Bathyraja maculata),* Alaska skates *(Bathyraja parmifera),* grenadiers (*Corypaenoididae* spp.), yellow Irish lord sculpins (*Hemilepidotus jordani*), and great sculpins *(Myoxocephalus polyacanthocephalus).* Dogfish were the largest component of the shark species category in Areas 2A (98%), 2B (99.7%), 2C (96%), 3A (98%), and 4A (67%). Sleeper sharks (*Somniosus pacificus*) made up the largest component of the shark species category in 3B (75%), and 4D (100%). Bocaccio (*Sebastes paucispinus*), canary rockfish (*S. pinniger*), and yelloweye rockfish (*S. ruberrimus*) populations are of concern in Areas 2A, 2B, and 2C and their numbers often drive catch regulations. Catch rates of bocaccio and canary rockfish are so low on IPHC surveys that it is difficult to make any inferences; however, the encounter rate for bocaccio in all three areas were lower in 2012 than in 2011. Trends in bycatch NPUE over the last ten years for the other major incidentally captured species and species groups show that the encounter rate for most remained relatively constant over time. In Area 4D, arrowtooth flounder are more common than in all other Areas, however Area 4B displayed a 76% decrease in 2012 from 2011. Pacific cod in Area 4D have been generally declining since 2008 but showed a slight increase in 2012. All other Areas that had occurrences of Pacific cod decreased in NPUE for 2012 compared to 2011.
http://iphc.int/publications/rara/2012/rara2012503_ssa_survey.pdf

Status of bycatch species

Harbor seal (*Phoca vitulina*): IUCN Red list "Least Concern".

Pacific cod (*Gadus macrocephalus*): From NPFMC SAFE reports: BSAI and GOA stocks above B35% reference points, not overfished. http://www.afsc.noaa.gov/REFM/Docs/2012/BSAIpcod.pdf and http://www.afsc.noaa.gov/REFM/Docs/2012/GOApcod.pdf

Based on the 1997-2011 GOA catch estimates, the halibut fishery caught 21% of the spiny dogfish total catch (Table 10).
The majority of vessels fishing in the GOA are smaller vessels that are either unobserved or subject to 30% observer coverage (up until 2012). In making the catch estimates, it is assumed that shark catch aboard observed vessels is representative of shark catch aboard unobserved vessels throughout the GOA. These catch estimates do not include unobserved fisheries as the halibut IFQ fishery. Estimates of shark catch by species in the GOA from the Halibut Fishery Incidental Catch

Estimation (HEICE) working group is shown in Table 11.

Table 10. Estimated catch (t) of spiny dogfish in the GOA by fishery. 1990-1996 catch estimated by pseudo-blend estimation procedure. 1997-2001 catch estimated with NMFS new pseudo-blend estimation procedure. Year2003-2010 from NMFS AKRO using the improved pseudo-blend estimation procedure. Bycatch in the halibut fisheries has been estimated by NMFS AKRO since 2003, but it is based on landed sharks and does not include discarded catch.

Fishery	Pollock	Pacific Cod	Flatfish	Rockfish	Halibut	Sablefish	Grand Total	Year % of Total 97-11
1990	57.6	36.0	13.5	1.8		59.0	170.9	
1991	29.3	52.6	16.2	16.4		26.2	141.2	
1992	84.4	50.5	116.0	22.4		40.7	320.6	
1993	137	10.1	138.5	2.4		95.3	383.4	
1994	22	16.9	83.4	2.5		35.4	160.2	
1995	2.8	28.1	24.1	18.4		50.7	140.6	
1996	2.9	15.3	182.6	19.8		79.5	336.9	
1997	2.8	57.6	137.2	326.2		133.7	657.5	8%
1998	4.9	727.2	69.0	3.1		59.6	864.9	10%
1999	8.6	160.2	56.6	4.8		83.4	313.6	4%
2000	18.7	29.4	66.3	146.6		136.6	397.6	5%
2001	11.6	172.8	162.5	25.1		122.1	494.0	6%
2002	-	-	-	-	-	-	-	
2003	6.1	43.6	166.0	35.5	6.6	17.3	275.0	3%
2004	9.2	19.6	15.5	2.3	13.4	123.2	183.2	2%
2005	15.2	27.9	50.1	2.8	17.3	329.3	442.7	6%
2006	50.0	113.2	122.9	2.0	713.2	147.4	1,148.6	14%
2007	47.6	250.2	151.4	6.2	210.5	165.6	831.4	10%
2008	59.6	289.6	87.3	4.8	0.5	91.1	533.0	7%
2009	17.6	113.7	204.8	7.0	603.2	80.7	1,027.1	13%
2010	19.8	118.1	164.0	3.5	21.4	70.8	397.7	5%
2011	1.5	20.0	46.8	0.7	69.1	248.9	387.1	5%
Fishery % of Total	3%	27%	19%	7%	21%	23%		

