Alaska Responsible Fishery Management Certification

3rd Surveillance Report (2019)

For The

Alaska Pacific Halibut Commercial Fishery (200nm EEZ)

Facilitated by

Alaska Seafood Marketing Institute (ASMI)

Client:
'Eat on the Wild Side' (FVOA)

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Report Code: AK/HAL/002.3/2019
Published Date: 19th September 2019

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Foreword

The Alaska Responsible Fisheries Management (RFM) Standard Version 1.3 is composed of Conformance Criteria based on the 1995 FAO Code of Conduct for Responsible Fisheries and the FAO Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries adopted in 2005 and amended/extended in 2009.

The Standard also includes full reference to the 2011 FAO Guidelines for the Eco-labelling of Fish and Fishery Products from Inland Fisheries which in turn are now supported by a suite of guidelines and support documents published by the UN FAO. Further information on the Alaska RFM program may be found here: http://www.alaskaseafood.org/rfm-certification/certified-fisheries-companies/certified-fisheries/.

This report is the 3rd Surveillance Report (2019) for the Alaska Pacific Halibut, federal and state commercial fisheries following initial certification award against this FAO-Based RFM Program, awarded on April 23rd 2011, and recertification on 9th January 2017.

The objective of the Surveillance Assessment and Report is to monitor for any changes/updates in the management regime, regulations and their implementation since the previous assessment; in this case, the Final Report of Full Assessment (re-certification) completed in January 2017. The report determines whether these changes and current practices remain consistent with the overall scorings of the fishery allocated during re-certification.

High conformance was demonstrated by the fishery with regards to the Fundamental Clause. Two minor non-conformances (NC) identified during the re-assessment persist, with an appropriate client action plan as well as fair levels of progress on the NC.

The certification covers the Pacific Halibut (*Hippoglossus stenolepis*) commercial fishery employing benthic longline gear and Pacific halibut caught by salmon trolls and sablefish pots 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 4th surveillance assessment against the requirements of the FAO-Based RFM Conformance Criteria Version 1.3 Fundamental clauses.

The surveillance assessment was conducted according to the Global Trust Certification ISO 65 accredited procedures for FAO – Based Responsible Fisheries Management Certification using the Alaska FAO – Based RFM Conformance Criteria Version 1.3 fundamental clauses as the assessment framework

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Glossary

ABC	Allowable Biological Catch
ADFG	Alaska Department of Fish and Game
AFA	American Fisheries Act
AFSC	Alaska Fisheries Science Center
ASMI	Alaska Seafood Marketing Institute
BOF	Board of Fisheries
BSAI	Bering Sea and Aleutian Islands
CCRF	Code of Conduct for Responsible Fisheries
CDQ	Community Development Quota
CFEC	Commercial Fisheries Entry Commission
CPUE	Catch per Unit Effort
EIS	Environmental Impact Statement
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FAO	Food and Agriculture Organization of the United Nations
FMP	Fishery Management Plan
GOA	Gulf of Alaska
GHL	Guideline Harvest Level
IFQ	Individual Fishing Quota
IRFA	Initial Regulatory Flexibility Analysis
IRIU	Improved Retention/Improved Utilization
LLP	License Limitation Program
MSFCMA	Magnuson-Stevens Fisheries Management and Conservation Act
mt	Metric tons
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act
nm	Nautical miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
OFL	Overfishing Level
OLE	Office for Law Enforcement
OY	Optimum Yield
PSC	Prohibited Species Catch
RACE	Resource Assessment and Conservation Engineering
REFM	Resource Ecology and Fisheries Management
RFM	Responsible Fisheries Management
SAFE	Stock Assessment and Fishery Evaluation (Report)
SSC	Scientific and Statistical Committee
SSL	Steller Sea Lion
TAC	Total Allowable Catch
USCG	U.S. Coast Guard

Summary and Recommendations

This report is the 3rd Surveillance Report (AK/HAL/002.3/2019) for the Alaska Pacific Halibut (*Hippoglossus stenolepis*) Commercial Fishery produced on behalf of the "Eat on the Wild Side (Fishing Vessel Owners' Association (FVOA))" according to the Alaska Based Responsible Fisheries Management (RFM) Certification Program. The fisheries were originally certified on 23rd April 2011, and recertified in 26th January 2017.

The objective of this Surveillance Report is to monitor for, and evaluate the impacts of, any changes to the management regime, regulations and their implementation since the previous assessment. Having assessed these changes to the fishery (if any) the Assessment Team determines if these changes materially affect the fisheries' conformance to the AKRFM Standard and whether current practices remain consistent with the overall confidence ratings assigned during either initial certification or subsequent surveillance audits where the original confidence rating(s) have been changed.

In addition to this, any areas reported as "items for surveillance" or corrective action plans in the previous assessment are reassessed and a new conclusion on consistency of these items with the Conformance Criteria is given accordingly.

High conformance was demonstrated by the fishery with regards to the Fundamental Clause. Two minor non-conformances (NC) identified during the re-assessment persist, with an appropriate client action plan as well as fair levels of progress on the NC.

The certification covers the Alaska Pacific Halibut (*Hippoglossus stenolepis*) Commercial Fishery legally employing benthic longline gear and Pacific halibut caught by salmon trolls and sablefish pots 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 4th surveillance assessment against the requirements of the FAO-Based RFM Conformance Criteria Version 1.3 Fundamental clauses.

The surveillance assessment was conducted according to the Global Trust Certification procedures for Alaska Responsible Fisheries Management Certification using the FAO – Based RFM Conformance Criteria (v1.3) fundamental clauses as the assessment framework.

The assessment was conducted by a team of Global Trust appointed assessors. Details of the assessment team are provided in Appendix 1.

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

Assessment Team Details

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1. Introduction

This Report documents the 3rd Surveillance Assessment of the Alaska Pacific Halibut (*Hippoglossus stenolepis*) Commercial Fishery originally certified on April 23rd 2011, and re-certified on 26th January 2017, and presents the recommendation of the Assessment Team for continued FAO-Based RFM Certification.

Unit of Certification

The US Alaska Pacific Halibut commercial fishery, under international (IPHC), federal (NMFS/NPFMC) and state (ADFG) management and fished with benthic longline (within Alaska's 200 nm EEZ) and Pacific halibut caught by salmon trolls and sablefish pots.

This Surveillance Report documents the assessment results for the continued certification of commercially exploited halibut fisheries to the Alaska RFM Certification Program. This is a voluntary program that has been supported by ASMI who wish to provide an independent, third-party certification that can be used to verify that these fisheries are responsibly managed.

The assessment was conducted according to the Global Trust procedures for Alaska RFM Certification using the fundamental clauses of the Alaska RFM Conformance Criteria Version (V1.3) in accordance with ISO 17065 accredited certification procedures.

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 12 fundamental clauses (+ 1 in case of enhanced fisheries) that guide the AK RFM Certification Program surveillance assessment.

A desktop review was conducted for this 3rd surveillance audit. Assessors included SAI Global internal staff (Appendix 1).

1.1. Recommendation of the Assessment Team

Following this 3rd Surveillance Assessment, the assessment team recommends that continued Certification under the Alaska Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fisheries, the US Alaska Pacific Halibut commercial fishery, under international (IPHC), federal (NMFS/NPFMC) and state (ADFG) management, fished with benthic longlines, salmon trolls and sablefish pots within Alaska's 200 nm EEZ).

2. Fishery Applicant Details

Table 1. Fishery applicant details.

Organisation/Company Name:	Eat on the Wild Side (Fishing Vessel Owners' Association (FVOA)
Date:	8/16/2019
Correspondence Address:	
Street:	4005 - 20th Ave. West, Room 232
City:	Seattle
State	Washington
Country:	USA
Postal Code:	98199
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3. Proposed Unit(s) of Assessment and Certification

The applicant Units of Assessment (UoA) (i.e., what is to be assessed) are described by the following:

Table 2. Units of assessment for the Alaska Pacific Halibut Commercial Fishery**.**

Units of Assessment (UoAs)			
Common across all UoAs		**UoA**	
Species:	**Common name:**	**All**	Pacific halibut
	Latin name:	**All**	*Hippoglossus stenolepis*
Geographical Area(s)		**All**	U.S. Federal and State fisheries within the Gulf of Alaska and the Bering Sea & Aleutian Islands.
Stock(s):		**All**	Eastern Pacific
Management System:		**All**	U.S. Federal and State fisheries within the Gulf of Alaska and the Bering Sea & Aleutian Islands managed by: ▪ International Pacific Halibut Commission (IPHC) ▪ National Marine Fisheries Service (NMFS) ▪ North Pacific Fishery Management Council (NPFMC) ▪ Alaska Department of Fish and Game (ADFG) and Board of Fisheries (BOF)
Unique to each UoA		**UoA**	
Fishing gears/methods:		**1**	Benthic longline
		2	Pots
		3	Troll

4. Fishery Observations

4.1. Stock status, landings and TAC update

No significant changes have occurred since the re-assessment in January 2017. Full stock assessment consistent with contemporary methods, was completed at the end of 2018 (Stewart and Hicks 2018b). All fishery removals and mortality of P. Halibut are considered in the assessment and management of the stock. These data include information on retained catch in the commercial, recreational and sport fisheries, the personal use and subsistence fisheries, as well as estimates of bycatch and discards.

P. halibut stock assessment is based on the approximate probability distributions derived from the ensemble of models. For 2018, the four models were equally weighted, as work-to-date on retrospective and predictive performance continues to suggest that each can be considered approximately equally plausible. Within-model uncertainty from each model was propagated through to the ensemble results via an asymptotic approximation. Point estimates reported in this stock assessment correspond to median values from the ensemble, and can therefore be described probabilistically.by incorporating the uncertainty within each model as well as the uncertainty among models.

SCIENTIFIC ADVICE[1]

Sources of mortality

In 2018, total mortality was near the lowest values estimated over the last 100 years (34 million pounds; ~15,420 t), down from 2017. In 2018, 82% of the total mortality was retained compared to 83% in 2017.

Fishing intensity

The 2018 mortality from all sources corresponds to a point estimate of SPR = 49% (there is a 34% chance that fishing intensity exceeded the IPHC's reference level of 46%). The Commission does not currently have a coastwide limit fishing intensity reference point.

The IPHC does not have an explicit coastwide fishing intensity target or limit reference point, making it difficult to determine if current levels of fishing intensity are consistent with the interim harvest strategy policy objectives. However, given the healthy female spawning biomass and the TAC set for 2018 only being marginally higher than the levels estimated to maintain biomass at current high levels, on the weight-of-evidence, the stock is classified as '**not subject to overfishing**'.

Stock status (spawning biomass)

Female spawning stock biomass of Pacific halibut at the beginning of 2019 was estimated to be 43% (27–63%) of the SB0 (unfished levels) defined by the interim harvest strategy policy (**Error! Reference source not found.**). The probability that the stock is below the SB30 level is estimated to be 11%, with less than a 1% chance that the stock is below SB20. Thus, on the weight-of-evidence available, the Pacific halibut stock is determined to be '**not overfished**' (SB2019 > SB20%). Projections indicate that the target fishing intensity is likely to result in declining biomass levels in the near future.

[1] https://www.iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf

Table 3. Status summary of Pacific Halibut in the IPHC Convention Area at the end of 2018.

Indicators				Stock status determination[2]			
Biological status				Fishing mortality[3]		Biomass[4]	
	2017	2018	2019[5]	2017	2018	2018[5]	2019[5]
Mortality limit Total mortality[7] Retained mortality 5 yr av. total mortality SPRyear	40.74 Mlbs, ~ 18,479 t[6] 41.99 Mlbs, ~19,050 t[6] 34.91 Mlbs (83%), ~15,835 t[6] 43.25 Mlbs, ~19,618 t[6] 48% (29-61%)	37.21 Mlbs, ~16,878 t[6] 38.74 Mlbs, ~17,572 t[6] 31.81 Mlbs (82%), ~14,427 t[6] 41.39 Mlbs, 18,772 t[6] 49% (28-62)	n/a				
SB_{year} (Mlb)[5] SB_{year}/SB_0[5] $P(SB_{year}<SB_{30})$[5] $P(SB_{year}<SB_{20})$[5]	213 (144–292) 45% (30-66%) 2% <1%	205 (134-288) 44% (28-64%) 6% <1%	199 (125-287) 43% (27-63) 11% <1%				
Economic status	Net Economic Returns: In development						

[1] Boundaries for the IPHC stock assessment are defined as the IPHC Convention Area (see Fig. 1).
[2] An ensemble of four stock assessment models, representing a two-way cross of short vs. long time series', and aggregated coastwide vs. Areas-As-Fleets (AAF) models was used to describe the range of plausible current stock estimates.
[3] Status determined in the absence of a specific limit reference point for fishing intensity. i.e. as the stock is well above the trigger and limit biomass reference point, overfishing in not considered to be occurring.
[4] Status determined relative to the IPHC's current harvest control rule biomass limit of *SB20%*.
[5] Stock status refers to the condition of the stock as the start of the given year.
[6] Weights in this document are reported as 'net' weights, head and guts removed; this is approximately 75% of the round (wet) weight).
[7] U26 bycatch mortality does not accrue to the mortality limit.

Fishing mortality		Not subject to overfishing		Subject to overfishing		Uncertain
Biomass		Not overfished		Overfished		Uncertain

4.2. Enforcement update

On May 2, 2019, NOAA published a Notice of its intention to revise its "Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions" (Penalty Policy[2]). Under the 2019 Penalty Policy, penalties and permit sanctions are based on two criteria: (1) A "base penalty" calculated by adding (a) an initial base penalty amount and permit sanction reflective of the gravity of the violation and the culpability of the violator and (b) adjustments to the initial base penalty and permit sanction upward or downward to reflect the particular circumstances of a specific violation; and (2) an additional amount added to the base penalty to recoup the proceeds of any unlawful activity and any additional economic benefit of noncompliance.

OLE has provided their latest Enforcement Division Report to the IPHC[3] in December 2018 for the 2018 year. In 2018, AKD opened 1294 halibut related incidents that included outreach events, vessel boardings, and dockside monitoring.

The US Coast Guard provided the 2018 activities report to the IPHC in January 2019[4]. This report covered all related activities in IPHC Regulatory Areas 2A, 2C, 3A, 3B, 4A, 4B, 4C, 4D and 4E. Overall, USCG assets boarded a total of 1,001 vessels and detected 17 IPHC violations.

[2] https://www.gc.noaa.gov/enforce-office3.html
[3] https://iphc.int/library/documents/meeting-documents/noaa-nmfs-office-of-law-enforcement-ole-west-coast-enforcement-division-report-to-the-international-pacific-halibut-commission-
[4] https://iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-ar03.pdf

4.3. Ecosystem Update

One of the key updates of the 2018 North Pacific Observer Program Report[5] was that 2018 was the first year that EM was integrated into the Observer Program under regulations.

Based on this information, some of the most common bycatch (retained and/or discarded) in the halibut fleet component using EM included some rockfish species, notably shortracker/rougheye and yelloweye rockfish, sablefish (most of which is retained when IFQ is present), Pacific cod, arrowtooth flounder, grenadiers, sculpin, spiny dogfish and longnose skate. Overfishing is not occurring for any of these species/stocks.

No takes of short-tailed albatross were observed in the groundfish or halibut fisheries in 2018.

The 2019 List of Fisheries Summary Tables list U.S. commercial fisheries by categories according to the level of interactions that result in incidental mortality or serious injury of marine mammals. The halibut fisheries in the GOA and the BSAI are currently listed as Category III[6] (remote likelihood of/ no known interactions).

During the 20th Session of the IPHC's Research Advisory Board (RAB020)[7] held in February 2019 the RAB agreed that the IPHC Closed Area (see Pacific Halibut Fishery Regulations 2019, Sect. 11) is not currently meeting its intended objective of protecting juvenile Pacific halibut when it is open to bottom trawl non-directed fisheries, and recommended, in coordination with the NPMFC, that the IPHC Secretariat examine alternative management regimes for the Closed Area, and for these to be presented at the 96th Session of the IPHC Annual Meeting (AM096) in 2020.

4.4. Relevant changes to Legislation and Regulations

There were no significant changes to the legislation and Regulations regime that governs the Alaska Pacific Halibut Commercial fishery in the last year.

4.5. Relevant changes to the Management Regime

There were no significant changes to the management regime that governs the Alaska Pacific Halibut fishery in the last year.

[5] https://www.fisheries.noaa.gov/resource/document/north-pacific-observer-program-2018-annual-report
[6] https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables#table-1-category-iii
[7] https://iphc.int/uploads/pdf/rab/2019/iphc-2019-rab020-r.pdf

5. Surveillance Meetings

There were no site visits as it was a desktop review for the 3rd audit.

6. Assessment Outcome Summary

6.1. Fundamental Clauses Summaries

Fundamental Clause 1: Structured and legally mandated management system

Evidence adequacy rating: High

No significant change has occurred in the management of the Alaska Pacific Halibut fishery since the full assessment final report in January 2017. Fisheries resources conservation and economic viability, through research and management are important principles of the bilateral administrative framework used by Canada and USA to manage the fishery. The International Pacific Halibut Commission (IPHC) and National Marine Fisheries Service (NMFS) manage fishing for Pacific Halibut through regulations established under authority of the Northern Pacific Halibut Act of 1982 (Halibut Act). The IPHC promulgates regulations governing the Pacific Halibut fishery under the Convention between the United States and Canada for the Preservation of the Halibut Fishery of the North Pacific Ocean and Bering Sea (Convention). The Halibut Act provides the North Pacific Fishery Management Council (Council) with authority to develop regulations, including limited access regulations. Council–developed regulations are implemented by NMFS after approval by the Secretary. The Council has exercised this authority during development of its IFQ Program. Congressional action is not required to modify the IFQ Program. However, CDQ allocations are specified in the MSA and changes to the CDQ allocations would require Congressional action. Following IPHC catch share allocations; 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, regulations, violations and sanctions in federal waters. The Alaska Wildlife Troopers (AWT) take part in enforcement activities in state waters.

Fundamental Clause 2: Coastal area management frameworks

Evidence adequacy rating: High

No significant changes have occurred since the re-assessment in January 2017. An appropriate policy, legal and institutional framework is adopted in order to achieve sustainable and integrated use of living marine resources, taking into account the fragility of coastal ecosystems, the finite nature of their natural resources and the needs of coastal communities. 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. Collectivity cooperation among NEPA and existing agencies (such as, ADFG, DEC, DNR, USFWS, ANILCA, OPMP and BOEM), facilitates appropriate processes for managing Alaska's coastal resources in a transparent, organized and sustainable way. In addition, these planning and management framework include 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. Both the NPFMC and the IPHC decision making processes are open to public input and consultation and the information produced through these fora, for the management of the halibut resources in Alaska, are publicly available. As for 2017, the IPHC is also going through a second performance review to improve its internal processes and expand the transparency of its decision-making process.

Fundamental Clause 3: Management objectives and plan

Evidence adequacy rating: High

No significant changes have occurred since the re-assessment in January 2017. USA and Canada agreement and long term objectives for management, conservation, and sustainable utilization of Pacific Halibut in the North Pacific has been in use since 1923. Relevant fisheries management plans are developed from these management objectives and included: seasonal fishery closures, halibut bycatch restrictions in other fisheries, IFQ and CDQ, as well as systems for mandatory reporting catch (removals), fishery monitoring, and persecutions where violations are identified. The IPHC promulgates regulations governing the Pacific Halibut fishery under the Convention

between the United States and Canada for the Preservation of the Halibut Fishery of the North Pacific Ocean and Bering Sea (Convention) (signed on March 2, 1953) as amended by a Protocol Amending the Convention (signed on March 29, 1979). Regulations developed by the IPHC are subject to approval by the Secretary of State with concurrence from the Secretary of Commerce (Secretary). After approval by the Secretary of State and the Secretary, the IPHC regulations are published in the Federal Register as annual management measures. Overall management objectives of NMFS include promoting 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.

Fundamental Clause 4: Fishery data
Evidence adequacy rating: Medium
No significant changes have occurred since the re-assessment in January 2017. A minor non-conformance was identified during the re-assessment in January 2017, related to limited observer coverage on vessel <40 ft. Evidence of progress included the recommendation and implementation of Electronic Monitoring (EM) starting in 2017 among smaller vessels (<40 ft) that currently do not participate in the observer program. EM has been included in the Observer Program beginning in 2018. Data from EM in 2017 was used in determining bycatch species and amounts on some halibut vessels. A Client corrective action plan was provided and accepted for the non-conformance on sub-clause 4.2.

In 2018, EM was integrated into the North Pacific Observer Program under a regulated program and NMFS approved the 141 eligible vessels in the EM selection pool. The EM data from hook-and-line vessels were incorporated into the CAS and used for management in 2018. However, there is still no monitoring data from vessels less than 40 ft. NMFS does continue to recommend that vessels less than 40 ft LOA could be considered for the EM selection pool in the future. The agency recognizes that the Council's priority for EM research is on trawl vessels, so the evaluation of data collected on fixed-gear less than 40 ft has not started.

Full stock assessment consistent with contemporary methods was completed at the end of 2017. In addition, data sources are updated with new available information, and refined to provide accurate representation of the fishery. All fishery removals, wastage, and mortality of Pacific Halibut are considered in the assessment and management of the stock. Reliable and accurate data are provided annually to IPHC scientist to assess the status of Pacific Halibut fisheries and ecosystems. These data include information on retained catch in the commercial and sport fisheries, the subsistence fisheries, as well as estimates of bycatch, and discards in other fisheries. Several data reporting systems are in place for the various fishery components to ensure timely and accurate collection and reporting of catch data. Fishery-independent surveys produce important, high-quality abundance and trend information for assessment and management of the Pacific Halibut stock. The IPHC has conducted fishery-independent setline surveys in selected areas during most years since 1963, and has carried out a coast- wide survey with a consistent sampling design since 1998. Data were analyzed from this extensive survey carried out in 2017. The IPHC has also taken part in the NMFS Bering Sea groundfish trawl survey since 1998 and the NMFS Aleutian Islands trawl survey since 2012. These two NMFS surveys contribute Pacific Halibut data from areas either poorly covered or not covered by the Commission's own fishery-independent survey.

Fundamental Clause 5: Stock assessment
Evidence adequacy rating: High
No significant changes have occurred since the re-assessment in January 2017. Full stock assessment consistent with contemporary methods was completed at the end of 2017 (Stewart and Hicks 2018). The assessment noted that since the estimated female spawning biomass (SB) stabilized near 200 million pounds (~90,100 t) in 2010, the

stock is estimated to have been increasing gradually to 2017. The SB at the beginning of 2018 is estimated to be 202 million pounds (~91,600 t), with an approximate 95% confidence interval ranging from 148 to 256 million pounds. Fishing mortality is estimated in the stock assessment from data collected during fishing surveys, catch sampling in main ports, and tagging studies. The IPHC conducts numerous projects annually to support its major mandates. The main objectives of the Biological and Ecosystem Science Research Program at IPHC are to: 1) identify and assess critical knowledge gaps in the biology of the Pacific Halibut; 2) understand the influence of environmental conditions; and 3) apply the resulting knowledge to reduce uncertainty in current stock assessment models. The Five-Year Research Plan are proposed for the period 2017-21 includes extensive studies covering five major research areas: 1) Reproduction (i.e., sex identification, maturity estimates), 2) Growth (i.e., decrease in size-at-age, temperature effects), 3) Discard mortality rates (i.e., physiological condition and survival post-release of bycatch), 4) Migration (i.e., larval dispersal, adult and reproductive migrations) and 5) Genetics and Genomics (i.e., genetic population structure, genome characterization.

Fundamental Clause 6: Biological reference points and harvest control rule
Evidence adequacy rating: High
Full stock assessments are conducted annually, and fisheries management and conservation are based on precautionary and ecosystem based approaches. Conservation and management of the fishery is based on an average coastwide fishing intensity SPR of F46, used to determine the Total Constant Exploitation Yield (TCEY). The justification for using an average SPR from recent years is that this corresponds to fishing intensities that have resulted in a stable or slightly increasing stock, indicating that, in the short-term, this may provide an appropriate fishing intensity that will result in a stable or increasing spawning biomass. The previous harvest strategy was revoked, in recognition of the development process (management strategy evaluation) currently underway. In previous years, the harvest policy was 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% (SB30 threshold level) of the level defined as unfished.

The 2018 stock assessment ensemble model is designed to capture both uncertainty related to the data and stock dynamics (due to estimation) as well as uncertainty related to our understanding of the way in which the Pacific halibut stock functions and is best approximated by a statistical model (structural uncertainty).

Based on the current assessment, the stock is currently at 43% (approximate 95% credible range = 27-63%) of specified unfished levels (relative to the SB specified by the current management procedure), with a 11% probability the stock is below the SB30% level, and less than 1% probability that the stock size is below SB20%.

The IPHC adopted catch limits for 2019 totaling 29,430,000 lb (13,349.22 mt) coastwide, corresponding to a fishing intensity of F47%, which is slightly more conservative than the interim reference level of F46%. The IPHC noted this more precautionary management approach considers the inherent uncertainties in the ensemble models, particularly the estimates of the relative strength of the 2011 and 2012 year-classes and the scale of the recent biomass, tied itself to the outcome of additional data collected in 2018 by the expansion of the setline survey.

Fundamental Clause 7: Precautionary approach
Evidence adequacy rating: High.
Full stock assessments are conducted annually, and fisheries management and conservation are based on precautionary and ecosystem based approaches. Target reference points for biomass and fishing mortality (harvest rate) have been developed based on sound scientific analyses. The combination of the stock distribution from the 2018 O32 fishery-independent setline survey catch and relative target harvest rates among IPHC Regulatory Areas results in the target distribution for the annual TCEY.

A comparison of the median 2019 ensemble SB estimate to reference levels specified by the IPHC's interim management procedure suggests that the stock is currently (in 2018) at 43% of unfished levels (approximate 95% credible range = 27-63%), compared to 41% in 2017. The probability that the stock is below the SB30% level is estimated to be 11%, with less than a 1% chance that the stock is below SB20%.

The IPHC adopted catch limits for 2019 totaling 29,430,000 lb (13,349.22 mt) coastwide, corresponding to a fishing intensity of F47%, which is slightly more conservative than the interim reference level of F46%[8]. The IPHC noted this more precautionary management approach considers the inherent uncertainties in the ensemble models, particularly the estimates of the relative strength of the 2011 and 2012 year-classes and the scale of the recent biomass, tied itself to the outcome of additional data collected in 2018 by the expansion of the setline survey.

Based on the current assessment, the stock is currently at 40% of specified unfished levels, with low probability the stock is below the SB30% and SB20% reference points. Stock projections for a range of alternative management actions were conducted using the integrated results from the 2018 stock assessment ensemble. The stock is projected to decrease gradually over the period from 2018-20 for removals around the reference SPR (46%) level (31 million pounds, ~14,060 t). There is a relatively small chance (< 21%) that the stock will decline below the threshold reference point (SB30%) in projections for all the levels of TCEY up to 40 million pounds (~18,100 t) evaluated over three years.

Fundamental Clause 8: Management measures
Evidence adequacy rating: High
The Halibut fishery in Alaska is a closed access fishery managed using an Individual Fishing Quota system. The IPHC currently apportions the quota shares for the halibut fishery among commercial, sport and personal use subsistence sectors coastwise in the US and Canada. The NPFMC, on the other hand, is responsible for allocation of the halibut resource among user (e.g. commercial, sport, customary) groups in Alaska waters. The management of the fishery is geared towards long-term sustainability, and is primarily based on the IPHC's interim management procedure, which targets to maintain the total mortality of halibut across its range from all sources based on a reference level of fishing intensity so that the Spawning Potential Ratio (SPR) is equal to 46%. The current interim management strategy is under development.

Fishery regulations for the 2019 season include vessel licensing, provisions for in-season actions to establish or modify current management measures, seasonal closures per regulatory area (modified for 2019, currently from the 15th March to 15th November 2019), other closed areas, IFQ and CDQs shares specifications, fishing period limits, size limits (currently 32 inches with head on, 24 inches with head off), careful release specifications for non-retained halibut, logbooks for any vessels above 27 feet in length, fishing gear allowed (main gear being hook and line but single pot extensions exist), supervision of unloading and weighing of halibut by authorized officers, retention of tagged halibut, customary, traditional and aboriginal fishing catches, and sport fishing regulations.

Halibut catch is controlled in the groundfish fisheries using prohibited species catch (PSC) limits in the GOA and the BSAI. The NPFMC is in the process of amending the current PSC limits for halibut and considering a regulatory amendment to allow retention of legal-size halibut in pot gear used to fish IFQ/CDQ in the BSAI. 2018 was the first year that EM was integrated into the Observer Program under regulations.

[8] https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan

Fundamental Clause 9: Appropriate standards of fisher's competence
Evidence adequacy rating: High
To be eligible to purchase halibut shares, new participants must apply for and obtain a Transferable Eligibility Certificate issued by the North Pacific Region of NMFS. An applicant must be a U.S. citizen and show documentation of 150 days of commercial fishing experience in the U.S.

