

## Responsible Fishery Management (RFM)



# Alaska Pacific Halibut Commercial Fishery

## 5<sup>th</sup> Surveillance Report

<b>Certification Body (CB):</b>	<b>Global Trust Certification</b>
<b>Assessment team:</b>	Dr. Ivan Mateo, Lead Assessor Dr. Robert Leaf, Assessor Mr. R.J. (Bob) Allain, Assessor
<b>Fishery client:</b>	Deckhand Seafoods
<b>Assessment Type:</b>	Surveillance audit 5
<b>Report Code:</b>	AK/HAL/002.5/2021
<b>Report Date:</b>	08 September 2022

**Global Trust Certification**  
Quayside Business Park,  
Mill Street, Dundalk,  
Co. Louth, Ireland.  
T: + 353 42 932 0912  
E: [ClientServicesie@nsf.org](mailto:ClientServicesie@nsf.org)

## Foreword

The Responsible Fisheries Management (RFM) Certification program is a third-party sustainable seafood certification program for wild capture fisheries owned by the Certified Seafood Collaborative (CSC), a 501(c)(3) non-profit foundation led by a diverse board of seafood and sustainability industry experts.

The program was previously owned by the Alaska Seafood Marketing Institute (ASMI) when it was known as the Alaska RFM program but when ownership passed to the CSC in July 2020 scope of the program was expanded to include other North American fisheries outside the State of Alaska.

The Responsible Fisheries Management (RFM) Standard 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 RFM program may be found at: <https://www.alaskaseafood.org/rfm-certification/>.

# 1 Contents

Foreword .....	2
1 Contents .....	3
1.1 List of Figures .....	5
1.2 List of Tables .....	5
2 Glossary .....	6
3 Executive Summary .....	7
3.1 Introduction .....	7
3.2 Summary of findings .....	8
3.3 Recommendation of the Assessment Team .....	8
3.4 Assessment Team Details .....	8
3.5 Details of Applicable RFM Documents.....	8
4 Client contact details.....	9
5 Units of Certification.....	10
5.1 Units of Certification.....	10
5.2 Changes to the Units of Certification.....	10
6 Summary of site visits and/or consultation meetings .....	11
7 Summary findings .....	13
7.1 Update on topics that trigger immediate failure .....	13
7.2 Changes in the management regime and processes .....	13
7.2.1 Federal Regulatory Changes 2021-22: Pacific Halibut Commercial Fishery .....	14
7.2.1.1 Environmental Assessment/Regulatory Impact Review .....	19
7.2.2 State Regulatory Changes 2021-22: Pacific Halibut Commercial Fishery .....	20
7.2.3 IPHC Harvest Strategy Policy .....	21
7.2.4 Management Strategy Evaluation - Update .....	22
7.2.5 NPFMC Written Public Comment Changes.....	22
7.3 Changes to the organizational responsibility of the main management agencies .....	23
7.3.1 Senior Personnel Changes .....	23
7.3.2 NPFMC Ideas for Process Change .....	23
7.4 New information on the status of stocks.....	24
7.4.1 Alaska Bycatch Review Task Force.....	24
7.5 Update on fishery catches .....	25
7.6 Significant changes in the ecosystem effects of the fishery .....	25
7.7 Violations and enforcement information .....	26
7.7.1 Monitoring, Control and Surveillance (MCS).....	26
7.7.1.1 Alaska Department of Public Safety, Alaska Wildlife Troopers (2021) .....	26
7.7.1.2 NPFMC Enforcement Committee Meeting Summaries - 2021 and 2022.....	27
7.7.1.3 USCG Operational Highlights – 2021 Year in Review .....	28
7.7.1.4 Joint Enforcement Agreement - Annual Report 2020.....	31
7.7.1.5 NOAA-OGC Civil Administrative Cases .....	31
7.7.1.6 NOAA-OGC Cases Settled .....	32
7.7.1.7 NOAA-OGC Default Judgments .....	32
7.7.1.8 Criminal Sentencing .....	33
7.7.2 North Pacific Observer Program (NPOP) .....	33
7.7.2.1 Observer Program - 2021 .....	33
7.7.2.2 At-Sea Observer Deployment and Electronic Monitoring Plan - Alaska Region 2022.....	34
7.7.2.3 Enforcement Actions arising from NPOP Incidents.....	35
7.7.2.4 NOAA-OLE New Initiative .....	35
7.7.2.5 NOAA Alaska Electronic Technologies Implementation Plan (2021-2025) .....	36
7.8 Other information that may affect the outcome of certification .....	36
7.9 Update on consistency to the fundamental clauses of the RFM Fishery Standard .....	36

7.9.1	Section A. The Fisheries Management System.....	37
7.9.1.1	Fundamental Clause 1.....	37
7.9.1.2	Fundamental Clause 2.....	42
7.9.1.3	Fundamental Clause 3.....	45
7.9.2	Section B. Science and Stock Assessment Activities.....	47
7.9.2.1	Fundamental Clause 4.....	47
7.9.2.2	Fundamental Clause 5.....	56
7.9.3	Section C. The Precautionary Approach.....	61
7.9.3.1	Fundamental Clause 6.....	61
7.9.3.2	Fundamental Clause 7.....	62
7.9.4	Section D. Management Measures.....	63
7.9.4.1	Fundamental Clause 8.....	63
7.9.4.2	Fundamental Clause 9.....	72
7.9.5	Section E. Implementation, Monitoring and Control.....	73
7.9.5.1	Fundamental Clause 10.....	73
7.9.5.2	Fundamental Clause 11.....	74
7.9.6	Section F. Serious Impacts of the Fishery on the Ecosystem.....	75
7.9.6.1	Fundamental Clause 12.....	75
8	Update on compliance and progress with non-conformances and agreed action plans.....	96
8.1.1	Closed non-conformances.....	96
8.1.2	Progress against open non-conformances.....	99
8.1.3	New non-conformances.....	99
8.1.4	New or revised corrective action plans.....	99
8.1.5	Proposed surveillance activities.....	99
9	Recommendations for continued certification.....	100
9.1	Certification Recommendation.....	100
10	References.....	101
11	Appendices.....	102
11.1	Appendix 1 – Assessment Team Bios.....	102
11.1.1	Assessment Team Bios.....	102

## 1.1 List of Figures

Figure 1. Fisheries boardings by year. ....	29
Figure 2. Fisheries violations by year. ....	29
Figure 3. Annual Fixed Wing Hours. ....	30
Figure 4. Annual Major Cutter Days. ....	30
Figure 5. Annual Rotary Wing Hours. ....	30
Figure 6. Annual Patrol Boat Hours. ....	31
Figure 7. IPHC Convention Area (Insert) and IPHC Regulatory Areas.....	48
Figure 8. Overview of data Sources. Circle areas are Proportional to magnitude (mortality/catches) or precision of the data (larger circles indicate greater precision for indices of abundance and age composition data).....	49
Figure 9. Structure of IPHC Boards. ....	66
Figure 10. Fishery closures and marine reserves in Alaska. ....	94
Figure 11. Net weight of halibut catches (lbs) of the <40ft and >40ft fleet of halibut vessels across the IPHC statistical areas from 2010-2017 reported in logbooks. Red bars represent the sum of the catch for the over 40ft fleet (i.e., fleet subject to observer coverage) and the blue bars are the <40ft fleet. ....	98

## 1.2 List of Tables

Table 1. Relevant RFM program documents including applicable versions.....	8
Table 2. Client details and key contact information.....	9
Table 3. Units of Certification.....	10
Table 4. Summary of site visits and/or consultation meetings. ....	11
Table 5. Highlights of actions taken during the 2021 and 2022 NPFMC Virtual Meetings in respect of the Pacific Halibut (and Sablefish) commercial fishery.....	15
Table 6. Summary of Board Meetings and Summary of Actions 2021/22. ....	21
Table 7. Observer Deployment Days by Coverage Type per ADP for FY20 and FY21. ....	34
Table 8. Status of Statements and Incidents (as of November 4, 2021) (Source: NOAA Fisheries OLE Report to NPFMC, December 2021). ....	35
Table 9. Time series of subsistence Pacific Halibut Removals.....	55
Table 10. Harvest decision table for 2022. 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. ....	63
Table 11. Distributed mortality Limits for Alaska Regions (TCEY) (Net weight).....	64
Table 13. Average bycatch of halibut directed longline from 2019-2021 in metric tons (t).....	86

## 2 Glossary

Acronym	Full Name
ABC	Allowable Biological Catch
ABOF	Alaska Board of Fisheries
ADFG	Alaska Department of Fish and Game
ADP	Annual Deployment Plan (at-sea observers)
ADPS	Alaska Department of Public Safety
AWT	Alaska Wildlife Troopers
BSAI	Bering Sea and Aleutian Islands
CQE	Community Quota Entity
CDQ	Community Development Quota
CPUE	Catch Per Unit Effort
CSP	Catch Sharing Plan
DMR	Discard Mortality Rate (Halibut)
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EM	Electronic Monitoring
ER	Electronic Reporting
FC	Fundamental Clause
FMP	Fishery Management Plan
FY	Fiscal Year
GOA	Gulf of Alaska
IFQ	Individual Fishing Quota
IPHC	International Pacific Halibut Commission
JEA	Joint Enforcement Agreement
MSA	Magnuson-Stevens Act
MSE	Management Strategy Evaluation
NOAA	National Aeronautics and Atmospheric Agency
NMFS	National Marine Fisheries Service
NPFMC	North Pacific Fishery Management Council
NPOP	North Pacific Observer Program
OFL	Overfishing Level
OLE	Office of Law Enforcement (NOAA)
PSC	Prohibited Species Catch
RFM	Responsible Fisheries Management (Scheme)
SEIS	Supplemental Environmental Impact Statement
SIR	Supplementary Information Report
TAC	Total Allowable Catch
USCG	United States Coast Guard

## 3 Executive Summary

### 3.1 Introduction

This Surveillance Report documents the 5<sup>th</sup> Surveillance Assessment of the Alaska Pacific Halibut Commercial Fishery (200nm EEZ) originally certified on 23rd April 2011, and recertified 9th January 2017.

In accordance with Procedure 4.6 *"If, at any time, the Certification Body determines that the fishery meets the requirements for certification under the RFM Fishery Standard (including through the use of corrective action plans as permitted), the suspension or withdrawal shall be terminated and the certificate reinstated."* and Procedure 4.0 *"To ensure that a certified fishery remains in compliance with the requirements of certification, surveillance audits will take place at least annually and more frequently, if deemed necessary by the Certification Body. Audits may be undertaken on short notice (i.e. unscheduled audits), if deemed necessary by the Certification Body."*, this 5<sup>th</sup> surveillance audit was conducted to determine if the fishery meets the requirements of the Standard and thus if the withdrawal is to be terminated and the certificate reinstated.

#### Unit of Certification

The Alaska Pacific Halibut Commercial Fishery (200nm EEZ) legally employing demersal longline (mainly), pot and trawl gear within Alaska's jurisdiction (200 nautical miles EEZ) under federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG) and Board of Fisheries (BOF)] management, underwent its 1st surveillance assessment against the requirements of the Alaska FAO-Based RFM Conformance Criteria Version 1.3 Fundamental clauses.

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, May 2016) 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 6 major components are supported by 12 fundamental clauses (+ 1 in case of enhanced fisheries) that guide the AK RFM Certification Program surveillance assessment.

A summary of the site meetings is presented in Section 6. Assessors included two externally contracted fishery expert and Global Trust Certification internal staff.

### 3.2 Summary of findings

The Audit team has determined that the commercial halibut fishery operated within the defined Alaskan UoA remained in compliance with the RFM Fishery Standard’s Fundamental Clauses for the Fisheries Management System component (Clauses 1, 2, and 3) Precautionary approach (Clauses 4, 5, 6) Management Measures (Clauses 7, 8, 9) the Monitoring and Control component (Clauses 10 and 11) and Ecosystem Impacts of the fishery (Clauses 12 and 13). No evidence exists to indicate that non- conformance situations arose during the 5<sup>th</sup> Surveillance audit.