Table 11. Estimates of shark catch (t) by species in the GOA from the Halibut Fishery Incidental Catch Estimation (HEICE) working group.

Shark Species	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Blue	0	4	0	7	9	0	0	1	0	0
Misc	3	46	0	0	128	1	0	0	0	0
Salmon	2	10	0	0	0	41	2	5	0	40
Sixgill	0	19	0	0	0	0	0	0	0	0
Pacific Sleeper	8,406	4,709	5,422	6,108	9,618	5,168	7,375	588	493	165
Soupfin	0	0	0	0	0	0	0	0	0	0
Spiny Dogfish	1,301	876	3,518	1,568	2,453	2,722	2,681	1,818	1,680	1,691
Total	9,712	5,664	8,941	7,682	12,208	7,931	10,057	2,413	2,173	1,896

http://www.afsc.noaa.gov/REFM/docs/2011/GOAshark.pdf

There are currently no directed commercial fisheries for shark species in federally or state managed waters of the GOA, and most incidental catch is not retained. Spiny dogfish are allowed as retained incidental catch in some state managed fisheries, and salmon sharks are targeted by some sport fishermen in Alaska state waters.

Recommendations in the GOA sharks SAFE report recommend the maximum allowable ABC of 6,028 t and an OFL of 8,037 t for the shark complex. Catch in 2011 was 522 t and in 2012 was 452 t (as of October 1). The complex was not being subjected to overfishing last year. The ABC/OFL for the shark complex is the sum of the computations for the individual species. Spiny dogfish is the only Tier 5 species, and OFL = M*Biomass, with ABC = 0.75*OFL. The remaining shark species are Tier 6 species with OFL = avg. historical catch (1997 – 2007) and ABC = 0.75*OFL.

Ideas and comments to be addressed in 2013 when a full shark assessment will occur include:

SSC and Plan Team Comments Specific to this Assessment

"Develop biomass indices for lowest tier species (Tier 5 for crab, Tier 6 for groundfish), such as sharks, and conduct net efficiency studies for spiny dogfish. Explore alternative methodologies for Tier 5 and 6 stocks, such as length-based methods or biomass dynamics models." (SSC, June 2012)

*"The Plan Team encourages the inclusion of the HFICE (*Halibut Fishery Incidental Catch estimation) *data in future models, and possibly some measure of fishing effort. Also, the Team suggested that using some alternative series (e.g., the ratio estimator for the period prior to 2003) may be useful for sensitivity analysis."* (Plan Team, September 2012)

"The assessment authors indicated that they intend to compare results from this demographic modeling analysis with results from planned biomass dynamic models and length-based models. The SSC encourages these efforts and urges the authors to incorporate these models into an improved stock assessment for spiny dogfish in the near future." (SSC, December 2011)

"The SSC recommends that total shark catches should be incorporated into the historical catch estimates and OFL/ABC determinations. This is an important issue, as HFICE estimates approach current ABCs." (SSC, December 2011)