There are several avenues for fishermen to receive training to ensure they have appropriate standards of competence. AMSEA provides marine safety training for commercial fishermen, subsistence & recreational boaters, and youth and women boaters throughout Alaska and across the United States. The State of Alaska, Department of Labor and Workforce Development (ADLWD) includes the Alaska's Institute of Technology, also called Alaska Vocational Training & Education Center (AVTEC). One of AVTEC's main divisions is the Alaska Maritime Training Center. In January 2020, the Alaska Sea Grant Marine Advisory Program will present the 8th Alaska Young Fishermen's Summit.

Fundamental Clause 10: Effective legal and administrative framework for enforcement
Evidence adequacy rating: High
The IPHC does not actively enforce regulations, but relies on the enforcement mechanisms of the Contracting Parties in the US and Canada. The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Alaska fisheries laws and regulations, especially 50CFR679 (on the management of fisheries off the Alaska EEZ). The Alaska Wildlife Troopers enforce halibut regulations in state waters. OLE has provided their latest Enforcement Division Report to the IPHC in December 2018 for the 2018 year. In 2018, AKD opened 1294 halibut related incidents that included outreach events, vessel boardings, and dockside monitoring. The US Coast Guard provided the 2018 activities report to the IPHC in January 2019. This report covered all related activities in IPHC Regulatory Areas 2A, 2C, 3A, 3B, 4A, 4B, 4C, 4D and 4E. Overall, USCG assets boarded a total of 1,001 vessels and detected 17 IPHC violations.

Fundamental Clause 11: Framework for sanctions
Evidence adequacy rating: High
The Northern Pacific Halibut Act governs halibut fisheries in the U.S. Penalties under the Halibut Act include civil and criminal penalties that may exceed $200,000 for each violation (where every day is considered as a single violation) or imprisonment for not more than 6 months, or both, and revocation and suspension of permits, among others.

Federally, the sanction and violation framework is based on 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.

Under the 2019 Penalty Policy, penalties and permit sanctions are based on two criteria: (1) A "base penalty" calculated by adding (a) an initial base penalty amount and permit sanction reflective of the gravity of the violation and the culpability of the violator and (b) adjustments to the initial base penalty and permit sanction upward or downward to reflect the particular circumstances of a specific violation; and (2) an additional amount added to the base penalty to recoup the proceeds of any unlawful activity and any additional economic benefit of noncompliance.

Fundamental Clause 12: Impacts of the fishery on the ecosystem
Evidence adequacy rating: High
The impacts of environmental factors on halibut and other fish or non-fish species associated or dependent upon them continue to be assessed appropriately by the IPHC, NMFS/NPFMC and ADFG.

In 2019, the IPHC published the 5-year Biological and Ecosystem Sciences Research Program Update. The main objectives of the Biological and Ecosystem Science Research Program at IPHC are to: 1) identify and assess critical knowledge gaps in the biology of the Pacific halibut; 2) understand the influence of environmental conditions; and 3) apply the resulting knowledge to reduce uncertainty in current stock assessment models.

One of the key updates of the 2018 North Pacific Observer Program Report was that 2018 was the first year that EM was integrated into the Observer Program under regulations. Based on this information, some of the most common bycatch (retained and/or discarded) in the halibut fleet component using EM included some rockfish species, notably shortracker/rougheye and yelloweye rockfish, sablefish (most of which is retained when IFQ is present), Pacific cod, arrowtooth flounder, grenadiers, sculpin, spiny dogfish and longnose skate. None of these stocks appear to be depleted.

Seabird mitigation measures for longline vessels were implemented by regulations in 2004 and required paired or single streamer lines for vessels larger than 55 feet length overall, which accounted for the vast majority of seabird bycatch. Since then, annual seabird bycatch in the fisheries using demersal longline gear has remained below 10,000 birds, dropping as low as 2,100 birds in 2014. The NOAA Fisheries Alaska Groundfish and Halibut Seabird Working Group provided an update of their work in April 2019.

No takes of short-tailed albatross were observed in the groundfish or halibut fisheries in 2018. In addition to the endangered short-tailed albatross, there is also conservation concern for Laysan and black-footed albatross (USFWS 2008). Laysan albatross is listed as Near Threatened in the IUCN redlist with a stable population trend, last assessed in 2018. The black-footed albatross is listed as Near Threatened in the IUCN redlist with an increasing population trend.

The 2019 List of Fisheries Summary Tables list U.S. commercial fisheries by categories according to the level of interactions that result in incidental mortality or serious injury of marine mammals. The halibut fisheries in the GOA and the BSAI are currently listed as Category III (remote likelihood of/ no known interactions).

During the 20th Session of the IPHC's Research Advisory Board (RAB020) held in February 2019 the RAB agreed that the IPHC Closed Area (see Pacific Halibut Fishery Regulations 2019, Sect. 11) is not currently meeting its intended objective of protecting juvenile Pacific halibut when it is open to bottom trawl non-directed fisheries, and recommended, in coordination with the NPMFC, that the IPHC Secretariat examine alternative management regimes for the Closed Area, and for these to be presented at the 96th Session of the IPHC Annual Meeting (AM096) in 2020.

There is considerable knowledge of the essential habitats for the Pacific Halibut and potential fishery impacts on them. As of 2019, there continues to be extensive habitat and fishery closures throughout Alaska.

7. Conformity Statement

Following this 3rd Surveillance Assessment, the assessment team recommends that continued Certification under the Alaska Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fisheries, the US Alaska Pacific Halibut commercial fishery, under international (IPHC), federal (NMFS/NPFMC) and state (ADFG) management, fished with benthic longlines, salmon trolls and sablefish pots within Alaska's 200 nm EEZ).

8. Evaluation of Fundamental Clauses

8.1. Section A. The Fisheries Management System

8.1.1. Fundamental Clause 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.

Number of Supporting clauses	**13**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized evidence:

1.1. There shall be an effective legal and administrative framework established at local and national level appropriate for the fishery resource and conservation and management.

No significant change has occurred in the management of the Alaska Pacific Halibut fishery since the full assessment final report in January 2017. Fisheries resources conservation and economic viability, through research and management are important principles of the bilateral administrative framework used by Canada and USA to manage the fishery.

The International Pacific Halibut Commission (IPHC) and National Marine Fisheries Service (NMFS) manage fishing for Pacific Halibut through regulations established under authority of the Northern Pacific Halibut Act of 1982 (Halibut Act)[9]. The IPHC promulgates regulations governing the Pacific Halibut fishery under the Convention between the United States and Canada for the Preservation of the Halibut Fishery of the North Pacific Ocean and Bering Sea (Convention) (signed on March 2, 1953) as amended by a Protocol Amending the Convention (signed on 29th March 1979). Regulations developed by the IPHC are subject to approval by the Secretary of State with concurrence from the Secretary of Commerce (Secretary).

After approval by the Secretary of State and the Secretary, the IPHC regulations are published in the *Federal Register* as annual management measures. The Halibut Act also provides the North Pacific Fishery Management Council (Council) with authority to develop regulations, including limited access regulations that are in addition to, and not in conflict with, approved IPHC regulations. Such Council–developed regulations may be implemented by NMFS only after approval by the Secretary. The Council has exercised this authority most notably in the development of its IFQ Program. Congressional action is not required to modify the IFQ Program. However, CDQ allocations are specified in the MSA and changes to the CDQ allocations would require Congressional action.

Updates for 2018 relevant to halibut fishery management consisted of catch share utilization, halibut catch in sablefish pots and improve monitoring, through protocols such as:

- CDQ groups leasing of IFQ quotas (https://www.npfmc.org/ifqcdq/)
- Halibut abundance-based PSC management (https://www.npfmc.org/halibutpsc/)
- Electronic monitoring (https://www.npfmc.org/electronic-monitoring-2/)
- Halibuts in Pots (https://www.npfmc.org/halibut-in-pots/)

[9] https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf.

CQE Fish Up in Area 3A[10]

The Council took final action to allow eligible CQE residents in Area 3A to fish halibut IFQ derived from CQE-held D class QS on C or D class vessels in Area 3A beginning on August 15th each year. This action provides flexibility for CQEs to potentially avoid revenue loss and is intended as a fallback mechanism for CQEs that have unfished D-class quota late in the season should unforeseen challenges arise.

As of 2019, one CQE in Area 3A holds D class IFQ. Current Area 3A regulations that require D class IFQ to be fished on D class vessels have, in some circumstances, limited this CQE community's ability to fully harvest their halibut IFQ. The Council's preferred alternative to include a date after which this "fish up" measure can be utilized was in response to concerns that future CQE purchases of quota share could target D class QS with the intent of fishing it on C class vessels if this opportunity was allowed for the duration of the IFQ season. This action provides a way for the CQE to keep D class quota in the community, furthering the Council's intent of encouraging CQE communities to secure long-term opportunities to access halibut.

Halibut Abundance-Based PSC Management

In June 2017 the Council reviewed a discussion paper on development of abundance-based approaches for BSAI halibut PSC limits[11]. This builds upon previous work to provide the information necessary for the Council to develop abundance-based PSC limit alternatives for analysis. Following review of some specific aspects of the indices and plans for the next discussion paper, the Council moved to provide additional direction for the expanded discussion paper for October. Specific direction on limiting the set of abundance indices, providing an illustrative starting point and shape of control rule and other directions for inclusion in the paper were provided by the Council motion. The full Council motion is posted on the website. An expanded discussion paper was provided for the October 2017 Council meeting to facilitate selection of alternatives for this abundance-based approach for BSAI PSC limits.

In October 2018, NPFMC evaluated a preliminary review draft EIS/RIR of alternatives for abundance-based management (ABM) of BSAI halibut prohibited species catch (PSC) limits. The analysis centered primarily around a detailed description of the Council's alternatives, elements and options, and a historical analysis of the application of candidate PSC limits from within the alternative set, to show the behavior of control rule features relative to estimated PSC limits. A narrative description was also included of how the three directly regulated BSAI groundfish sectors approach their fishing year in the context of the various constraints they face, including but not limited to halibut PSC limits. This section was included to provide the context necessary to understand interactions between fisheries, and the factors that drive the decisions made during the year by fleet managers and vessel operators in the Amendment 80 sector, the trawl limited access sector, and the hook-and-line catcher-processor sector. The Council made a number of changes to the alternative set based upon the preliminary analysis, staff workgroup recommendations, SSC comments, and stakeholder and Advisory Panel input.

<u>BSAI Halibut ABM Stakeholder Committee</u>

The Council moved to form a stakeholder committee that will provide recommendations for the ABM scenarios to be analyzed in the draft EIS/RIR. The Committee will also provide recommendations on measurable objectives and associated performance metrics to be considered by analysts in evaluating trade-offs among alternatives. This committee will meet to draft these scenarios prior to the February Council meeting with an update on the initial committee meeting provided to the Council in December 2018.

[10] https://www.npfmc.org/cqe-fish-up-in-area-3a-2/
[11] https://www.npfmc.org/halibutpsc/

BSAI Halibut Catch in pots

In October 2018, The Council took final action on an issue that would allow retention of legal-size halibut in pot gear in the Bering Sea and Aleutian Islands (BSAI), provided the operator holds sufficient halibut IFQ or CDQ for the corresponding regulatory area. The purpose of this action is to allow for more efficient harvest of the halibut resource by decreasing wastage of legal-size halibut discarded in the BSAI sablefish pot fishery and to allow for the possibility of reduced whale depredation of halibut off of hook-and-line gear.

This action includes the following elements: 1) an exemption to the 9-inch maximum width of the tunnel opening on pots, 2) VMS and logbook requirements for all vessels using pot gear to fish IFQ/CDQ, and 3) in the event that the overfishing limit for a shellfish or groundfish species is approached, regulations would allow NMFS to close IFQ fishing for halibut as necessary. Additionally, the Pribilof Islands Habitat Conservation Zone would be closed to all fishing with pot gear. To the extent practicable, the Council has recommended that halibut fishermen in the BSAI interested in using pot gear under this action consult with crab fishery participants on appropriate crab escape mechanisms to minimize crab bycatch. Until the action is approved by the Secretary of Commerce and implemented by NMFS, retention of halibut in pots in the BSAI is not permitted. The Council plans to review the effects of allowing retention of halibut in pot gear three years after implementation.

Electronic Monitoring

The Council reviewed the Electronic Monitoring (EM) Workgroup report from their March 2017 meeting. In addition to discussing how the 2017 program is working, a workplan for giving public input on the statement of work for an EM contract, and planning for the transition of the current EM pre-implementation program to an integrated Observer Program, the Workgroup also reviewed the EM Integration action proposed rule and the scope of the 2018 EM deployment pool. The Council motion addressed two areas[12]:

- The Council requested that the agency develop an EM program for 2018 that is generally similar to EM deployment in 2017, except that the Council supports expanding the size of the EM pool in 2018 to accommodate up to 120 longline vessels and up to 45 pot vessels, provided there is funding to support this pool size.
- The Council directed staff to submit comments to the agency on behalf of the Council on the EM Integration Proposed Rule, in line with the six areas highlighted by the consensus of the EM Workgroup.

In 2018, EM was integrated into the North Pacific Observer Program under a regulated program and NMFS approved the 141 eligible vessels in the EM selection pool. The EM data from hook-and-line vessels were incorporated into the CAS and used for management.

A 2018 pre-implementation plan for using EM aboard vessels using pot gear was developed by the EM Workgroup with the pre-implementation goals of determining the efficacy of EM for catch accounting of retained and discarded catch and to identify key decisions that were needed in order to integrate pot EM into the Observer Program.

Ninety-seven longline and 15 pot vessels participated in the 2018 EM project, completing 250 longline trips and 45 pot trips. EM data was reviewed for 83 longline vessels covering 174 trips. EM data was reviewed for 94 halibut trips, 10 Pacific cod trips, and 70 sablefish trips containing a total of 1,875 hauls. The data spanned 532 halibut sea days, 38 Pacific cod sea days, and 435 sablefish sea days for a total of 1,005 sea days with trips averaging 5.8 days across all fisheries (Appendix Table B-1). Of the 1,875 hauls on reviewed trips, the catch level data was

[12] https://www.npfmc.org/electronic-monitoring-2/

recorded for 770. All catch data presented is from this subset of hauls. Some of the most common bycatch (retained and/or discarded) in the halibut fleet component using EM included Pacific cod, Sablefish, Redband rockfish, Yelloweye rockfish, Shortraker/Rougheye rockfish.

However, there is still no monitoring data from vessels less than 40 ft. NMFS does continue to recommend that vessels less than 40 ft LOA could be considered for the EM selection pool in the future. The agency recognizes that the Council's priority for EM research is on trawl vessels, so the evaluation of data collected on fixed-gear less than 40 ft has not started.

1.2. Management measures shall take into account the whole stock unit over its entire area of stock distribution.
The IPHC is a bilateral, international treaty, established with the primary purpose of managing the whole pacific halibut stock over its entire area of distribution which extends from California to the Bering Sea[13]. As the biological stock unit encompasses multiple jurisdictions (U.S. and Canada) the IPHC considers exploitation by all parties when defining exploitation levels and determining stock health to avoid overfishing/depletion of the resource. IPHC conducts extensive research on Pacific Halibut throughout the entire area through which the species migrates during its life cycle. Additionally, the IPHC explicitly considers halibut life cycle and migration when recommending apportionment of catch limits between regulatory areas. Within the Alaskan EEZ, NPFMC and NMFS also consider the entire range through which halibut migrate during its life cycle[14].

1.3./1.4/1.5./1.6. Transboundary stocks
As explained above, the IPHC considers management of the stock throughout its full range, and leads a cooperative forum which is structure between the U.S. and Canada that provides for a joint management and conservation system aimed at ensuring effective conservation and management of the Eastern North Pacific Halibut stock and its environment. Stock assessment and harvest rates are prepared for joint management areas. Furthermore, Federal regulations was established in 2015, with regards to areas 2C and 3A focused on controlling harvest from Chartered fishing sector, in order to enhance information of the sector interaction as well as conservation of Pacific Halibut. Since 2014, the IPHC implemented Management Strategy Evaluation with frameworks for performance review with regards to specific conservation objectives; in addition, the setline survey areas was expanded including areas 2A and 4A; also the established halibut fishery bycatch working group is focused on reduction of discard mortality levels across the full range of the fishery.

The IPHC conducts numerous projects annually to support both of its major mandates namely stock assessment and basic halibut biology. Current projects include standardized stock assessment fishing surveys covering an area that stretches from northern California to the end of the Aleutian Island chain and port sampling aimed at collecting scientific information from the halibut fleet. In conjunction with these ongoing programs, the IPHC conducts numerous biological and scientific experiments to further the understanding and information about Pacific Halibut.

The IPHC explicitly considers halibut life cycle and migration when recommending apportionment of catch limits between regulatory areas. Within the Alaskan EEZ, NPFMC and NMFS also consider the entire range through which halibut migrate during its life cycle.

The Pacific Halibut within the IPHC convention area is considered to comprise a single stock. This assertion is based on studies indicating northwest larval drift being balanced by southeast compensatory migration of juveniles and

[13] http://www.iphc.washington.edu/documents/basictext/IPHC-2017-Rules-of-Procedure.pdf
[14] https://www.npfmc.org/

adults and tagging studies showing movement of fish over broad spatial scales[15].

1.7. Review and Revision of conservation and management measures

The Alaskan Halibut and sablefish IFQ program has gone through numerous innovations over the years and has been officially modified many times since initial implementation including modifications to trading restrictions, eligibility rules, administrative catch accounting systems and more. In December 2016 the IPHC released the Twenty-Year Review of the Pacific Halibut and Sablefish Individual Fishing Quota Management Program.

The intent of the review was to evaluate the IFQ Program as required by the MSA and within the framework of the scope requested by the Council and its advisory bodies. Primarily, the IFQ Program was examined with respect to how well it has met its 10 original policy objectives and how it is providing entry opportunities for new participants, an objective that the Council has sought to provide through numerous revisions since the IFQ Program was implemented. The Council, its Advisory Panel (AP), Scientific and Statistical Committee (SSC), and IFQ Implementation Committee all provided feedback on the proposed structure and policy scope of this review document at the December 2015 and February 2016 Council meetings[16].

In the 20 years since implementation of the IFQ Program, this was the first formal and comprehensive review of the program. However, in this time there have been numerous regulatory impact reviews and reports produced by Council and NMFS staff that provide relevant information about QS ownership and transfers, IFQ use and landings, and with respect to specific provisions in the program. This IFQ Program Review synthesized much of the information provided in these previous reports and analyses. In addition to this, both the IPHC and the NPFMC annually review their previous, current, and possible future conservation and management measures. The 94th Session of the International Pacific Halibut Commission (IPHC) Annual Meeting (AM094) was held in Portland, Oregon, U.S.A., from 22 to 26 January 2018.

During this meeting the Commission adopted a proposal aimed at IPHC Regulation changes to allow the use of leased Individual Fishing Quota (IFQ) by Community Development Quota (CDQ) organizations in IPHC Regulatory Areas 4B, 4C, 4D, and 4E. The Commission also adopted a proposal aimed at clarification to the IPHC Regulations regarding retention of Pacific halibut caught in the recreational charter fisheries and IPHC Regulations regarding filleting of Pacific halibut caught recreationally in Alaska. Finally, the commission, adopted a proposal directed to the modification to the IPHC Regulations to allow retention of Pacific halibut taken in long-line or single pot gear in the directed Pacific halibut fishery in Alaska, where such gear is permitted by domestic regulation.

The NPFMC sets its agenda for each meeting in response to both current priority issues and possible future changes/events with the potential to impact the halibut fishery with all meetings being open to the public comment[17]. The continual public input into the NPFMC process effectively provides public scrutiny of the NPFMC's activities with issues being discussed continuously as long as they remain of importance to the stakeholder. Some of the most recent (2018) NPFMC review concerning the halibut fishery include the development of abundance-based approaches for BSAI halibut PSC limits and regulatory amendment that would allow CDQ groups the opportunity to lease Area 4B, 4C, and 4D halibut IFQ in years where the catch limits are below certain[18].

1.8. Transparent management arrangements and decision making

In 2012, an outside performance review of the Commission structure, commissioned by the IPHC itself, found the

[15] http://www.iphc.washington.edu/publications/rara/2016/IPHC-2016-RARA-26-R-
[16] https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf
[17] http://www.npfmc.org/council-meeting-archive/
[18] https://www.npfmc.org/npfmc-newsletters/

Commission's protocols and decision-making processes at the time to be somewhat lacking in definition and transparency[19]. In response to this the IPHC undertook a number of changes aimed at better defining the Commission's rules of procedure and increasing the transparency of decision-making processes. As a result of these changes:

- The IPHC's advisory bodies were directed to develop or amend their rules of procedure in order to make their operations more transparent and predictable.
- All Commission meetings are now treated as open unless specifically closed (Examples of specifically closed meetings might include those pertaining to personnel, financial or commercially sensitive matters)
- Agendas for IPHC meetings allow more time for public comment and discussion.
- The web broadcast now allows submission of comments and questions from the on-line audience.
- Both attendees and web audience participants are now afforded the opportunity to engage the Commission in two-way dialogue during meetings.
- The range of meeting materials and updates posted on the IPHC website has been expanded, and the period of posting prior to meetings increased. This has greatly increased the information available to the public before, during, and after meetings allowing for more focused public comment.

The IPHC also directed the Conference Board (CB) and the Processor Advisory Group (PAG) to open their meetings to the public.

In 2014, the IPHC self-reported its progress against the recommendations of, and commitments resulting from the 2012 performance review[20]. Following the changes to Commission procedures since the performance review responses to all management issues are provided in the form of supporting documents, minutes of meetings, and public testimony published on the IPHC website. Annual reports posted on the website include the Annual IPHC meeting[21], and the "RARA", a detailed IPHC Report of Assessment and Research Activities[22].

Noting that the 1st Performance Review of the IPHC occurred in 2011 – 12 (see paper IPHC – 2017 – AM 093 - 17, and that the generally agreed best practice among RFMOs requires a Performance Review to be undertaken every - 5 years, the IPHC has agreed to undertake a 2nd Performance Review of the IPHC during 2017. In this regard, the Commission requested that the IPHC Secretariat finalize the draft performance review terms of reference and criteria, as well as provide a proposed process and budget to conduct the review, to be considered at the 2017 Annual Meeting (AM093) for implementation during 2017. The plan should include anticipated Commissioner and IPHC Secretariat support, as well as recommendations regarding the use of outside contractors to conduct the review.

Follow up

At the 93rd Session of the IPHC Annual Meeting (AM093) in January 2017[23], the Commission reviewed paper IPHC-2017-AM093-18, which outlined planning for the 2nd IPHC Performance Review, and provided the following direction to the IPHC Secretariat:

AM093–Rec.13 (para. 153) *The Commission RECOMMENDED that the IPHC Secretariat finalise the draft performance review terms of reference and criteria to conduct the review, and implement the 2nd Performance Review throughout 2017, for presentation to the Commission at its 94th Annual Meeting in 2018*.

[19] http://www.iphc.int/documents/review/FINAL_IPHC_Performance_Review-April30.pdf
[20] http://www.iphc.int/documents/review/Performancereviewprogressreport Jan2014.pdf
[21] http://www.iphc.washington.edu/meetings/2017am/IPHC-2017-AM093-R-Report_of_the_AM093.pdf
[22] http://www.iphc.washington.edu/library/raras/485-rara2016.html
[23] https://iphc.int/uploads/pdf/im/2018im/iphc-2018-im094-14.pdf

At the 94th Session of the IPHC Annual Meeting (AM094) in January 2018, the Commission adopted Terms of Reference, criteria, process and budget to conduct the 2nd Performance Review of the IPHC: Terms of Reference, criteria, process, and budget to conduct the 2nd Performance review of the IPHC (Adopted 26 January 2018).

Also at the AM094, the Commission agreed to defer the 2nd IPHC Performance Review until FY2019 (1 Oct. 2018 to 30 Sept. 2019), due to budget limitations in the current financial year (para. 94 of IPHC-2018-AM094-R).

The NPFMC consultative and decision making process relative to halibut and all the other fishery resources managed are considered transparent and as a model from other Fishery Management Organizations to be modeled upon.

1.9. Compliance with international conservation and management measures

The fishery does not occur in the high seas and as such this Clause is **NOT APPLICABLE.**

8.1.1. Fundamental Clause 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.

Number of Supporting clauses	**10**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized evidence:

2.1./2.2./2.3./2.4. Policy, legal and institutional frameworks adopted to achieve sustainable and integrated use of marine resources along with mechanisms to avoid conflict shall be in place. Representatives of the fisheries sector and fishing communities shall be consulted in decision making processes and information related to management measures shall be disseminated.

No significant changes have occurred since the re-assessment in January 2017. An appropriate policy, legal and institutional framework is adopted in order to achieve sustainable and integrated use of living marine resources, taking into account the fragility of coastal ecosystems, the finite nature of their natural resources and the needs of coastal communities. 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. Collectivity cooperation among NEPA and existing agencies (such as, ADFG, DEC, DNR, USFWS, ANILCA, OPMP and BOEM), facilitates appropriate processes for managing Alaska's coastal resources in a transparent, organized and sustainable way. In addition, these planning and management framework include 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. Both the NPFMC and the IPHC decision making processes are open to public input and consultation and the information produced through these fora, for the management of the halibut resources in Alaska, are publicly available. As for 2018[24], the Commission adopted Terms of Reference, criteria, process and budget to conduct the 2nd Performance Review of the IPHC: Terms of Reference, criteria, process, and budget to conduct the 2nd Performance review of the IPHC which the commission agreed to defer it until FY2019 (1 Oct. 2018 to 30 Sept. 2019), due to budget limitations in the current financial year.

The IPHC, NMFS, NPFMC[25] cooperatively manage halibut stocks within the Alaskan EEZ. The NMFS and NPFMC as federal agencies participate in coastal area management-related institutional frameworks through federal National Environmental Policy Act (NEPA) process[26]. NEPA documents are required to be produced each time regulations are renewed or amended meaning all proposed regulations include NEPA considerations. The NEPA process requires information to be made publicly available and provides a robust opportunity for public involvement and ensures decisions are made in collaboration with fishery managers, fishermen, fishing organizations and fishing communities.

Other State and federal entities that participate in ensuring the sustainable and integrated use of living marine resources within the Alaskan EEZ include, but are not limited to:

[24] https://iphc.int/uploads/pdf/im/2018im/iphc-2018-im094-14.pdf
[25] http://www.npfmc.org/
[26] https://ceq.doe.gov/docs/get-involved/Citizens_Guide_Dec07.pdf

Alaskan Department of Environmental Conservation (DEC)[27]
The DEC implements statutes and regulations affecting air, land and water quality and is the lead state agency charged with implementing the federal Clean Water Act.

Alaska Department of Fish and Game (ADFG)[28]
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.

Alaskan Department of Natural Resources (DNR)[29]
DNR manages all state-owned land, water, and natural resources except for fish and game and use the state Endangered Species Program to preserve the habitats of species threatened with extinction.

DNR Office of Project Management and Permitting (OPMP)[30]
The OPMP coordinates the review of larger scale projects in the state such as transportation, oil and gas, mining, federal grants, ANILCA coordination, and land use planning.

U.S. Fish and Wildlife Service (USFWS)[31]
The USFWS fulfills functions including enforcement of federal wildlife laws, protection of endangered species, restoration of nationally significant fisheries and conservation and restoration of wildlife habitat. Additionally, the USFWS distributes monies collected through the Sport Fish and Restoration Program to State fish and wildlife agencies for fishery projects, boating access and aquatic education.

Bureau of Ocean Energy Management (BOEM)[32]
The BOEM 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 overlap extensively with those of ADNR, ADFG and ADEC given the potential impacts of such activities on marine resources.

Alaska has institutional and legal frameworks that determine the possible uses of coastal resources, govern access to them and take into account the rights of coastal fishing communities and their customary practices when doing so. The management framework explicitly recognizes and accounts for the rights of people dependent on marine fishing through NPFMC process, the Western Alaska Community Development Quota (CDQ) Program, allowances for subsistence halibut fishery in Alaskan waters and consultation with tribes and Native corporations.

NPFMC processes
The Council system mandated under the MSA of which the NPFMC is part was designed so that fisheries management decisions were made at the regional level allowing input from affected stakeholders. NPFMC meetings are open and public testimony is taken ensuring that the rights of coastal communities and their historic access to the fishery are considered in the decision making process.

[27] http://dec.alaska.gov/
[28] http://www.adfg.alaska.gov/
[29] http://dnr.alaska.gov/
[30] http://dnr.alaska.gov/commis/opmp/
[31] http://www.fws.gov/help/about_us.html
[32] http://www.boem.gov/uploadedFiles/Proposed_OCS_Oil_Gas_Lease_Program_2012-2017.pdf

Dissatisfied parties affected by Council and NMFS decisions can appeal the decision to the Appeals Office in the NMFS Alaska Regional Office, which adjudicates appeals of initial administrative determinations and whose jurisdiction includes the halibut IFQ and CDQ Programs as well as other management programs. These dispute resolution mechanisms have proven to be effective at dealing with most issues avoiding the necessity for disputes to escalate to the stage of legal action. However, in cases where processes have not resulted in the resolution of disputes, parties can and do resolve the disputes in the federal court system.