### 3.3 Recommendation of the Assessment Team

Following this 5<sup>th</sup> Surveillance Report the assessment team recommends the withdrawal to be terminated and the certificate reinstated.

### 3.4 Assessment Team Details

The Assessment Team for this assessment was as follows; further details are provided in [Appendix 1](#)):

- Dr. Ivan Mateo – Lead Assessor, Responsible for Fundamental Clauses 8, 9, 12
- Dr. Robert Leaf – Assessor 1, Responsible for Fundamental Clauses 4, 5, 6, 7
- Mr. R.J. (Bob) Allain – Assessor 2, Responsible for Fundamental Clauses 1, 2, 3, 10, 11

### 3.5 Details of Applicable RFM Documents

This assessment was conducted according to the relevant program documents outlined in Table 1 below.

**Table 1.** Relevant RFM program documents including applicable versions.

Document title	Version number, Issue Date	Usage
RFM Procedure 2: Application to Certification Procedures for the RFM Fishery Standard	Version 6, September 2020	Process
Responsible Fisheries Management Certification Program Fisheries Standard.	Version 1.3 May 2016	Standard



## 4 Client contact details

**Table 2.** Client details and key contact information.

Applicant Information	
Organization/Company Name:	Deckhand Seafoods
Address:	Street: c/o Hingston Miller Hingston PLLC 20700 44 <sup>th</sup> Ave West
	City: Lynnwood
	State: WA
	Country: USA
	Zip code: 98036
Applicant Key Contact Information	
Name:	Warner Lew
Position:	Manager
E-mail:	deckhandseafoods@gmail.com

## 5 Units of Certification

### 5.1 Units of Certification

The Units of Certification (i.e., what is covered by the certificate) are as described in Table 3 below.

**Table 3.** Units of Certification.

Units of Certification	
Species:	Common name: Pacific halibut
	Latin name: <i>Hippoglossus stenolepis</i>
Geographical area:	U.S. Federal and State fisheries within the Gulf of Alaska and the Bering Sea & Aleutian Islands
Stock(s):	Eastern Pacific
Management system:	U.S. Federal and State fisheries within the Gulf of Alaska and the Bering Sea & Aleutian Islands managed by: <ul style="list-style-type: none"> <li>▪ International Pacific Halibut Commission (IPHC)</li> <li>▪ National Marine Fisheries Service (NMFS)</li> <li>▪ North Pacific Fishery Management Council (NPFMC)</li> <li>▪ Alaska Department of Fish and Game (ADFG) and Board of Fisheries (BOF)</li> </ul>
Fishing gear/method:	UoC 1 Benthic longline
	UoC 2 Pots
	UoC 3 Troll
Client group:	Deckhand Seafoods

### 5.2 Changes to the Units of Certification

There have not been any changes to the Units of Certification.

## 6 Summary of site visits and/or consultation meetings

Desktop reviews are the preferred assessment vehicle within the RFM program. In general, on-site/off-site audits are required only if the Certification Body deems that a desktop review may be inadequate for determining whether the fishery is continuing to comply with the RFM Fishery Standard, based on the performance of the fishery, status of non-conformances and related corrective actions.

**Table 4.** Summary of site visits and/or consultation meetings.

Meeting Date and Location	Personnel	Areas of discussion
Date: 06/21/2022  Location: Conference call	ADFG: Forrest Bowers Philip J. Joy Rhea K. Ehresmann Asia Beder  Assessment Team Members: Dr. Ivan Mateo, Lead Assessor Dr. Robert Leaf, Assessor Mr. Robert Allain, Assessor	Topics Discussed: <ul style="list-style-type: none"> <li>• Statewide Commercial Groundfish Regulations 2022-2023.</li> <li>• Fisheries management activities report – Pacific halibut commercial fisheries in state waters 2021 year-end and 2022 (if possible).</li> <li>• Emergency orders/releases issued in 2021 and 2022 specific to the Halibut and Sablefish commercial fisheries from the Board of Fisheries.</li> <li>• Information on how all 10 National Standards under the MSA (or equivalent state standards) are operationalized in the Pacific halibut commercial fisheries in state waters.</li> <li>• External audits of the Halibut commercial fisheries in 2021 or 2022.</li> </ul>
Date: 06/24/2022  Location: Conference call	IPHC Ian Stewart Allan Hicks Barbara Utniczak  Assessment Team Members: Dr. Ivan Mateo, Lead Assessor Dr. Robert Leaf, Assessor Mr. Robert Allain, Assessor	Topics Discussed: <ul style="list-style-type: none"> <li>• major changes in understanding the magnitude of fishery removals.</li> <li>• modifications in the observer programs to understand the magnitude of incidental discards or their length- and age-composition.</li> <li>• major unreported changes to the stock assessment model formulations.</li> <li>• discussion of any insights from their research activities to describe:               <ul style="list-style-type: none"> <li>▪ Reproduction</li> <li>▪ Growth and Condition</li> <li>▪ Growth mortality and survival</li> <li>▪ Distribution and migration</li> <li>▪ Genetics</li> </ul> </li> </ul>
Date: 06/30/2022  Location: Conference call	AK Board of Fisheries Kristy Tibbles  Assessment Team Members: Dr. Ivan Mateo, Lead Assessor Dr. Robert Leaf, Assessor Mr. Robert Allain, Assessor	Topics Discussed: <ul style="list-style-type: none"> <li>• Discussion of role and processes in AK BOF.</li> </ul>
Date: 06/30/2022	Client Deckhand seafood	Topics Discussed:

<p>Location: Conference call</p>	<p>Warner Lew</p> <p>Assessment Team Members: Dr. Ivan Mateo, Lead Assessor Dr. Robert Leaf, Assessor Mr. Robert Allain, Assessor</p>	<ul style="list-style-type: none"> <li>• Background and involvement in the Alaska Pacific Halibut/Pacific Sablefish commercial fisheries and current challenges in management or conservation-based science of Alaska Pacific Halibut/Pacific Sablefish commercial fisheries at state level.</li> </ul>
<p>Date: 07/06/2022</p> <p>Location: Conference call</p>	<p>AWT CAPT. Aaron Frenzel</p> <p>Assessment Team Members: Dr. Ivan Mateo, Lead Assessor Dr. Robert Leaf, Assessor Mr. Robert Allain, Assessor</p>	<p>Topics Discussed:</p> <ul style="list-style-type: none"> <li>• Number of boarding, number of violations detected, types of violations for the species in question.</li> <li>• General level of compliance overall. Updates for 2021.</li> </ul>

## 7 Summary findings

Surveillance audits are summary audits intended to evaluate continued compliance with the RFM Fishery Standard. Each aspect of the fishery they are intended to focus on is addressed below.

### 7.1 Update on topics that trigger immediate failure

The following fisheries management issues cause a fishery to immediately fail RFM assessment:

- Dynamiting, poisoning, and other comparable destructive fishing practices.
- Significant illegal, unreported, and unregulated (IUU) fishing activities in the country jurisdiction.
- Shark finning.
- Slavery and slave labor on board fishing vessels.
- Any significant lack of compliance with the requirements of an international fisheries agreement to which the U.S. is signatory. A fishery will have to be formally cited by the International Governing body that has competence with the international Treaty in question, and that the US has been notified of that citation of non-compliance.

The Assessment Team has, as part of this surveillance, carried out a review of any new evidence with respect to these issues and found no evidence that any of the above issues are occurring/describe any issues identified and the consequences for the fishery.

### 7.2 Changes in the management regime and processes

The core management regime and processes for the 2021 commercial Pacific halibut fishery within Alaska's EEZ involving federal agencies (NOAA-NMFS, NPFMC, IPHC, USCG) and the state's territorial sea (0-3nm) involving state agencies (ADFG-ABOF; ADPS-AWT) remained largely as they were for the 2020 fishery. Regulatory changes for the 2021 fishery as well as those for 2022 (to June 30<sup>th</sup>) followed the normal pre-and in-season practices of amending specific provisions and rules as required to ensure that management measures reflected decisions made and were legally binding and enforceable. Typically, in-season actions may include, but are not limited to, establishment or modification of the following: (i) closed areas, (ii) fishing periods, (iii) fishing period limits, (iv) gear restrictions, (v) recreational bag limits, (vi) size limits, and (vii) vessel clearances. These are highlighted in Section 7.2.1.

#### Harvest Specification Process

Annually, the NPFMC's harvest specifications process is to apply the harvest strategy to the best available scientific information to derive annual harvest specifications. The Council's Groundfish Plan Teams and Scientific and Statistical Committee (SSC) use stock assessments to calculate biomass, overfishing levels, and acceptable biological catch (ABC) limits for each species or species group for specified management areas. Overfishing levels and ABCs provide the foundation for the Council and NMFS to develop the total allowable catch (TAC) for each species or species group. Overfishing levels and ABC amounts reflect fishery science, applied considering the requirements of the FMPs. The TACs recommended by the Council are either at or below the ABCs. The sum of the TACs for each area (the BSAI or GOA) is constrained by the optimum yield established for that area. The annual harvest specifications also set or apportion the prohibited species catch (PSC) limits.

When new or significant adjustments are under consideration that affect the FMPs, the NPFMC's Groundfish Plans Teams of experts, together with NOAA's teams, are required to carry out a detailed Environmental Impact Statement (EIS) of the effects of the adjustments within the action areas i.e., target species, non-specific species, forage species, prohibited species, marine mammals, seabirds, essential fish habitat, ecosystem relationships,

economy, and environmental justice. The product of this collaboration - a Supplementary Information Report (SIR) - evaluates the need to prepare a Supplemental EIS (SEIS) for the 2022 and 2023 groundfish harvest specifications. In short, a SEIS should be prepared if (i) the agency makes substantial changes in the proposed action that are relevant to environmental concerns, or (ii) significant new circumstances or information exist relevant to environmental concerns and bearing on the proposed action or its impacts (40 CFR 1502.9(d)(1)).

The decision by NOAA's Regional Administrator regarding the 2022 and 2023 groundfish specifications was that they were set according to the preferred harvest strategy and, therefore, did not constitute a substantial change in the action. Furthermore, the information presented did not indicate that there were significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Therefore, a Supplementary EIS was not required.

Ongoing policy and program initiatives that are part of an agency's longer term work plans and with implications for its management regime and processes are reported in Sections 7.2.3 to 7.2.5.

### 7.2.1 Federal Regulatory Changes 2021-22: Pacific Halibut Commercial Fishery

A. The IPHC's regulations for 2022 were published on March 3, 2022.<sup>1</sup> Sections 3 to 8 and 30 apply generally to all Pacific halibut fishing while Sections 8 to 23 apply to commercial fishing for Pacific halibut.