Responses to Comments and Research Priorities

Responses to the previously listed SSC and Plan Team Comments will be provided in next year's full stock assessment report. To address several of these comments, the SAFE's authors aim to follow the recommendations listed in the various working group reports (e.g. the methods for averaging

surveys report) submitted to the Plan Team in September 2012. In addition, the plan is to investigate stock structure and migration patterns through tagging and genetics studies; examine spiny dogfish age estimates and growth models (ongoing NPRB funded study); and to investigate survey efficiency (i.e. catchability) for spiny dogfish by examining tagging data.
http://www.afsc.noaa.gov/REFM/Docs/2012/GOAshark.pdf

Arrowtooth flounder (*Atheresthes stomias)*: From NPFMC SAFE reports: BSAI and GOA stocks above B35% reference points, not overfished.
http://www.afsc.noaa.gov/REFM/Docs/2012/BSAIatf.pdf
and http://www.afsc.noaa.gov/REFM/Docs/2012/GOAatf.pdf

White-blotched skates (*Bathyraja maculata)*: The total 2011 skate catch was down slightly relative to 2010, and the 2012 catch as of September 28 is down substantially from previous years. A full assessment was not performed in 2012, but the 2011 assessment was updated to include 2011 and 2012 data. The stock assessment authors did not recommend any directed fishing for skates in 2012 in the GOA, due to high incidental catch in groundfish and halibut fisheries and the lack of accurate information regarding the composition of the skate catch; and recommended using an *M* estimate of 0.1, as has been used in past GOA skate assessments, and the average biomass from the last three AFSC trawl surveys.
http://www.afsc.noaa.gov/REFM/Docs/2012/GOAskate.pdf
A full assessment of the BSAI skate complex was conducted in 2012. The model was updated and the most recent survey data was included. The revised model provided a better fit to length at age data and to survey trends for the Alaska skate. The new model shows that skates reach a greater maximum length and weight than previously estimated. Allowable harvest rates and harvest recommendations are increased from the previous model. The biomass estimates for other skates on the EBS shelf and in the Aleutian Islands were down relative to the penultimate surveys, but the EBS slope biomass estimate was increased relative to 2010. As a result, the 3-survey average and the harvest recommendations for other skates are slightly higher than in the 2011 assessment.
The 2011 and 2012 skate complex catches, OFL, ABC and TAC recommendations are summarized below (2012 data are incomplete; retrieved September 28, 2012).

Year	skate complex OFL	skate complex ABC	skate complex TAC	skate complex catch	skate retention rate
2011	37800	31500	16500	23135	24%
*2012**	*39100*	*32600*	*24700*	*19592*	*27%*

http://www.afsc.noaa.gov/REFM/Docs/2012/BSAIskate.pdf

Grenadiers (*Corypaenoididae* spp.) From NPFMC SAFE reports: BSAI and GOA stocks above catches are well below ABC, not overfished or overfishing occurring.
http://www.afsc.noaa.gov/REFM/Docs/2012/BSAIgrenadier.pdf

BSAI yellow Irish lord sculpins (*Hemilepidotus jordani*), and Great sculpins *(Myoxocephalus polyacanthocephalus)*. For the 2012 and 2013 fisheries, stock assessment scientists recommended ABCs of 43,718 t. These ABCs are equivalent to last year's ABCs for 2011 (and 2012) set by the

Council. The corresponding reference values for BSAI sculpins are summarized below.

Species	Year	Biomass	OFL	ABC	TAC	Catch
Sculpin complex	2011	208,181	58,291	43,718	5,200	4513[1]
	2012	208,181	58,291	43,718		
	2013	208,181	58,291	43,718		

[1]/ Current as of September 17, 2011 http://www.fakr.noaa.gov/2011/car110_bsai_with_cdq.pdf.