The IPHC and NPFMC meetings provide for a resolution of potential conflicts with users being afforded the opportunity to testify in person or in writing. In addition, stakeholders may review and submit written comments to the NMFS on proposed rules published in the Federal Register.

The Western Alaska Community Development Quota (CDQ) Program[33]
The Western Alaskan Community Development Quota (CDQ) Program is a federal fisheries program, authorized and governed by the MSA as amended in 2006 (MSA Section 305(i)(1)), which aims to promote fisheries related economic development in western Alaska. The Program involves 65 eligible communities within a fifty-mile radius of the Bering Sea coastline split into six regional organizations, referred to as CDQ groups. The Program allocates a portion of the BSAI harvest of halibut to CDQ groups.

Subsistence halibut fishing[34]
Implemented in 2003, the subsistence halibut fishery allows rural and Alaska native persons to 'practice the long-term customary and traditional harvest of Pacific Halibut for food in a non-commercial manner'. Before fishing under the subsistence halibut regulations, fishermen must obtain a Subsistence Halibut Registration Certificate (SHARC) and comply with SHARC registration and reporting processes. Special permits for community harvest, ceremonial, and educational purposes also are available to qualified Alaska communities and Alaska Native Tribes.

Consultation with tribes and Native corporations[35]
In Alaska, NOAA's National Marine Fisheries Service (NMFS) consults with tribes and Native corporations about Federal actions that may affect tribal governments and their members. In fact the Alaska National Interest Lands Conservation Act (ANILCA[36]) which conveyed large sections of federal land to settle Alaska native lands claims specifically directs federal agencies to consult and coordinate with the State of Alaska. Executive Order 13175 sets the framework for regular and meaningful consultation and collaboration with Alaska Native representatives in the development of policies, legislation, regulations, and programs.

Risks and uncertainties related to the policies set up for the management of coastal areas are taken into account within and throughout the various NEPA processes, NPFMC proceedings as well as through ANILCA and the Department of Natural Resources (DNR) Office of Project Management and Permitting (OPMP).

2.5. The economic, social and cultural value of coastal resources shall be assessed in order to assist decision-making on their allocation and use.
NOAA's Alaska Fisheries Science Center (AFSC) runs the Economic and Social Sciences Research Program in

[33] https://alaskafisheries.noaa.gov/fisheries/cdq
[34] https://alaskafisheries.noaa.gov/fisheries/subsistence-halibut
[35] https://alaskafisheries.noaa.gov/tribal-consultations
[36] http://dnr.alaska.gov/commis/opmp/anilca/

Alaska[37]. The aim of the Program is to provide economic and sociocultural information to assist NMFS in meeting its stewardship responsibilities with activities being conducted in support of this mission including:

- collecting economic and sociocultural data relevant for the conservation and management of living marine resources
- developing models to use that data both to monitor changes in economic and sociocultural indicators and to estimate the economic and sociocultural impacts of alternative management measures
- preparing reports and publications
- participating on NPFMC, NMFS, and inter-agency working groups
- preparing and reviewing research proposals and programs
- preparing analyses of proposed management measures
- assisting Alaska Regional Office and NPFMC staff in preparing regulatory analyses
- providing data summaries

Many of the activities of the Program are conducted in collaboration with other Federal and State agencies and universities. Current research topics being addressed include regional economic impact models, behavioral models of fishing operations, indicators of economic performance, and the non-market valuation of living marine resources.

Regarding socio-economic data collection, AFSC's Economic and Social Sciences Research Program produces an annual Economic Status Report of the Groundfish fisheries in Alaska. This comprehensive report (Fissel, *et. al.* 2018) provides estimates of total groundfish catch, groundfish discards and discard rates, prohibited species catch (PSC) and PSC rates, values of catch and resulting food products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, and employment on at-sea processors. The report contains a wide range of analyses and comments on the performance of a range of indices for different sectors of the North Pacific fisheries, and relates changes in value, price, and quantity, across species, product and gear types, to changes in the market. This report includes extensive economic data for the commercial Pacific Halibut fishery.

In 2005, the Alaska Fisheries Science Center (AFSC) compiled baseline socioeconomic information about 136 Alaska communities most involved in commercial fisheries. In 2010 and 2011, the AFSC went through the process of evaluating the community profiles and determining how to update them. A NOAA Technical Memorandum finalized in October 2011 documents the process been undertaken to update the *Community Profiles for North Pacific Fisheries – Alaska* (NOAA-TM-AFSC-230). In addition, the communities to be included in the updated document were reevaluated to ensure that communities with significant reliance on commercial, recreational and subsistence fishing are included. A total of 196 communities have been profiled. The new profiles add a significant amount of new information to help provide a better understanding of each community's reliance on fishing. Introductory materials cover purpose, methods, and an overview of the profiled communities in the larger context of the state of Alaska and North Pacific fisheries. The community profiles comprise additional information including, but not limited to, annual population fluctuation, fisheries-related infrastructure, community finances, natural resources, educational opportunities, fisheries revenue, shore-based processing plant narratives, landings and permits by species, and subsistence and recreational fishing participation, as well as information collected from communities in the Alaska Community Survey, which was implemented during summer 2011, and the Processor Profiles Survey, which was implemented in Fall 2011[38].

[37] http://www.afsc.noaa.gov/REFM/Socioeconomics/Default.php
[38] https://www.afsc.noaa.gov/REFM/Socioeconomics/Projects/CPU.php

2.6./2.7/2.8. Research and monitoring of the coastal environment, mechanisms for cooperation and coordination, appropriate technical capacities and financial resources, conflict avoidance amongst user groups.

Monitoring of the coastal environment in Alaska is performed by federal and state agencies. The NMFS and NPFMC as federal agencies participate in coastal area management-related institutional frameworks through federal NEPA processes. Other State and federal entities that cooperate at the sub-regional level in order to improve coastal area management include:

- Alaskan Department of Environmental Conservation (DEC)
- Alaska Department of Fish and Game (ADFG)
- Alaskan Department of Natural Resources (DNR)
- DNR Office of Project Management and Permitting (OPMP)
- U.S. Fish and Wildlife Service (USFWS)
- Bureau of Ocean Energy Management (BOEM)

Other entities involved in collaborative research in the North Pacific region include the Alaska Fisheries Science Center (AFSC), North Pacific Research Board (NPRB), NMFS Pacific Marine Environmental Lab (PMEL) and institutes of higher learning such as the University of Alaska Fairbanks' (UAF) Institute of Marine Science (IMS).

The NPRB funds major research projects in the Gulf of Alaska[39] and the Bering Sea[40] aimed at examining physical and biological mechanisms that determine the survival of juvenile groundfish in the GOA and understanding the impacts of climate change and dynamic sea ice cover on the eastern BS ecosystem respectively. For oceanography, the NPRB has funded numerous studies describing baseline oceanographic parameters and supported environmental buoy arrays.

PMEL regularly collect oceanographic and environmental data important to understanding the changing habitat of halibut and other marine species in Alaskan waters[41].

Additionally, the IPHC, in collaboration with Washington Sea Grant, developed a sampling protocol for collecting seabird occurrence data and oceanographic data on the IPHC setline surveys. The 2018 longline research cruise for example was the tenth consecutive year of the IPHC coastwide oceanographic data collection program[42]. Oceanographic data are collected using water column profilers during the IPHC fishery-independent setline survey that spans the area from southern Oregon in the U.S. northward to British Columbia, into the Gulf of Alaska, Bering Sea, and Aleutian Islands. The IPHC has operated profilers since 2000 on a limited basis, and coastwide since 2009. Oceanographic data were successfully collected at a total of 1,458 stations out of a possible 1,497 in 2018[43]. As for year 2018, The coldest bottom temperatures, which are routinely close to or below 0°C, were typically found around St. Matthew Island in the Bering Sea. However, the Bering Sea experienced temperatures much higher than normal in summer 2018 due to lack of sea ice the winter before, and temperatures around the island ranged from 5.5-8.5°C during the FISS. The coldest coastwide bottom temperature of 2.5°C was still found in the Bering Sea, however, at a FISS expansion station in Area 4D along the continental shelf edge. The severe hypoxic zone found off of the Washington coast in 2017 was not detected in 2018.

Counts of live seabirds, taken immediately following gear retrieval, have been conducted during IPHC fishery-

[39] http://www.nprb.org/gulf-of-alaska-project/about-the-project/
[40] http://www.nprb.org/bering-sea-project/about-the-project/
[41] http://www.pmel.noaa.gov
[42] https://iphc.int/uploads/pdf/am/2018am/iphc-2017-rara27-r.pdf
[43] https://www.iphc.int/library/documents/annual-reports/iphc-2019-ar2018-iphc-annual-report-2018

independent setline surveys since 2002. The Convention waters, extending from off Oregon northward to Alaska and the EEZ border with Russia, are surveyed annually between late May and early September. A total of 20,921 seabird counts have been conducted over the last 16 years, with 1,368 occurring in 2017. Current data for 2018 is not available at the moment due to updates on the fishery survey database[44].

ADFG Habitat Division[45] conducts research on coastal and marine environments throughout Alaska in an effort to document and mitigate human-related impacts, changes in habitat & species abundance. The agency also collects physical and chemical data, including temperature, depth, salinity and conductivity during their St. Matthew's pot survey using data loggers placed on the survey pots.

The NMFS' Habitat Conservation Division (HCD) works to avoid, minimize, or offset adverse anthropogenic effects on Essential Fish Habitat (EFH) and living marine resources in Alaska. This work includes conducting and/or reviewing environmental analyses for a large variety of activities including commercial fishing. The HCD focuses on activities in habitats used by federally managed fish species in marine, estuarine, and freshwater areas[46].

The Coast Guard enforces fisheries laws at sea including regulations to aid the protection and/or recovery of marine protected species and their associated habitats[47].

The IPHC is financially resourced through money it receives from both the U.S. and Canadian governments, through the Department of State and DFO respectively. It is considered part of the U.S. Federal government for purchasing and travel and is afforded not-for-profit status in the U.S.[48] The costs incurred by the NMFS in its management of the Alaskan Halibut IFQ Program are recovered as obligated by the MSA through a fee to be paid by IFQ fishermen based on the ex-vessel value of their catches landed under the Program.

IPHC and NPFMC meetings provide fora for resolution of potential conflicts with users being afforded the opportunity to testify in person or in writing. These dispute resolution mechanisms have proven to be effective at dealing with most issues avoiding the necessity for disputes to escalate to the stage of legal action. However, in cases where processes have not resulted in the resolution of disputes, parties can and do resolve the disputes in the federal court system.

[44] https://www.iphc.int/library/documents/annual-reports/iphc-2019-ar2018-iphc-annual-report-2018
[45] http://www.adfg.alaska.gov/index.cfm?adfg=habitatresearch.main
[46] http://www.fakr.noaa.gov/habitat/default.htm
[47] http://www.uscg.mil/hq/cg5/cg531/LMR.asp
[48] http://www.iphc.int/about-iphc.html

8.1.2. Fundamental Clause 3

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

Number of Supporting clauses	**7**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized evidence:

3.1. Long-term management objectives shall be translated into a plan or other management document and be subscribed to by all interested parties.

No significant changes have occurred since the re-assessment in January 2017. USA and Canada agreement and long term objectives for management, conservation, and sustainable utilization of Pacific Halibut in the North Pacific has been in use since 1923. Relevant fisheries management plans are developed from these management objectives and included: seasonal fishery closures, halibut bycatch restrictions in other fisheries, IFQ and CDQ, as well as systems for mandatory reporting catch (removals), fishery monitoring, and persecutions where violations are identified. The IPHC promulgates regulations governing the Pacific Halibut fishery under the Convention between the United States and Canada for the Preservation of the Halibut Fishery of the North Pacific Ocean and Bering Sea (Convention) (signed on March 2, 1953) as amended by a Protocol Amending the Convention (signed on 29th March 1979). Regulations developed by the IPHC are subject to approval by the Secretary of State with concurrence from the Secretary of Commerce (Secretary). After approval by the Secretary of State and the Secretary, the IPHC regulations are published in the *Federal Register* as annual management measures. Overall management objectives of NMFS include promoting 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 Halibut Act also provides the North Pacific Fishery Management Council (Council) with authority to develop regulations, including limited access regulations that are in addition to, and not in conflict with, approved IPHC regulations. Such Council–developed regulations may be implemented by NMFS only after approval by the Secretary[49].

The IPHC is currently undertaking a major Management Strategy Evaluation (MSE) process with the aim of developing a formal process of evaluating existing and alternative management procedures for Pacific Halibut. The Commission's Management Strategy Evaluation process is 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. To assist and help guide this process the Commission formed a Management Strategy Advisory Board (MSAB) comprised of harvesters (commercial, sport, and subsistence), fisheries managers (DFO, NMFS, and regional fishery management councils), processors, and IPHC commissioners.

[49] https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf

The central role of the Management Strategy Advisory Board (MSAB) is to provide advice to the Commission on options for fishery objectives, performance metrics, candidate management procedures, and to measure the performance of various management strategies against the defined objectives.

The MSAB has been working with IPHC staff to initially define clear measurable objectives for the Pacific Halibut fishery, define candidate management procedures (MP) for testing within the MSE framework, and define the performance measures to evaluate alternative MPs.

After meeting twice in 2018, the MSAB suggested primary and secondary objectives, and evaluated management procedures related to the coastwide fishing intensity[50]. A recommendation was made that the Commission consider a range of fishing intensities that reduce the spawning potential of the stock to between 40 and 46% of spawning potential without fishing (this is called the Spawning Potential Ratio, or SPR). The MSAB also recommended that future work consist of examining constraints on the annual change in the Total Constant Exploitation Yield (TCEY, or mortality limits) to stabilize the annual variability.

The Commission agreed with the MSAB recommendation that the harvest strategy policy consist of a coast wide fishing intensity SPR should not be lower than 40% nor higher than 46%, with a target SPR of 42%-43% and with a 30:20 HCR.

Thus, it was agreed the management procedure that best meets the primary objectives for coastwide scale is:

a) A target SPR of 40% with a fishery trigger of 30% and a fishery limit of 20% in the control rule;
b) An annual constraint of 15% from the previous year's mortality limit.

The Commission recommended that the MSAB and IPHC Secretariat continue its program of work on the Management Procedure for the Scale portion of the harvest strategy, noting that Scale and Distribution components will be evaluated and presented no later than at AM097 in 2021, for potential adoption and subsequent implementation as a harvest strategy.

The MSAB will focus on examining management procedures related to distributing the TCEY among IPHC Regulatory Areas. The five-year program of work includes an update for the Commission in January 2020, and final results and recommendations on a coastwide fishing intensity and the distribution of the TCEY will be provided in January 2021, for potential adoption and implementation.

3.2. Management measures should limit excess fishing capacity, promote responsible fisheries, take into account artisanal fisheries, protect biodiversity and allow depleted stocks to recover.

The fishery is a closed access fishery managed under an Individual fishing Quota (IFQ) system. In 1991, the NPFMC recommended an IFQ Program for management of the fixed gear (hook and line) halibut and sablefish fisheries off Alaska. The Secretary of Commerce approved the Council's IFQ Program as a regulatory amendment in 1993, and the program was implemented by NMFS for the fishing season in 1995 (58 FR 215). The fundamental component of the IFQ Program is QS, issued to participants as a percentage of the QS pool for a species-specific IFQ regulatory area, which is translated into annual IFQ allocations in the form of fishable pounds. The IFQ Program was developed to address issues associated with the race-for-fish that had resulted from the open-access and effort control management of the halibut and sablefish fisheries[51]. Specifically, the Council identified several problems that emerged in these fisheries due to the previous management

[50] https://www.iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf
[51] https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf

regime, including increased harvesting capacity, decreased product quality, increased conflicts among fishermen, adverse effects on halibut and sablefish stocks, and unintended distributions of benefits and costs from the fisheries. The stock is currently at 43% of SSB, well above the SSB%30 reference point and the fishery is not considered to have significant effects on reduction of biodiversity in the ecosystem.

Pacific Halibut is taken throughout its range as a personal use (or subsistence) harvest by several fisheries. The primary harvests occur in the treaty Indian ceremonial and subsistence fishery in the waters off northwest Washington State, the First Nations food fish fishery in British Columbia, and the subsistence fishery by rural residents and federally-recognized native tribes in Alaska. The coastwide personal use estimate for 2018 is 1.72 M lbs (531.5 mt). New estimates for all areas are not available so proxy estimates are used: the allocation amount was used for the Area 2A treaty Indian ceremonial and subsistence fishery estimate and the 2016 estimate was used again for Alaska in 2018. The estimate for Area 2B remained unchanged[52].

[52] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-r.pdf

8.2. Section B. Science and Stock Assessment Activities

8.2.1. Fundamental Clause 4

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

Number of Supporting clauses	**13**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Minor Non-Conformance
Non Conformances	1 Minor (4.2)

Summarized evidence:

4.1. All fishery removals and mortality of the target stock(s) shall be considered by management.

No significant changes have occurred since the re-assessment in January 2017. Full stock assessment consistent with contemporary methods, was completed at the end of 2018 (Stewart and Hicks 2018b)[53], and all fishery removals and mortality of Pacific Halibut are considered in the assessment and management of the stock. Reliable and accurate data are provided annually to IPHC to assess the status of Pacific Halibut fisheries and ecosystems. These data include information on retained catch in the commercial, recreational and sport fisheries[54], the personal use and subsistence fisheries[55], as well as estimates of bycatch and discards. Several data reporting systems are in place for the various fishery components to ensure timely and accurate collection and reporting of catch data. These include an eLandings[56] system, in which data are checked by NMFS and entered along with observer data into the catch accounting system (CAS) which is maintained by NMFS. Data from the eLandings are made available to the three collaborating agencies, i.e. NMFS, IPHC, and ADFG.

Known Pacific halibut removals (mortality) consist of target fishery landings and discard mortality (including research), recreational fisheries, subsistence, and bycatch mortality in fisheries targeting other species (where Pacific halibut retention is prohibited)(IPHC, 2019)[57]. Over the period 1918-2018 removals have totaled 7.2 billion pounds (~3.3 million metric tons, t), ranging annually from 34 to 100 million pounds (16,000-45,000 t) with an annual average of 63 million pounds (~29,000 t). Annual removals were above this long-term average from 1985 through 2010, were relatively stable near 42 million pounds (~19,000 t) from 2014-17, and decreased by 8% in 2018.

Coastwide commercial Pacific halibut fishery landings in 2018 were approximately 23.5 million pounds (~10,660 t), a low for the last decade (IPHC, 2019). NOAA Fisheries and DFO estimate bycatch of Pacific halibut from non-Pacific halibut fisheries and report it annually to the IPHC, though this estimation varies widely in quality depending upon the year, fishery, type of estimation method, and many other factors. The peak level of bycatch occurred in 1992, with over 20 million pounds (~9,070 t) caught, and has mostly declined since then, with an estimated 6.1 million pounds (~2,750 t) caught in 2018 (just about on par with the 6 million pounds [2,720 t] caught in 2017). The total recreational removals were estimated to be 7.2 million pounds (~3,260 t), down 5% from 2017. Mortality from all sources in 2018 was estimated to be 38.7 million pounds (~17,570 t).

[53] https://iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-10.pdf
[54] https://iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-ar14.pdf
[55] https://iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-ar15.pdf
[56] https://elandings.alaska.gov/
[57] https://iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf

Catch data and other biological information and research results feed into the annual stock assessment process and form the basis for the setting of management objectives, reference points and performance criteria, as well as for ensuring adequate linkage, between applied research and fisheries management (e.g. adoption of scientific advice).

4.2. An observer scheme designed to collect accurate data for research and support compliance with applicable fishery management measures shall be established.

The minor NC identified in the 2017 reassessment with regards to sub-clause 4.2 (lack of observer data for halibut vessels less than 40' LOA) remains unclosed. Evidence of progress included the recommendation and implementation of Electronic Monitoring (starting 2017 fishing season) among smaller vessels (<40' LOA) that currently do not participate in the observer program, and subsequent inclusion of EM in the North Pacific Observer Program. As per the Client Action Plan, the most recent information on the Observer Program, Electronic Monitoring, and all related committee and NPFMC meetings on these subjects have been provided to the assessment team in 2018. Data on the EM program for 2017 is also available and is summarized below in Clause 12.6. Information from EM has been collected from 55 halibut trips in 2017, and the video information collected has been used to assist in determining catch and bycatch in the halibut fishery (see Clause 12.6 for details). The Client Action Plan was accepted, and this NC will remain open throughout the period of certificate (5 years) until the medium confidences move to high as the corrective actions take effect.

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 of Alaska. In compliance with the MSA, these amendments restructured the funding and deployment system for observers in the North Pacific groundfish and halibut fisheries and include some vessels less than 60 ft. in length, as well as halibut vessels in the North Pacific Groundfish Observer Program. Halibut vessels are registered with the NMFS and can be selected on a vessel or trip basis, under the Observer Declare and Deploy System (ODDS), administered by the Fisheries Monitoring and Analysis Division of NMFS at AFSC. The program is covered by fees assessed on landings from both the CDQ and IFQ fisheries. Each year NMFS presents its deployment plan[58] at meetings of NPFMC.

NPFMC established an intention to integrate electronic monitoring (EM) into the Observer Program for the fixed gear small-boat groundfish and halibut fisheries, so that EM may be used to collect data to be used in catch estimation (retained and discarded) for this fleet. The NPFMC set an interim goal of pre-implementation in the small boat (40-57.5 feet length overall) longline fleet in 2016, focusing on vessels that have trouble carrying an observer due to various limitations. On August 8, 2017, NMFS published a final rule (82 FR 36991) to integrate EM into the North Pacific Observer Program[59]. EM would have to be incorporated into the at-sea deployment design, beginning in 2018, and will be used to collect data to account for retained and discarded catch for fixed-gear vessels. To be considered for EM, a vessel must have requested to participate through ODDS, by Nov. 1, 2017.

Recognizing the challenging logistics of putting observers on small vessels, NMFS recommended that vessels less than 40' LOA to be in the no-selection pool for observer coverage. NMFS also recognized that the Council's next priority for EM research has shifted to trawl vessels, so the evaluation of data collected on fixed-gear less than 40' will not begin immediately. However, since there is no monitoring data from this segment of the fleet, NMFS recommended that vessels less than 40' LOA could be considered for the EM selection pool in the future.

In an Excel spreadsheet from NOAA/NMFS[60], observed catches by sector (vessel type), gear, species, and

[58] https://alaskafisheries.noaa.gov/sites/default/files/final_2018_adp.pdf
[59] Ibid
[60] https://alaskafisheries.noaa.gov/sites/default/files/2013-2017-observed-catch-tables.xlsx

kept/discarded are listed for 2013-2017. Tables showing this information in summary format(s) for 2013-2016 can be seen in the annual observer reports for 2014-2017[61]. Information provided by NPFMC during the May, 2018 site visit indicated that vessels < 40'LOA take about 18% of the total halibut catch.

In 2018, EM was integrated into the North Pacific Observer Program under a regulated program and NMFS approved the 141 eligible vessels in the EM selection pool. The EM data from hook-and-line vessels were incorporated into the CAS and used for management.

A 2018 pre-implementation plan for using EM aboard vessels using pot gear was developed by the EM Workgroup with the pre-implementation goals of determining the efficacy of EM for catch accounting of retained and discarded catch and to identify key decisions that were needed in order to integrate pot EM into the Observer Program.

Ninety-seven longline and 15 pot vessels participated in the 2018 EM project, completing 250 longline trips and 45 pot trips. EM data was reviewed for 83 longline vessels covering 174 trips. EM data was reviewed for 94 halibut trips, 10 Pacific cod trips, and 70 sablefish trips containing a total of 1,875 hauls. The data spanned 532 halibut sea days, 38 Pacific cod sea days, and 435 sablefish sea days for a total of 1,005 sea days with trips averaging 5.8 days across all fisheries. Of the 1,875 hauls on reviewed trips, the catch level data was recorded for 770. All catch data presented is from this subset of hauls. Some of the most common bycatch (retained and/or discarded) in the halibut fleet component using EM included Pacific cod, Sablefish, Redband rockfish, Yelloweye rockfish, and Shortraker/Rougheye rockfish.

There is still no monitoring data from vessels less than 40 ft. NMFS does continue to recommend that vessels less than 40 ft LOA could be considered for the EM selection pool in the future. NMFS recognizes that the Council's priority for EM research is on trawl vessels, so it is unknown when the evaluation of data collected on fixed-gear less than 40 ft will start.

4.3. Management entities shall make data available in a timely manner and in an agreed format in accordance with agreed procedures.

NMFS, ADF&G, and IPHC have extensive scientific databases which include halibut. NPFMC has extensive information on management of halibut. These data are made widely available through websites, publications and at various publically-attended meetings. Data on certain aspects of commercial fishing are confidential, such as individuals or individual vessels in the analysis of CPUE data, depending on the number of individuals or entities involved. For this surveillance report in 2019, all necessary (updated 2018-19) key documentation such as stock assessment report, observer report, and other documents, records and regulations were available[62].

4.4/4.5. States shall stimulate the research required to support national policies related to fish as food and collect sufficient knowledge of social, economic and institutional factors relevant to the fishery in question to support policy formulation.

State and national policies regarding seafood are guided by the Alaska Seafood Marketing Institute[63] (ASMI), U.S. Food and Drug Administration (FDA), U.S. Department of Agriculture (USDA), and the U.S. National Institute of Health (NIH). ASMI is the state agency primarily responsible for increasing the economic value of Alaskan seafood through marketing programs, quality assurance, industry training and sustainability certification. ASMI's role includes conducting or contracting for scientific research to develop and discover health, dietetic, or other uses

[61] https://alaskafisheries.noaa.gov/fisheries/observed-catch-tables
[62] https://www.iphc.int/library/documents/annual-reports/iphc-2019-ar2018-iphc-annual-report-2018
[63] http://www.alaskaseafood.org

of seafood harvested and processed in the state.

Socioeconomic data collection and economic analyses are required to varying degrees under the Regulatory Flexibility Act (RFA), the MSA, the NEPA, the Endangered Species Act, and other applicable laws. AFSC's Economic and Social Sciences Research Program produces an annual Economic Status Report of the Groundfish fisheries in Alaska[64] (Fissel *et al.,* 2018). This comprehensive report provides estimates of total groundfish catch, groundfish discards and discard rates, prohibited species catch (PSC) and PSC rates, values of catch and resulting food products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, and employment on at-sea processors. The report contains a wide range of analyses and comments on the performance of a range of indices for different sectors of the North Pacific fisheries, including Pacific Halibut, and relates changes in value, price, and quantity, across species, product and gear types, to changes in the market.

Lew et al. (2015) studied economic value of sport fishing charters in Alaska, including the significant contribution of Pacific Halibut to this sector.

4.6. States shall investigate and document traditional fisheries knowledge and technologies, in particular those applied to small scale fisheries, in order to assess their application to sustainable fisheries conservation, management and development.

A major component of small scale fisheries for Alaskan Halibut is covered by ceremonial and subsistence (personal use) fishing. The subsistence halibut fishery off Alaska was formally recognized in 2003 by the NPFMC and implemented by IPHC and National Marine Fisheries Service (NMFS) regulations. The fishery allows the customary and traditional use of halibut by rural residents and members of federally-recognized Alaska native tribes who can retain halibut for non-commercial use, food, or customary trade.

Subsistence (formerly called Personal use/subsistence) categories include ceremonial and subsistence removals in the Area 2A treaty Indian fishery; the sanctioned First Nations Food, Social, and Ceremonial (FSC) fishery conducted in British Columbia; federal subsistence fishery in Alaska; and U32 halibut retained in Areas 4D and 4E under IPHC regulations. Details for these have been reviewed in the 2018 stock assessment documentation[65] (Stewart and Webster, 2018).

4.7. States conducting scientific research activities in waters under the jurisdiction of another State shall ensure that their vessels comply with the laws and regulations of that State and international law.

The major scientific activity for Pacific Halibut is the annual setline survey conducted by IPHC, using commercial vessels from USA and Canada. In 2018[66] the survey encompassed both nearshore and offshore waters of southern Oregon, Washington, British Columbia, southeast Alaska, the central and western Gulf of Alaska, Aleutian Islands, and the Bering Sea continental shelf (Erickson *et al.,* 2019). Thus only the waters under jurisdiction of USA and Canada, the two countries involved in IPHC, were surveyed. Survey activities were compliant with all laws and regulations of those countries, registered commercial halibut vessels were chartered, and all catches in the survey were recorded and reported.

[64] https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/economic.pdf
[65] https://iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-08.pdf
[66] https://iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf

4.8. States shall promote the adoption of uniform guidelines governing fisheries research conducted on the high seas.

Not applicable, both fishery and survey research activities occur and are carried out within the jurisdictions of the USA and Canada EEZ. No activities occur in the high seas outside the 200 nm EEZ of the US and Canada.

4.9/4.10/4.11. States shall promote and enhance the research capacities of developing countries, support (upon request) States engaged in research investigations aimed at evaluating stocks which have been previously un-fished or very lightly fished.

Not applicable, operations of the fishery take place in USA and Canada; these areas are not considered developing countries.

8.2.2. Fundamental Clause 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.

Number of Supporting clauses	**7**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized Evidence:

5.1 States shall ensure that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science. The research shall be disseminated accordingly. States shall also ensure the availability of research facilities and provide appropriate training, staffing and institution building to conduct the research, taking into account the special needs of developing countries.