B. Regulatory proposals for the 2020-21 process were reviewed during the 97<sup>th</sup> Annual Meeting of the Commission which was held remotely between 25 - 29 January 2021. The list of proposals is described in document IPHC-2021-AM097.<sup>2</sup> The list is made up of 3 proposals from the IPHC Secretariat, 1 from a Contracting Party (U.S.A), and 1 from a Stakeholder. Proposals relevant to the scope of this audit included:

- Mortality and Fishery Limits (Sect. 5): To provide the fishery limits table for the IPHC Fishery Regulations that will be filled in when the Commission adopts TCEYs for the individual IPHC Regulatory Areas. **Adopted.**
- Commercial Fishing Periods (Sect. 9): To provide recommendations for commercial fishing periods: All IPHC Regulatory Areas for 2021. **Adopted.**
- Minor amendments and clarifications. To improve clarity and consistency in the IPHC Fishery Regulations. **Adopted.**
- Commercial Fishing Periods (Sect. 9): To provide for a year-long directed commercial fishery. **Deferred; Recommended further consultation between Contracting Parties and Stakeholders.**

C. Similarly, regulatory proposals for the 2021-22 process were reviewed during the 98<sup>th</sup> Annual Meeting of the Commission which was held remotely from 24 - 28 January 2022. The list of proposals is described in document IPHC-2022-AM098-14.<sup>3</sup> The list is made up of 3 proposals from the IPHC Secretariat, 4 from the Contracting Parties (Canada, U.S.A), and 1 from a stakeholder. Only the proposals submitted by the Secretariat are of relevance to the scope of this audit. They included:

- Mortality and Fishery Limits (Sect. 5): To improve clarity and transparency of fishery limits within the IPHC Fishery Regulations. **Adopted.**
- Commercial Fishing Periods (Sect.9): To specify fishing periods for the directed commercial Pacific halibut fisheries within the IPHC Fishery Regulations. **Adopted.**
- Minor amendments: To improve clarity and consistency in the IPHC Fishery Regulations. **Adopted.**

<sup>1</sup> <https://www.iphc.int/uploads/pdf/regs/iphc-2022-regs.pdf>

<sup>2</sup> <https://iphc.int/uploads/pdf/am/am097/iphc-2021-am097-r.pdf>

<sup>3</sup> <https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-14.pdf>

D. Regulatory Actions undertaken by the NPFMC, IPHC and NOAA for the 2021-22 Commercial Halibut Fishery included:

- **Halibut Annual Management Measures.** Effective February 18, 2021, NOAA on behalf of the IPHC published as regulations the 2021 annual management measures governing the Pacific halibut fishery that have been recommended by the IPHC and accepted by the Secretary of State (86 FR 13475, March 9, 2021).<sup>4</sup> The opening date for all IPHC regulatory areas was March 6, 2021, and the closing date for the halibut fisheries in all regulatory areas was December 7, 2021.
- **Emergency Rule: Temporary Transfers.** Effective March 30, 2021, NMFS issued this temporary emergency rule to modify the temporary transfer provision of the IFQ Program for the fixed-gear commercial Pacific halibut (and sablefish) fishery for the 2021 IFQ fishing year (86 FR 16542, 03/30/2021).<sup>5</sup> This emergency rule was intended to provide flexibility to quota share (QS) holders in 2021, while preserving the Program's long-standing objective of maintaining an owner operated IFQ fishery in future years and did not modify other provisions of the IFQ Program.
- **Final Rule: Vessel Use Caps.** Effective May 26, 2021, NOAA Fisheries removed vessel use caps in IFQ regulatory areas 4A (Eastern Aleutian Islands), 4B (Central and Western Aleutian Islands), 4C (Central Bering Sea), and 4D (Eastern Bering Sea) for the 2021 IFQ fishing year (86 FR 28294, 05/26/2021).<sup>6</sup> This action was needed to provide additional flexibility to IFQ participants in 2021 to ensure allocations of halibut IFQ can be harvested by the limited number of vessels operating in these areas.

E. The NPFMC remained active throughout 2021 and 2022 with a full slate of issues requiring either direction to staff or decisions for further consideration, such as by NOAA Fisheries. **Error! Reference source not found.** summarizes the actions taken by the Council regarding the Pacific halibut (and sablefish) commercial fisheries of the UoA during 2021 and 2022 (partial). Several of the agenda items that were scheduled for Council's consideration were previously reviewed by the Advisory Panel and advice offered.

**Table 5.** Highlights of actions taken during the 2021 and 2022 NPFMC Virtual Meetings in respect of the Pacific Halibut (and Sablefish) commercial fishery.

(Source: <https://www.npfmc.org/meeting-minutes/>)

Dates	Actions
February 5, 8-10, 2021	<ul style="list-style-type: none"> <li>• Council received the report of its Community Engagement Committee whose recommendations are aimed at improving Council's engagement with rural and Alaska Native communities. Council approved a number of iterative actions that may require Council Executive Director, Executive Committee, or Finance Committee input prior to implementation. <i>Motion passed unanimously.</i></li> <li>• Council suspended action on the IFQ Sablefish Release Allowance proposal until it can consider recommendations from the IFQ Committee concerning the relative priority of this action (possibly in April). <i>Motion passed with no objection.</i></li> <li>• Council requested the Secretary promulgate emergency regulations under the authority of Section 305(c) of the <i>Magnuson-Stevens Act</i> to allow the temporary transfer of catcher vessel halibut and sablefish IFQ for all individual quota shareholders for the 2021 fishing season. <i>Motion passed 10-1.</i></li> <li>• Council requested the Secretary promulgate expedited regulations to remove vessel use cap regulations under 50 CFR Section 679.42(h) for IFQ halibut harvested in IPHC</li> </ul>

<sup>4</sup><https://www.federalregister.gov/documents/2021/03/09/2021-04821/pacific-halibut-fisheries-catch-sharing-plan>

<sup>5</sup><https://www.federalregister.gov/documents/2021/03/30/2021-06509/fisheries-of-the-exclusive-economic-zone-off-alaska-ifq-program-modify-temporary-transfer-provisions>

<sup>6</sup> <https://www.federalregister.gov/documents/2021/05/26/2021-11087/pacific-halibut-fisheries-catch-sharing-plan>

Dates	Actions
	<p>regulatory Areas 4A, 4B, 4C, and 4D for the 2021 IFQ fishing season. <i>Motion passed with no objection.</i></p> <ul style="list-style-type: none"> <li>• Council requested the Secretary promulgate emergency regulations under the authority of Section 305(c) of the <i>Magnuson-Stevens Act</i> to suspend the residency requirements applicable to the Adak Community Quota Entity (CQE) Program for 2021 (50 CFR 679.41(g)(6)(ii)). <i>Motion passed 10-1.</i></li> <li>• <b>For detailed record, see:</b></li> <li>• <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=bf5d4d62-f6f4-47f9-8286-a6e952fbd145.pdf&amp;fileName=February%20Council%20Summary.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=bf5d4d62-f6f4-47f9-8286-a6e952fbd145.pdf&amp;fileName=February%20Council%20Summary.pdf</a></li> </ul>
April 5-16, 2021	<ul style="list-style-type: none"> <li>• Council received reports reviewing the GOA’s sablefish pot fishery that were compiled by the IFQ Committee, stock assessment scientists, fishery managers and from public testimony. It agreed to initiate an analysis to revise several regulatory components of the IFQ Program to increase operational efficiency, reduce administrative burden in the fishery, and clarify how harvesters can meet existing regulatory requirements. Regulatory changes passed by Council included: (i) clarify that “slinky pots” are a legal gear, (ii) allow biodegradable twine in the door latch or pot tunnel, (iii) remove buoy configuration and flagpole requirements, (iv) authorize jig gear, (v) specify pot limits per vessel, and (vi) adjust the gear retrieval requirement. Council also agreed to remove the Adak CQE residency requirement for 5 years. <i>Motion passed unanimously.</i></li> <li>• Council also considered several amendments to the BSAI Halibut Abundance-based Management of the Amendment 80 PSC limit that would, <i>inter alia</i>, achieve better outcomes associated with MSA National Standards 1 and 9. Council agreed to release the analysis for final action and to trigger the public comment phase. A final action was proposed to be brought before Council in December 2021. <i>Vote on amended motion was 10-1 in favor.</i></li> <li>• <b>For summary record, see:</b></li> <li>• <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=6020b974-f715-40b0-bf4a-dacb36165c4e.pdf&amp;fileName=Council%20Summary%20Final.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=6020b974-f715-40b0-bf4a-dacb36165c4e.pdf&amp;fileName=Council%20Summary%20Final.pdf</a></li> </ul>
June 9-11, 14-16, 2021	<ul style="list-style-type: none"> <li>• Council provided various recommendations in respect of the draft NPOP’s 2022 Annual Deployment Plan for partial fisheries. <i>Motion passed unanimously.</i></li> <li>• Council took no action following a review of a discussion paper that looked at possible tools and management measures to limit or prevent trawl fisheries exceeding their area- and sector-specific allocations of sablefish. However, Council indicated that it was interested in hearing from the trawl sector about plans to avoid sablefish in the future. <i>Motion passes unanimously.</i></li> <li>• <b>For detailed record, see:</b></li> <li>• <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=1cf20f75-46df-4ff4-987a-1efd306b87de.pdf&amp;fileName=June%202021%20Council%20Summary.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=1cf20f75-46df-4ff4-987a-1efd306b87de.pdf&amp;fileName=June%202021%20Council%20Summary.pdf</a></li> </ul>
October 6, 10-15, 2021	<ul style="list-style-type: none"> <li>• Council reviewed an analysis on several revisions to the IFQ Program regulations. The analysis evaluated five elements relevant to pot gear used to fish IFQ, including gear specifications and configuration requirements, pot limits, and gear retrieval requirements, and one element to authorize jig gear as a legal gear type for the harvest of sablefish IFQ. Council reviewed an alternative to remove the Adak CQE residency requirement for a period of five years. It made some changes to the analysis and then approved it for final action. <i>Motion passed with no objection.</i></li> <li>• Council reviewed a plan that will serve to guide its work associated with the planned allocation review of NOAA’s Pacific halibut Catch Sharing Plan (CSP). Following discussion, Council adopted the proposed workplan and tentative scheduling for IPHC Areas 2C and 3A. <i>Motion passed with no objection.</i></li> </ul>



Dates	Actions
	<ul style="list-style-type: none"> <li>• Council reviewed the Draft 2022 Annual Deployment Plan (ADP) for the partial coverage category of the North Pacific Observer Program and provided recommendations to NMFS for the Final 2022 ADP. <i>Motion passed unanimously.</i></li> <li>• Council adopted the proposed 2022 and 2023 GOA groundfish specifications for OFLs and ABCs as recommended by the SSC and the TACs as presented. Final specifications will be approved in December. Council also adopted the proposed 2022 and 2023 annual and seasonal Pacific halibut PSC limits and apportionments in the GOA as presented.</li> <li>• Finally, Council adopted the proposed 2022 and 2023 halibut discard mortality rates for the GOA as presented. <i>Motion passed unanimously.</i></li> <li>• Council requested that NOAA continue work with the IPHC to ensure the collection and timely input of CPUE data from the sablefish logbooks, and to continue efforts to input data from electronic monitoring logbooks, to support the sablefish stock assessment. <i>Motion passed unanimously.</i></li> <li>• Council adopted the proposed 2022 and 2023 BSAI groundfish harvest specifications for OFLs and ABCs as recommended by the SSC as well as the TACs. All proposed specifications consisted of rollovers of 2022 final specifications from the 2021/2022 harvest specifications as approved in December 2020.</li> <li>• Council also adopted the proposed 2022 and 2023 halibut discard mortality rates for the BSAI as presented. <i>Motion passed unanimously.</i></li> <li>• Council directed staff to prepare a small sablefish release Initial Review document to be scheduled for an upcoming meeting. <i>Vote on amended motion passed unanimously.</i></li> <li>• <b>For detailed record, see:</b></li> <li>• <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=1f1d38a2-0053-4431-af3b-9778a456f670.pdf&amp;fileName=October%20Final%20Council%20Summary.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=1f1d38a2-0053-4431-af3b-9778a456f670.pdf&amp;fileName=October%20Final%20Council%20Summary.pdf</a></li> </ul>
December 8-10, 13-15, 2021	<ul style="list-style-type: none"> <li>• Council took final action on the draft Environmental Impact Statement (DEIS) for the abundance-based management (ABM) of the Amendment 80 (A80) halibut prohibited species catch (PSC) limit. The action links PSC limits in the A80 commercial groundfish trawl fleet in the BSAI to estimated halibut abundance. Under this ABM program, the A80 halibut PSC limit moves both up and down according to the indices of abundance and be responsive to changing halibut stock conditions that affect all halibut users, while never exceeding the current PSC limit. Implementation of this action will occur in either 2023 (mid-year) or for the beginning of the 2024 fishing year.</li> <li>• Council’s preferred alternative selected determines the A80 PSC limit annually based on the most recent survey values and the associated PSC limit value from the table provided in the report.</li> <li>• Council authorized the Executive Director and the Chairman to review the draft proposed regulations when provided by NMFS to ensure that the proposed regulations to be submitted to the Secretary under section 303(c) are consistent with these instructions. <i>Motion on Amendment passed with no objection. Motion on amended main motion passed 8-3.</i></li> <li>• <b>For detailed record, see:</b></li> <li>• <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=b9593023-3fd6-4fa3-a91b-4044c25cf3bc.pdf&amp;fileName=December%20Final%20Council%20Summary%20.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=b9593023-3fd6-4fa3-a91b-4044c25cf3bc.pdf&amp;fileName=December%20Final%20Council%20Summary%20.pdf</a></li> <li>• Concerning 2022 BSAI Groundfish specifications, Council took the following actions:</li> <li>• Council approved the 2021 BSAI Groundfish SAFE report as well as to adopt the 2022/2023 OFLs, ABCs and TACs for groundfish in the BSAI as presented.</li> </ul>