http://www.afsc.noaa.gov/REFM/Docs/2012/BSAIsculpin.pdf

Yelloweye rockfish (*Sebastus ruberrimus*) is part of the "other rockfish" complex. To estimate removals in the halibut fishery, methods were developed by the HFICE working group and approved by the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish Plan Teams and the Scientific and Statistical Committee of the North Pacific Fishery Management Council. A detailed description of the methods is available in Tribuzio et al. (2011). The HFICE estimates should be considered preliminary estimates for what is caught in the IFQ halibut fishery. Improved estimates of groundfish catch in the halibut fishery may become available following restructuring of the Observer Program in 2013. The non-commercial removals for "other slope rockfish" in 2010 showed that only a trace amount totaling 94 kg (<0.1 mt) was taken in the GOA. Estimated catches of "other slope rockfish" in the Pacific halibut longline fishery have been much higher than research catches and other non-commercial removals and range from 81 mt in 2003 to 133 mt in 2004. This level of unaccounted catch, although relatively high compared to the official catch, does not appear to have put stocks of "other rockfish" at risk because the annual catch of these species in the GOA has always been much less than ABC. A full assessment was not conducted in 2012, but 2013 will bring new survey data and a new assessment.

Table 12. Estimated catch (mt) of "other slope rockfish" in the Gulf of Alaska halibut fishery, 2001-2010, from the Halibut Fishery Incidental Catch Estimation working group.

Year	Catch
2001	96
2002	89
2003	81
2004	133
2005	132
2006	126
2007	100
2008	100
2009	93
2010	85

http://www.afsc.noaa.gov/REFM/docs/2011/GOAorock.pdf

Interactions with marine mammals

Sperm whale diets overlap with commercial fisheries harvests more than any other species of toothed whales, but the degree of overlap is at least partly because of direct interactions with longline gear. In addition to consuming primarily medium - to large-sized squid, sperm whales also consume some fish and have been observed feeding off longline gear targeting sablefish and halibut in the GOA. The interactions with commercial longline gear do not appear to have an adverse impact on sperm whales. Much to the contrary, the whales appear to have become more attracted to these vessels in recent years. Killer whales frequently take fish directly from commercial fishing gear as it is retrieved. Interactions with commercial longline fisheries are well-documented throughout the GOA and BSAI. Killer whales fall under the jurisdiction of the NOAA Fisheries PRD, and are protected under the Marine Mammal Protection Act of 1972.
The NMFS 2012 Marine Mammal SAFE report indicates that the halibut commercial fleet didn't cause incidental serious or mortality of marine mammal in Alaska.
http://www.nmfs.noaa.gov/pr/sars/pdf/ak2012.pdf

Estimation of bycatch and developments of the observer program in regards to non-halibut bycatch in the directed halibut fishery

In the directed longline fisheries for Pacific halibut, bycatch of other fish species is not well documented on any sized vessel because of the lack in observer coverage (albeit partial coverage requirements implemented in January 2013) in this fleet. Management actions are in place in respect to increasing knowledge on the bycatch dynamics of the directed halibut longline.
A paper titled *Methods for the estimation of non-target species catch in the unobserved halibut IFQ fleet* was produced in August 2011 to address the issue and help the accounting of groundfish and other species bycatch in other Alaska fisheries.
ftp://ftp.afsc.noaa.gov/afsc/public/plan_team/Halibut_Fishery_Bycatch_8_2011_final.pdf.