No significant changes have occurred since the re-assessment in Jan. 2017. A full stock assessment consistent with contemporary methods was completed at the end of 2018 (Stewart and Hicks, 2018b).

The International Pacific Halibut Commission (IPHC)[67] was established in 1923 by a Convention between the governments of Canada and the United States of America. Its mandate is research on and management of the stocks of Pacific Halibut within the Convention waters of both nations. The IPHC receives money from both the U.S. and Canadian governments to support a director and staff.

The IPHC has a strong and long-standing structure of professional scientists, researchers and statisticians in place to conduct the necessary research and stock assessment on Pacific Halibut for conservation and management purposes. Appropriate processes exist to ensure proper planning of research projects, as well as ongoing peer review of stock assessment and research activities. The quality, quantity and relevance of IPHC's publications are noteworthy. IPHC staff members are involved in a number of collaborative projects with other researchers and institutions.

The IPHC conducts numerous projects[68] annually to support its major mandates. The main objectives of the Biological and Ecosystem Science Research Program at IPHC are to: 1) identify and assess critical knowledge gaps in the biology of the Pacific Halibut; 2) understand the influence of environmental conditions; and 3) apply the resulting knowledge to reduce uncertainty in current stock assessment models. As described in the Five-Year Research Plan for the period 2017-2021, the primary biological research activities at IPHC can be summarized in these main areas:

1) Reproduction
2) Growth and Physiological Condition
3) Discard Mortality and Survival
4) Distribution and Migration

[67] http://www.iphc.int/about-iphc.html
[68] https://iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-13.pdf

5) Genetics and Genomics

The Bering Sea Project, a partnership between the NPRB and the National Science Foundation, is studying the Bering Sea ecosystem from atmospheric forcing and physical oceanography to humans and communities, as well as socio-economic impacts of a changing marine ecosystem. Scientists and researchers from a number of agencies and universities are involved. Ecosystem modelling, sound data management and education and outreach activities are included in the program[69].

Regarding socio-economic data collection, AFSC's Economic and Social Sciences Research Program produces an annual Economic Status Report of the Groundfish fisheries in Alaska[70]. This comprehensive report (Fissel et. al. 2018) provides estimates of total groundfish catch, groundfish discards and discard rates, prohibited species catch (PSC) and PSC rates, values of catch and resulting food products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, and employment on at-sea processors. The report contains a wide range of analyses and comments on the performance of a range of indices for different sectors of the North Pacific fisheries, and relates changes in value, price, and quantity, across species, product and gear types, to changes in the market. This report includes extensive economic data for the commercial Pacific Halibut fishery.

Since 2002, IPHC has been working cooperatively with the Alaska Department of Environmental Conservation (ADEC) in a project monitoring environmental contaminants in Alaskan fish. Over 91 species of fish have been studied, include salmon (5 species), pollock, P. cod, lingcod, black rockfish, sablefish, and Pacific Halibut. The fish are analyzed for organochlorine pesticides, dioxins, furans, polybrominated diphenyl ethers, PCB congeners, methyl mercury and heavy metals (arsenic, selenium, lead, cadmium, nickel, and chromium). As per the most recent IPHC report (Dykstra, 2018), over 2700 samples of Pacific Halibut have been tested by ADEC. Results from analysis of persistent organic pollutants found that in general these compounds are either undetectable in halibut or well below other marine fish species. This is a positive finding and is likely attributable to the lower fat content in halibut compared to these other species.

5.2. The state of the stocks under management jurisdiction, including the impacts of ecosystem changes resulting from fishing pressure, pollution or habitat alteration shall be monitored.

Alaska's Pacific Halibut stock assessment program is extensive and comprehensive. Primary sources of information for this assessment include indices of abundance from the IPHC's annual fishery-independent setline survey (numbers and weight) and commercial CPUE (weight), and biological summaries (length-, weight-, and age-composition data). Other data from NMFS trawl surveys in the eastern Bering Sea and GOA, as well as from various tagging programs, are also collected and analysed. The program to determine the stock removals used in the assessment and management considerations is explained in Clause 4.1. Research capacity in environmental science is also extensive as outlined in previous clauses, and in Clause 12 below. The program to determine reference points and evaluate the stock against these in a precautionary approach is described in Clauses 6.1 – 6.4 below.

In the most recent stock assessment (Stewart and Hicks 2018b)[71], the authors report the status of the Pacific Halibut (*Hippoglossus stenolepis*) resource in the International Pacific Halibut Commission (IPHC) Convention Area at the end of 2018. The assessment consists of four equally-weighted models, two long time-series models, and two short time-series models either using data sets by geographical region, or aggregating all data series into

[69] http://www.nprb.org/assets/images/uploads/01.10_bsag_web.pdf
[70] https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/economic.pdf
[71] https://iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-09.pdf

coastwide summaries; these models are structurally unchanged since the most recent detailed scientific review in 2015. Results are based on the approximate probability distributions derived from the ensemble of models, thereby incorporating the uncertainty within each model as well as the uncertainty among models. Results of this assessment are presented in Clause 6 below.

Compared to 2017 results[72], The 2018 IPHC's fishery-independent setline survey setline survey WPUE increased in IPHC Regulatory Areas 2A (+50%), 3A (+8%), and 4C (+3%). WPUE decreased in IPHC Regulatory Areas 2B (-8%), 2C (-12%), 3B (-27%), 4A (-25%), 4B (-8%) and 4D (-5%) (Erickson *et al.,* 2019). Since 2011, IPHC Regulatory Area 2C's WPUE has exceeded Area 3A's, and has been the highest WPUE of all the regions. Although weight is the primary unit of measure when studying population and removals, the number of Pacific halibut is also a critical measure.

There was an estimated six percent decrease in the average catch rate (by weight) of Pacific halibut of all sizes caught and an estimated five percent decrease in average catch rate by weight of O32 Pacific halibut when compared to 2017. In 2018, there was an estimated seven percent decrease in the numbers of Pacific halibut captured, following a 24 percent decrease from 2016 to 2017.

As part of IPHC's annual setline survey, which provides data for the sablefish assessment, IPHC conducts an extensive oceanographic monitoring program which includes waters off British Columbia, and into the Gulf of Alaska, Bering Sea, and Aleutian Islands (Sadorus and Walker 2018). The IPHC is collaborating with the Joint Institute for the Study of the Atmosphere and Ocean (JISAO) at the University of Washington and NOAA's Pacific Marine Environmental Laboratory to process the oceanographic data and make them publicly accessible, and a number of years of data up to 2014 are currently available[73].

In addition to the oceanographic monitoring done by IPHC, other data on ecosystem impacts are collected and presented in the annual IPHC reports. These studies include data on seabird occurrence (Geernaert 2018), and impacts of marine mammal on setline depredation (Wong 2016). As part of its annual management process for Alaskan groundfish, NPFMC also receives extensive presentations on the status of Alaska's marine ecosystems (GOA and BS/AI) at its SSC and Advisory Panel meetings. The Ecosystem Considerations reports[74]are produced annually to compile and summarize information about the status of the Alaska marine ecosystems for the NNPFMC, the scientific community and the public. As of 2018, there are separate reports for the Eastern Bering Sea (EBS), Aleutian Islands (AI), the Gulf of Alaska (GOA), and Arctic (forthcoming) ecosystems. These reports include ecosystem assessments, and ecosystem-based management indicators that together provide context for ecosystem-based fisheries management in Alaska.

NOAA identifies habitats essential for managed species and conserves habitats from adverse effects on those habitats. These habitats are termed "Essential Fish Habitat" or EFH, and are defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". NMFS and NPFMC must describe and identify EFH in fishery management plans (FMPs), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS, and NMFS must provide conservation recommendations to federal and state agencies regarding actions that would adversely affect EFH. More specific information on EFH and recent 5 year review are described in Clause 12 below.

[72] https://iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf
[73] https://www.ecofoci.noaa.gov/projects/IPHC/efoci_IPHCData.shtml
[74] https://access.afsc.noaa.gov/reem/ecoweb/

5.3. Management organizations shall cooperate with relevant international organizations to encourage research in order to ensure optimum utilization of fishery resources.

IPHC is, by definition, an international organization established in 1923 for the preservation of the Pacific Halibut fishery in waters off Canada and the United States of America. Thus there is extensive cooperation on various aspects of research, stock assessment, and management of Pacific Halibut between the fisheries agencies (e.g. DFO and NMFS) of these two nations. Declaration of the 200 mile EEZ's by both countries in the late 1970's drastically reduced and eventually eliminated halibut fishing in these waters by countries other than Canada and USA.

For halibut management, there has also been cooperative research and surveys carried out on the stock involving other nations, such as the 1984 US-Japan bottom trawl survey in the GOA (Brown 1986), but it has been quite limited. Pacific Halibut caught in Russian areas of the Bering Seas are believed to be of a different stock, and are thus not included in the IPHC assessments. There is ongoing contact between IPHC and Russian scientists regarding halibut research in the Bering Sea area (I. Stewart, pers. com).

There is considerable discussion and exchange between IPHC and NPFMC on management issues related to Alaska Pacific Halibut. Currently, both organizations are cooperating to develop a Halibut Management Framework[75], designed to improve coordination between the Council and IPHC. One goal is for better alignment of the two management bodies when dealing with halibut needs among the various directed fishery and bycatch user groups.

5.4. The fishery management organizations shall directly, or in conjunction with other States, develop collaborative technical and research programmes to improve understanding of the biology, environment and status of trans-boundary aquatic stocks.

The only relevant transboundary issues for the Alaskan Pacific Halibut stock are between Canada and USA, and these are dealt with in the IPHC. Both countries have extensive scientific programs for halibut research and assessment, and collaborate on numerous topics related to science and management. Evidence for this is contained in the IPHC annual Reports of Assessment and Research Activities.

5.5. Data generated by research shall be analysed and the results of such analyses published in a way that ensures confidentiality is respected, where appropriate.

Data collected by scientists from the many surveys and halibut fisheries are analyzed and presented in peer reviewed meetings and/or in primary literature, following rigorous scientific protocols. Results of these analyses are disseminated in a timely fashion through numerous methods, including scientific publications, and as information on IPHC, NMFS and the NPFMC websites, in order to contribute to fisheries conservation and management. The core of halibut specific information for 2018 is available at the IPHC 2018 annual meeting website page[76].

Confidentiality of individuals or individual vessels (e.g. in the analysis of fishery CPUE data) is fully respected where necessary. By Alaska Statute (16.05.815 Confidential Nature of Certain Reports and Records)[77], except for certain circumstances, all records obtained by the state concerning the landing of fish, shellfish, or fishery products and annual statistical reports of fishermen, buyers, and processors may not be released. To ensure confidentiality, fishery data are routinely redacted from ADFG reports if the data for a time/area stratum were obtained from a small number of participants.

[75] https://www.npfmc.org/halibut-management-committee/
[76] https://iphc.int/venues/details/95th-session-of-the-iphc-annual-meeting-am095
[77] http://touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter05/Section815.htm

8.3. Section C. The Precautionary Approach

8.3.1. Fundamental Clause 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 targets. Remedial actions shall be available and taken where reference point or other suitable proxies are approached or exceeded.

Number of Supporting clauses	**4**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized Evidence:

6.1/6.2/6.3/6.4 States shall determine for the stock both safe targets for management (Target Reference Points) and limits for exploitation (Limit Reference Points), shall measure the status of the stock against these reference points and agree to actions to be undertaken if reference points are exceeded.

Full stock assessments are conducted annually, and fisheries management and conservation are based on precautionary and ecosystem based approaches, including the use of reference points for spawning biomass and harvest rate. Since 1985, the IPHC followed a constant harvest rate 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 area-specific harvest rate to the estimate of exploitable biomass in each IPHC regulatory area. The apportionment percentages and the target harvest rates for each regulatory area together result in a target distribution for the annual TCEY. The scale of this distribution is based on the estimate of the coastwide exploitable biomass at the beginning of year x+1 from the stock assessment in year x.

IPHC's policy was to harvest 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% (B30 threshold) of a level defined as the unfished level. The harvest rate is decreased linearly by a harvest control rule towards a rate of zero as the spawning biomass approaches 20% (B20 limit) 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.

However, at its 93rd Annual Meeting in January 2017, the Commission recognized that its 'current' harvest strategy was not meeting the Commission's fisheries management objectives. Subsequently, the harvest strategy was revoked, in recognition of the development process currently underway for a modern harvest strategy for Pacific Halibut[78]. At the 2017 Annual Meeting, Commissioners supported a revised harvest policy that separates the scale and distribution of fishing mortality and accounts for fishing related mortality of Pacific Halibut of all sizes and from all sources. Furthermore, the Commission identified an interim "hand-rail" or reference for harvest advice based on a status quo SPR (46%), which uses the average estimated coastwide SPR for the years 2014–2016 from the stock assessment. The justification for using an average SPR from recent years is that this corresponds to fishing intensities that have resulted in a stable or slightly increasing stock, indicating that, in the short-term, this may provide an appropriate fishing intensity that will result in a stable or increasing spawning biomass[79].

[78] https://iphc.int/the-commission/harvest-strategy-policy

[79] https://iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-12.pdf

In addition to adopting an average SPR of F46 as the reference level of coastwide fishing intensity to be used as an interim management procedure while a harvest strategy policy is being developed, the Commission directed the IPHC Secretariat to provide for future management decisions to be based on Total Constant Exploitation Yields (TCEY), rather than Fishery Constant Exploitation Yields (FCEY). This allows catch limits to be more directly comparable across IPHC Regulatory Areas. The combination of the stock distribution from the 2017 O32 fishery-independent setline survey catch and relative target harvest rates among IPHC Regulatory Areas results in the target distribution for the annual TCEY[80].

The following summary paragraphs are from the IPHC assessment conducted in late 2018 (Stewart and Hicks 2018b): The 2018 stock assessment management consists of an ensemble of four equally-weighted models, and the basic approach has remained unchanged since 2014. As has been the case since 2012, this stock assessment is based on the approximate probability distributions derived from the ensemble of models, thereby incorporating the uncertainty within each model as well as the uncertainty among models.

The results of the 2018 stock assessment indicate that the Pacific halibut stock declined continuously from the late 1990s to around 2011 as a result of decreasing size-at-age, as well as somewhat weaker recruitment strengths than those observed during the 1980s[81]. Since the estimated female spawning biomass (SB) stabilized near 190 million pounds (~86,200 t) in 2011, the stock is estimated to have increased gradually to 2016. The SB at the beginning of 2019 is estimated to be 199 million pounds (~90,300 t), with an approximate 95 percent confidence interval ranging from 125 to 287 million pounds (~56,700-130,200 t).

Comparison with previous stock assessments indicates that the 2018 results are very close to estimates from the 2012 through 2017 assessments, all of which lie very close to the median estimate. The 2018 SB estimate from the 2018 stock assessment is only 1% larger than the estimate from the 2017 stock assessment. However, the uncertainty is larger as the effects of the revised time-series in Biological Region 2 influenced each of the individual models differently, and resulted in a greater difference in the magnitude of the terminal year's estimated spawning biomass.

A comparison of the median 2019 ensemble SB estimate to reference levels specified by the IPHC's interim management procedure suggests that the stock is currently at 43% of unfished levels (approximate 95% credible range = 27-63%). The probability that the stock is below the *SB30%* level is estimated to be 11%, with less than a 1% chance that the stock is below *SB20%*. Consistent with the interim management procedure (while improvements are ongoing via the Management Strategy Evaluation process[82]; see **IPHC-2019-AM095-12**), estimates of spawning biomass are compared to equilibrium values representing poor recruitment regimes and relatively large size-at-age. Stock projections were conducted using the integrated results from the stock assessment ensemble, details of IPHC Regulatory Area-specific catch sharing plans and estimates of mortality from the 2018 directed fisheries and other sources of mortality where these values are projected for 2019. The stock is projected to decrease over the period from 2019-21 for all TCEYs greater than 20 million pounds (~9,070 t), corresponding to a Spawning Potential Ratio (SPR) of 64%. At the reference level (SPR of 46% and a TCEY of 40 Mlbs or 18,140 t) the probability of at least a 5% decrease in stock size increases from 37% (2020) to 86% (2022). There is a one third chance (<34/100) that the stock will decline below the threshold reference point (*SB30%*) in projections for all the levels of fishing intensity up to an SPR of 40% evaluated over three years.

[80] https://iphc.int/library/documents/news-releases/iphc-news-release-2017-32-br-outcomes-of-interim-meeting-im093
[81] https://www.iphc.int/library/documents/annual-reports/iphc-2019-ar2018-iphc-annual-report-2018
[82] https://iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-12.pdf

8.3.2. Fundamental Clause 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.

Number of Supporting clauses	**5**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	High
Non Conformances	None

Summarized Evidence:

7.1. The precautionary approach shall be applied widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment.

The IPHC conducts an annual stock assessment, using data from the fishery-independent setline survey (FISS), the commercial Pacific halibut and other fisheries, as well biological information from its research program. Data sources are updated each year to reflect the most recent scientific information available for use in management decision making[83].

The most recent stock assessment was published in December 2018 and relied on an ensemble of four population dynamics models to estimate the probability distributions describing the current stock size, trend, and demographics. The ensemble is designed to capture both uncertainty related to the data and stock dynamics (due to estimation) as well as uncertainty related to our understanding of the way in which the Pacific halibut stock functions and is best approximated by a statistical model (structural uncertainty).

A comparison of the median 2019 ensemble SB estimate to reference levels specified by the IPHC's interim management procedure suggests that the stock is currently (in 2018) at 43% of unfished levels (approximate 95% credible range = 27-63%), compared to 41% in 2017. The probability that the stock is below the SB30% level is estimated to be 11%, with less than a 1% chance that the stock is below SB20%.

Stock assessment results are then used as inputs for harvest strategy calculations. The data and assessment models used by the IPHC are reviewed by the IPHC's Scientific Review Board comprised of non-IPHC scientists who provide an independent scientific review of the stock assessment data and models and provide recommendations to IPHC staff and to the Commission. The Scientific Review Board did not identify any substantive errors in the data or methods used in the 2019 stock assessment. NMFS stated that the IPHC's data and assessments models constitute best available science[84] on the status of the Pacific halibut resource.

Alternative harvest options and the associated risks to the stock and fishery is presented below.

[83] https://www.iphc.int/management/science-and-research/stock-assessment
[84] https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan

Table 4. Harvest decision table for 2019. Columns correspond to yield alternatives and rows to risk metrics. Values in the table represent the probability, in "times out of 100" (or percent chance) of a particular risk (source: Dec. 2018 IPHC Stock Assessment).

2019 Alternative			No fishing mortality					Status quo		Reference SPR=46%							
Total mortality (M lb)			0.0	11.7	21.8	31.8	37.6	39.0	40.4	41.8	43.1	44.3	45.5	46.8	48.3	49.9	61.8
TCEY (M lb)			0.0	10.0	20.0	30.0	35.8	37.2	38.6	40.0	41.3	42.5	43.7	45.0	46.5	48.1	60.0
2019 Fishing intensity			$F_{100\%}$	$F_{78\%}$	$F_{64\%}$	$F_{54\%}$	$F_{49\%}$	$F_{48\%}$	$F_{47\%}$	$F_{46\%}$	$F_{45\%}$	$F_{44\%}$	$F_{43\%}$	$F_{42\%}$	$F_{41\%}$	$F_{40\%}$	$F_{34\%}$
Fishing intensity interval			--	56-87%	41-76%	31-67%	27-63%	26-62%	25-61%	25-60%	24-59%	23-59%	23-58%	22-57%	22-56%	21-55%	17-49%	
Stock Trend (spawning biomass)	in 2020	is less than 2019	1	3	26	60	77	81	84	87	90	92	93	95	96	97	>99	a
		is 5% less than 2019	<1	<1	1	10	26	30	34	37	39	41	43	45	48	50	78	b
	in 2021	is less than 2019	1	7	41	75	90	93	94	96	97	98	98	99	99	99	>99	c
		is 5% less than 2019	<1	1	11	42	57	61	65	69	73	77	80	83	87	90	99	d
	in 2022	is less than 2019	1	12	51	82	93	94	96	97	98	98	99	99	99	>99	>99	e
		is 5% less than 2019	<1	3	28	58	76	79	83	86	88	90	92	93	95	96	>99	f
Stock Status (Spawning biomass)	in 2020	is less than 30%	5	7	11	14	17	17	18	18	19	19	20	20	21	21	25	g
		is less than 20%	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	h
	in 2021	is less than 30%	3	7	13	20	24	25	25	26	27	27	27	28	29	29	33	i
		is less than 20%	<1	<1	<1	<1	1	1	1	1	2	2	2	3	3	4	10	j
	in 2022	is less than 30%	2	8	17	25	28	29	29	30	30	31	31	32	33	33	41	k
		is less than 20%	<1	<1	<1	2	4	5	6	7	8	9	10	12	13	15	24	l
Fishery Trend (TCEY)	in 2020	is less than 2019	0	<1	18	26	40	45	51	56	60	63	66	69	73	77	95	m
		is 10% less than 2019	0	<1	12	25	29	33	37	42	47	51	54	58	62	66	95	n
	in 2021	is less than 2019	0	<1	20	28	46	51	56	60	64	67	70	73	77	81	97	o
		is 10% less than 2019	0	<1	16	26	35	39	44	49	53	56	59	63	66	71	97	p
	in 2022	is less than 2019	0	<1	22	32	50	54	58	62	66	69	72	76	79	83	98	q
		is 10% less than 2019	0	<1	19	28	40	45	49	53	56	60	62	66	69	73	98	r
Fishery Status (Fishing intensity)	in 2019	is above $F_{46\%}$	0	<1	16	25	35	40	46	50	56	59	62	65	69	72	92	s

The IPHC adopted catch limits for 2019 totaling 29,430,000 lb (13,349.22 mt) coastwide, corresponding to a fishing intensity of F47%, which is slightly more conservative than the interim reference level of F46%[85]. The IPHC noted this more precautionary management approach considers the inherent uncertainties in the ensemble models, particularly the estimates of the relative strength of the 2011 and 2012 year-classes and the scale of the recent biomass, tied itself to the outcome of additional data collected in 2018 by the expansion of the setline survey. Furthermore, to implement an additional process of periodic external peer review of the IPHC Stock Assessment the Commission published a call of interest for qualified peer reviewers in April 2019 [86]. Hence, the precautionary approach is applied widely and effectively in order to assess, manage and protected the halibut resource.

7.2. For new and exploratory fisheries, procedures shall be in place for promptly applying precautionary management measures, including catch or effort limits.

This clause is not applicable for this fishery. The halibut fisheries in the US and Canada are under the overarching management of the IPHC. These are mature fisheries and cannot be considered exploratory, abundance indices are available since 1910 and catch data since 1890. Current management measures and their performance have been presented in detail under Fundamental clause 4, 5, 6, 7 and 8.

[85] https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan
[86] https://www.iphc.int/uploads/pdf/contract/iphc-2019-consultant-02.pdf

8.4. Section D. Management Measures

8.4.1. Fundamental Clause 8

Management shall adopt and implement effective management measures designed to maintain stocks at levels capable of producing maximum sustainable yields, including harvest control rules and technical measures applicable to sustainable utilization of the fishery and be based upon verifiable evidence and advice from available scientific and objective, traditional sources.

Number of Supporting clauses	**17**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	High
Non Conformances	None

Summarized evidence:

8.1. Conservation and management measures shall be designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of optimum utilization, and be based on verifiable and objective scientific and/or traditional sources. In the evaluation of alternative conservation and management measures, their cost-effectiveness and social impact shall be considered.

The management of the fishery is geared towards long-term sustainability, and is primarily based on the IPHC's interim management procedure, which targets to maintain the total mortality of halibut across its range from all sources based on a reference level of fishing intensity so that the Spawning Potential Ratio (SPR) is equal to 46%[87].

The previous harvest strategy was revoked, in recognition of the development process of the management strategy evaluation. In previous years, the harvest policy was 20% of the coastwide exploitable biomass when the spawning biomass is estimated to be above 30% of the level defined as unfished.

Currently, the reference fishing intensity of F46 percent SPR seeks to allow a level of fishing intensity that is expected to result in approximately 46 percent of the spawning stock biomass per recruit compared to an unfished stock with zero fishing mortality). Overall, the 2019 spawning biomass is currently estimated to be 199 million pounds (90'264 tonnes), which is 43 percent of unfished levels, as defined by the IPHC's interim harvest strategy policy[88].

The current interim management strategy is under development. The 12th Session of the International Pacific Halibut Commission (IPHC) Management Strategy Advisory Board (MSAB012) was held in Seattle, Washington, U.S.A. from 22 to 25 October 2018. Key recommendations from MSAB02 included[89] the prioritizing a single conservation objective over fishery measurable objectives (i.e. biomass based), the reporting of short, medium and long term time span metrics for evaluation, and closed-loop simulation results to investigate coastwide fishing intensity.

The 13th Session of the IPHC MSAB (MSAB013) was held in Sitka, Alaska, U.S.A. from 6-9 May 2019. In here the MSAB requested[90] an update on the actions arising from the MSAB012 session (e.g. research on migration

[87] https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan
[88] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-09.pdf
[89] https://www.iphc.int/uploads/pdf/msab/msab12/iphc-2018-msab012-r.pdf
[90] https://www.iphc.int/uploads/pdf/msab/msab13/iphc-2019-msab013-r.pdf

patterns, stock structure, and consequences to area productivity, climate drivers). Furthermore, the MSAB requested that the Scientific Review Board (SRB) and the IPHC Secretariat consider draft reference objectives (see table 1 in MSAB13 report) and to provide advice to the MSAB on potential MSY and MEY proxy target reference points.

Aside from the harvest strategy, all key management measures are listed in the Pacific Halibut Fishery Regulations for 2019[91] . The main difference from the 2018 regulations are the catch limits for the 2019 commercial fishery, which are shown in (Table 5):

Table 5. 2019 Commercial fishery catch limits (lb) by IPHC Regulatory Area**.**

IPHC Regulatory Area	Commercial fishery catch limits in pounds (lb)
Area 2C (southeastern Alaska)	3,610,000 catch and 60,000 incidental mortality
Area 3A (central Gulf of Alaska)	8,060,000 catch and 310,000 incidental mortality
Area 3B (western Gulf of Alaska)	2,330,000
Area 4A (eastern Aleutians)	1,650,000
Area 4B (central/western Aleutians)	1,210,000
Area 4C (Pribilof Islands)	910,000
Area 4D (northwestern Bering Sea)	910,000
Area 4E (Bering Sea flats)	220,000

The Pacific Halibut and Sablefish Individual Fishing Quota (IFQ) Program was adopted by the North Pacific Fishery Management Council under Amendment 15 to the Bering Sea and Aleutian Islands Fishery Management Plan and Amendment 20 to the Gulf of Alaska Fishery Management Plan in October 1992. The final rule was published on November 9, 1993.

Fishery regulations for the 2019 season also include vessel licensing, provisions for in-season actions to establish or modify current management measures, seasonal closures per regulatory area (modified for 2019, currently from the 15th March to 15th November 2019[92]), other closed areas, IFQ and CDQs shares specifications, fishing period limits, size limits (currently 32 inches with head on, 24 inches with head off), careful release specifications for non-retained halibut, logbooks for any vessels above 27 feet in length, fishing gear allowed (main gear being hook and line but single pot extensions exist), supervision of unloading and weighing of halibut by authorized officers, retention of tagged halibut, customary, traditional and aboriginal fishing catches, and sport fishing regulations.

Halibut are routinely taken as incidental catch in federally managed groundfish trawl, hook-and-line, and pot fisheries in the GOA and BSAI. Interception of juvenile and adult halibut occurs in trawl fisheries targeting groundfish species (such as rockfish, flatfish, pollock, and Pacific cod). Incidental catch of halibut also occurs in groundfish hook-and-line and pot fisheries that typically focus on Pacific cod[93]. Regulations require that all halibut caught incidentally in these groundfish fisheries must be discarded, regardless of whether the fish is living or dead. Halibut catch is controlled in the groundfish fisheries using prohibited species catch (PSC) limits[94]in the GOA and the BSAI. The NPFMC is in the process of amending the current PSC limits for halibut (further information below).

[91] https://www.iphc.int/uploads/pdf/regs/iphc-2019-regs.pdf
[92] https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan
[93] https://www.npfmc.org/halibut-bycatch-overview/
[94] https://www.npfmc.org/bsai-halibut-bycatch/

Observers and EM systems collect fishery-dependent information used to estimate total catch and interactions with protected species. Managers use these data to manage groundfish and PSC within established limits and to document and reduce fishery interactions with protected resources. Scientists use fishery-dependent data to assess fish stocks, to provide scientific information for fisheries and ecosystem research and fishing fleet behavior, to assess marine mammal interactions with fishing gear, and to assess fishing interactions with habitat. Each year, the Annual Deployment Plan (ADP) describes the science-driven method for deployment of observers on vessels in the partial coverage category (50 CFR 679.51(a)) in the halibut and groundfish fisheries off Alaska.