Dates	Actions
	<ul style="list-style-type: none"> <li>• Council also approved the PSC amounts and distributions as presented, and also approved the Pacific halibut DMRs for 2022/2023 as presented.</li> <li>• <i>Motion passed with no objection.</i></li> <li>• Concerning 2022 GOA Groundfish specifications, Council took the following actions:</li> <li>• Council approved the 2021 GOA Groundfish SAFE report as well as to adopt the final 2022 and 2023 GOA groundfish specifications for OFLs and ABCs as recommended by the SSC, and the TACs for groundfish as presented.</li> <li>• Council sets the final 2022 and 2023 Pacific halibut PSC limits, allowances, and apportionments in the GOA as presented and also approved the halibut discard mortality rates for 2022 and 2023 as presented.</li> <li>• <i>Motion passed with no objection.</i></li> <li>• <b>For detailed record, see:</b></li> <li>• <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=b9593023-3fd6-4fa3-a91b-4044c25cf3bc.pdf&amp;fileName=December%20Final%20Council%20Summary%20.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=b9593023-3fd6-4fa3-a91b-4044c25cf3bc.pdf&amp;fileName=December%20Final%20Council%20Summary%20.pdf</a></li> </ul>
February 7-10, 2022	<ul style="list-style-type: none"> <li>• Council accepted the Allocation Review of the Halibut Catch Charing Plan for Area 2C/3A allocation review as complete and final with the addition of information to the extent practicable recommended by the SSC. <i>Motion passed unanimously.</i></li> <li>• The meeting agenda identified various issues regarding the current Groundfish Management Policy<sup>1</sup>. Council was to (i) review the policy, (ii) review its actions relative to the policy, (iii) consider whether modifications to the Management Objectives are called for (noting that any change requires and FMP amendment), and (iv) consider whether additional Council actions to better fulfil the Management Policy are required. <i>No action was taken.</i></li> <li>• On another issue, Council requested that the Secretary promulgate emergency regulations under the authority of Section 305(c) of the <i>Magnuson-Stevens Act</i> to allow the temporary transfer of catcher vessel halibut and sablefish IFQ for all individual quota shareholders for the 2022 fishing season. <i>Motion was passed 10-1.</i></li> <li>• On another matter, Council requested that the Secretary promulgate expedited regulations to remove vessel use cap regulations under 50 CFR Section 679.42(h)(1) for IFQ halibut harvested in IPHC regulatory Areas 4A, 4B, 4C, and 4D for the 2022 IFQ fishing season. <i>Motion passed unanimously.</i></li> <li>• <b>For detailed record, see:</b></li> <li>• <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=fce7a315-a804-4398-984d-9e1f24ee9823.pdf&amp;fileName=February%20Council%20Summary.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=fce7a315-a804-4398-984d-9e1f24ee9823.pdf&amp;fileName=February%20Council%20Summary.pdf</a></li> </ul>
April 6-9, 2022	<ul style="list-style-type: none"> <li>• Council proposed revisions to parts of the IFQ/CDQ Programs. The preferred option included:</li> <li>• A change to biodegradable panel requirements to provide increased flexibility for innovation in gear designs for vessels fishing IFQ across the GOA and BSAI.</li> <li>• (ii) Removal of flagpole, radar reflector, and buoy requirements for GOA sablefish longline pot gear.</li> <li>• An element which would allow vessels targeting halibut IFQ in pot gear in the GOA to use a tunnel opening larger than 9 inches if they also have sablefish IFQ on board. This element would allow vessels with both sablefish and halibut IFQ to target halibut and larger sablefish more efficiently in longline pot gear.</li> <li>• A change to pot limits in Western Yakutat which would allow vessels fishing IFQ to use 200 pots per vessel, and modifications to gear retrieval requirements in the Central GOA and Southeast Outside Area.</li> <li>• An element which would authorize jig gear as a legal gear type to harvest sablefish IFQ/CDQ in the BSAI and GOA.</li> </ul>

Dates	Actions
	<ul style="list-style-type: none"> <li>• A five-year exemption to Adak CQE residency requirements.</li> <li>• Furthermore, Council authorized the Executive Director and the Chairman to review the draft proposed regulations when provided by NMFS to ensure that the proposed regulations to be submitted to the Secretary under section 303(c) are consistent with the proposed regulatory changes. <i>Amendment passed with no objection. Amended main motion passed 11-0.</i></li> <li>• For detailed record, see: <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=27dcf94c-d0a6-469d-b8c3-c3b4fcef1fd0.pdf&amp;fileName=April%20Council%20Summary.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=27dcf94c-d0a6-469d-b8c3-c3b4fcef1fd0.pdf&amp;fileName=April%20Council%20Summary.pdf</a></li> </ul>

**Note:**

- (1) Every three years, the Council reviews management programs in the Bering Sea and Gulf of Alaska to make sure the goals and objectives are being met.

### 7.2.1.1 Environmental Assessment/Regulatory Impact Review

The Council’s April 2022 decision to seek amendments to parts of the IFQ/CDQ Programs (see table above) triggered an EA/RIR of the proposed management measures that would apply to fishery participants in the halibut and sablefish Individual Fishing Quota (IFQ) and Community Development Quota (CDQ) Programs off the coast of Alaska as required by the MSA. The amendments were evaluated in relation to alternatives, elements, and options. The findings were reported in a draft for final action report that will be considered by the Council at a forthcoming meeting.<sup>7</sup>

The Council on Environmental Quality regulations at 40 CFR 1508.27 state that the significance of an action should be analysed both in terms of “context” and “intensity.” An action must be evaluated at different spatial scales and settings to determine the context of the action. Intensity is evaluated with respect to the nature of impacts and the resources or environmental components affected by the action. These factors form the basis of the analysis presented in the EA/RIR. Results are reported in the cited report, and included an assessment of the following issues:

- Can the proposed action reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?
- Can the proposed action reasonably be expected to significantly affect **public health or safety**?
- Can the proposed action reasonably be expected to result in significant impacts to unique characteristics of the **geographic area**, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?
- Are the proposed action’s effects on the quality of the **human environment** likely to be highly controversial?
- Are the proposed action’s effects on the human environment likely to be highly uncertain or involve unique or unknown risks?
- Can the proposed action reasonably be expected to establish a **precedent for future actions** with significant effects or represent a decision in principle about a future consideration?
- Is the proposed action related to other actions that when considered together will have individually insignificant but **cumulatively significant impacts**?
- Can the proposed action reasonably be expected to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause **loss or destruction of significant scientific, cultural, or historical resources**?

<sup>7</sup> <file:///C:/Users/ocean/OneDrive/Desktop/Draft%20EA%20RIR%20IFQ%20Omnibus%20Amendments%20April%202022.pdf>

- Can the proposed action reasonably be expected to have a **significant impact on endangered or threatened species, or their critical habitat** as defined under the *Endangered Species Act of 1973*?
- Can the proposed action reasonably be expected to threaten a violation of Federal, state, or local law or requirements imposed for **environmental protection**?
- Can the proposed action reasonably be expected to **adversely affect stocks of marine mammals** as defined in the *Marine Mammal Protection Act*?
- Can the proposed action reasonably be expected to **adversely affect managed fish species**?
- Can the proposed action reasonably be expected to **adversely affect essential fish habitat** as defined under the *Magnuson-Stevens Fishery Conservation and Management Act*?
- Can the proposed action reasonably be expected to **adversely affect vulnerable marine or coastal ecosystems**, including but not limited to, deep coral ecosystems?
- Can the proposed action reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?
- Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

### 7.2.2 State Regulatory Changes 2021-22: Pacific Halibut Commercial Fishery

According to the 2021 annual report for the Legislative Affairs Agency of the State of Alaska, there were no repeals, amendments of legislation or executive orders in respect of the Pacific halibut fishery in state waters (available at: [http://akleg.gov/docs/pdf/SumAKLeg\\_2021.pdf](http://akleg.gov/docs/pdf/SumAKLeg_2021.pdf) and select Summary of legislation 2021).

However, in its December 2021 report to the NPFMC, the ADFG noted that several proposals would be before the Board for consideration in January 2022.<sup>8</sup> The lone Pacific halibut commercial fishery proposal was for the eastern GOA area and would require CFEC permit holders fishing for groundfish, or halibut using hook-and-line, pot, or jig gear to retain and land all rockfish. This proposal would mirror federal rockfish retention requirements to provide better estimates of rockfish catch, reduce waste and incentives to discard, and maintain consistency between state and federal fisheries management.

An online search of the Alaska Board of Fisheries' Proposal Book for the 2021/2022 cycle indicated that of the 79 proposals, the only proposed regulatory action affecting the Pacific halibut commercial fishery was Proposal 278 - Gear for halibut and escape mechanisms for shellfish and groundfish pots including halibut.<sup>9</sup> The Board's previous considerations regarding Pacific halibut are highlighted in **Error! Reference source not found.** Prior to acting on a proposal before it, the Board will consider written comments and take oral testimony from stakeholders and members of the public. All comments and testimonies are included in the meetings' record and published on the Board's website.

Note: The review of certain regulatory proposals affecting the Pacific halibut fishery may require the participation of both the Board and the NPFMC. This process is enabled by the Joint Protocol Committee (JPC). The JPC meets as needed to review and discuss areas of mutual interest. The council and board alternate serving as host for the meeting. The JPC last met in November 2020 to consider amendments to the commercial salmon fishery in the Cook Sound Area (federal waters). The meeting's record of discussion including written comments and oral testimonies were also published on the Board's website.