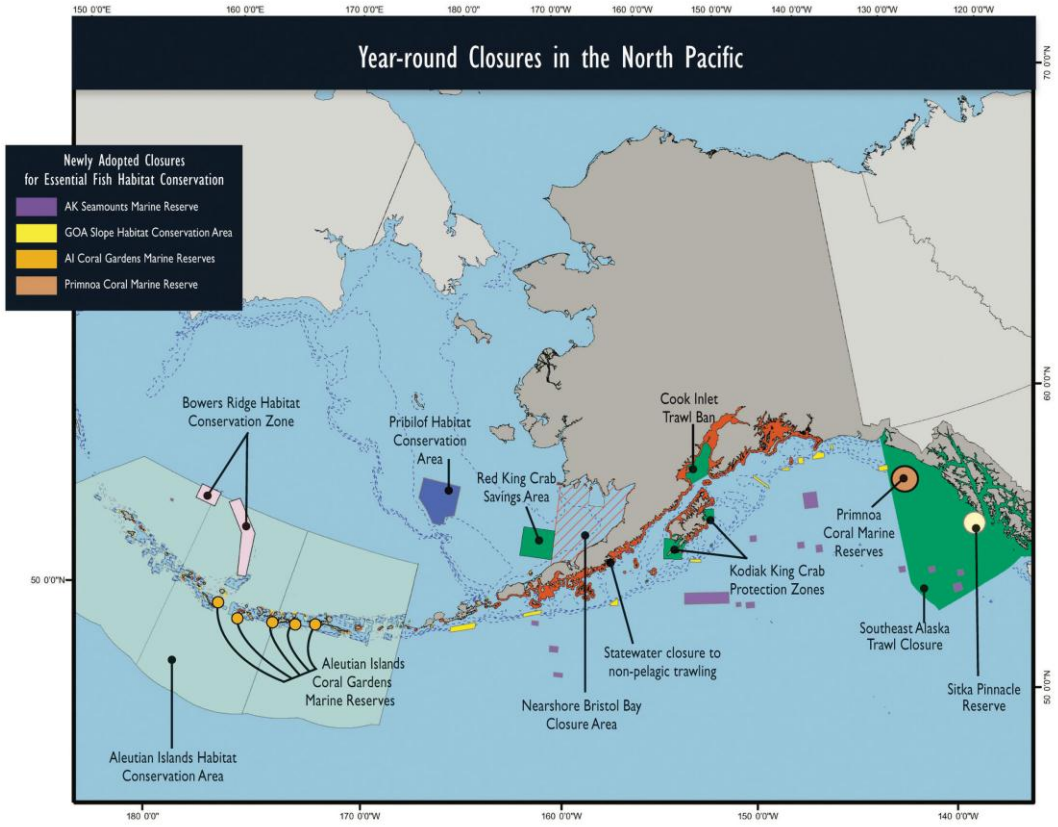
The NMFS announced to NPFMC on June 7th 2012 the approval of Amendment 86 to the FMP for Groundfish of the BSAI Management Area and Amendment 76 to the FMP for Groundfish of the GOA (RIN 0648-BB42). These amendments restructure the funding and deployment system for observers in the North Pacific groundfish and halibut fisheries and include vessels less than 60 ft. In length and halibut vessels in the North Pacific Groundfish Observer Program, in compliance with the MSA.
http://www.fakr.noaa.gov/sustainablefisheries/amds/amds86_76/approval060712.pdf

NOAA Fisheries is providing the $3.8 million start-up funding for the first year of this partial coverage category program. The fees collected from industry will fund the program in subsequent years.
http://www.fakr.noaa.gov/newsreleases/2012/observers041212.htm
http://www.fakr.noaa.gov/notice/77fr29961.pdf

Alaska Marine Protected Areas

Fisheries managers have established many marine protected areas (MPAs) in the Federal and state waters off Alaska to protect ecological structure and function, establish control sites for scientific research studies, conserve benthic habitat, protect vulnerable stocks, and protect cultural resources. Many MPAs achieve multiple objectives. Over 40 named MPAs, many of which include several sites, encompass large areas of Federal waters off Alaska and state waters where commercial fisheries occur. All of the MPAs include measures to prohibit a particular fishery or gear type (particularly bottom trawls) on a seasonal or year-round basis, and several MPA's prohibit virtually all commercial fishing. Although the effectiveness of MPAs is difficult to evaluate on an individual basis, as a group

they are an important component of the management program for sustainable fisheries and conserving marine biodiversity off Alaska (Witherell and Woodby, 2005).
http://aquaticcommons.org/9716/1/mfr6711.pdf



http://alaskaseafood.org/sustainability/pdf/Marine%20Protected%20Areas%20Brochure.pdf

Clause 14 "where fisheries enhancement is utilized, environmental assessment and monitoring shall consider genetic diversity and ecosystem integrity" is not relevant to this fishery.