The North Pacific Observer Program 2018 Annual Report offered a number of highlights relevant to the halibut fisheries[95]:

- 2018 was the first year that EM was integrated into the Observer Program under regulations. NMFS approved 141 vessels in the 2018 EM selection pool and approved a Vessel Monitoring Plan (VMP) for 134 vessels (the other 7 boats in EM selection pool did not submit a VMP).
- For all federal fisheries off Alaska, 4,423 trips (41.6%) and 492 vessels (45.4%) were monitored by either an observer or EM system in 2018.
- The overall coverage levels (i.e. all catch and catcher-processor vessels) for hook and line fisheries in the GOA where 22% for retained catch and 18% for discarded catch, while in the BSAI these figures were higher at 98% for retained catch and 94% for discarded catch.

NPFMC consideration of new regulatory amendments: June 2018 to June 2019.
The Council is considering a regulatory amendment to allow retention of legal-size halibut in pot gear used to fish IFQ/CDQ in the Bering Sea and Aleutian Islands, provided the operator also holds sufficient halibut IFQ/CDQ for the appropriate regulatory area. Action taken could affect fishery participants that have sufficient halibut IFQ/CDQ by allowing them to use pot gear. However, it would not allow for the retention of halibut IFQ/CDQ in other directed (non-sablefish) groundfish or shellfish pot fisheries. The NPFMC is considering five options for this amendment[96].

The Council has also motioned for halibut abundance based management of PSC limits where they recommended revisions and clarifications to the alternatives proposed for calculation halibut PSC limits[97] (e.g. based on NMFS EBS bottom trawl survey index or IPHC Area 4 setline survey index), and direction on Alternatives, Elements, and Options for analysis resulting from the Halibut ABM Stakeholder Committee, formed to provide the Council with recommendations for the scenarios to be analyzed [98].

In late 2018, an interim report was provided on a halibut deck-sorting experimental fishing permit, ongoing since 2015, and increasing in participation (21 CP vessels in 2018), designed to better understand the mortality rate of discarded halibut (currently averaging 49% based on preliminary results)[99].

[95] https://meetings.npfmc.org/CommentReview/DownloadFile?p=53b3f51f-a17b-4f80-af4c-6dd9e89ab6f7.pdf&fileName=C3%202018%20Observer%20Report.pdf
[96] http://legistar2.granicus.com/npfmc/meetings/2018/6/982_A_North_Pacific_Council_18-06-04_Meeting_Agenda.pdf
[97] http://meetings.npfmc.org/CommentReview/DownloadFile?p=1d3d53ff-5e17-4c48-b442-f096b0e2d631.pdf&fileName=C6%20COUNCIL%20MOTION%20(with%20amendment).pdf
[98] https://meetings.npfmc.org/CommentReview/DownloadFile?p=4fb7b4a4-d8d0-4ef2-bd8f-a1e830271d8e.pdf&fileName=D3%20ABM%20Action%20Memo.pdf
[99] http://meetings.npfmc.org/CommentReview/DownloadFile?p=756d1adc-8cb6-44a2-bfb9-586c7613d67d.pdf&fileName=%20B8%20EFP%20PRESENTATION.pdf

Halibut vessels in Alaska are required to use of seabird avoidance measures (e.g. paired and single streamer lines), which have reduced seabird bycatch four-fold[100]. They are required to be used by operators of all vessels greater than 26 feet in length overall using hook-and-line gear.

Other than noted above, vessel operators using hook-and-line gear and fishing for groundfish in waters off the state of Alaska must refer to seabird avoidance measures in state regulations (5AAC 28.055). No changes have occurred to this requirement since 2009.

The NPFMC is required to analyze potential economic, social, and/or biological impacts of proposed regulatory changes in support of Council initiatives to develop and modify management programs for the Federal groundfish and crab fisheries off Alaska. Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations[101].

8.2. States shall prohibit dynamiting, poisoning and other comparable destructive fishing practices.
The only gears allowed for use in the IPHC fishery are hook and line gear with the exception of Pacific halibut taken with longline or single pot gear if such retention is authorized by NOAA Fisheries regulations published at 50 CFR Part 679[102]. All other gears and methods are strictly prohibited. There is no allowance for any destructive fishing practice such as dynamiting and poisoning in Alaska or in US waters. No change has occurred since the 2018 surveillance audit.

8.3. States shall seek to identify domestic parties having a legitimate interest in the use and management of the fishery.
The IPHC currently apportions the quota shares for the halibut fishery among commercial, sport and personal use subsistence sectors coastwise in the US and Canada. The NPFMC, on the other hand, is responsible for allocation of the halibut resource among user (e.g. commercial, sport, customary) groups in Alaska waters[103]. ADFG licenses anglers and sport fishing businesses and guides, monitors and reports on sport and subsistence harvests, and assists federal agencies with preparation of regulatory analyses in Alaska waters.

There are two main channels used in Alaska to identify and involve parties having a legitimate interest in the use and management of fisheries. One is through the IPHC and the other through NPFMC processes.

The Conference Board (CB) is a panel representing Canadian and American commercial and sport halibut fishers. Created in 1931 by the Commission, the Board gives the IPHC the fishers' perspective on Commission proposals presented at Annual Meetings in January. Members are designated by union and vessel owner organizations from both nations. As of 2019 there were 79 representative members and two officers in the CB.

The Processor Advisory Board (PAB), as the name suggests, represents halibut processors. Like the Conference Board, PAB lends its opinion regarding Commission proposals and offers recommendations at IPHC Annual Meetings. The group was formed in 1996. As of 2019 there are 28 representative members and two officers in the PAB.

[100] https://www.fisheries.noaa.gov/action/seabird-avoidance-measures-hook-and-line-groundfish-and-halibut-fisheries-alaska
[101] https://www.epa.gov/nepa/what-national-environmental-policy-act
[102] https://www.ecfr.gov/cgi-bin/text-idx?SID=0cc954068b4cef56066a93c0ecbd605f&mc=true&node=pt50.13.679&rgn=div5#se50.13.679_124
[103] http://www.adfg.alaska.gov/index.cfm?adfg=halibut.management

Other Boards existing within IPHC include the Management Strategy Advisory Board (MSAB), the Research Advisory Board (RAB), and a Scientific Review Board (SRB). These are shown in (Figure 1).

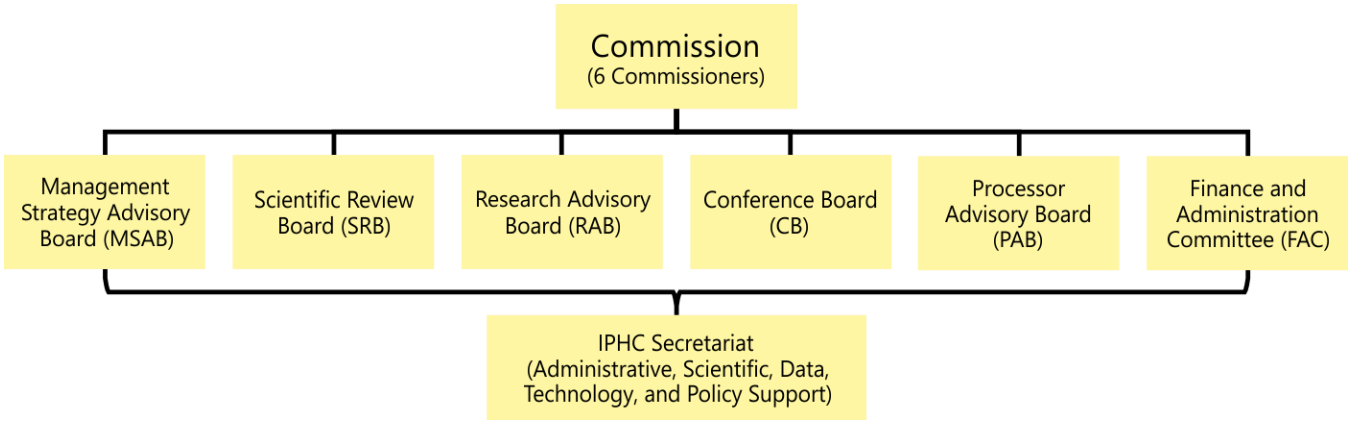

Figure 1. Structure of the IPHC and its Boards[104].

The Western Alaska Community Development Quota (CDQ) Program created by the NFMC in 1992 provides western Alaska communities opportunities to participate in the BSAI fisheries. There are 65 communities participating in the program[105]. The last amendment to the CDQ relevant to halibut was made in June 2017[106] when the Council took final action to approve a regulatory amendment that would allow CDQ groups the opportunity to lease Area 4B, 4C, and 4D halibut IFQ in years where the catch limits are below certain thresholds.

The Gulf of Alaska parallel of the CDQ program is the Community Quota Entity Program, which authorizes 45 eligible communities in areas 2C, 3A and 3B and one community in the Aleutian Islands to form Community Quota Entities (CQEs)[107] that may purchase commercial halibut and sablefish quota share (QS) for lease to community residents. The overarching purpose of this program is to remedy barriers to participation in remote coastal communities and to provide these communities with long-term opportunities to access the halibut and sablefish resources[108]. As of 2019, the Council is reviewing regulations that restrict CQE ability to fish "D" class quota on "C" class vessels has, in some circumstances, limited the CQE community's access to fish CQE halibut, particularly in Area 3A[109].

The Council formed the Community Engagement Committee in June 2018 to identify and recommend strategies for the Council to provide effective community engagement with rural and Alaska Native communities. The Community Engagement Committee will develop tools and processes to facilitate improved communication and understanding between rural communities and tribes and the Council. The latest meeting was held in anchorage in March 2019[110].

[104] https://www.iphc.int/the-commission/structure-of-the-commission
[105] https://www.federalregister.gov/documents/2016/07/12/2016-16418/proposed-information-collection-comment-request-western-alaska-community-development-quota-cdq
[106] https://www.npfmc.org/ifqcdq/
[107] https://www.npfmc.org/community-quota-entity-program/
[108] https://meetings.npfmc.org/CommentReview/DownloadFile?p=60c6260c-faa3-4eed-87e9-2a324869f26b.pdf&fileName=C6%20MOTION.pdf
[109] https://meetings.npfmc.org/CommentReview/DownloadFile?p=60c6260c-faa3-4eed-87e9-2a324869f26b.pdf&fileName=C6%20MOTION.pdf
[110] https://www.npfmc.org/committees/cec/

8.4. Mechanisms shall be established where excess capacity exists, to reduce capacity. Fleet capacity operating in the fishery shall be measured. States shall maintain, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations and a record of all authorizations to fish allowed by them.

The Halibut fishery in Alaska is a closed access fishery managed using an IFQ system. The number of vessels participating in the fleet has decreased significantly since implementation of the IFQ program in the mid 1990's[111]. Annually, NMFS issues eligible QS holders an IFQ fishing permit that authorizes participation in the IFQ fisheries. Those to whom IFQ permits are issued may harvest their annual allocation at any time during the eight plus-month IFQ halibut and sablefish seasons[112]. NMFS monitors allocations and subsequent landings.

The number and size of fishing vessels involved in Alaskan fisheries is recorded and reported annually by NMFS/AFSC. In the years after IFQ was implemented, the average annual decrease in the number of active vessels fishing halibut was about 4%, with 863 active vessels in the halibut IFQ fishery in 2016, compared to 2060 in 1995 (Fissel et. al 2017). This demonstrates a clear ability to control and reduce capacity as necessary.

In 2018, the total number of permitted vessel offloads containing only halibut IFQ was recorded 3,285, the total number of vessel offloads containing only sablefish IFQ was 1,943, and total number of vessel offloads containing both IFQ species was 1,047. In 2018, 95% of total halibut quota was landed, while 81% of the sablefish IFQ was landed[113].

8.5. Technical measures shall be taken into account, where appropriate, in relation to: fish size, mesh size or gear, closed seasons, closed areas, areas reserved for particular (e.g. artisanal) fisheries, protection of juveniles or spawners.

Updated IPHC regulations covering the directed halibut fisheries (commercial and sport) in 2019 can be found on the IPHC website[114]. The full suite of NMFS fishery regulations for Alaskan waters can be found on their website[115]. Concerning specific technical measures, a brief summary by category, as contained in these IPHC regulations, is show below.

Fishery regulations for the 2019 season include vessel licensing, provisions for in-season actions to establish or modify current management measures, seasonal closures per regulatory area (modified for 2019, currently from the 15th March to 15th November 2019[116]), other closed areas, IFQ and CDQs shares specifications, fishing period limits, size limits (currently 32 inches with head on, 24 inches with head off), careful release specifications for non-retained halibut, logbooks for any vessels above 27 feet in length, fishing gear allowed (main gear being hook and line but single pot extensions for sablefish exist), supervision of unloading and weighing of halibut by authorized officers, retention of tagged halibut, customary, traditional and aboriginal fishing catches, and sport fishing regulations. Such measures are meant for the protection of the entire halibut stock, including adult and juveniles, taking into account commercial, sport and traditional, customary users. For further information on each of these technical and other management measures, refer to the 2019 Pacific Halibut Regulations on the IPHC website[117].

Incidental halibut catch is controlled in the groundfish fisheries (i.e. non halibut-sablefish IFQ fisheries) using PSC

[111] https://www.sciencedirect.com/science/article/pii/S0165783616300649
[112] https://www.fisheries.noaa.gov/alaska/commercial-fishing/pacific-halibut-and-sablefish-individual-fishing-quota-ifq-program
[113] https://www.fisheries.noaa.gov/sites/default/files/akro/18ifqland.htm
[114] https://www.iphc.int/uploads/pdf/regs/iphc-2019-regs.pdf
[115] https://alaskafisheries.noaa.gov/fisheries-679regs
[116] https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan
[117] https://www.iphc.int/uploads/pdf/regs/iphc-2019-regs.pdf

limits[118]in the GOA and the BSAI. The NPFMC is in the process of amending the current PSC limits for halibut.

Areas closed to halibut fishing are defined in IPHC regulations, and include certain specific waters in the Bering Sea in Isanotski Strait (note recommendation for revision during RAB020 meeting[119]). A large number of areas in GOA and BSAI waters are closed to trawling (and thus to halibut bycatch outside the directed fisheries). Details on these closures set up to for habitat protection are available on the NPFMC website[120]. No changes have been made to these measures in 2018.

Further to these, trawl sweep gear modification have been required by the Council for the trawl flatfish fisheries in the Bering Sea and the central Gulf of Alaska. Elevating devices (e.g., discs or bobbins) are required to be used on the trawl sweeps, to raise the sweeps off the seabed and limit adverse impacts of trawling on the seafloor. Such modifications have been shown to be effective in limiting habitat damage as well as unobserved mortality of crab species[121].

8.6. Fishing gear shall be marked.

The 2019 IPHC gear regulations[122] specify that all gear marker buoys carried on board or used by any United States of America vessel used for Pacific halibut fishing shall be marked with one of the following: (a) the vessel's State license number; or (b) the vessel's registration number.

These markings shall be in characters at least four inches in height and one-half inch in width in a contrasting color visible above the water and shall be maintained in legible condition.

These same requirements are mirrored in the NMFS Federal Fishery Register halibut catch sharing plan regulation published in March 2019[123].

[118] https://www.npfmc.org/bsai-halibut-bycatch/
[119] https://iphc.int/uploads/pdf/rab/2019/iphc-2019-rab020-r.pdf
[120] https://www.npfmc.org/habitat-protections/
[121] https://www.npfmc.org/habitat-protections/gear-modifications/
[122] https://www.iphc.int/uploads/pdf/regs/iphc-2019-regs.pdf
[123] https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan

8.7. Measures shall be introduced to identify and protect depleted resources and those resources threatened with depletion, and to facilitate the sustained recovery/restoration of such stocks. Also, efforts shall be made to ensure that resources and habitats critical to the well-being of such resources which have been adversely affected by fishing or other human activities are restored.

The most recent stock assessment was published in December 2018 and relied on an ensemble of four population dynamics models to estimate the probability distributions describing the current stock size, trend, and demographics. A comparison of the median 2019 ensemble SB estimate to reference levels specified by the IPHC's interim management procedure suggests that the stock is currently (in 2018) at 43% of unfished levels (approximate 95% credible range = 27-63%), compared to 41% in 2017. The probability that the stock is below the SB30% level is estimated to be 11%, with less than a 1% chance that the stock is below SB20%.

The IPHC adopted catch limits for 2019 totaling 29,430,000 lb (13,349.22 mt) coastwide, corresponding to a fishing intensity of F47%, which is slightly more conservative than the interim reference level of F46%[124]. The IPHC noted this more precautionary management approach considers the inherent uncertainties in the ensemble models, particularly the estimates of the relative strength of the 2011 and 2012 year-classes and the scale of the recent biomass, tied itself to the outcome of additional data collected in 2018 by the expansion of the setline survey.

The halibut resource is not considered depleted. Management measures detailed in previous clauses explain the various management measures in place, including the interim management procedure, implemented to ensure the halibut stock remains productive and to ensure its sustainable management and conservation, as per IPHC's fisheries management objectives. The IPHC is in the process of formulating a more formal harvest strategy containing reference points and harvest rules, as specified in the Management Strategy Advisory Board (MSAB013) meeting held in May 2019 (see table 1 in the meeting report document [125]).

In terms of habitats, there are significant closures in the Bering Sea, Aleutians and the Gulf Alaska, coupled to modified sweeps requirements for demersal trawl gear, that together limit potential habitat impacts that could negatively affect the halibut stock in Alaska[126]. Furthermore, considering that the halibut fishery is a hook and line fishery, habitat effects of this specific gear is considered quite small.

8.8/8.9/8.10/8.11/8.12/8.13. States shall encourage the development and implementation of technologies and operational methods that reduce waste and discards and reduce the loss of fishing gear. The implications of the introduction of new fishing gears, methods and operations shall be assessed and the effects of such introductions monitored. New developments shall be made available to all fishers and shall be disseminated and applied appropriately.

Pacific halibut are captured in large numbers by vessels fishing for other species, primarily using trawl, pot, and longline gear that are targeting groundfish species such as cod, flatfish, rockfish and other species. IPHC regulations require that the fish be targeted and caught with demersal longline gears. For those hook and line fisheries, Article 15 (Careful Release of Pacific Halibut) of the 2019 fishing regulations state the following:

All Pacific halibut that are caught and are not retained shall be immediately released outboard of the roller and returned to the sea with a minimum of injury by: (a) Hook straightening; (b) cutting the gangion near the hook; or (c) carefully removing the hook by twisting it from the Pacific halibut with a gaff. The reasons for releasing halibut in this manner are so that post release mortality can be calculated and minimised.

[124] https://www.federalregister.gov/documents/2019/03/14/2019-04714/pacific-halibut-fisheries-catch-sharing-plan
[125] https://www.iphc.int/uploads/pdf/msab/msab13/iphc-2019-msab013-r.pdf#page=10&zoom=100,0,478
[126] https://www.npfmc.org/habitat-protections/

Since 1990, Pacific halibut bycatch management of U.S.A. domestic groundfish fisheries in Alaska has principally been conducted through the use of limits to the annual amount of Pacific halibut bycatch mortality in both the GOA and the BSAI. Once these PSC limits are reached, fisheries are closed. Except for other longline fisheries for which the harvester holds individual quota shares for Pacific halibut, any Pacific halibut encountered by these other groundfish fisheries must be returned to the sea as quickly as possible with a minimum of injury, under the IPHC fishery regulations. Discard mortality rates (DMRs) are estimates of the proportion of incidentally captured Pacific halibut (by both directed and non-directed fisheries) that do not survive after being returned to the water. The magnitude of discard mortality varies according to both the capture and release methods.

The IPHC has studied and is continuing to research discard mortality and survival of halibut. The IPHC website lists research information on the physiological condition and hook injury survival (hook type, size, bait, effect of fish size) and discard survival assessment[127]. In late 2018, an interim report was provided for NPFMC consideration on a halibut deck-sorting experimental fishing permit (EFP), authorized by NMFS and ongoing since 2015 to better elucidate the mortality rate of discarded halibut. The report highlighted increased vessel participation (21 CP vessels in 2018) in the study, and that current discard mortality from these studies is averaging 49%, based on 2018 preliminary results[128], quite comparable to the average mortality rate obtained since the 2015 trials. Research will be ongoing in a 2019 EFP with some modification and with the testing of additional technologies (e.g. electronic length-measuring board and chute cameras).

In terms of bycatch of halibut in trawl fisheries, the groundfish trawl industry in Alaska have deployed halibut excluder devices in their gear with success. The NMFS, in collaboration with the Pacific States Marine Fisheries Commission (PSMFC) and the Alaska Whitefish Trawlers Association, tested the efficacy of a flexible sorting grate bycatch reduction device (BRD) designed to reduce halibut bycatch[129]. The results showed that halibut bycatch was reduced numerically by 57% and by 62% by weight. Target species loss ranged from 9% to 22%.

Furthermore, IPHC project 2019-04[130] ("Use of LEDs to reduce Pacific halibut catches before trawl entrainment") proposes evaluating if artificial illumination (e.g. LEDs) in trawl gear can reduce Pacific halibut bycatch before trawl entrainment in relation to the physiological condition of the fish. This study will be performed in the framework of a Bycatch Reduction Engineering Program (BREP-NOAA) funded study led by Pacific States Marine Fisheries Commission in which IPHC is a collaborating partner.

Longline vessels in Alaska are required to deploy streamer lines and weighted lines in order to reduce bycatch of seabirds. Demersal trawl vessels such as those targeting flatfish in the BSAI and cod in the GOA are required to use modified gear with raised bobbins, found to decrease crab mortality and decrease habitat impacts.

Since the implementation of the quota share (IFQ) fisheries, the amount of halibut fishing gear deployed has been reduced significantly, and therefore lost gear is much less common in the fishery of recent years. Under the IFQ program, there is also more incentive for fishermen to retrieve any lost gear, as it does not result in reduced income, and decreases gear replacement costs. Under IPHC regulations, vessels fishing for halibut in Alaska must record the amount and location of all fishing gear deployed, including any lost gear (see article 17, 2nd para, IPHC 2019 Regulations[131]).

[127] https://iphc.int/management/science-and-research/biological-and-ecosystem-science-research-program-bandesrp/-bandesrp-discard-mortality-and-survival
[128] http://meetings.npfmc.org/CommentReview/DownloadFile?p=756d1adc-8cb6-44a2-bfb9-586c7613d67d.pdf&fileName=%20B8%20EFP%20PRESENTATION.pdf
[129] http://marineconservationalliance.org/seafacts-the-development-of-halibut-excluders/
[130] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-14.pdf
[131] https://www.iphc.int/uploads/pdf/regs/iphc-2019-regs.pdf

There is no evidence that regulations involving gear selectivity are being circumvented either by omission, or through the illegal use of gear technology. Advancements or developments in gear are made widely available to fishers through websites and public meetings and other forms of communication.

New fishing gears have seldom been allowed for halibut fishing, where longline is been the de facto fishing method of catching halibut under IPHC management. However, since January 2017, Amendment 101[132] to the Fishery Management Plan for Groundfish of the Gulf of Alaska authorizes the use of longline pot gear in the GOA sablefish IFQ fishery. In addition, this final rule establishes management measures to minimize potential conflicts between hook-and-line and longline pot gear used in the sablefish IFQ fisheries in the GOA. This final rule also includes regulations developed under the Northern Pacific Halibut Act of 1982 to authorize harvest of halibut IFQ caught incidentally in longline pot gear used in the GOA sablefish IFQ fishery.

The Council is currently reviewing/considering allowing retention of halibut in pots in the BSAI[133]. In the October 2018 meeting the NPFMC took final action[134] to allow for: (1) more efficient harvest of the halibut resource by decreasing the wastage of legal-size halibut discarded in the BSAI sablefish pot fishery, and (2) reduced whale depredation of halibut caught on hook-and-line gear by allowing operators that hold both halibut IFQ or CDQ the opportunity to retain halibut in pot gear. This action includes the following elements[135]: 1) an exemption to the 9-inch maximum width of the tunnel opening on pots, 2) VMS and logbook requirements for all vessels using pot gear to fish IFQ/CDQ, and 3) in the event that the overfishing limit for a shellfish or groundfish species is approached, regulations would allow NMFS to close IFQ fishing for halibut as necessary. Additionally, the Pribilof Islands Habitat Conservation Zone would be closed to all fishing with pot gear. To the extent practicable, the Council has recommended that halibut fishermen in the BSAI interested in using pot gear under this action consult with crab fishery participants on appropriate crab escape mechanisms to minimize crab bycatch.

Until the action is approved by the Secretary of Commerce and implemented by NMFS, retention of halibut in pots in the BSAI is not permitted.

As summarized above, these waste, discard and bycatch reduction measures are typically implemented following rigorous scientific study and periods of allowed experimental fishing to test their effectiveness. Many of the studies and subsequent implementation have involved cooperative efforts between researchers at institutions in NMFS, DFO, IPHC, universities, and industry. All the research is published online and is widely available for both review and input through the appropriate channels at the NFMC and the IPHC. More information is also presented in Clause 12 below.

NOAA/NMFS published a National Bycatch Reduction Strategy in 2016 [136]which is intended to guide and coordinate efforts to reduce bycatch and bycatch mortality in support of sustainably managing fisheries and recovering and conserving protected species. Statutory bycatch provisions are provided within the Magnuson-Stevens Act, the Marine Mammal Protection Act, and the Endangered Species At. For the purposes of this Strategy, reducing bycatch includes efforts to minimize the amount of bycatch, as well as minimize the mortality, serious injury, and adverse impacts of bycatch that do occur. In addition, reducing bycatch can also include actions that increase utilization of fish that would otherwise be economic discards. Due to the different bycatch issues

[132] https://www.fisheries.noaa.gov/action/amendment-101-fmp-groundfish-gulf-alaska-management-area
[133] https://www.npfmc.org/halibut-retention-in-pots/
[134] http://meetings.npfmc.org/CommentReview/DownloadFile?p=94b0f940-78a1-45d9-bc75-3686b6ccb3a9.pdf&fileName=C4%20Action%20Memo.pdf
[135] https://www.npfmc.org/halibut-in-pots/
[136] https://www.fisheries.noaa.gov/national/bycatch/national-bycatch-reduction-strategy

across NOAA Fisheries' regions and programs, the national-level objectives and actions presented in the 2016 Strategy will be applied to the specific priorities and needs of each region and its fisheries through the implementation plans. The objectives and actions of the Strategy are designed to align ongoing and future regional, national, and international bycatch-related efforts with the overall goal of reducing bycatch and bycatch mortality. As of 2019, detailed implementation plans for Alaska have not yet been developed.

8.14. Policies shall be developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures.

This clause is not applicable. The halibut fishery is not an enhanced fishery.

8.4.2. Fundamental Clause 9

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

Number of Supporting clauses	**3**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	High
Non Conformances	None

Summarized evidence:

9.1./9.2./9.3. Education and training programs.

To be eligible to purchase halibut shares, new participants must apply for and obtain a Transferable Eligibility Certificate issued by the North Pacific Region of NMFS. An applicant must be a U.S. citizen and show documentation of 150 days of commercial fishing experience[137] in the U.S.

There are several avenues for fishermen to receive training to ensure they have appropriate standards of competence.

AMSEA provides marine safety training for commercial fishermen[138], subsistence & recreational boaters, and youth & women boaters throughout Alaska and across the United States. AMSEA's Fishing Vessel Drill Conductor Trainings are accepted by the U.S. Coast Guard and meet the training requirements for fishermen onboard commercial fishing vessels.

The State of Alaska, Department of Labor and Workforce Development (ADLWD) includes the Alaska's Institute of Technology, also called Alaska Vocational Training & Education Center (AVTEC). One of AVTEC's main divisions is the Alaska Maritime Training Center. The Alaska Maritime Training Center is a United States Coast Guard approved training facility located in Seward, Alaska, and offers USCG/STCW (STCW is the international Standards of Training, Certification, and Watchkeeping) compliant maritime training[139]. 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 world class ship simulator, state of the art computer based navigational laboratory and modern classrooms equipped with the latest instructional delivery technologies. AVTEC offers courses such as Able Seaman, Fire Fighting, Meteorology, Electronic Chart display and Information Systems, Seafood Processor Orientation and Safety Course, among many others.

The Marine Advisory Program (MAP) is a university-based statewide program designed to help Alaskans with the practical use and conservation of the state's marine and freshwater resources. MAP is based at the University of Alaska Fairbanks (UAF) College of Fisheries and Ocean Sciences[140]. Through classes, workshops, trainings and other resources, MAP offers Alaskans technical assistance, marine education, applied research and other expert advice on how residents can sustain healthy coastal economies, communities and ecosystems.

[137] https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska
[138] https://www.amsea.org/commercial-fishermen
[139] https://avtec.edu/department/alaska-maritime-training-center
[140] https://alaskaseagrant.org/marine-advisory/

Established in 2007 by the Alaska Sea Grant Marine Advisory Program, The Alaska Young Fishermen's Summit (AYFS) is a three-day networking and skill-building conference for new entrants in managing modern commercial fishing businesses designed to provide training, information and networking opportunities for commercial fishermen early in their careers. The event features prominent industry leaders as speakers and mentors. In January 2020, the Alaska Sea Grant Marine Advisory Program will present the 8th Alaska Young Fishermen's Summit[141].