---

<sup>8</sup> <https://meetings.npfmc.org/CommentReview/DownloadFile?p=ebc3d40d-da94-42e9-b13a-ad957a637fed.pdf&fileName=B5%20ADFG%20Report.pdf>

<sup>9</sup> [https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2021-2022/proposals/proposal\\_book.pdf](https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2021-2022/proposals/proposal_book.pdf)

**Table 6.** Summary of Board Meetings and Summary of Actions 2021/22.

(Source: <https://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.meetinginfo>)

Date	Summary of Actions
January 25, 2021	(i) Approved postponing its 2020/2021 meetings to 2021/2022 with dates to be determined at a March 8, 2021, board meeting (COVID-19 considerations). (ii) Approved keeping its current 2021/2022 meeting schedule as planned.
March 8, 2021	(i) The board voted to hold only the originally scheduled 2020/2021 meetings in 2021/2022. Meetings schedule here: <a href="https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2020-2021/mar/soa.pdf">https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2020-2021/mar/soa.pdf</a>
March 16, 2021	(i) Approved its 2022/2023 and 2023/2024 meeting cycles here: <a href="https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2020-2021/mar16/soa.pdf">https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2020-2021/mar16/soa.pdf</a>
August 2, 2021	(i) No specific issues of relevance to either the Pacific halibut or Sablefish commercial fisheries.
October 20-21, 2021	(i) Approved by 7-0 vote to include pots as lawful gear for <b>commercial halibut fishing statewide</b> (5 AAC 28.051, 5 AAC 39.145). This allows holders of halibut IFQ or CDQ quotas to retain halibut from pot gear. State regulations were currently inconsistent with new federal and IPHC regulations for allowable gear types and pots were not legal gear in the commercial halibut fishery when the regulations were adopted in 2020. (ii) Board chair and vice-chair were re-elected by unanimous consent.
November 30 - December 6, 2021	(i) Approved by 6-0 vote to clarify possession and landing requirements for the state managed sablefish fishery in the Prince William Sound Area. (ii) Approved by 6-0 vote to include pots as lawful gear for <b>commercial halibut fishing</b> .
January 27, 2022	(i) This was a special meeting to review Southeast and Yakutat Finfish and Shellfish meeting location.
March 10, 2022	(i) A request to align state waters sablefish fishing season with federal sablefish fishing season failed by a 6-0 vote. (ii) A request to extend the sablefish fishing season to December 15 also failed by a 6-0 vote. (iii) Approved by a 6-0 vote to allow pot gear in the Northern Southeast Inside Subdistrict sablefish commercial fishery. (iv) Approved by a 6-0 vote to reduce the minimum inside diameter of circular escape rings from four inches to three and three-fourths of an inch on pots used to take sablefish. (v) Approved by a 6-0 vote to require CFEC permit holders fishing for groundfish, or <b>halibut</b> using hook-and-line, pot, or jig gear in the Eastern Gulf of Alaska Area to retain and land all rockfish, including thornyhead rockfish.
March 26 - 30, 2022	(i) Several regulatory adjustments were tabled and decided but none were related to the commercial halibut and sablefish fisheries in state-managed waters.
<b>Future meeting dates of the Board</b>	
October 25 - 26, 27 - 28, 2022; November 29 - December 3, 2022; January 14 - 18, 2023; February 13 - 17, 2023; March 10 - 13, 2023.	

### 7.2.3 IPHC Harvest Strategy Policy

The IPHC’s Harvest Strategy Policy<sup>10</sup> is an amalgamation of current IPHC practices and best practices in harvest strategy policy, and it remains in draft form for the time being. It is expected that over the coming two years, the IPHC will develop and implement a harvest strategy, and that this policy document will then be updated

<sup>10</sup> <https://iphc.int/uploads/pdf/hsp/iphc-2019-hsp2019.pdf>

accordingly. The IPHC Harvest Strategy Policy will provide a framework for applying a rigorous science-based approach to setting harvest levels for Pacific halibut (*Hippoglossus stenolepis*) within the Convention Area.

A harvest strategy consistent with this policy will provide all interested sectors with confidence that Pacific halibut is being managed for long-term ecological sustainability and economic viability. The implementation of a clearly specified harvest strategy will also provide the fishing industry with a more certain operating environment.

The Audit Team concludes that the outcome of certification or the effect of the fishery on resources were not affected by adjustments to the fishery management measures and processes, including to existing federal and state legislation and regulations.

#### 7.2.4 Management Strategy Evaluation - Update

Management Strategy Evaluation (MSE) is a formal process in which to evaluate the performance of alternative management procedures for the Pacific halibut fishery against defined goals and objectives. At the IPHC, the MSE process has been interactive, with a Management Strategy Advisory Board (MSAB) made up of stakeholders and managers involved in the resource. The MSAB provides suggestions that are evaluated against objectives defined by all parties involved. The MSE analysis was completed in 2020 with an evaluation and comparison of many candidate management procedures to be presented to the Commission for potential adoption and implementation in 2021. The MSE program of work was updated in 2021 for completion in 2023 and included items related to improving the MSE framework, investigating management procedures, and evaluation of the results. The Audit team understands that a meeting of the Management Strategy Advisory Board (MSAB) is scheduled to occur in late 2022 to review MSE results related to the current program of work.

A detailed paper on the MSE Program of Work (2021-2023) was tabled and reviewed at the 98<sup>th</sup> Session of the IPHC Annual Meeting (available here: <https://www.iphc.int/uploads/pdf/msab/tech/iphc-2021-mse-02.pdf>). The Commission reviewed the paper and made numerous observations, including: (i) requesting that work continue on methods to evaluate MSE outcomes, including providing new alternative methods to quickly evaluate large sets of management procedures, which may involve ranking them in various ways, and (ii) recommending that an MSE agenda item be added to the upcoming special session to discuss and provide direction on elements of the MSE workplan, including distribution procedures to incorporate in the management procedures being simulated in 2022 and evaluated at the 99th Session of the IPHC Annual Meeting (AM099).

The IPHC Secretariat released an updated document: *Technical details of the IPHC MSE framework (June 2022)* that describes the Management Strategy Evaluation (MSE) framework and its elements, details specifications of the framework for the evaluation of scale and distribution management procedures, provides definition of terms used, and defines the technical details of the models and equations used within the framework.<sup>11</sup> This is a working document that will be revised often as development of the MSE framework progresses.

#### 7.2.5 NPFMC Written Public Comment Changes

The Council approved several changes to the current written public comment procedures.<sup>12</sup> The Council process remains a welcoming environment for all public, and the comment process encourages people to be respectful when commenting. In that regard, staff will implement the following changes:

- Post written comment policy on Council website and summarize on e-Agenda:
- Clarify one comment per person per agenda item; however, an individual can submit comments on behalf of their organization as well as on behalf of themselves.

<sup>11</sup> <https://www.iphc.int/uploads/pdf/msab/tech/2022/iphc-2022-mse-01.pdf>

<sup>12</sup> <https://www.npfmc.org/april-2021-newsletter/>



- Consistent with the Department of Commerce policy: no vulgar language, personal attacks, offensive terms targeting protected classes, promoting service or products, non-fisheries-related (off topic), unsupported accusations.
- Allow staff to remove comments that are inconsistent with policy.
- Allow staff to sort comments to the appropriate agenda item as practicable (comments that are not associated with an agenda item would go in staff tasking).
- Changes to commenting period:
  - Open commenting later once materials post online.
  - Close commenting earlier (Wednesday or Thursday before the start of the meeting) to allow staff to review comments for adherence to the policy.
- Do not display comments publicly until after comment deadline closes.

### 7.3 Changes to the organizational responsibility of the main management agencies

The organizational structures, mandates, and core responsibilities of the main agencies that comprise the management framework for the Alaskan commercial Pacific halibut fishery have remained unchanged from the previous surveillance audit. However, there were several changes to federal staff professionals within the main agencies, including to some of their subordinate bodies. These changes were both rotational (e.g., term expirations) and replacement (e.g., retirements, promotions) in nature.

#### 7.3.1 Senior Personnel Changes

Senior level appointments included (i) Jon Kurland as NOAA Fisheries Regional Administrator for Alaska effective March 27, 2022, (ii) Rear Admiral Nathan Moore as Commander of the USCG District 17 effective April 23, 2021, (iii) Ms. Sara Boario as the Regional Director for the USFW Service Alaska Region effective March 14, 2022, (iv) Mr. Paul Ryall (Canada) as Chairperson of the IPHC (2021), and (v) Mr. Glenn Merrill (U.S.A.) as Vice-Chairperson of the IPHC (2021). On June 27, 2022, the U.S. Secretary of Commerce announced the appointment of Ms. Angela Drobnica and the re-appointment of Ms. Nicole Kimball to the NPFMC.

The Audit team concludes that the personnel changes did not have a material negative impact on the governance systems of the principal federal organizations.

#### 7.3.2 NPFMC Ideas for Process Change

At its March 14, 2022 meeting, Council members were brief on a February staff paper entitled, “Reflections on the Council Process and Ideas for Change.”<sup>13</sup> The paper provided fourteen ideas for potential changes to the Council’s meeting schedule and agenda timing, and to its advisory bodies. The ideas represented in the paper were in response to the movement to virtual and hybrid meetings, and in response to the Council’s Community Engagement Committee recommendations in 2021. The listed ideas include:

- Reduce the number of annual Council meetings from 5 to 4 and drop the February meeting.
- Create a schedule that makes 1-2 meetings per year virtual, and the remaining meetings in-person.
- Consider issue-specific meetings, whether as virtual or in-person.
- Change the timing of the October meeting to avoid government shutdowns.
- Re-evaluate the timing of crab and groundfish harvest specifications in light of fishery needs and stock prioritization.
- Reconsider the frequency of agency reports.
- Consider the order of the agenda, and how to make time for longer-term planning.

---

<sup>13</sup><https://meetings.npfmc.org/CommentReview/DownloadFile?p=6ba2cd00-d353-40a5-bdbc-8e8131524242.pdf&fileName=B1%20Executive%20Committee%20Report%20on%20Ideas%20for%20Process%20Change.pdf>

- Consider ways to avoid duplicate staff presentations and public testimony, especially during virtual meetings.
- Changes to the nomination/reappointment process for the Advisory Panel - timing, qualifications, term length.
- Reconsider the size and/or composition of the Advisory Panel.
- Clarify the purpose of the AP, and consider operational changes to agenda, voting.
- Changes to the nomination/reappointment process for the SSC - timing, recruitment, soliciting SSC input.
- Consider how to reduce SSC workload.
- Evaluate the purpose and usefulness of all Council advisory bodies and consider ways to improve.

Council suggested four additional ideas, one of which included exploring ways to engage with new stakeholders as fish stocks and fisheries shift, particularly communities in the northern Bering Sea and Chukchi Sea who have so far not engaged as much in the Council process.

At the Council's April 2022 in-person meeting, it was reported that the Council will listen to public testimony about existing and new management measures that the public may be interested in and will provide feedback to staff and the Council Chair about how to prioritize staff work on existing and new projects.

## **7.4 New information on the status of stocks**

### **7.4.1 Alaska Bycatch Review Task Force**

In November 2021, Governor Dunleavy created the ABRTF to help better understand unintended bycatch of high value fishery resources in state and federal waters.<sup>14</sup> The Task Force's mandate which sunsets on November 30, 2022, is to:

- Study what impacts bycatch has on fisheries.
- Evaluate and recommend policies informed by a better understanding of the issue of bycatch of high-value Alaska fishery resources.
- Ensure state agencies are leveraging available resources to better understand the issue of bycatch.
- Utilize the best available science to inform policy makers and the public about these issues

There are 13 voting members of the Task Force including two each from the ADFG, and Alaska Department of Commerce, Community and Economic Development, and single representatives from a broad cross-section of the various fisheries and including the NPFMC, Native Community, and the public. There is no representative of the commercial sablefish fishery sector. The Task Force may create advisory-only subcommittees, must meet monthly at a minimum, conduct its business using teleconferencing and other electronic means to the extent practicable, may convene public meetings in accordance with the *Open Meetings Act*, and must preserve all records.

#### Stock Status Update

Stock status is reported by the IPHC using a risk profiling approach. The IPHC's interim management procedure uses a relative spawning biomass of 30% as a fishery trigger, reducing the reference fishing intensity if relative spawning biomass decreases further toward a limit reference point at 20%, where directed fishing is halted due to the critically low biomass condition.

---

<sup>14</sup> <https://gov.alaska.gov/wp-content/uploads/sites/2/11.18.21-Administrative-Order-326-Alaska-Bycatch-Review-Task-Force.pdf>



**The relative spawning biomass at the beginning of 2022 was estimated to be 33% (credible interval: 22-54%), the same value estimate for 2021. The probability that the stock is below SB30% is estimated to be 45% at the beginning of 2022, with less than a 1% chance that the stock is below SB20%.**

The IPHC's current interim management procedure specifies a target level of fishing intensity of a Spawning Potential Ratio (SPR) corresponding to an *F*43%; this equates to the level of fishing that would reduce the lifetime spawning output per recruit to 43% of the unfished level given current biology, fishery characteristics and demographics.