8. Performance specific to agreed corrective action plans

Not Applicable. This is the 2nd FAO RFM Alaska Pacific halibut surveillance assessment report. Non-conformances were issued neither during the full assessment nor the 1st surveillance assessment. However, a number of issues were identified for review during surveillance to identify whether management actions were being taken to improve issues relating to estimation of bycatch in the halibut fleet and the restructuring of the observer program. The developments have been positive and proceeded as planned. Details of these points are available under Fundamental Clause 8 and 13.

9. Unclosed, new non-conformances and new corrective action plans

Not applicable as no unclosed or new non-conformances has been issued.

10. Future Surveillance Actions

The assessment team will review the following during the 2014 surveillance assessment:

- Re-instatement of Alaska Coastal Management Plan
- Coverage of restructured groundfish observer program
- Bycatch data collection in the halibut fleet and relative management actions to decrease and manage bycatch as relevant and as needed.

11. Client signed acceptance of the action plan

Not applicable.

12. Recommendation and Determination

Following this 2nd surveillance assessment, in 2013, the assessment team and the certification committee recommends that continued Certification under the FAO-Based Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fishery, the Pacific halibut commercial fishery employing benthic longline gear within the IPHC's Regulatory Areas 2C, 3A, 3B, 4A, 4B, and 4CDE, within Alaska jurisdiction (200 nautical miles EEZ), under international [International Pacific Halibut Commission (IPHC)], federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG)] management.

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Appendix 1

Based on the technical expertise required to carry out the above fishery assessment, Global Trust Certification Ltd., is pleased to confirm the 2nd Surveillance assessment team members for the fishery as follows:

Erica Fruh

Erica Fruh has been involved in commercial fisheries management for over 15 years. She earned her BSc in Marine Biology from Auburn University, and her MSc in Marine Resource Management from Oregon State University. Her MSc project focused on bycatch in trawl and long line fisheries. Previous experience includes fishery biologist roles with the Oregon Department of Fish and Wildlife, the Pacific States Marine Fisheries Commission and NOAA Fisheries. She has worked with most fishing gear types used along the U.S. west coast, spending numerous days at sea participating in tagging studies, population monitoring, bycatch monitoring and fishing mortality studies. She worked as a commercial fisheries observer in the U.S. west coast groundfish trawl fishery, the Oregon pink shrimp fishery and the seine sardine fishery. She spent 10 years contributing to the National Marine Fisheries Service U.S. west coast groundfish bottom trawl survey gathering data for stock assessments, and leading projects on marine debris, seabird sightings and age structure collection. She serves on the Board of Directors for the Newport Fishermen's Wives organization to promote safety at sea.

Dr. Geraldine Criquet

Géraldine Criquet holds a PhD in Marine Ecology (École Pratique des Hautes Études, France) which focused on coral reef fisheries management, Marine Protected Areas and fish ecology. She has also been involved during 2 years in stock assessments of pelagic resources in the Biscay Gulf, collaborating with IFREMER. She worked 2 years for the Institut de Recherche pour le Développement (IRD) at Reunion Island for studying fish target species growth and connectivity between fish populations in the Indian Ocean using otolith analysis. She served as Consultant for FAO on a Mediterranean Fisheries Program (COPEMED) and developed and implemented during 2 years a monitoring program of catches and fishing effort in the Marine Natural Reserve of Cerbère-Banyuls (France). Geraldine has joined Global trust Certification in August 2012 as Fisheries Assessment Officer and is involved in FAO RFM and MSC fisheries assessments.

Dave Garforth

Dave Garforth, BSC, HDip. (Applied Science), MSC has been involved in fisheries and aquatic resources for over 20 years. Currently, managing Global Trust FAO based Fishery Certification Program, with experience in the application of ISO/IEC Guide 65 based seafood certification systems and a professional background in numerous fishery assessments. Previous professional background includes; Development Officer in the Irish Sea Fisheries Board, supply chain and trade experience at Pan European Fish Auctions, the control and enforcement of fisheries regulations as a UK Fishery Officer. Dave is also a lead, third party IRCA approved auditor.