All regulations governing the halibut fisheries are available on the IPHC, NPFMC, and NMFS websites, as previously documented. Changes to regulations are considered only after detailed processes which include open and public discussions, and the results of any changes are widely communicated. Fishermen do attend these meetings and participate in these processes where they input in and become better acquainted with fishery regulations.

Data on the number and location of Alaskan of fishers, permits issued, current QS holders and QS units - by species, area, vessel category, blocks, and CDQ compensation flag etc. can be can be found online at the NMFS website[142]. In 2018 there were 2576 IFQ quota share holdings registered in the NMFS database. Data on fishing in state-managed fisheries can be found in the State of Alaska's CFEC website[143].

[141] https://alaskaseagrant.org/event/2020-alaska-young-fishermens-summit/
[142] https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska#individual-fishing-quota-(ifq)-halibut/sablefish-and-cdq-halibut-ifq
[143] https://www.cfec.state.ak.us/fishery_statistics/earnings.htm

8.5. Section E. Implementation, Monitoring and Control

8.5.1. Fundamental Clause 10

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.

Number of Supporting clauses	**6**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	High
Non Conformances	None

Summarized evidence:

10.1. Enforcement agencies and framework:

The Northern Pacific Halibut Act of 1982 (Halibut Act or Act) is the implementing legislation for the Convention between the United States and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea (Convention)[144].

The IPHC does not actively enforce regulations[145], but relies on the enforcement mechanisms of the Contracting Parties. (Convention, Article IV). The Contracting Parties provide extensive annual reports to the IPHC regarding their fishery management, catch monitoring and accounting, and enforcement activities.

The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce Alaska fisheries laws and regulations, especially 50CFR679 (on the management of fisheries off the Alaska EEZ)[146]. The Alaska Wildlife Troopers enforce halibut regulations in state waters. All landings of halibut must be reported to NMFS via its mandatory “e-landings” reporting system.

OLE and USCG are responsible for enforcement of regulations in the IFQ fisheries. OLE has 9 field offices across Alaska and is responsible for shoreside enforcement and for providing after hours surveillance while USCG engages in at-sea enforcement. The USCG documents at-sea violations and refers them to OLE for final action. OLE employs a multifaceted strategy to maximize compliance in the IFQ fisheries. This strategy includes educational outreach, partnerships, patrols, inspections, and investigations. OLE also spends thousands of hours annually conducting patrols to provide a visible deterrence to potential violators, to monitor fishing and other marine activities, to detect violations, to conduct compliance inspections, and to provide compliance assistance. OLE personnel investigate reports or complaints of IFQ violations as well as regularly analyze IFQ data that may lead to investigations of abnormal activity and missing or questionable information.

OLE works closely with the Alaska Wildlife Troopers (enforcing regulations in state waters) and the USCG to maximize compliance by sharing information, intelligence, knowledge, and resources[147]. The formalized Joint Enforcement Agreement (JEA) between the AK Wildlife Troopers and NMFS provide the state with federal funding

144 https://www.google.com/search?rlz=1C1GGRV_enGB817GB817&ei=uNoVXfiYJdqk1fAP0N6AGA&q=The+Northern+Pacific+Halibut+Act&oq=The+Northern+Pacific+Halibut+Act&gs_l=psy-ab.3..35i39.9930.9930..10109...0.0..0.67.67.1.....0....1..gws-wiz.....0i71.j3yC9MbmE-8&safe=active&ssui=on

145 https://iphc.int/uploads/pdf/priph/iphc-2019-priphc02-06.pdf

146 https://www.law.cornell.edu/cfr/text/50/part-679

147 https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-ar03.pdf

for personnel, equipment, operations, and authorization for the Wildlife Troopers to enforce federal fishing regulations while engaged in their regular duties. AWT have requested additional funding to enhance capacity for dockside monitoring and inspections for Individual Fishing Quota (IFQ)/Individual Processing Quota (IPQ) as part of FY 2019[148].

OLE 2018 Enforcement summary

OLE has provided their latest Enforcement Division Report to the IPHC in December 2018[149] for the 2018 year.

As part of this 2018 report the OLE Alaska Enforcement Division (AKD) stated that there were 3,391 IFQ halibut permits issued and 3,285 IFQ halibut vessel offloads, at 29 IFQ landing ports in Alaska. AKD personnel spent over 5216 hours conducting patrols to provide a visible deterrence to potential violators; monitoring fishing and other marine activities; detecting violations; providing compliance assistance; and providing outreach and education. This is compared to 4,972 patrol hours in 2017, and 4,476 patrol hours in 2016. In May 2018 OLE received four new near shore patrol vessels.

The Alaska IFQ halibut fishery had 734 IFQ overages reported in 2018, 48 of these exceeded the individual 10% limit.

In 2018, AKD opened 1294 halibut related incidents that included outreach events, vessel boardings, and dockside monitoring. Of the 1294 incidents, officers identified 536 halibut related violations which were handled by Compliance Assistance, Summary Settlement or Written Warning (Table 6).

Table 6. Halibut related violation in 2016-2018.

	2016	2017	2018
Total Cases Opened	2873	3151	2667
Total Violations Documented	1741	1621	1257
Halibut Related Violations	602	523	536*

*includes violations pertaining to halibut in other non-halibut fisheries

Although enforcement and violations include the commercial, sport, charter and subsistence sectors, we summarize only commercial data below. The most common 2018 halibut violation in the IFQ fishery included:

- 48 IFQ halibut overages greater than 10% in 2018
  - 34 IFQ halibut overages greater than 10% in 2017
  - 33 IFQ halibut overages greater than 10% in 2016
- Record keeping or reporting violations (Prior Notice of Landings, Landing Report, Logbook, Product Transfer Reports, Production Reports)
- Gear marking violations
- Retain undersized halibut, or discarding legal sized halibut
- Hired skipper and permit holder violations
- Vessel cap overages
- Misreporting IFQ area fished or fishing in an area with no IFQ available
- Fishing without a Federal Fisheries Permit (FFP)

[148] https://www.omb.alaska.gov/ombfiles/20_budget/PublicSafety/Amend/2020proj62513.pdf
[149] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-ar16.pdf

Commercial groundfish violations involving halibut; the most common violations included:

- Fail to carefully release halibut or allow halibut to contact a crucifier or hook stripper.
- Release halibut caught with longline gear by any method other than— positioning the gaff on the hook and twisting the hook from the halibut straightening the hook by using the gaff to catch the bend of the hook and bracing the gaff against the vessel or any gear attached to the vessel.
- Puncture the halibut with a gaff or other device

Adjudicated significant investigations. An IFQ Halibut permit holder was issued a $5000.00 NOVA for having more IFQ halibut on board the vessel than IFQ quota available for the IPHC regulatory area being fished on three trips. The permit holder also failed to enter required fishing information in his IPHC logbook during nine separate fishing trips and submitted inaccurate information at the end of one trip[150].

USCG 2018 Enforcement summary

The US Coast Guard provided the 2018 activities report to the IPHC in January 2019. This report covered all related activities in IPHC Regulatory Areas 2A, 2C, 3A, 3B, 4A, 4B, 4C, 4D and 4E[151]. The US Coast Guard Seventeenth District (D17) area of responsibility includes all waters off Alaska out to 200 nautical miles, and encompasses the IPHC Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E. Resources used for fisheries enforcement include cutters, aircraft, and boats from coastal stations. In 2018, the USCG distributed its enforcement assets throughout the IPHC Areas, with boarding amounts listed in (Table 7). The USCG enforcement focus is to protect the resource in accordance with the fishery management plan, to ensure equal economic opportunity for all participants, and to enhance safety at sea.

Table 7. 2017 and 2018 US Coast Guard boardings for IPHC Area.

IPHC Area	2017 Boardings	2018 Boardings
2A	68	246
2C	330	395
3A	195	327
3B	2	15
4A	11	11
4B	4	1
4C	0	0
4D	1	6
4E	1	0

In Areas 2C through 4E, the commercial fishery is rationalized with the 2018 season lasting from March 24th to November 7th. D17 law enforcement assets routinely patrolled the fishing grounds, often conducting joint boardings with or in collaboration with NOAA OLE. Their partnership with NOAA OLE and Alaska Wildlife Troopers is integral to successfully allocating law enforcement assets in the areas of the highest fishing activity, ensuring consistent presence on the fishing grounds and at offload sites.

The lack of a universal requirement for fishing vessels targeting halibut to be equipped with VMS on board means there is not a centralized means to assess fishing activity in Areas 2C through 4E. Time intensive patrols by surface

[150] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-ar16.pdf
[151] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-ar03.pdf

and aviation assets are the primary means to identify where vessels are fishing for halibut. Participants in the commercial halibut fishery only make up a portion of the hook and line vessels on the fishing grounds. During boardings of the hook and line vessels, USCG enforcement efforts focus on (1) adherence to permit requirements for area and individual quota, (2) safe release of halibut bycatch by other commercial vessels, (3) consistent use of seabird avoidance gear, (4) indicators of high-grading catch, (5) retention of rockfish and Pacific cod, (6) complete offload of catch, and (7) timely compliance with all recordkeeping requirements.

Overall, USCG assets boarded a total of 1,001 vessels and detected 17 IPHC violations (Table 8). Violations were documented and referred to NOAA OLE or Alaska Wildlife Troopers (for violation detected on recreational vessel) for final action.

Table 8. 2017 & 2018 Boarding and Violation Summaries by Industry Sector[152].

2017 Boardings/Violations		2018 Boardings/Violations	
Total At-Sea Boardings	612	Total At-Sea Boardings	1,001
Commercial	129	Commercial	184
Charter	97	Charter	105
Recreational/Subsistence	386	Recreational/Subsistence	712
Fisheries Violations	11	Fisheries Violations	17
Commercial	8	Commercial	7
Charter	1	Charter	3
Recreational/Subsistence	2	Recreational/Subsistence	7
Fisheries Compliance Rates	98.2%	Fisheries Compliance Rates	98.3%
Commercial	93.8%	Commercial	96.2%
Charter	99.0%	Charter	97.2%
Recreational/Subsistence	99.5%	Recreational/Subsistence	99.9%

10.2./10.3/10.4. Fishing permit requirements:

All vessels harvesting halibut must be authorized and permitted (by way of license and ITQ) to fish, in accordance with federal regulations, 50CFR679[153]. Data on the number and location of Alaskan of fishers, permits issued, Current Quota Share with Holders and QS Units - by species, area, vessel category, blocks, and CDQ compensation flag etc. can be can be found online at the NMFS website[154]. In 2018 there were 2576 IFQ quota share holders registered in the NMFS database. Data on fishing in Alaskan state-managed fisheries can be found in the State of Alaska's CFEC website[155].

[152] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-ar03.pdf
[153] https://alaskafisheries.noaa.gov/fisheries-679regs
[154] https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska#individual-fishing-quota-(ifq)-halibut/sablefish-and-cdq-halibut-ifq
[155] https://www.cfec.state.ak.us/fishery_statistics/earnings.htm

8.5.2. Fundamental Clause 11

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

Number of Supporting clauses	**3**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	High
Non Conformances	None

Summarized evidence:

11.1/11.2/11.3. Enforcement policies and regulations, state and federal:

The Northern Pacific Halibut Act governs halibut fisheries in the U.S. Penalties under the Halibut Act include[156] civil and criminal penalties that may exceed $200,000 for each violation (where every day is considered as a single violation) or imprisonment for not more than 6 months, or both, and revocation and suspension of permits, among others.

Federally, the sanction and violation framework is based on 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.

On May 2, 2019, NOAA published a Notice of its intention to revise its "Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions" (Penalty Policy[157]) previously published in 2011 and revised in 2014[158], and requested public comment on the proposed revisions. The comment period ended on June 3, 2019. The revised Penalty Policy was effective June 24, 2019. The 2011 and 2014 policies which are now superseded.

While there is significant variation in the maximum penalties and sanctions authorized under the statutes most commonly enforced by NOAA, the factors used to determine an appropriate penalty or permit sanction under these statutes are similar: the nature, circumstances, extent and gravity of the alleged violation; the alleged violator's degree of culpability; the alleged violator's history of prior offenses; the alleged violator's ability to pay the penalty; and such other matters as justice may require. See 15 C.F.R. § 904.108(a). This Policy utilizes these principles to create a system for determining appropriate penalties.

Under the 2019 Penalty Policy, penalties and permit sanctions are based on two criteria: (1) A "base penalty" calculated by adding (a) an initial base penalty amount and permit sanction reflective of the gravity of the violation and the culpability of the violator and (b) adjustments to the initial base penalty and permit sanction upward or downward to reflect the particular circumstances of a specific violation; and (2) an additional amount added to the base penalty to recoup the proceeds of any unlawful activity and any additional economic benefit of noncompliance. Penalties matrixes for the Magnuson Stevens Act and the Halibut Act are presented in **Error! Reference source not found.** and Table 10 respectively.

[156] https://www.law.cornell.edu/uscode/text/16/chapter-10/subchapter-IV
[157] https://www.gc.noaa.gov/enforce-office3.html
[158] https://www.gc.noaa.gov/documents/Penalty%20Policy_FINAL_07012014_combo.pdf

Table 9. Offence level and penalty matrix for the Magnuson-Stevens Fishery Conservation and Management Act; the Antarctic Marine Living Resources Convention Act; and the Port State Measures Agreement Act 159, as shown in the 2019 NOAA Penalty Policy**.**

		Level of Culpability			
		A Unintentional	**B Negligent**	**C Reckless**	**D Intentional**
Gravity Offense Level	**I**	Written warning-$2,500	Written warning-$5,000	$2,500-$7,000	$7,000-$10,000
	II	$2,500-$4,500	$4,500-$7,000	$7,000-$12,000	$12,000-$24,000
	III	$5,000-$12,000	$12,000-$18,000	$18,000-$24,000	$24,000-$48,000 Permit sanction of 5-20 days for subsequent violations*
	IV	$12,000-$18,000	$18,000-$30,000	$24,000-$48,000 Permit sanction of 10-20 days for subsequent violations*	$48,000-$72,000 Permit sanction of 20-60 days*
	V	$18,000-$30,000	$30,000-$48,000 Permit sanction of 10-20 days for subsequent violations*	$48,000-$72,000 Permit sanction of 20-60 days*	$72,000-$120,000 Permit sanction of 60-180 days*
	VI	$30,000-$48,000 Permit sanction of 5-20 days for subsequent violations*	$48,000-$72,000 Permit sanction of 20-60 days*	$72,000-$120,000 Permit sanction of 60-180 days*	$120,000 -statutory maximum Permit sanction of 180-365 days*

* Permit sanctions may be assessed in conjunction with a civil penalty, in lieu of a civil penalty, or may be not assessed, depending on the facts and circumstances of a given case. Where permits allow for a certain amount of fishing quota per year (instead of fishing days), permit sanctions will be assessed as a percentage of the quota, at a rate based on days in the fishing season. For example, in a 365-day season, a rate of 0.27% for each day of permit sanction time will be applied (100% divided by 365 days per year is approximately 0.27% per day). As another example, if the season is 180 days long, then a rate of 0.55% would apply.

[14] The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 *et seq.*), the Antarctic Marine Living Resources Convention Act (16 U.S.C. § 2431 *et seq.*), and the Port State Measures Agreement Act (16 U.S.C. § 7401 *et seq.*) all have a statutory maximum of $189,427 per violation, per the February 7, 2019 adjustment (*See* 84 Fed. Reg. 2445). However, maximum civil penalties are adjusted annually for inflation.

[159] https://www.gc.noaa.gov/documents/Penalty-Policy-CLEAN-June242019.pdf

Table 10. Penalty Matrix for the Northern Pacific Halibut Act of 1982.

		Level of Culpability			
		A Unintentional	B Negligent	C Reckless	D Intentional
Gravity Offense Level	I	Written warning-$2,200	Written warning-$4,400	$2,200-$6,600	$6,600-$8,800
	II	$2,200-$5,500	$4,400-$6,600	$6,600-$11,000	$11,000-$22,000
	III	$5,500-$11,000	$11,000-$16,500	$16,500-$22,000	$22,000-$44,000 Permit sanction of 5-20 days for subsequent violations*
	IV	$11,000-$16,500	$16,500-$27,500	$22,000-$48,000 Permit sanction of 10-20 days for subsequent violations*	$44,000-$66,000 Permit sanction of 20-60 days*
	V	$16,500-$27,500	$27,500-$44,000 Permit sanction of 10-20 days for subsequent violations*	$44,000-$71,500 Permit sanction of 20-60 days*	$71,500-$132,000 Permit sanction of 60-180 days*
	VI	$27,500-$44,000 Permit sanction of 5-20 days for subsequent violations*	$44,000-$71,500 Permit sanction of 20-60 days*	$71,500-$132,000 Permit sanction of 60-180 days*	$132,000 - statutory maximum Permit sanction of up to one year*

* Under catch share or similar programs, where permits allow for a certain amount of catch per year (instead of fishing days per year), permit sanctions will be assigned as a percentage of the quota, at a rate based on days in the fishing season. For example, in a 365-day season, a rate of 0.27% for each day of permit sanction time will be applied (100% divided by 365 days per year is approximately 0.27% per day). As another example, if the season is 180 days long, then a rate of 0.55% would apply.

In general, when a law enforcement officer or agent identifies a statutory or regulatory violation, he or she may pursue one of several available options, depending on the nature and seriousness of the violation. Where a violation is minor or is merely technical, having little to no impact on marine resources, the officer or agent may provide compliance assistance, issue a "Fix-It Ticket," which provides the alleged violator with an opportunity to correct the violation within a certain amount of time and waives all penalties if the alleged violator takes appropriate curative action, or issue a Written Warning[160].

For certain violations, an OLE officer or agent may issue a "Summary Settlement offer" under authority delegated to OLE by the NOAA General Counsel. Under the terms of a Summary Settlement offer, an alleged violator receives

[160] https://www.gc.noaa.gov/documents/Penalty-Policy-CLEAN-June242019.pdf

a document explaining the alleged violation and the alleged violator may resolve the matter expeditiously by paying a reduced penalty.

Summary Settlement schedules developed by the Office of General Counsel, with input from the NOAA Office of Law Enforcement and, often, the relevant program office, provide a listing of violations that OLE is authorized to handle via the Summary Settlement process. Where an officer or agent determines that an alleged violation is significant, or where an alleged violator has one or more prior violations, or does not pay a proposed summary settlement amount, the officer or agent will refer the case to the NOAA General Counsel's Enforcement Section for further action. U.S. Coast Guard personnel, state and territorial officers operating under Cooperative Enforcement Agreements, and law enforcement personnel from the U.S. Fish and Wildlife Service, Customs and Border Protection, or other federal agencies may also uncover potential violations, and where appropriate, may submit proposed cases to OLE to determine the proper action to take.

The new Alaska Region Summary Settlement and Fix it schedule is effective since June 27th 2019[161] and lists penalties amounts for 1st, 2nd and 3rd offences. Specific penalties relevant to the IFQ halibut fishery, its sectors, and those fisheries that incidentally catch halibut PSC are also listed in detail. Please refer to those for further details.

[161] https://www.gc.noaa.gov/gces/2019/AK-SSS-Final-6-27-19.pdf

8.6. Section F. Serious Impacts of the Fishery on the Ecosystem

8.6.1. Fundamental Clause 12

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.

Number of Supporting clauses	**16**
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	High
Non Conformances	

Summarized evidence:

12.1. Assessment of environmental effects on target stocks and ecosystem

The impacts of environmental factors on halibut and other fish or non-fish species associated or dependent upon them continue to be assessed appropriately by the IPHC, NMFS/NPFMC and ADFG.

IPHC scientists recognized in the late 1990s that monitoring environmental conditions coincident with catch might eventually contribute clarity to the stock assessment and aid in the evaluation of harvest strategies. Every year, as part of the IPHC fishery-independent setline survey (FISS), the IPHC has conducted oceanographic monitoring by deploying water column profilers at more than 1,200 fishery-independent setline survey stations coastwide from northern California to the Gulf of Alaska and into the Bering Sea and Aleutian Islands. An estimated 11,876 successful water column observations have been collected through 2018[162]. The Gulf of Alaska tends to experience cooler temperatures, higher dissolved oxygen, higher pH, and lower salinity than the west coast region. In the Bering Sea, Pacific halibut are found over a broad area from inner Bristol Bay to the shelf edge, but in most years, the survey covers only the shelf edge and habitat around the Pribilof Islands and St. Matthew Island as well as both the north and south sides of the Aleutian Island chain. The monitored habitat is characterized by much cooler temperatures, high dissolved oxygen concentration except at very deep stations, pH similar to the Gulf of Alaska (but higher than the west coast), and intermediate salinity, i.e. lower than the west coast region but higher than the Gulf of Alaska.

The 2018 IPHC stock assessment[163] lists some of the key environmental conditions affecting Pacific halibut abundance and highlights that based on the two long time-series models, average Pacific halibut recruitment is estimated to be higher (70 and 56% for the coastwide and AAF models respectively) during favorable Pacific Decadal Oscillation (PDO) regimes, a widely used indicator of productivity in the north Pacific. Historically, these regimes included positive conditions prior to 1947, poor conditions from 1947- 77, positive conditions from 1978-2006, and poor conditions from 2007-13. Annual averages from 2014 through October 2018 have been positive; however, many other environmental indicators, current and temperature patterns have been anomalous relative to historical periods and therefore historical patterns of productivity related to the PDO may not be relevant to the most recent few years.

[162] https://iphc.int/management/science-and-research/biological-and-ecosystem-science-research-program-bandesrp/bandesrp-environmental-monitoring/oceanographic-monitorization

[163] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-09.pdf

Furthermore, in 2019, the IPHC published the 5-year Biological and Ecosystem Sciences Research Program Update[164]. The main objectives are to: 1) identify and assess critical knowledge gaps in the biology of the Pacific halibut; 2) understand the influence of environmental conditions; and 3) apply the resulting knowledge to reduce uncertainty in current stock assessment models.

The primary biological research activities at the IPHC that follow Commission objectives are identified and described in the Five-Year Research Plan for the period 2017-21. These activities can be summarized in five broad categories: 1) Migration, 2) Reproduction, 3) Growth and Physiological Condition, 4) Discard Mortality Rates (DMRs) and Survival, and 5) Genetics and Genomics, and have been selected for their important management implications. Some of these studies include: somatic growth processes in the Pacific halibut and their response to temperature, density and stress manipulation effects (NPRB Award No. 1704), adapting Towed Array Hydrophones to support information sharing networks to reduce interactions between sperm whales and Longline Gear in Alaska, and use of LED artificial illumination to reduce Pacific halibut catches before trawl entrainment, among others.

The NMFS' Alaska Fisheries Science Center publishes yearly Ecosystem Status Reports that provide links between ecosystem research and fishery management. Key findings from the 2018 reports are briefly summarized below.

Noting that larval Pacific halibut feed mainly on zooplankton while adults aggressively prey on a variety of groundfish, sculpins, sand lance, herring, octopus, crabs, clams, and occasionally smaller Pacific halibut, environmental conditions have an effect on the halibut resource and on other associated species in the ecosystem.

Northern Bering Sea[165]. Without sea ice and sea ice melt consequently (freshwater), there was no salinity component to the stratification of the water column. The water column was well-mixed from top to bottom and resulted in a weak and delayed spring bloom (~1 month later than typical). A weak bloom cannot fuel the next link in the food chain, the zooplankton. Their abundances and lipid quality were low (lower nutritional value). Anecdotally, large copepods were predominantly *Eucalanus bungii*, not a lipid-rich species. Bottom trawl, surface trawl, and acoustic surveys again documented the presence of pollock and Pacific cod in the northern Bering Sea. Pollock biomass (total weight of all fish in the population) declined slightly from 2017 to 2018. However, more than 50% of Pacific cod biomass in the eastern Bering Sea was found over the northern portion of the shelf. Juvenile forage fish (e.g., pollock, capelin, herring), an important prey resource for birds and mammals, all showed downward trends in abundance over the northern portion of the shelf in 2018.

Southeastern Bering Sea[166]. By late spring, small copepod abundances were at one of the highest levels recorded while krill abundances were low. A summer acoustic survey indicated low densities of krill, continuing a trend of low abundance of this important prey resource since 2012. Reduced energy transfer from the prey base to the top-level predators likely contributed to poor body condition and observed mortality events (i.e., mammals and seabirds). The bottom trawl survey indicated that Pacific cod and pollock abundances were below average. An index of overall biomass of demersal (living closer to the seafloor) and benthic (living on the bottom of the seafloor) fish and invertebrates (largely driven by biomass of pollock) dropped sharply between 2017 and 2018. Estimates of age-1 predation mortality remain above average for pollock while Pacific cod and arrowtooth flounder mortality were at and below the mean, respectively. The biomass of some species groups (e.g., urchins, sand dollars) continued an increasing trend in 2018 while many commercial crab stocks declined. The multivariate

[164] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-14.pdf
[165] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf
[166] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf

seabird breeding index remains below the long term mean for the Bering Sea as a whole, indicating that overall, seabirds bred later and had poor reproductive success in 2018.

Aleutian Islands[167]. The Aleutians Islands region experienced suppressed storminess through fall and winter 2017/2018 across the region. The Alaska Stream appears to have been relatively diffuse on the south side of the eastern Aleutian Islands. Although the sea surface temperatures cooled in 2018, relative to the 2014–2017 warm period, the overall temperature was still warm due to heat retention throughout the water column. Overall, the Aleutian ecosystem has shown a response to the recent warm years that has similar characteristics to those in the Gulf of Alaska. As the water column and surface temperatures shifted to anomalously warm in 2013/2014, the mean size of the copepod community became smaller than the long term mean, indicating that smaller-bodied copepod species became relatively abundant as is expected. In general, planktivorous seabirds have had fewer reproductive failures during these warm years relative to piscivorous seabirds, indicating that zooplankton resources were largely sufficient while forage fish were periodically lacking. The pelagic fish foraging guild biomass decreased slightly from 2016 to 2018 in the Western and Central Aleutian Islands. On the other hand, Pollock, Atka mackerel, Pacific ocean perch, and northern rockfish in the Eastern Aleutian Islands all contributed to the increase in fish pelagic forager biomass from 2016 to 2018. This represents a gradual increase since the low estimate in 2012.

Gulf of Alaska[168]. The North Pacific atmosphere-ocean system in 2017–2018 was similar to that from the year before, as seen in the continuation of largely average conditions in the western Gulf of Alaska following the end of the 2014–2016 marine heatwave. The limited indicators of zooplankton abundance available for 2018 show mixed signals. The biomass of copepods and euphausiids during May along the Seward line was above average. This was the fourth year of abundant copepods, but the first for euphausiids since 2014, indicating an increase in higher quality zooplankton prey for predators. Indications of groundfish biomass trends in 2018, an "off-year" for the GOA-wide bottom trawl surveys, are based on ADF&G surveys off Kodiak Island over Barnabus Gully and in two inshore bays. Catch rates were below the long-term mean for arrowtooth flounder, Pacific halibut, Pacific cod, skates, and flathead sole. Catch rates were above the long-term mean for pollock offshore, but below at the inshore bays. Upper trophic marine birds and mammals appear to continue to show signs of negative impacts from the marine heatwave.

ACLIM. The Alaska Climate Integrated Modeling project (ACLIM) is a NOAA sponsored interdisciplinary collaboration to project and evaluate climate impacts on marine fisheries in the Bering Sea, Alaska[169]. It connects research on global climate and socioeconomic projections to regional circulation, climate enhanced biological models, and socio-economic and harvest scenarios. To evaluate a range of possible future conditions, scientists are evaluating the effectiveness of existing fishery management actions under 11 different climate scenarios (spanning high and low CO2 futures expected to lead to different degrees of warming). They will also look at how human fishing fleets and communities can adapt to climate change through climate-informed management.

Results of the ACLIM have been presented to the Council. In December 2018 the North Pacific Council adopted a Bering Sea Fishery Ecosystem Plan (BS FEP). Under the overarching guidance of the Council's Ecosystem Approach Statement, the BS FEP sets goals and objectives for the Bering Sea ecosystem which direct the process by which the Council should manage fisheries, monitor the ecosystem, and prioritize new research through identification of projects, called "Action Modules" [170].

[167] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysAI.pdf
[168] https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/ecosysGOA.pdf
[169] https://www.fisheries.noaa.gov/alaska/ecosystems/alaska-climate-integrated-modeling-project
[170] https://meetings.npfmc.org/CommentReview/DownloadFile?p=c334ad33-4139-4b5a-b205-

Accordingly, in June 2019[171], the Council sought nominations for membership for two taskforces to work on two Action Modules that implement the Council's Bering Sea FEP. One of the two is the Climate Change Action Module: tasked with evaluating short- and long-term effects of climate change on fish, fisheries, and the Bering Sea ecosystem, and develop management considerations. The Bering Sea FEP establishes a framework for the Council's continued progress towards ecosystem-based fishery management (EBFM) of the Bering Sea fisheries, and relies and builds on the Council's existing processes, advisory groups, and management practice. The FEP was prepared by the Bering Sea Fishery Ecosystem Plan Team, which is an interagency group of Council, NMFS, and other Federal, State and IPHC staff, with contributions from other Council and NMFS staff, and with extensive input from the Council's Ecosystem Committee. The module will leverage ongoing studies, such as ACLIM and an Alaska species vulnerability assessment, and consider how information from those existing studies can better filter into the Council process.