Based on the 2021 assessment, the 2021 fishing intensity is estimated to correspond to an *F*46% (credible interval: 35-63%). 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 2021 directed fisheries and other sources of mortality. The projections for this assessment are more optimistic than those from the 2019 and 2020 assessments due largely to the increasing projected maturity of the 2012 year- class. This translates to a lower probability of stock decline for 2022 than in recent assessments as well as a decrease in this probability through 2023-24. **There is greater than a 50% probability of stock decline in 2023 (55-64/100) for the entire range of SPR values from 40-46%, which include the *status quo* TCEY and the *F*43% reference level.**

The 2022 "3-year surplus" alternative, corresponds to a TCEY of 38.0 million pounds (~17,240 t), and a projected SPR of 48% (credible interval 32-63%). At the reference level (a projected SPR of 43%), the probability of spawning biomass decline from 2022 to 2023 is 59%, decreasing to 55% in three years, as the 2012 cohort matures. The one-year risk of the stock dropping below SB30% ranges from 43% at the *F*46% level to 45% at the at the *F*40% level of fishing intensity.

## 7.5 Update on fishery catches

In the 2021 assessment, Pacific halibut mortality consists of directed/targeted commercial fishery landings and discard mortality (including research), recreational fisheries, subsistence, and non-directed discard mortality ('bycatch') in fisheries targeting other species and where Pacific halibut retention is prohibited. Over the period 1888-2021 mortality has totaled 7.3 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 mortality was above this long-term average from 1985 through 2010 and has averaged 38.5 million pounds (~17,500 t) from 2017-21. Coastwide commercial Pacific halibut fishery landings (including research landings) in 2021 were approximately 24.5 million pounds (~11,100 t), up 9% from 2020. Discard mortality in non-directed fisheries was estimated to be 3.5 million pounds in 2021 (~1,600 t)<sup>2</sup>, down 23% from 2020 and representing the smallest estimate in the time-series. The total recreational mortality (including estimates of discard mortality) was estimated to be 7.6 million pounds (~3,470 t) up 43% from reduced fisheries that occurred in 2020. Mortality from all sources increased by 10% to an estimated 37.7 million pounds (~17,100 t) in 2021.

## 7.6 Significant changes in the ecosystem effects of the fishery

There have not been significant changes in the ecosystem effects of the fishery.

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 Ecosystem section of the SAFE documents, annual Ecosystem Considerations documents, and various other research reports.

The halibut benthic longline fishery has minimal and temporary impacts on the seabed and therefore on habitats. 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.

Streamer lines limit interactions with seabirds and the fishery has minimal impact on the short-tailed albatross (i.e., no takes in 2021), 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 2021 IPHC stock assessment 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 (71 and 72% 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 2019 were positive with 2020 and 2021 (through September) showing negative average conditions. Although strongly correlated with historical recruitments, it is unclear whether recent conditions are comparable to those observed in previous decades.

## **7.7 Violations and enforcement information**

The 2021 fishing season marked the second full year in which the Enforcement Section of NOAA's Office of General Counsel's Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions (June 2019) was in effect. Like its predecessor, the revised policy is very comprehensive and prescriptive. All major federal statutes are embodied in the policy, and it is believed that the quality of the guidance provided to prosecutors and law enforcement managers will result in ensuring that (i) penalties and permit sanctions decisions are assessed fairly and consistently, and are appropriate for the gravity of the violation, and (ii) economic incentives for non-compliance are eliminated.

### **7.7.1 Monitoring, Control and Surveillance (MCS)**

The MCS components in place during Alaska's 2021 commercial sablefish fishery for both the GOA and BSAI were, for all intent and purpose, like those that were in place for the 2020 commercial fishery. Adjustments to the fisheries management measures and allocations did not materially affect how the MCS aspects were planned and implemented by federal and state enforcement agencies. Despite the COVID-19 pandemic and its challenges, most operational agencies were able to adjust and fulfill their MCS mandates.

#### **7.7.1.1 Alaska Department of Public Safety, Alaska Wildlife Troopers (2021)**

In a letter dated March 5, 2021, to the fishery client, Captain Aaron Frenzel, Southern Detachment Commander provided information on the AWT's enforcement presence during the Chatham Sablefish fishery. He noted that AWT has both an at-sea and dockside presence during this fishery. Due to the length of the season, personnel do not conduct vessel-based patrols specifically targeting operators in the fishery, but frequently have vessels in Chatham conducting multi-purpose patrols. When commercial vessels are observed they are contacted and inspected for compliance with the fishery they are participating in.

Dockside inspections are conducted by Troopers in ports where product is being delivered. The representative stated that the AWT does not dedicate Troopers specifically to sablefish offloads but when Troopers observe them they conduct inspections. The Division also has post-season enforcement efforts of the fishery when managers become aware of issues that occurred in-season.

### **Joint Force Agreement Operations - 2021**

In April, a team of four Enforcement Officers along with USCG and AWT boarding officers conducted boardings and surveillance in Southcentral Alaska during the 2021 Homer King Salmon Derby. Teams conducted 66 boardings and identified 16 violations including two failures to sign logbooks, four chunked halibut, eight state violations, and two USCG safety violations.

In June, a team consisting of three Enforcement Officers and one Alaska Wildlife Trooper completed a three-day patrol from Seward to Whittier, AK. A USCG Boarding officer joined on day two. A total of 20 boardings were completed and 25 violations were discovered. The violations consisted of four North Pacific Halibut Act violations, 18 State of Alaska violations, and three Coast Guard violations. Over 100 pounds of illegally processed halibut, 11 non-pelagic rockfish, and one lingcod were seized.

Also, in June, OLE and AWT completed a patrol of Prince of Wales (POW) Island and surrounding communities. During the sea-based joint patrol, multiple strings of unmarked commercial shrimp gear were pulled, recorded, and deck loaded. Unmarked longline gear was also discovered. Officers provided outreach to the Thorne Bay Charter Association and to the community of Hollis during a town meeting. Multiple dockside boardings resulted in outreach with halibut charter operators to discuss and assist with eLogBooks. In September, an Enforcement Officer completed a two-week patrol with AWT on the PV Enforcer in Southeast AK with a total of 92 vessels boarded and 18 state and federal citations. Four federal citations were issued, one fix-it for subsistence gear markings, and three unreported Guided Angler Fish (GAF).

In September, an Enforcement Officer completed a two-week patrol with AWT in Southeast AK with a total of 92 vessels boarded and 18 state and federal citations. Four federal citations were issued, one fix-it for subsistence gear markings, and three unreported Guided Angler Fish (GAF).

#### **7.7.1.2 NPFMC Enforcement Committee Meeting Summaries - 2021 and 2022**

The Enforcement Committee was established by the Council to review proposed FMP amendments, regulatory changes, and other management actions on matters related to enforcement and safety at sea. Its administrative and governance measures are contained in Terms of Reference (2016).<sup>15</sup> Meetings were subject to COVID-19 protocols with members and the public participating via conference call.

Committee members are appointed by the Council Chair from governmental agencies and organizations having expertise relating to the enforcement and monitoring of North Pacific groundfish and crab fisheries of the BSAI and GOA. At a minimum these agencies would include NOAA Fisheries Enforcement, NOAA Office of Sustainable Fisheries, U.S. Coast Guard, Alaska State Fish and Wildlife Protection, Alaska Department of Fish and Game, NOAA Fisheries Observer Program, and NOAA Office of General Counsel. The Committee is Chaired by a member of the Committee, as elected biennially by the Committee.

The committee met virtually on three occasions between January 2021 and March 2022. Highlights of the discussions are summarized here in as much as they related to the commercial sablefish fisheries.

#### **Meeting - January 28, 2021**

The committee's business was focussed on the enforcement implications of a proposed IFQ sablefish release allowance. For at-sea enforcement operations, this would involve observing fishery operations and ensuring that

---

<sup>15</sup> [https://www.npfmc.org/wp-content/PDFdocuments/membership/Enforcement/Enforcement\\_TermsReference\\_0616.pdf](https://www.npfmc.org/wp-content/PDFdocuments/membership/Enforcement/Enforcement_TermsReference_0616.pdf)

sablefish not retained by IFQ vessels are returned to the sea immediately, with a minimum of injury and that discards are accurately reported in the logbooks required. The primary compliance monitoring tools for this would be limited to at-sea boardings, observed trips, and electronic monitoring (EM) trips. The committee also discussed the potential need for increasing observer/EM coverage for IFQ sablefish vessels to better determine sablefish discard mortality estimates.

If the Council was to implement a size limit, this would create additional enforcement concerns pertaining to the limited compliance monitoring tools that would be available to enforce a size limit and detect high grading violations. The primary compliance monitoring tools would be limited to at-sea boardings, observed trips, and electronic monitoring trips. The committee also discussed the added cost that would be incurred to review electronic monitoring video for illegal discards, and current EM technology is not able to identify illegal discard (size limit) of sablefish to the accuracy/fidelity required as evidence to support a violation for prosecution.

#### Meeting - March 31, 2021

The committee's only agenda item involved consideration of the enforcement implications of a possible Recreational Quota Entity (RQE) funding mechanism, and enforcement issues associated with enforcing an RQE stamp program.

#### Meeting - March 29, 2022

The committee discussed supplementary business arising from the proposed IFQ Omnibus Amendments. Members provided commentary on the following topics:

- Clarify that "slinky pots" are a legal gear for the IFQ fishery and CDQ fisheries, and revise regulations to allow the use of biodegradable twine in the door latch or pot tunnel.
- Remove buoy configuration, radar reflector, and flagpole requirements in regulations but retain "LP" marking requirement.
- Remove the nine-inch max width of the tunnel opening for vessel IFQ sablefish. Would apply to GOA and BSAI.
- Change the pot limits and the gear retrieval requirements for West Yakutat and/or Southeast Outside for vessels targeting IFQ sablefish.
- Authorize jig gear as a legal gear type for the harvest of sablefish IFQ and CDQ.
- Daily Fishing Logbook (DFL) requirements for vessels less than 60 ft LOA using more than one gear type.

The committee reviewed the 3-meeting outlook to determine which agenda items the committee is planning on reviewing and has tentatively scheduled a review of the OLE Alaska Division 5-year priorities, Observer Annual Report for 2021 (Enforcement Chapter), and a review of the trawl EM analysis which are both scheduled for the June Council meeting.

### **7.7.1.3 USCG Operational Highlights – 2021 Year in Review**

#### **U.S./Canadian EEZ Boundary (Dixon Entrance) Enforcement**

Canadian fishing activity along the U.S.- Canadian EEZ boundary in the vicinity of Dixon Entrance was low throughout 2021. There were no detected incursions by foreign fishing vessels into the U.S. EEZ in 2021.

#### **Marine Protected Resources and Critical Habitat Enforcement**

During 2021, the Coast Guard conducted 14 flights out of Kodiak, Nome (via FOL Kotzebue), and Sitka in support of Marine Protected Resources and NOAA's Protected Resources Division (PRD). No violations were detected on these flights but were instrumental in collecting and reporting marine mammal stranding data, including for the gray whale and ice seal unusual mortality events (UMEs). Alaska Marine Mammal Stranding Network partners

were able to conduct eight surveys of coastal Kodiak (the largest effort to date), respond to a live gray whale stranding, and a dead sperm whale north of Kodiak.

### Commercial Fishing Vessel Boarding Statistics

District 17 conducted 595 federal fisheries boardings during 2021. Figures 1 and 2 show the historic trends for boardings and violations. The top five fisheries violations were (i) logbook discrepancies, (ii) no IFQ permit onboard, (iii) expired or no FFP onboard, (iv) sea-bird avoidance gear not onboard or improperly constructed, and (v) improperly marked buoys.

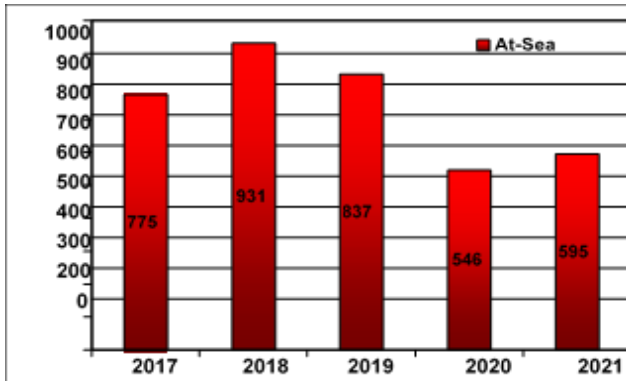


Figure 1. Fisheries boardings by year.