Aside from IPHC and NMFS ecosystem based research, there are a number of other programs, initiatives and plans initiatives devoted to understanding the ecosystem dynamics as they relate to fisheries.

The North Pacific Research Board (NPRB) has funded long-term monitoring (LTM) projects since 2002 through its annual Request for Proposals (RFPs) and as part of its Integrated Ecosystem Research Program with projects in the Bering Sea and Gulf of Alaska[172]. The NPRB Long-term Monitoring Program was launched in 2013. The board committed an initial $400,000 per year for five years to this effort (a total of $2 million). The first long-term monitoring projects were funded in 2014 for a minimum of five years.

The NPRB's Bering Sea Project[173] was founded upon the implementation and science plans for the Bering Ecosystem Study (''BEST'') supported by the National Science Foundation (NSF), and the Bering Sea Integrated Ecosystem Research Program (''BSIERP'') supported by the NPRB. The overarching goal of the two programs was to increase our understanding of the processes that maintain the structure and function of the Bering Sea marine ecosystem, and to learn how natural and anthropogenic variation in sea ice and other physical forcing mechanisms may produce natural, economic, sociological and cultural impacts to the ecosystem. Major direct funding was provided by the National Science Foundation ("Bering Ecosystem Study"; ~$26M) and the North Pacific Research Board ("Bering Sea Integrated Ecosystem Research Program", BSIERP; ~$16M). Substantial in-kind support (~$15M) was provided by other agencies.

The $17.6 million Gulf of Alaska ecosystem study examines the physical and biological mechanisms that determine the survival of juvenile groundfish in the Gulf of Alaska[174]. From 2010 to 2014, oceanographers, fisheries biologists and modelers studied commercially and ecologically important groundfish, specifically walleye pollock, Pacific cod, Pacific ocean perch, sablefish and arrowtooth flounder, during their first year of life as these fish are transported from offshore areas where they are spawned to nearshore nursery areas. A synthesis was planned from September 2015 through February 2018. The synthesis is building upon the results of the field program and producing products that apply the results to fisheries management.

12.2 Research and Institutional capacity for environmental impact assessment

The IPHC, NPFMC and NOAA/NMFS conduct assessments and research related to fishery impacts on ecosystems and habitats and how environmental factors affect the fishery. Findings and conclusions are published in the

a8b7c5028562.pdf&fileName=D6%20Final%20BS%20FEP%20Jan%202019.pdf

[171] https://www.npfmc.org/feptaskforce/

[172] https://www.nprb.org/long-term-monitoring-program/about-the-program/

[173] https://www.nprb.org/bering-sea-project/about-the-project/

[174] https://www.nprb.org/gulf-of-alaska-project/about-the-project/

Ecosystem section of the SAFE documents, annual Ecosystem Considerations documents, and various other research reports. Some of these have been summarized in the previous clause. In terms of impact assessment, it is a requirement that every time a major change is proposed to regulations affecting fisheries management such as the revision of a fishery management plan, a federal National Environmental Policy Act (NEPA) analysis is initiated. Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations[175]. The most recent NEPA compliant Regulatory Impact Review/ Environmental Assessment was performed in regards to the proposed NPFMC action to allow halibut retention in BSAI sablefish pots, issued for public review in October 2018[176].

The halibut benthic longline fishery has minimal and temporary impacts on the seabed and therefore on habitats. As noted in Clause 8 above, gear modifications have been implemented to reduce the impacts of trawl fisheries in the BSAI and Central GOA by raising the bobbins from the seafloor. By-catches in the directed halibut fishery are recorded by observers and reported through the NMFS catch accounting system. Most of bycatch include sharks, skate, sculpins, and rockfish species, but the fishery does not appear to pose a threat to bycatch species.

Issues relating to bycatch (mainly grenadiers and groundfish FMP species) and endangered, threatened and protected species (seabirds and marine mammals) are summarized in the next clause below.

Streamer lines limit interactions with seabirds and the fishery has minimal impact on the short-tailed albatross (i.e. no takes in 2018), the only seabird listed as endangered under the ESA (more information on this in the next clause/section). Interactions with whales remain a problem as they take fish off longline gear, but the fishery does not adversely affect whale populations.

The effects of lost/abandoned gear on legal O32 halibut have been considered by IPHC and NPFMC, and catch estimates have declined substantially from over 2 million pounds annually from 1986-91, to less than 100 thousand pounds annually after 2010[177]. Much of this reduction occurred following the implementation of the IFQ program in 1995. Given the above and the more relaxed pace of the fishery due to IFQs, gear is not lost as frequently and gear loss does not currently appear to be a significant issue.

Longline is typically not associated with as much ghost fishing as some other fishing gears, such as gillnets and some types of traps (NOAA 2015)[178].

In the 20th Session of the Research Advisory Board (RAB020) held In February 2019[179] the RAB noted the limitations imposed on the fishing industry by the growing number of marine conservation areas that restrict particular halibut fishing activities, and requested that the IPHC consider research examining: a. the impact of longline gear on the ocean bottom, including how much habitat disturbance is created by setting and retrieving the gear; b. the magnitude and impact of lost and abandoned longline gear over time; and c. the extent of the geographic footprint (the bottom area directly affected) of longline gear. The RAB also The RAB also noted that the IPHC has recently provided data on lost gear in response to a request from the Pacific Halibut Management Association (PHMA), and intends to make such data publicly available on the website.

[175] https://www.epa.gov/nepa/what-national-environmental-policy-act
[176] https://meetings.npfmc.org/CommentReview/DownloadFile?p=2dcf0126-26d7-478a-a2c6-c8f1dc234d58.pdf&fileName=C4%20Halibut%20Retention%20in%20BSAI%20Pots%20Public%20Review%20-%20pdf%20version.pdf
[177] https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf
[178] https://marinedebris.noaa.gov/sites/default/files/publications-files/Ghostfishing_DFG.pdf
[179] https://iphc.int/uploads/pdf/rab/2019/iphc-2019-rab020-r.pdf

12.3./12.4/12.5/12.6. Fishery Interaction with the ecosystem, non-target catches, discards associated, dependent or endangered species

Bycatch in non-Pacific halibut-target fisheries

The estimated mortality from fisheries where the retention of Pacific halibut is prohibited is termed 'bycatch' by the IPHC. This bycatch cannot be retained without appropriate IFQ quota and fishing gear, and termed Prohibited Species Catch (PSC). Halibut PSC are mainly caught in trawl fisheries for cod, flatfish and Pollock but also in pot and longline gear fisheries. Specific details on halibut bycatch rates - by gear, area, target, week, and processing sector in 2018 are available on the NMFS website, under the BSAI/GOA prohibited species heading[180]. Mortality by individual IPHC Regulatory Area from these non-halibut-target fisheries is reported to the IPHC by the NMFS and DFO on an annual basis. Bycatch has been delineated among Areas 4A, 4B, and 4CDE only from 1990 to the present, during which time it has declined from a peak of over 20 million lbs (~9,070 t) to a projected value of approximately 6.1 million lbs (~2,750 t) in 2018. Bycatch in IPHC Regulatory Areas 4CDE and 3A (the two largest sources coastwide) increased from 2017 to 2018, but were largely offset by a decrease in IPHC Regulatory Area 3B. The total bycatch in 2018 represents the smallest estimate since the beginning of foreign industrial fishing in Alaska in the early 1960s[181].

Halibut discards

Discard mortality includes all Pacific halibut that are captured during the directed commercial fishery, are subsequently estimated to die, but that do not become part of the landed catch. Discards have been decreasing steadily since 2010 and in 2018 it was estimated as the lowest in the past 30 years[182]. Many studies looking at the survival of Pacific halibut after capture events have been conducted over the years. The two main methodologies have been captive holding experiments, and long-term tag returns by injury classifications[183].

Bycatch of other species in the halibut fishery

As noted in the 20-year review of the IFQ program published in 2016, discards of other FMP groundfish species by the halibut IFQ fleet have historically not been estimated. The NPFMC Groundfish Plan Team has discussed estimating other FMP groundfish, non-target species, and prohibited species catch discards for the halibut IFQ fleet using observer data from the restructured Observer Program that began in 2013. However, there are other sources of information available on bycatch in the halibut fishery, which are summarised below.

Over 100 other species of fish or other organisms are consistently observed on the IPHC FISS. Approximately 818,246 pounds (371 t) of Pacific halibut, 85,716 pounds (39 t) of Pacific cod, and 51,337 pounds (23 t) of rockfish spp. were landed from the FISS stations. Pacific cod and rockfish are the bulk of incidental catches. The bycatch species observed by IPHC Regulatory Area was not reported in the 2018 FISS report but instead was published online at: https://iphc.int/static/56/fiss-bycatch .

Bycatch of other species in the target halibut fleet from EM data

One of the key updates of the 2018 North Pacific Observer Program Report was that[184] 2018 was the first year that EM was integrated into the Observer Program under regulations. Ninety-seven longline and 15 pot vessels participated in the 2018 EM project, completing 250 longline trips and 45 pot trips. EM data was reviewed for 83 longline vessels covering 174 trips, including 94 halibut trips, 10 Pacific cod trips, and 70 sablefish trips containing

[180] https://www.fisheries.noaa.gov/alaska/commercial-fishing/fisheries-catch-and-landings-reports
[181] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-08.pdf
[182] https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-08.pdf
[183] https://iphc.int/management/science-and-research/biological-and-ecosystem-science-research-program-bandesrp/-bandesrp-discard-mortality-and-survival
[184] https://www.fisheries.noaa.gov/resource/document/north-pacific-observer-program-2018-annual-report

a total of 1,875 hauls. The data spanned 532 halibut sea days, 38 Pacific cod sea days, and 435 sablefish sea days for a total of 1,005 sea days with trips averaging 5.8 days across all fisheries (Table 11).

Table 11. Summary of EM monitored fishing activity for 2018.

	Halibut Target		Pacific Cod Target		Sablefish Target			All Fisheries
	Fixed Hook Longline	Snap Longline	Fixed Hook Longline	Snap Longline	Fixed Hook Longline	Snap Longline	String Pot	
Vessels	29	31	1	6	32	7	-	**83**
Trips	41	53	1	9	61	9	-	**174**
Hauls	514	526	13	114	611	97	-	**1,875**
Reviewed Hauls	200	205	9	79	235	42	-	**770**
Sea Days	243	289	3	35	375	60	-	**1,005**
Average Trip Length (Days)	5.9	5.5	3.0	3.9	6.1	6.7	-	**5.8**

Since total catch accounting is the goal for EM in the Southeast Alaska fixed gear sectors, all species of retained or discarded marine organisms were reported and summarized to the target fishery level. Video reviewers identified a high proportion of retained and discarded catch to species. Exceptions were primarily those species that reviewers have been instructed to identify to a group level because they are too similar to reliably differentiate (e.g., shortraker rockfishes, and arrowtooth/Kamchatka flounders). There were also a small proportion of rockfish that were recorded as “Rockfish – unidentified” or “Rockfish – Small Red unidentified”.

Some of the most common bycatch (retained and/or discarded) in the halibut fleet component using EM included some rockfish species, notably shortracker/rougheye and yelloweye rockfish, sablefish (most of which is retained when IFQ is present), Pacific cod, arrowtooth flounder, grenadiers, sculpin, spiny dogfish and longnose skate (Table 12). A full list of recorded bycatch is presented in the 2018 Observer report, table B6.

Table 12. Status of common bycatch species recorded in the directed halibut fishery employing EM in 2018.

Species	GOA	BSAI
Shortracker rockfish	No overfishing determined for 2016.[185]	N/A but catches well below ABC in 2017 and 2018[186]
Rougheye rockfish	No overfishing determined for 2017, and no overfished condition or approaching overfished state in 2017.[187]	No overfishing determined for 2017, and no overfished condition or approaching overfished state in 2017[188].
Yelloweye rockfish	No overfishing in 2016 as assessed in 2017.[189]	No overfishing determined in 2017 as assessed in 2018[190].
Sablefish	2018 model projections indicate that Alaska sablefish is not subject to overfishing, overfished, nor approaching an overfished condition[191].	
Pacific cod	The 2017 stock assessment indicates no overfishing or overfished stock in 2017.[192]	No overfishing in either EBS[193] or AI[194] in 2017. Stock not overfished in EBS in 2017.
Arrowtooth flounder	The 2017 stock assessment indicates no overfishing or overfished stock in 2017[195].	The 2018 stock assessment indicates the stock was not overfished in 2017[196].
Grenadiers	Unlikely to be highly susceptible or heavily exploited.[197] [198] [199]	Unlikely to be highly susceptible or heavily exploited.[200] [201]
Sculpin	No overfishing occurred in 2016 as assessed last in 2017[202].	No overfishing occurred in 2016 as assessed last in 2018[203].
Spiny dogfish	No overfishing occurred in 2017 as assessed in 2018.[204]	No overfishing occurred in 2017 as assessed in 2018 (as part of the shark complex)[205].
Longnose skate	No overfishing in 2016 as assessed in 2018.[206]	No overfishing in 2017 as assessed in 2018[207].

Seabird bycatch

Counts of live seabirds, taken immediately following gear retrieval, have been conducted during the IPHC fishery-independent setline surveys since 2002. A total of 20,921 seabird counts have been conducted over the last 16 years, with 1,368 occurring in 2017[208]. More than 916,000 observations of seabirds have been recorded since 2002. Northern fulmars (Fulmarus glacialis), glaucous-winged gulls (Larus glaucescens), blackfooted albatross (Phoebastria nigripes), and fork-tailed storm petrels (Oceanodroma furcata) represent the most commonly

[185] https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAshortraker.pdf
[186] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIshortraker.pdf
[187] https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOArougheye.pdf
[188] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIrougheye.pdf
[189] https://www.afsc.noaa.gov/REFM/Docs/2017/GOAdsr.pdf
[190] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIorock.pdf
[191] https://www.fisheries.noaa.gov/resource/data/2018-assessment-sablefish-stock-alaska-0
[192] https://www.fisheries.noaa.gov/resource/data/2018-assessment-pacific-cod-stock-gulf-alaska
[193] https://www.fisheries.noaa.gov/resource/data/2018-assessment-pacific-cod-stock-eastern-bering-sea
[194] https://www.fisheries.noaa.gov/resource/data/2018-assessment-pacific-cod-stock-aleutian-islands
[195] https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAatf.pdf
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[197] https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
[198] https://link.springer.com/article/10.1134%2FS0032945212100062
[199] https://www.federalregister.gov/documents/2015/03/05/2015-05049/fisheries-of-the-exclusive-economic-zone-off-alaska-groundfish-of-the-gulf-of-alaska-groundfish-of
[200] https://link.springer.com/article/10.1134%2FS0032945212100062
[201] https://www.fisheries.noaa.gov/alaska/commercial-fishing/giant-grenadier-albatrossia-pectoralis-age-and-growth-research
[202] https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAsculpin.pdf
[203] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIsculpin.pdf
[204] https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAshark.pdf
[205] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIshark.pdf
[206] https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAskate.pdf
[207] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIskate.pdf
[208] https://iphc.int/uploads/pdf/iphc-2018-am094-00.pdf

observed species. The observed number of unidentified gulls has decreased, inversely correlated with an increased number of observations of glaucous-winged gulls and herring gulls (L. argentatus). This shift was likely the result of increased emphasis on gull identification during annual IPHC field biologist training.

The short-tailed albatross is currently listed as Endangered under the Endangered Species Act and is protected by the Migratory bird Treaty Act which are implemented by the U.S. Fish and Wildlife Service (USFWS)[209]. This species is of relevance to this fishery and assessment. A total of 389 endangered shorttailed albatross (*P. albatrus*) sightings have been recorded overall, with an average of 24 observed annually since 2002.

In a 2018 report, NOAA Fisheries monitored bycatch of short-tailed albatross to assess compliance with the incidental take limit established by the U.S. Fish and Wildlife Service (USFWS)[210] in its 2015 biological opinion on the effects of the groundfish and halibut fisheries of Alaska on endangered short-tailed albatross (USFWS 2015). USFWS anticipated up to six short-tailed albatross could be reported taken biannually (every 2 years) as a result of groundfish / halibut fishing activities using demersal longline or trawl gear in the BSAI and GOA FMP areas. This report estimates seabird mortality associated with Federal groundfish (2010 through 2018) and halibut (2013 through 2018) fisheries off Alaska and provides detailed descriptions of bycatch in 2018. The 2018 estimated seabird bycatch for the combined groundfish and halibut fisheries (6,075 birds) was below the 2010 through 2018 annual average of 6,492 birds.
Consistent with results for all gear types combined, most 2018 estimated seabird bycatch by demersal longline gear was Northern fulmar (55 percent; 2,794 birds, Least Concern on IUCN Red List); gulls (15 percent; 781 birds); and shearwaters (13 percent; 641 birds). However, in 2018, total bycatch of these species was comparatively lower when compared to the 2010 through 2017 times series average. In the 2018 analysis, 68 percent (4,137 birds) of estimated seabird bycatch occurred in the Bering Sea, 20 percent (1,212 birds) in the GOA, and 12 percent (726 birds) in the Aleutian Islands. These proportions are relatively similar to the 2010 through 2017 average.

Seabird mitigation measures for longline vessels were implemented by regulations in 2004 and required paired or single streamer lines for vessels larger than 55 feet length overall, which accounted for the vast majority of seabird bycatch. Since then, annual seabird bycatch in the fisheries using demersal longline gear has remained below 10,000 birds, dropping as low as 2,100 birds in 2014.

The 2013 through 2018 bycatch estimates included two sources of seabird mortality that previous years did not include: vessels less than 60 feet length overall in the groundfish fisheries and the entire halibut fishery. Including these smaller vessels and the halibut fishery provide a better estimate of overall albatross bycatch in Alaska. The estimated 2013 through 2018 albatross bycatch in the sablefish fisheries (2,887 birds) surpassed the estimated contribution from the halibut fishery (789 birds) (Table 13). Although albatross habitat overlaps with both the sablefish and the halibut fisheries, albatross spend more time over continental shelf break and slope habitat (Fischer et al. 2009; Suryan et al. 2007), which is most commonly associated with the sablefish fishery; the halibut fishery generally occurs in shallower water on the shelf. Thus, more interactions between albatross and sablefish vessels would be expected, unless albatross or fisheries shift their distribution in a given year.

[209] http://www.adfg.alaska.gov/index.cfm?adfg=wildliferesearch.shorttailedalbatross
[210] https://repository.library.noaa.gov/view/noaa/20231

Table 13. Estimated demersal longline seabird bycatch in the Alaska halibut fishery 2013 through 2018. The top part of the table is for the BSAI and the bottom part for the GOA (modified from table 13 in Krieger et al. 2019[211]).

Target	Species/Species Group	2010	2011	2012	2013	2014	2015	2016	2017	2018	Grand Total	Ann Avg.
Halibut	Black-footed Albatross	0	0	0	0	16	0	0	0	0	16	2
	Gulls	0	0	0	14	0	0	17	0	0	31	3
	Laysan Albatross	0	0	0	17	0	18	0	38	131	204	23
	Northern Fulmar	0	0	0	0	0	0	68	468	0	536	60
	Shearwaters	0	0	0	0	0	0	0	43	0	43	5
	Unidentified Birds	0	0	0	19	0	0	0	32	0	51	6
	Total	0	0	0	50	16	18	85	581	131	881	98
Halibut	Black-footed Albatross	0	0	0	51	33	0	0	340	69	493	55
	Gulls	0	0	0	75	99	144	42	0	0	360	40
	Laysan Albatross	0	0	0	0	0	19	0	0	6	25	3
	Northern Fulmar	0	0	0	0	19	41	59	121	0	240	27
	Shearwaters	0	0	0	0	0	0	0	27	50	77	9
	Total	0	0	0	126	151	204	101	488	125	1,195	133

Status

Northern fulmar are considered Least Concern on IUCN Red List[212]. No bycatch of endangered shorttailed albatrosses were recorded in 2017 in the EBS[213], the AI[214] or the GOA[215] groundfish fisheries, as per the Ecosystem considerations. No takes of short-tailed albatross were observed in the groundfish or halibut fisheries in 2018[216]. In addition to the endangered short-tailed albatross, there is also conservation concern for Laysan and black-footed albatross (USFWS 2008). In 2018, 643 albatross (300 black-footed albatross, 285 Laysan albatross, 58 unidentified albatross) were estimated to have been caught in the fisheries off Alaska; an increase of 33 percent compared to the 2010 through 2017 average (482 birds). Laysan albatross bycatch was 6 times higher in 2018 than in 2017 (47 birds), and was 80 percent higher than the 2010 through 2017 average (159 birds). Laysan albatross bycatch has ranged from less than 1 percent to 5 percent of total estimated seabird bycatch since 2010. The reason for the increase in Laysan albatross bycatch is unknown. Laysan albatross bycatch was found in both demersal longline (192 birds) and trawl gear (93 birds) in 2018.

Laysan albatross is listed as Near Threatened in the IUCN redlist with a stable population trend, last assessed in 2018. The population is estimated to be more than c. 800,000 breeding pairs, equivalent to c.1,600,000 mature individuals (Arata et al. 2009). Midway Atoll, Laysan Island and French Frigate Shoals support 90% of the global breeding population[217].

Black-footed albatross were the fourth most frequently occurring birds in the bycatch (5 percent) in 2018. Black-footed albatross bycatch was 62 percent lower in 2018 (300 birds) compared to 2017 (790 birds). Estimates of the approximate population size of black-footed albatross is 61,700 breeding pairs (Naughton et al. 2007). The black-footed albatross is listed as Near Threatened in the IUCN redlist[218] with an increasing population trend.

[211] https://www.fisheries.noaa.gov/resource/document/seabird-bycatch-estimates-alaska-groundfish-fisheries-2018
[212] https://www.iucnredlist.org/species/22697866/132609419
[213] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf
[214] https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysAI.pdf
[215] https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/ecosysGOA.pdf
[216] https://repository.library.noaa.gov/view/noaa/20231
[217] https://www.iucnredlist.org/species/22698365/132643073#population
[218] https://www.iucnredlist.org/species/22698350/132642517#population

The NOAA Fisheries Alaska Groundfish and Halibut Seabird Working Group provided an update of their work in April 2019[219]. Some of their key recommendation to further reduce seabird bycatch included the exploration of vessel-specific bycatch mortality (data shows that few vessels may have large effects on bycatch rates), assess the effectiveness of using leading indicators (e.g. sea surface temperatures) as a tool for predicting in-season bycatch risk, and exploring ways to improve seabird bycatch mitigation measures in the trawl fisheries. Their next in person meeting is planned for March 2020.

Marine Mammals

The 2019 List of Fisheries Summary Tables list U.S. commercial fisheries by categories according to the level of interactions that result in incidental mortality or serious injury of marine mammals. The halibut fisheries in the GOA and the BSAI are currently listed as Category III[220] (remote likelihood of/ no known interactions) (Table 14).

Table 14. Category III marine mammal species for the Alaska halibut fishery.

Area and fishery	Marine Mammal Species and Stocks Incidentally Killed or Injured
AK Bering Sea, Aleutian Islands halibut longline	Northern fur seal, Eastern Pacific Sperm whale, North Pacific
AK Gulf of Alaska halibut longline	None documented

Three northern fur seals entangled in commercial Bering Sea/Aleutian Islands halibut longline gear in 2011-2015, resulting in minimum mean annual mortality and serious injury rates of 0.6 (2017 northern fur seal assessment[221]). Based on currently available data, the minimum estimate of the mean annual U.S. commercial fishery related mortality and serious injury rate for this stock (3.2 fur seals) is less than 10% of the calculated PBR (10% of PBR = 1,160 fur seals) and, therefore, can be considered to be insignificant and approaching a zero mortality and serious injury rate.

Sperm whales have been observed depredating both halibut and sablefish longline fisheries in the Gulf of Alaska and this is also widespread in sablefish longline fisheries in the central and eastern Gulf of Alaska; this depredation can lead to mortality or serious injury if hooking or entanglement occurs. Potential threats most likely to result in direct human-caused mortality or serious injury of this stock include entanglement in fishing gear and ship strikes due to increased vessel traffic (from increased shipping in higher latitudes).

In 2012-2016, five serious injuries of sperm whales were observed in the Gulf of Alaska sablefish longline fishery (two each in 2012 and 2013 and one in 2016) and one in the Bering Sea/Aleutian Islands Pacific halibut longline fishery (in 2015). Each of these injuries was prorated at a value of 0.75 (i.e. observed) and extrapolated to fishery-wide estimates when possible, resulting in a minimum average annual estimated mortality and serious injury rate of 4.4 sperm whales in U.S. commercial fisheries in 2012-2016. The Potential Biological Removal (PBR) is calculated to be 0.5 sperm whales, however, this is likely an underestimate given that is was calculated based on a limited geographical subset of the whole population. On the basis of total abundance, current distribution, and regulatory measures that are in place, it is unlikely that this stock is in danger of extinction (Braham 1992) (2018 Sperm Whale North pacific assessment[222]).

[219] https://meetings.npfmc.org/CommentReview/DownloadFile?p=b3bd6639-c47d-496a-a22b-da5e4136208a.pdf&fileName=B2%20PRESENTATION%20Seabird%20Working%20Group%20Update.pdf
[220] https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables#table-1-category-iii
[221] https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-(eared-seals-or-fur-seals-and-sea-lions)
[222] https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-

Non-target catches, including discards, of stocks other than Pacific Halibut are monitored and likely do not threaten these non-target stocks with serious risk of extinction, recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible. However, there is a lack of observer coverage on vessels <40ft LOA, as such the observer scheme does not sufficiently monitor and account for non-target catches by the <40ft LOA sector of the commercial Pacific Halibut fleet. Because of this, a nonconformance was raised on the 2017 reassessment.

However, the assessment team confirmed that further evidence submitted by FVOA and NOAA letters to address this non-conformance was sufficient to close it with no further specific actions required by the Client. The evidence presented demonstrated that there is low risk of impact to species interacting for this fishery based on the low numbers of biomass caught in the fishery. However, annual surveillance audits will continue to review any up-dates, changes in circumstances and status as part of the normal audit procedure.

As it was mentioned previously, an electronic monitoring program was recommended for implementation in the <40ft fleet in order to improve data collection and fishery monitoring. A summary of the progress made in this 3rd surveillance audit (2019) is presented below.

One of the key updates of the 2018 North Pacific Observer Program Report was that[223] 2018 was the first year that EM was integrated into the Observer Program under regulations.

Under the regulated program, NMFS incorporated EM data from hook-and line vessels into CAS in 2018 so the information was be used for in-season management. Pot vessels were still in "pre-implementation" in 2018 while the methods to incorporate the data into CAS were developed. Starting in 2019 EM data from both pot and hook-and-line vessels is being used for in-season management (Table 15). In 2018, there was sufficient funding to accommodate the 141 vessels that requested EM. In 2019, there was sufficient funding to accommodate all of the vessels that requested to participate in EM and NMFS approved the 168 vessels in the EM selection pool.

If there were insufficient funds to support the expanded size of the EM pool, NMFS priority be given to 1) vessels already equipped with EM systems; 2) vessels wired for EM systems but not yet fully equipped; and 3) vessels 40-57.5 ft LOA where carrying an observer is problematic due to bunk space or life raft limitations.

(eared-seals-or-fur-seals-and-sea-lions)

[223] https://www.fisheries.noaa.gov/resource/document/north-pacific-observer-program-2018-annual-report

Table 15. Sampling strata and selection pools in the partial coverage category from 2016 to the present. The partial coverage selection rates set through the Annual Deployment Plan since 2016 are noted and the realized coverage rates evaluated in the Annual Report are noted in parentheses. CP = catcher/processor vessel; CV = catcher vessel; H&L = hook-and-line gear; LOA = vessel length overall.

Year	Observer trip selection pool Observer coverage required on all randomly selected trips					EM trip selection pool EM required on randomly selected trips		Observer vessel selection pool	No selection pool Observer coverage not required	
2019	Trawl: 24%	Trawl Tender: 27%	H&L: 18%	Pot: 15%	Tender Pot: 16%	Fixed gear EM: 30%				EM Innovation Research 4 vessels
2018	Trawl: 20% (20.3)	Trawl Tender: 17% (35.0)	H&L: 17% (15.5)	Pot: 16% (15.5)	Tender Pot: 17% (29.0)	H&L EM: 30%	Pot EM Pre-implementation: 30%			
2017	Trawl: 18% (20.7)	Trawl Tender: 14% (18.8)	H&L: 11% (12.0)	H&L Tender: 25% (0)	Pot: 4% (7.7)	Pot Tender : 4% (5.3)		n/a		Voluntary EM Pre-implementation ~90 vessels
2016	Trawl: 28% (28.0)		H&L: 15% (15.0)		Pot: 15% (14.7)				Vessels <40' LOA and Jig gear	Voluntary EM Pre-implementation 60 vessels

Ninety-seven longline and 15 pot vessels participated in the 2018 EM project, completing 250 longline trips and 45 pot trips (Table 16). EM data was reviewed for 83 longline vessels covering 174 trips, including 94 halibut trips, 10 Pacific cod trips, and 70 sablefish trips containing a total of 1,875 hauls. The data spanned 532 halibut sea days, 38 Pacific cod sea days, and 435 sablefish sea days for a total of 1,005 sea days with trips averaging 5.8 days across all fisheries.

Table 16. Summary of EM monitored fishing activity for 2018.

	Halibut Target		Pacific Cod Target		Sablefish Target			All Fisheries
	Fixed Hook Longline	Snap Longline	Fixed Hook Longline	Snap Longline	Fixed Hook Longline	Snap Longline	String Pot	
Vessels	29	31	1	6	32	7	-	**83**
Trips	41	53	1	9	61	9	-	**174**
Hauls	514	526	13	114	611	97	-	**1,875**
Reviewed Hauls	200	205	9	79	235	42	-	**770**
Sea Days	243	289	3	35	375	60	-	**1,005**
Average Trip Length (Days)	5.9	5.5	3.0	3.9	6.1	6.7	-	**5.8**

12.7. Role of the "stock under consideration" in the ecosystem

Pacific halibut feeds on fishes, cephalopods, crabs, clams, squids, and other invertebrates. They are not typically categorized as a key prey species for any single marine predator, partly because they are quite high up in the food chain and has a trophic level of around 4 [224]. Several comprehensive studies of the food web in various regions of the northern Pacific Ocean have not indicated that halibut are heavily utilized by any predator. Predation on

[224] https://www.fishbase.se/Ecology/FishEcologySummary.php?StockCode=530&GenusName=Hippoglossus&SpeciesName=stenolepis

halibut, especially by marine mammals, is apparently low, except in cases where the fish were attached to fishing gear. This is understandable, because adult halibut are large, active animals that would be difficult to capture in open water. Also, their bottom dwelling habits, generally in offshore areas, make them less accessible to predation than schooling, pelagic species.

12.8. Pollution – MARPOL.

MARPOL 73/78 (the "International Convention for the Prevention of Pollution From Ships") is one of the most important treaties regulating pollution from ships. Six Annexes of the Convention cover the various sources of pollution from ships and provide an overarching framework for international objectives. In the U.S., the Convention is implemented through the Act to Prevent Pollution from Ships (APPS).

The requirements apply to vessels operating in U.S. waters as well as ships operating within 200 nautical miles of the coast of North America, also known as the North American Emission Control Area (ECA).

On June 27, 2011 the EPA and USCG entered into a Memorandum of Understanding (MOU) to enforce Annex VI MARPOL. The Annex VI MOU[225] provides that EPA and USCG will jointly and cooperatively enforce the provisions of Annex VI and APPS. Efforts to be conducted by USCG and EPA include inspections, investigations and enforcement actions if a violation is detected. The efforts to ensure compliance with Annex VI and APPS include oversight of marine fueling facilities, on board compliance inspections, and record reviews. On January 16, 2015, EPA released a penalty policy for violations of the sulfur in fuel standard and related provisions for ships.

12.9. Knowledge of the essential habitats for the “stock under consideration” and potential fishery impacts on them.

During the 20th Session of the IPHC’s Research Advisory Board (RAB020) held in February 2019 the RAB agreed that the IPHC Closed Area (see Pacific Halibut Fishery Regulations 2019, Sect. 11) is not currently meeting its intended objective of protecting juvenile Pacific halibut when it is open to bottom trawl non-directed fisheries, and recommended, in coordination with the NPMFC, that the IPHC Secretariat examine alternative management regimes for the Closed Area, and for these to be presented at the 96th Session of the IPHC Annual Meeting (AM096) in 2020.

There is considerable knowledge of the essential habitats for the Pacific Halibut and potential fishery impacts on them. Studies of seasonal migration and winter distribution were initiated in 2002 in the shallow nearshore waters of Regulatory Area 4C (Seitz et al. 2007), expanded to Regulatory Area 4B in 2004 (Seitz et al. 2008), and to the northern and southern extents of the IPHC’s Bering Sea continental shelf-edge survey grid in 2006 (Seitz et al. 2016)[226]. The result was an integrated 5-site design spanning from Attu Island in the west to Unimak Pass in the east, and northward to Pervenets Canyon. With respect to stock structure, the results indicated considerable mixing on the eastern continental shelf in conjunction with relative isolation within Regulatory Area 4B (Seitz et al. 2011).

Additionally, the results suggested that the stock’s spawning range is considerably broader than had been traditionally assumed. Prior to the initiation of the IPHC’s PAT-tagging program, the best available evidence indicated that Pacific halibut in the eastern Pacific Ocean concentrate their winter spawning activity at submarine canyons from southern British Columbia to Pribilof Canyon in the southeastern Bering Sea, with no indication of spawning along the Aleutian Ridge (St. Pierre 1984). PAT tag data suggest a spawning distribution that extends

[225] https://www.epa.gov/enforcement/act-prevent-pollution-ships-apps-enforcement-case-resolutions
[226] https://www.iphc.int/uploads/pdf/am/2018am/iphc-2017-rara27-r.pdf

latitudinally from at least Cape Johnson, Washington (Loher and Blood 2009) northwards to Pervenets Canyon, and westward to Attu Island (Seitz et al. 2016). Still, the full range of potential spawning habitats has not been studied.

Although much of the halibut harvest takes place in the Gulf of Alaska, the waters of Bristol Bay and the southeast Bering Sea shelf are nursery grounds important to the overall health of the Pacific Halibut population. As juveniles, Pacific halibut conduct potentially large-scale migrations from nearshore nursery grounds to the continental shelf habitats in which they will reside as adults. Young halibut spend two or three years growing in these rich, nursery areas, after which they migrate to other parts of the Bering Sea, through the Aleutian passes and into the North Pacific where they live out their adult lives. The importance of these nursery grounds has been recognized by fishery managers. In 1967, the IPHC closed a significant area of the southeast Bering Sea to halibut fishing in order to protect young fish during this sensitive life stage. The area was modified in 1990, and its effectiveness has recently come under review by IPHC[227].

Finally, as adults, Pacific halibut undergo annual spawning migrations that take them up and down the continental slope, between shallow feeding grounds and deeper spawning habitat, as well as sometimes-large annual migrations along the coastline. The IPHC has and continues to be involved in research on larval distribution, juvenile and adult migrations[228].

Because halibut is harvested with longline gear, habitat effects of this gear type are not deemed significant and temporary. In terms of halibut bycatch, the majority is caught by demersal trawlers targeting (non-Pollock) groundfish in the Central GOA and BSAI. The new gear uses spaced discs to elevate the trawl above the ocean floor, reducing contact with the ocean floor by as much as 90% (NOAA 2012).

Non Magnuson Stevens Act fisheries include the halibut fishery Alaska managed by the IPHC, as well as other state managed fisheries. Accordingly, the effects of non-Magnuson-Stevens Act fishing activities in the 2005 EFH EIS and remain valid, as the 2015 EFH review published in 2017[229].

12.10. Research shall be promoted on the environmental and social impacts of fishing gear and, in particular, on the impact of such gear on biodiversity and coastal fishing communities.

In regards to the IFQ halibut and sablefish fisheries, one of the most important pieces of recent research was the December 2016 Twenty-Year Review of the Pacific Halibut and Sablefish IFQ Management Program. Primarily, the IFQ Program was examined with respect to how well it met its 10 original policy objectives and how it was providing entry opportunities for new participants, an objective that the Council has sought to provide through numerous revisions since the IFQ Program was implemented. The 10 objectives of this review spanned from access to the fishery to quota shares, community reliance to IFQ and benefits from the program, among others[230].

Socio-economic data collection and economic analyses are often included under the Regulatory Flexibility Act (RFA), the MSA, the NEPA, the Endangered Species Act, and other applicable laws. The most recent NEPA compliant Regulatory Impact Review/ Environmental Assessment was performed in regards to the proposed NPFMC action to allow halibut retention in BSAI sablefish pots, issued for public review in October 2018[231]. The

[227] https://www.iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-propa1.pdf
[228] https://iphc.int/management/science-and-research/biological-and-ecosystem-science-research-program-bandesrp/bandesrp-migration
[229] https://www.fisheries.noaa.gov/resource/document/essential-fish-habitat-5-year-review-summary-report-2010-through-2015
[230] https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf
[231] https://meetings.npfmc.org/CommentReview/DownloadFile?p=2dcf0126-26d7-478a-a2c6-

measure under consideration would allow (and require) retention of legal-size halibut in pot gear in the BSAI, provided the operator holds sufficient halibut IFQ or CDQ for the corresponding International Pacific Halibut Commission (IPHC) regulatory area. Currently, pot gear is not authorized as a legal gear type for the retention of halibut; thus, it is required to be discarded when caught in sablefish pots in the BSAI. This generates both conservation and socioeconomic concerns, as it impedes efficient use of the halibut resource.

AFSC's Economic and Social Sciences Research Program produces an annual Economic Status Report of the Groundfish Fisheries off Alaska is published yearly. This report contains extensive socio-economic fisheries for all fisheries in Alaska, pursued with all allowed gear types. The 2018 report is not yet published as of July 9th 2019.

12.11. Outcome indicator(s) and management objectives for non-target stocks.

The main outcome indicators influencing sustainable management of bycatch are those elements expected to keep bycatch species at levels that are highly likely to be within biological limits and minimize impacts to habitat. Management of non-target species (largely FMP groundfish species) of relevance to the IFQ halibut/sablefish program consists of:

1. a catch accounting system for all species caught (FMP, non target, PSC, seabirds, marine mammals)
2. observer program to estimate catches of non-target species (observers + EM data),
3. fishery independent surveys,
4. statistical stock assessments for most non-target species,
5. a tiered system of assessments that provides for more precautionary annual catch limits when assessments use less precise methods and clear procedures for restricting catch limits if stock rebuilding is necessary,
6. mandatory use of seabird avoidance devices on all vessels larger than 55', and
7. a spatial management strategy that prohibits or restricts vessels from fishing in sensitive habits.

As summarized in earlier clauses, none of the species considered common bycatch in the halibut fishery (retained and/or discarded) from 2018 EM data and that include shortracker/rougheye and yelloweye rockfish, sablefish (most of which is retained when IFQ is present), Pacific cod, arrowtooth flounder, grenadiers, sculpin, spiny dogfish and longnose skate can be considered depleted, as most of them are exploited using conservative fishing measures. The key outcome indicators for groundfish species is the ABC and OFLs set for these which dictate the management and conduct of fisheries in terms of total possible harvest. These are informed by regular (annual or bi-annual) stock assessments in the GOA and BSAI, and in-season catch accounting.

12.12. Outcome indicator(s) and management objectives for endangered species.

The outcome indicators and main management objectives for the halibut fleet in regards to endangered species refer to regulations aimed at protecting the endangered short tailed albatrosses (as well as other albatross species and seabirds) from longline fishery interactions, as well as MMPA protected marine mammals.

In Alaska, seabird avoidance measures are required[232] (i.e. streamer lines) to be used by operators of all vessels greater than 26 ft LOA using hook-and-line gear while fishing for 1) IFQ halibut, Community Development Quota halibut, or IFQ sablefish in the EEZ off Alaska or State of Alaska (State) waters (0 to 200 nm combined); or 2) groundfish in the EEZ off Alaska (3 to 200 nm). No changes occurred in 2018 to these regulations, which are still seen to be effective at reducing bycatch.

No endangered short tailed albatrosses where caught as bycatch in 2018 in either the halibut or sablefish IFQ fishery.

c8f1dc234d58.pdf&fileName=C4%20Halibut%20Retention%20in%20BSAI%20Pots%20Public%20Review%20-%20pdf%20version.pdf

[232] https://www.fisheries.noaa.gov/alaska/bycatch/seabird-avoidance-gear-and-methods

Endangered marine mammal species are managed under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) in close coordination with the State of Alaska and other partners. Conservation programs are developed by the NOAA Alaska Regional Office Protected Resources Division for marine mammals including whales, ice seals, harbor seals, northern fur seals, and Steller sea lions; who also develops and implements recovery programs for threatened and endangered species including Cook Inlet beluga whales, bowhead whales, North Pacific right whales, Steller sea lions, and Arctic ringed seals; coordinates the Alaska Marine Mammal Stranding Network to respond to stranded or entangled marine mammals; and consults with federal agencies to minimize the effects of proposed actions on threatened and endangered marine mammals and their critical habitat, among other tasks. All marine mammal encounters in these fishery are required to be released without harm.

The 2019 List of Fisheries Summary Tables list U.S. commercial fisheries by categories according to the level of interactions that result in incidental mortality or serious injury of marine mammals. The halibut fisheries in the GOA and the BSAI are currently listed as Category III[233] (remote likelihood of/ no known interactions). The species listed in this category that have been known to occasionally interact with the halibut fishery are Eastern Pacific Northern fur seal and North Atlantic Sperm whale. There are also extensive management measures to protect Steller sea lions in Alaskan waters, as detailed in the NPFMC BSAI and GOA FMPs. All in all bycatch of marine mammals is not considered an issue in the halibut fleet in Alaska.

12.13. Outcome indicator(s) and management objectives for avoiding, minimizing or mitigating the impacts of the unit of certification on essential habitats for the “stock under consideration” and on habitats that are highly vulnerable to damage by the fishing gear of the unit of certification.

The halibut fishery is prosecuted using longline gear which has minimal and temporary effect on sensitive and essential fish habitats, unlike fisheries that employ demersal trawl gear and have sever and lasting effects on marine habitats and vulnerable epifauna[234]. In addition to this there are extensive habitat closures in Alaska.

These are shown in Figure 2. No new closures have been implemented in 2018. Further information on these is provided at https://www.npfmc.org/habitat-protections/.

[233] https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables#table-1-category-iii
[234] http://www.fao.org/3/y3427e/y3427e04.htm#bm04.3.2

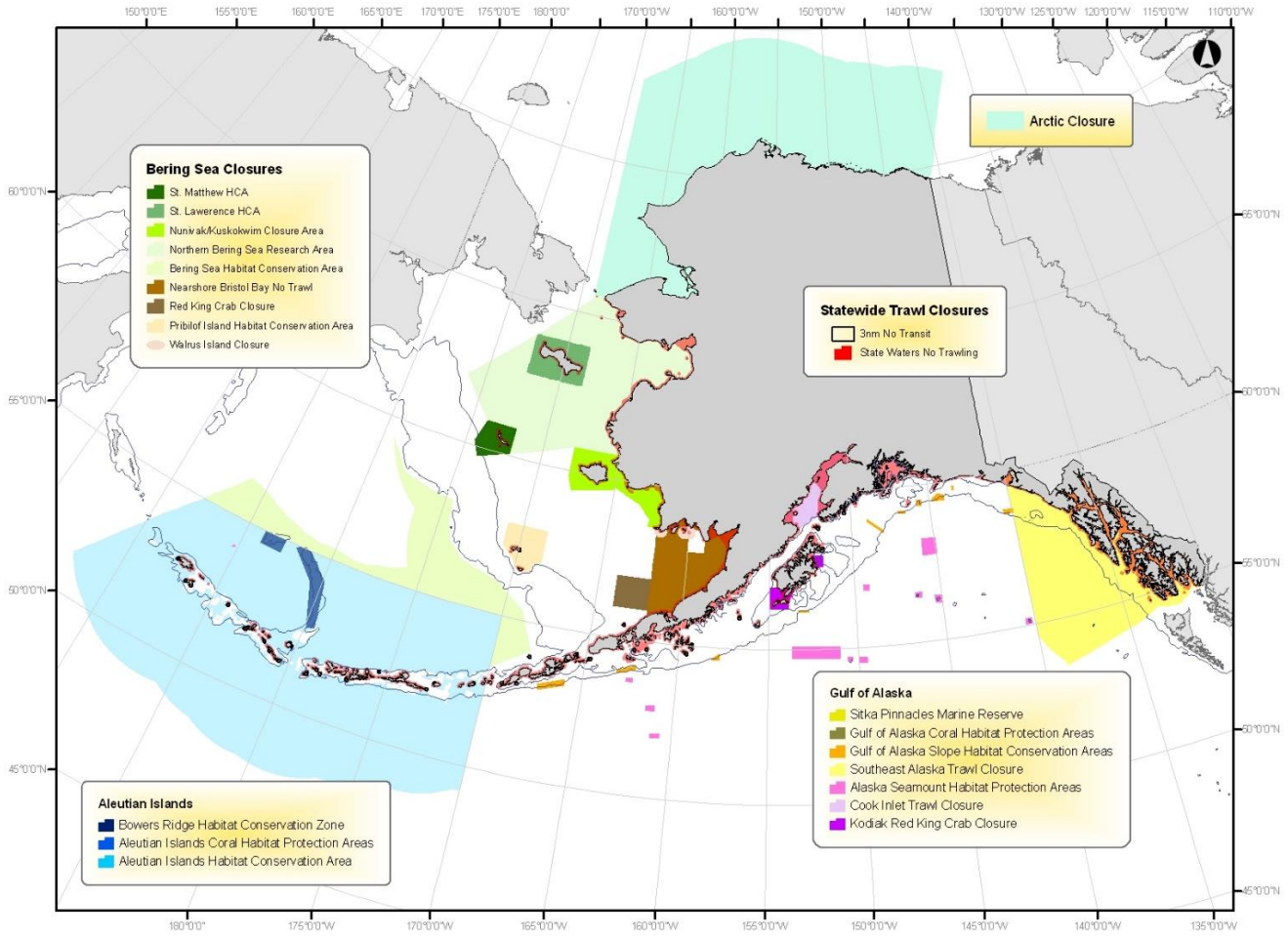

Figure 2. Fishery closures and marine reserves in Alaska.

Furthermore, the NPFMC also implemented the Artic Fishery Management Plan[235] covering the Arctic waters of the United States in the Chukchi and Beaufort seas. It initially prohibits commercial fishing in the Arctic waters of the region until more information is available to support sustainable fisheries management (an area roughly 150,000 sq nm2).

12.14. Outcome indicator(s) and management objectives for dependent predators.

As described in previous clauses, Pacific Halibut in Alaska are not typically categorized as a key prey species for any single marine predator. They have a trophic level of about 4 and are high up in the food chain. As such, this clause is considered not applicable.

12.15. Outcome indicator(s) and management objectives that seek to minimize adverse impacts of the unit of certification, including any enhancement activities, on the structure, processes and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible.

The halibut fishery is not an enhanced fishery. The use of artificial structures is neither practical nor appropriate or considered useful for Pacific halibut in Alaska or coastwide as managed by the IPHC. As such, that portion of the Clause is not applicable.

[235] https://www.npfmc.org/habitat-protections/

The effects on habitats, bycatch and ETP species have been considered in earlier clauses. Accordingly, the halibut fishery does not appear to have any significant negative effects on any of these components.

The IPHC, NPFMC and NOAA/NMFS conduct assessments and research related to fishery impacts on ecosystems and habitats and how environmental factors affect the fishery.

Pacific halibut are found across a large geographic area during the FISS which encompasses a wide range of oceanographic properties and environmental systems. 1,330 water observations were made during the 20188 FISS[236]. The GOA tends to experience cooler temperatures, higher dissolved oxygen, higher pH, and lower salinity than the west coast region. In the EBS, Pacific halibut are found over a broad area from inner Bristol Bay to the shelf edge, but in most years, the survey covers only the shelf edge and habitat around the Pribilof Islands and St. Matthew Island as well as both the north and south sides of the Aleutian Island chain. The monitored habitat is characterized by much cooler temperatures, high dissolved oxygen concentration except at very deep stations, pH similar to the GOA (but higher than the west coast), and intermediate salinity, i.e. lower than the west coast region but higher than the GOA.

Findings and conclusions are published in the Ecosystem section of the SAFE document, annual Ecosystem Considerations documents, and the various other research reports[237]. Recent trends in climate and the physical environment, ecosystems, and fishing and fisheries are highlighted in bulleted lists of these reports.

The selected list of indicators is intended to be revisited regularly. The eastern Bering Sea indicators were selected in 2010 and will be updated as part of the Fishery Ecosystem Plan currently being developed. The Aleutian Islands indicators were selected in 2011. The Gulf of Alaska indicators were selected in 2015.

In December 2018 the North Pacific Council adopted a Bering Sea Fishery Ecosystem Plan (BS FEP). Under the overarching guidance of the Council's Ecosystem Approach Statement, the BS FEP sets goals and objectives for the Bering Sea ecosystem which direct the process by which the Council should manage fisheries, monitor the ecosystem, and prioritize new research through identification of projects, called "Action Modules" [238].

Accordingly, in June 2019[239], the Council sought nominations for membership for two taskforces to work on two Action Modules, or projects that implement the Council's Bering Sea FEP. The FEP was prepared by the Bering Sea Fishery Ecosystem Plan Team, which is an interagency group of Council, NMFS, and other Federal, State and IPHC staff, with contributions from other Council and NMFS staff, and with extensive input from the Council's Ecosystem Committee. The module will leverage ongoing studies, such as ACLIM and an Alaska species vulnerability assessment, and consider how information from those existing studies can better filter into the Council process.

The halibut fishery is not considered to have significant effects on the structure, process and function of the North Pacific ecosystem, as documented in the Ecosystem reports for the GOA, AI and EBS[240].

[236] https://iphc.int/management/science-and-research/biological-and-ecosystem-science-research-program-bandesrp/bandesrp-environmental-monitoring/oceanographic-monitorization
[237] https://www.fisheries.noaa.gov/alaska/ecosystems/ecosystem-status-reports-gulf-alaska-bering-sea-and-aleutian-islands#2018
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9. Performance specific to agreed corrective action plans

In the course of the reassessment of Alaskan Pacific halibut the Assessment Team identified two areas (Clauses 4.2 and 12.6) that scored less than full conformance to the Alaska RFM Certification Standard Version 1.3. As a result, two **MINOR** non-conformances were issued. One of these non-conformances (Clause 12.6) was closed during the re-assessment process following the submission of further evidence by the Client. The Client submitted a corrective action plan to address the remaining non-conformance which remains open with progress towards addressing the non-conformance being monitored during the annual surveillance audits.

Non-Conformance #1 (MINOR non-conformance: Clause 4.2)

An observer scheme designed to collect accurate data for research and support compliance with applicable fishery management measures is established for the Alaskan Pacific Halibut fishery. However, there is a lack of observer coverage on vessels <40ft LOA, as such the observer scheme does not sufficiently account for the risk posed by the <40ft LOA sector of the commercial Pacific Halibut fleet.

Client Action of Year 3 after certification:

Evidence in the form of combined data or summary of reports from the work on year 2 and 3 will be provided to the CAB that shows that EM program has been implemented by year 2019.

Evidence for Year 3

An electronic monitoring system was recommended for implementation in the <40ft fleet in order to improve data collection and fishery monitoring. A summary of the progress made in this 3rd surveillance audit (2019) is presented below.

FVOA provided the team on August 27 and August 29 2019, 2 documents that provided evidence of EM program implementation:

- North Pacific Observer Program 2018 Annual Report published 5-13-2019 that has information regarding EM during the 2018 season
- 2019 Annual Deployment Plan for Observers in the Groundfish and Halibut Fisheries off Alaska

One of the key updates of the 2018 North Pacific Observer Program Report was that[241] 2018 was the first year that EM was integrated into the Observer Program under regulations.

Under the regulated program, NMFS incorporated EM data from hook-and line vessels into CAS in 2018 so the information was be used for in-season management. Pot vessels were still in “pre-implementation” in 2018 while the methods to incorporate the data into CAS were developed. Starting in 2019 EM data from both pot and hook-and-line vessels is being used for in-season management. In 2018, there was sufficient funding to accommodate the 141 vessels that requested EM. In 2019, there was sufficient funding to accommodate all of the vessels that requested to participate in EM and NMFS approved the 168 vessels in the EM selection poolTable 15.

If there were insufficient funds to support the expanded size of the EM pool, NMFS priority be given to 1) vessels already equipped with EM systems; 2) vessels wired for EM systems but not yet fully equipped; and 3) vessels 40-57.5 ft LOA where carrying an observer is problematic due to bunk space or life raft limitations. Ninety-seven longline and 15 pot vessels participated in the 2018 EM project, completing 250 longline trips and 45 pot trips. EM data was reviewed for 83 longline vessels covering 174 trips, including 94 halibut trips, 10 Pacific cod trips,

[241] https://www.fisheries.noaa.gov/resource/document/north-pacific-observer-program-2018-annual-report

and 70 sablefish trips containing a total of 1,875 hauls. The data spanned 532 halibut sea days, 38 Pacific cod sea days, and 435 sablefish sea days for a total of 1,005 sea days with trips averaging 5.8 days across all fisheries.

Status:
This is the third surveillance assessment following the re-assessment in January 2017. Some progress is made according to the Client Action Plan. However, the team could not find evidence of EM implementation on under the 40" fleet or plans to when is going to be implemented. Therefore, the evidence presented is not yet sufficient to be considered fulfillment of the NC. This NC will remain open throughout the period of certificate (5 years) until the medium confidences move to high as the corrective actions take effect.

It should be noted that the requirements of this non-conformance are that the observer scheme sufficiently account for the risk posed by the <40ft LOA sector of the commercial Pacific Halibut fleet; therefore, the implementation of EM is not the only available route to closing this non-conformance. If the implementation of EM is not a realistic prospect, the fishery should consider alternative means to either evaluate the risk posed by the <40ft LOA sector or, if appropriate, demonstrate that the information available from the wider observer program is acceptably representative of the <40ft sector.

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

No new non-conformances were identified during this surveillance assessment of the fishery that would require new corrective action plans.

There remains one unclosed non-conformance which was raised during the most recent re-assessment as detailed in Performance specific to agreed corrective action plans above.

11. Future Surveillance Actions

Progress towards closure of minor non-conformance #1 (clause 4.2) will be reviewed and assessed again in 2020 during the 4th surveillance activities. Specifically, the audit team will continue to monitor the implementation of Electronic Monitoring on board of selected halibut vessels under 40 feet of length.

12. Client signed acceptance of the action plan

The signed Client Action Plan, aligned to the previously mention NC was accepted by the assessment Team on 20th October 2016 (Complete details are outline in the full assessment report - http://www.alaskaseafood.org/wp-content/uploads/2017/02/Alaska-RFM-Final-Full-Assessment-Halibut-Report-Jan-2017-final.pdf.

13. Recommendation and Determination

Following this 3rd Surveillance Assessment, the assessment team recommends that continued Certification under the Alaska Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fisheries, the US Alaska Pacific Halibut commercial fishery, under international (IPHC), federal (NMFS/NPFMC) and state (ADFG) management, fished with benthic longlines, salmon trolls and sablefish pots within Alaska's 200 nm EEZ).

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15. Appendices

15.1. Appendix 1 – Assessment Team Details

Dr. Ivan Mateo, Lead Assessor

Dr. Ivan Mateo has over 20 years of experience working with natural resources population dynamic modeling. His specialization is in fish and crustacean population dynamics, stock assessment, evaluation of management strategies for exploited populations, bioenergetics, ecosystem-based assessment, and ecological statistical analysis. Dr. Mateo received a Ph.D. in Environmental Sciences with Fisheries specialization from the University of Rhode Island. He has studied population dynamics of economically important species as well as candidate species for endangered species listing from many different regions of the world such as the Caribbean, the Northeast US Coast, Gulf of California, and Alaska. He has done research with NMFS Northeast Fisheries Science Center Ecosystem Based Fishery Management on bioenergetics modeling for Atlantic cod. He also has been working as environmental consultant in the Caribbean doing field work and looking at the effects of industrialization on essential fish habitats and for the Environmental Defense Fund developing population dynamics models for data poor stocks in the Gulf of California. Recently, Dr. Mateo worked as National Research Council postdoc research associate at the NOAA National Marine Fisheries Services Ted Stevens Marine Research Institute on population dynamic modeling of Alaska sablefish.

Mr. Vito Romito (Assessor)

Vito is an ISO14001 Certified Lead Auditor and MSC approved Fisheries Team Leader for SAI Global with extensive experience in ecosystems effects of fisheries. Vito received a BSc (Honours) in Ecology and a MSc in Tropical Coastal Management from Newcastle University (U.K.), in between which he spent a year in Tanzania, carrying out biodiversity assessments and monitoring studies of pristine and dynamited coral reef and seagrass ecosystems around the Mafia Island Marine Park. For five years he worked at Global Trust Certification/ later SAI Global as Lead Assessor for all the fisheries assessments in Alaska, Iceland and Louisiana. Vito has also carried out several International Fishmeal and Fishoil Organisation (IFFO) forage fisheries assessments in Chile, Peru, Europe and other various pre-assessments in Atlantic and Pacific Canada. To date, Vito has headed and conducted dozens of fishery assessments involving 40+ different species including salmonid, groundfish, pelagic, flatfish, crustacean and cephalopod species in Europe, North and South America, and SE Asia while managing expert teams. For three years, as a senior consultant and then manager with RS Standards Ltd., Vito was involved in various work that included fishery reviews, development and testing of a Data Deficient Fisheries framework and coordination of V2 fisheries standard development for the ASMI Alaska RFM Scheme, and IFFO RS Improver/FIP projects related to South East Asia multispecies bottom trawl fisheries. Vito re-joined the SAI Global Fisheries Team in 2018.