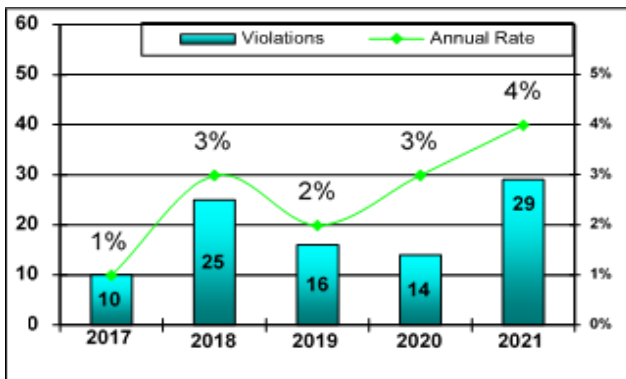


Figure 2. Fisheries violations by year.

During the 5-year period, a total of 3,684 at-sea boardings were conducted by the USCG’s 17<sup>th</sup> District for an average of 737 annual inspections (Figure 1). Similarly, a total of 94 fisheries violations were detected, averaging 19 violations annually over the same period (Figure 2). Typically, USCG violations are handed off to NOAA-OLE when administrative or prosecutorial actions are warranted. Over the same reporting period, the annualized violation rate was between 2 and 3% (Figure 2).

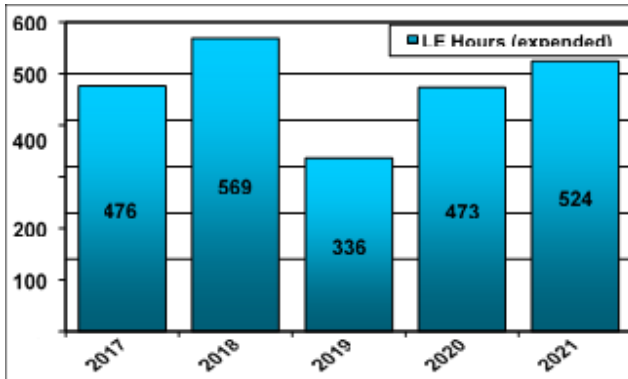
### Halibut and Sablefish Enforcement

In 2021, USCG District 17 conducted 515 boardings on commercial, charter, and recreational vessels targeting halibut and sablefish. Personnel conducted 152 boardings of IFQ halibut or sablefish vessels, detecting 22 fisheries violations, representing 76% of the commercial violations detected. The top violations included (i) logbook discrepancies, (ii) no IFQ permit and/or FFP onboard, (iii) sea-bird avoidance gear not onboard or improperly constructed, (iv) improper marked buoys, and (v) failure to retain Pacific cod. District 17 conducted 108 boardings on charter halibut vessels, detecting zero violations. District 17 conducted 255 boardings on recreational vessels

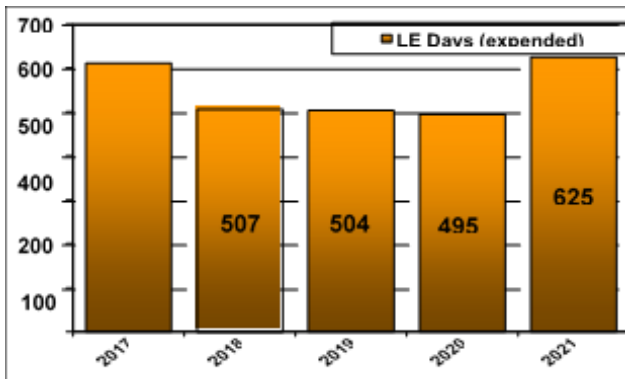
targeting halibut and detected one violation for improper filleting at sea, which resulted in a seizure of the catch, and one violation for no subsistence halibut license onboard.

**Coast Guard Resource Summary**

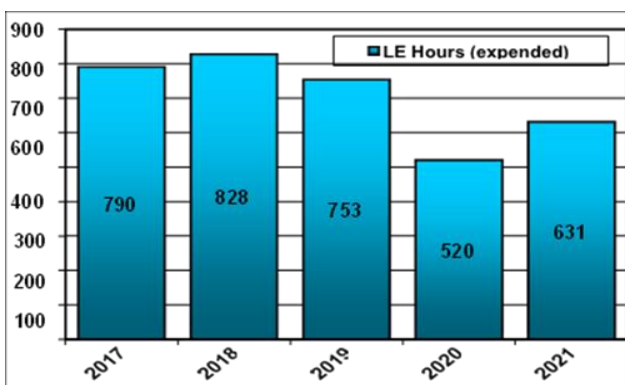
Figure 3, Figure 4, Figure 5 and Figure 6 show the annual aircraft law enforcement hours, Major Cutter days, and Patrol Boat hours used in the Seventeenth District between 2017 and 2021.



**Figure 3.** Annual Fixed Wing Hours.

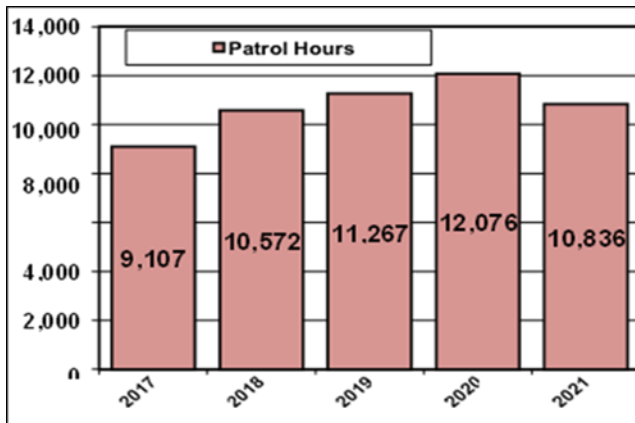


**Figure 4.** Annual Major Cutter Days.



**Figure 5.** Annual Rotary Wing Hours.





**Figure 6.** Annual Patrol Boat Hours.

#### 7.7.1.4 Joint Enforcement Agreement - Annual Report 2020

The purpose of the Joint Enforcement Agreement (JEA) between NOAA-OLE and the Alaska Wildlife Troopers (AWT) is to support operations, administration, and funding for AWT to enforce Federal laws and regulations under the *Magnuson-Stevens Act*, *Endangered Species Act*, *Marine Mammal Protection Act*, *Lacey Act*, and *Northern Pacific Halibut Act*. Central to this JEA is the prevention and detection of violations by federally deputized Wildlife Troopers. Deputized Wildlife Troopers provide an overt presence and force multiplier for Federal fisheries enforcement.

The reporting year for the JEA differed slightly from the Federal fiscal year: the “2020” JEA report ran from July 1, 2020, through June 30, 2021. AWT recorded the following actions in direct support of OLE and marine resource protection.

- 315 vessels boarded (commercial, charter, sportfish, and subsistence) including 111 gear inspections performed.
- 698 contacts (industry and public) during execution of field operations.
- 757 additional contacts through 41 outreach activities.
- 35 State warnings and 36 State citations (many are common state/federal fisheries); and
- 20 cases referred to OLE for federal enforcement action including 17 from JEA operation and 3 from non-JEA operations.

NOAA - OLE continued its outreach and education efforts aimed at facilitating and encouraging responsible and sustainable uses of marine resources. Approximately 16 community-based meetings were held remotely because of the COVID-19 pandemic between April and September 2021. Topics discussed were wide-ranging and included OLE priorities, enforcement procedures, regulations, new CHP requirements, fisheries management, and observer program.

#### 7.7.1.5 NOAA-OGC Civil Administrative Cases

The NOAA Office of General Counsel, Enforcement Section (GCES) issued seven Notices of Violation and Assessment (NOVAs) during the reporting period. Examples included:

- AK1906496; Keta Seafoods, L.L.C. and Gregory V. McMillan  
Shoreside processor Keta Seafoods, LLC, and owner Gregory V. McMillan were charged jointly and severally under the Northern Pacific Halibut Act (NPHA) with failing to submit a required IFQ Registered Buyers ex-vessel Volume and Value Report. A \$1,500 NOVA was issued.
- AK2004893; F/V Marathon

Owner Marathon Fisheries, Inc. and operator Martin Stam were charged jointly and severally under the Magnuson-Stevens Act (MSA) with exceeding the maximum retainable amount of Pacific cod. A \$3,625 NOVA was issued.

- AK2003816; F/V Gulf Maiden

Owner Gulf Maiden Corporation and operator Randall Shears were charged jointly and severally under the NPHA and MSA with failing to return Pacific halibut to the sea with a minimum of injury, unlawful discard of rockfish and Pacific cod, and failure to record discards. A \$22,800 NOVA was issued.

- AK2005521; F/V Legacy

Crewman Tusi Tausaga was charged under the MSA with observer assault. A \$72,000 NOVA was issued.

#### 7.7.1.6 NOAA-OGC Cases Settled

The Office reported that a total of seven settlement agreements in respect of various civil administrative cases were entered into during the reporting period. Examples included:

- AK1905306; F/V Pacific Sojourn

Owner Sojourn Fisheries, LLC and operator Roy Wilson were charged jointly and severally under the MSA with unlawfully discarding IFQ sablefish and failing to log the discards. A \$21,500 NOVA was issued. The case settled for \$17,200.

- AK1905767 and AK1905392 F/V Anita

Owner F/V Anita LLC and operator Jay Gillman were charged jointly and severally under the MSA and the NPHA with discarding IFQ sablefish and IFQ halibut, failing to report discards, and failing to register an IFQ fishing trip in the Observer Declare and Deploy System. A \$78,250 NOVA was issued. The case settled for \$55,270.

- AK2005638; Silver Bay Seafoods, LLC

Plant operator was charged under the MSA for exceeding the applicable Rockfish Program processing cap for Pacific cod by 24,849 pounds, a 25.9% overage. A \$20,475.58 amended NOVA was issued. The case settled for \$18,428.

- AK1906825; F/V Cameron

Owner Overa Fisheries, LLC and operator Roger Overa were charged jointly and severally under the MSA with operating a vessel in the Gulf of Alaska Pacific cod fishery without carrying an operable NMFS-approved Vessel Monitoring System (VMS) and without complying with VMS requirements. A \$15,000 NOVA was issued, and the case settled for \$10,000.

- AK2003816; F/V Gulf Maiden

Owner Gulf Maiden Corporation and operator Randall Shears were charged jointly and severally under the NPHA and MSA with failing to return Pacific halibut to the sea with a minimum of injury, unlawful discard of rockfish and Pacific cod, and failure to record discards. A \$22,800 NOVA was issued, and the case settled for \$20,250.

#### 7.7.1.7 NOAA-OGC Default Judgments

The NOVAs in the following civil administrative cases became final agency action via default:

- AK1708652; F/V Vaerdal

Crewman Justin A. Williams was charged under the Magnuson-Stevens Act with harassing a female fisheries observer. A \$24,000 NOVA was issued. The NOVA became a final administrative decision due to default.

- AK2005521; F/V Legacy

Crewman Tusi Tausaga was charged under the *Magnuson-Stevens Act* with observer assault. A \$72,000 NOVA was issued. The NOVA became a final administrative decision due to default.

- AK2101775; F/V Sentinel



Owner/Operator Arseny Polushkin was charged under the *Magnuson-Stevens Act* with interfering with and harassing authorized officers during the lawful discharge of their duties. A \$8,500 NOVA was issued. The NOVA became a final administrative decision due to default.

#### 7.7.1.8 Criminal Sentencing

NOAA OLE and GCES assisted the U.S. Attorney's Office in Anchorage with the following criminal prosecution in U.S. District Court: *United States v. Stevens*, No. 3:20-cr-00773-JMK-DMS (D. Alaska 2021). On August 5, 2021, James A. Stevens, vessel owner, operator, fleet manager, and IFQ permit holder was sentenced for violating the *Lacey Act's* felony false labeling provision. Stevens was ordered to pay a \$1,000,000 fine, serve six months in federal prison, 126 days in a halfway house, and perform 80 hours of community service. During the three years that he is supervised by the United States Probation Office after he is released from prison, Stevens will be subject to VMS and EM conditions, drug testing, and other standard conditions. Stevens pled guilty to knowingly submitting false information concerning the locations and regulatory areas where 903,208 pounds of IFQ halibut and IFQ sablefish were harvested on IFQ landing reports, ADFG fish tickets, and in his logbooks. His crime spanned four IFQ fishing seasons (2014 - 2017).

#### 7.7.2 North Pacific Observer Program (NPOP)

The Program continues to be the largest observer program in the country and covers vessels in both partial coverage and full coverage. In the full coverage component of the program, every trip is monitored by 1 or 2 observers and the vast majority of groundfish harvest is covered by this portion of the program. Each year, the Annual Deployment Plan (ADP) describes the science-driven method for deployment of observers on vessels in the partial coverage component of the program (50 CFR 679.51(a)).

##### 7.7.2.1 Observer Program - 2021

Details for the 2021 operational year were presented in draft form to the Council in June 2022.<sup>16</sup> In December 2020, NMFS released the final 2021 ADP. In 2021 EM was deployed according to trip-selection. Due to limitations on transportation and health mandates associated with COVID-19, observers were deployed according to a port-based trip selection model. Under this model, observers were deployed on randomly selected trips from specific ports. This method excluded trips from observation if they did not depart and land within a port that was on the list of observable ports. The observable ports were identified as ports where travel and lodging conditions allowed observers to meet and maintain applicable health mandates and advisories for deployment into the commercial fisheries and where there were expected to be enough fishing trips originating and ending in these ports to make it cost effective to place observers in these communities.

In August 2021, NMFS released an Information Bulletin to announce the expansion of observer deployment for all ports throughout Alaska beginning on September 1, 2021. This change was consistent with the updated NOAA policy on observer waivers, which stated that vessels were no longer eligible for release from observer coverage under the Emergency Rule if a fully vaccinated or quarantined/shelter-in-place observer was available.

Despite the ongoing challenges of COVID-19 in 2021, the agency was able to safely continue most Observer Program operations. There were 378 individual observers that were trained, briefed, and equipped for deployment to vessels and processing facilities operating in the BSAI and GOA groundfish and halibut fisheries. Twenty Fisheries Monitoring and Analysis Division (FMA) staff members completed 532 debriefings from Seattle and Anchorage; the majority of debriefings were completed virtually. In 2021, observers collected data on board 296 fixed gear and trawl vessels and at 12 processing facilities for a total of 35,769 observer days (32,672 full

---

<sup>16</sup> <file:///C:/Users/Owner/Desktop/NOAA%20Annual%20Observer%20Program%20Report%202021.pdf>

coverage days on vessels and in plants; and 3,097 partial coverage days on vessels and plants). NMFS approved 170 vessels in the 2021 EM selection pool and of these, 125 vessels fished at least 1 trip. In 2021, EM data was collected from 105 unique vessels on a total of 279 trips (195 hook-and-line trips and 84 pot trips).

Overall, for all federal fisheries off Alaska, 3,747 trips (43.2%) and 423 vessels (44.2%) were monitored by either an observer or EM system in 2021. Table 3 illustrates how the observer program’s deployment categories by coverage type performed in FY20 and FY21. The total distinct observer deployed days for the full coverage component decreased by 8.8% in FY21; however, the partial coverage component increased by 46.4%. A similar trend is seen for the total vessel-plant deployed days.

**Table 7.** Observer Deployment Days by Coverage Type per ADP for FY20 and FY21.  
(Source: NMFS Fisheries Monitoring and Analysis)

FY	Coverage Type	Total Distinct Observer Deployed Days		Total Vessel- Plant Deployed Days		Total Cruises		Total Vessel- Plant Assignment	
		Value	YOY change	Value	YOY change	Value	YOY change	Value	YOY change
2019	Full	35,940		36,004		686		993	
	Partial	3,849		3,867		141		660	
2020	Full	37,957	5.60%	38,000	5.50%	652	-5.0%	824	-17.0%
	Partial	1,826	-52.6%	1,867	-51.7%	109	-22.7%	293	-55.6%
2021	Full	34,616	-8.8%	34,827	-8.4%	600	-8.0%	795	-3.5%
	Partial	2,673	46.40%	2,766	48.20%	101	-7.3%	349	19.10%

### 7.7.2.2 At-Sea Observer Deployment and Electronic Monitoring Plan - Alaska Region 2022

As in previous years, NOAA’s Annual Deployment Plan (ADP) describes how the National Marine Fisheries Service (NMFS) intends to assign at-sea and shoreside fishery observers and electronic monitoring (EM) to vessels and processing plants engaged in halibut and groundfish fishing operations in the North Pacific during the calendar year. This plan is developed under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1862), the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI FMP), the Fishery Management Plan for Groundfish of the Gulf of Alaska (GOA FMP), and the Northern Pacific Halibut Act of 1982.

For the program’s vessel full coverage component, every trip is monitored by 1 or 2 observers and the vast majority of groundfish harvest is covered by this portion of the program. In 2022, NMFS expects to monitor 3,012 trips, consisting of an estimated 17,936 days.

The ADP mainly focuses on the partial coverage component of the program and specifies the scientific deployment design and selection rate—the portion of trips that are sampled by observers and EM. In 2022, NOAA has proposed 3 sampling strata for the deployment of observers: (i) Hook-and-line vessels greater than or equal to 40 ft LOA, (ii) Pot vessels greater than or equal to 40 ft LOA, and (iii) Trawl vessels making a trip not covered by the EM EFP.

The planned deployment rates (rounded to the nearest whole number) for the ADP in 2022 are as follows:

- No-selection pool: The no-selection pool is composed of vessels that will have no probability of carrying an observer on any trips for the 2022 fishing season. These vessels are fixed-gear vessels less than 40 ft LOA and vessels fishing with jig gear, which includes handline, jig, troll, and dinglebar troll gear.

- Observer trip-selection pool: Observers will be deployed from all ports throughout Alaska in 3 sampling strata:
- Hook-and-line: This pool is composed of all vessels in the partial coverage category that are greater than or equal to 40 ft LOA that are fishing hook-and-line gear.
- Pot: This pool is composed of all vessels in the partial coverage category that are greater than or equal to 40 ft LOA that are fishing pot gear.
- Trawl: This pool is composed of all vessels in the partial coverage category fishing trawl gear.
- EM selection pool: The EM selection pool will be composed of up to 171 fixed gear vessels.
- Trawl EM trip-selection pool: This pool is composed of all vessels fishing under the EFP permit.

### 7.7.2.3 Enforcement Actions arising from NPOP Incidents

In its December 2021 report to the NPFMC, NOAA-OLE noted that in a normal year, very few observer contracts extend beyond 90 days. However, due to ongoing impacts from the COVID-19 pandemic in FY21, many contract extension were approved by the NPOP, resulting in longer and fewer observer deployments. Observer debriefings were completed remotely.

In FY21, OLE received 715 observer statements of potential violations, with 4,247 occurrences described (Table 4). In FY20, OLE received 597 statements describing 3,422 occurrences. In FY19, the last “normal” year had 956 statements describing 7,576 occurrences. The NPOP increased from deploying observers from 1 port (2020 onset of the pandemic) to 14.

**Table 8.** Status of Statements and Incidents (as of November 4, 2021) (Source: NOAA Fisheries OLE Report to NPFMC, December 2021).

Statements	Incidents	Statuses
715 statements received and reviewed in FY2021; 56 statements did not document an actual violation (no incident created in TRIDENT).	638 statements were forwarded to agents and officers; assigned to 240 unique incidents.	81 Ongoing (226 statements) 1 Forwarded for prosecution (2 statements) 7 Written Warnings issued (24 statements) 4 Summary Settlements issued (12 statements) 50 Compliance Assistance provided (164 statements) 1 Closed - Referred to another Agency (1 statement) 98 Closed - No OLE Action (209 statements)

### 7.7.2.4 NOAA-OLE New Initiative

In 2021, OLE initiated a new process for industry to self-report potential violations. The mechanism is entirely voluntary. Between October 1, 2021, and March 31, 2022, OLE received 25 self-reports from industry personnel (vessel/plant owners/operators and personnel). The reports included potential infractions such as: (i) Halibut deck sorting issues, (ii) Disruptive/Bothersome Behavior-Conflict Resolved; (iii) Amendment 80 issues (generally electronic monitoring (EM)-related); (iv) Failure to Notify (of fish being brought aboard); (v) Reasonable Assistance (failure to provide to observers); (vi) Harassment-Sexual; (vii) Recordkeeping and Reporting; and (viii) Prohibited Species-Mishandling.

According to NOAA, self-reporting of potential violations is viewed positively by both the industry and the Agency. It allows industry to provide a documented record of their perspective of an incident. The Agency can explain what actions it has taken to mitigate the issue, and to cross-reference alleged violations against observers (if reporting vessels fall in the observer coverage sectors).

### 7.7.2.5 NOAA Alaska Electronic Technologies Implementation Plan (2021-2025)<sup>17</sup>

The Alaska Region's vision is a comprehensive, integrated, and adaptable monitoring program for the groundfish and Pacific halibut fisheries off Alaska that enables verification of catch composition and quantity, including those species discarded at sea, and collection of biological information on marine resources. It builds upon previous work in the Alaska Region including the 2015 Alaska Region Electronic Technologies Implementation Plan and 2018 update.

The plan's current iteration consists of 4 strategic goals, each supported by various objectives (not listed here):

- Goal 1: NMFS has the infrastructure and regulatory requirements to support EM/ER operations.
- Goal 2: NMFS is advancing cost-effective Electronic Monitoring (EM) and Electronic Reporting (ER) capabilities through science-based studies and technological developments.
- Goal 3: NMFS has a cost-effective, adaptable, and sustainable fishery data collection program that takes advantage of the full range of current and emerging technologies.
- Goal 4: The Council and NMFS leverage global EM/ER developments while sharing Alaska perspectives with others.

The region's ET prioritization process is led by 3 monitoring committees, with each having a specific scope: (i) Fishery Monitoring Advisory Committee (FMAC), (ii) Partial Coverage Fishery Monitoring Advisory Committee (PCFMAC), and (iii) Trawl EM Committee.

The 2021-2025 plan includes a suite of EM projects that are currently in progress, have been identified by the Council as high priorities, or have been suggested through the Council's monitoring committees but have not yet been identified as a priority. They are not presented here but will be included in the planned re-certification of Alaska's Pacific halibut and sablefish fisheries

## 7.8 Other information that may affect the outcome of certification

There is no other information that may affect the outcome of certification.

## 7.9 Update on consistency to the fundamental clauses of the RFM Fishery Standard

There are no changes in the fishery relevant to the fundamental clauses of the RFM Fishery Standard.

The fishery continues to conform to the requirements of all Fundamental Clauses of the RFM Fishery Standard

---

<sup>17</sup> [https://media.fisheries.noaa.gov/2021-08/AK%20ETIP\\_080621.pdf](https://media.fisheries.noaa.gov/2021-08/AK%20ETIP_080621.pdf)

## 7.9.1 Section A. The Fisheries Management System

### 7.9.1.1 Fundamental Clause 1

<p><b>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.</b></p>	
<p>Summary of relevant changes:</p>	<p><u><i>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.</i></u></p> <p>The management systems for the Pacific halibut commercial fisheries have remained highly structured and legally supported by federal and state statutes and regulations, including by international convention. Changes to the management systems in 2020 were essentially those required to implement new or amended rules, and year-over-year adjustments to FMP measures, including allocative formulae (OFLs, ABCs, PSCs, GHs, IFQ temporary transfers), opening and closing dates, bycatch monitoring, at-sea observer coverage levels, catch reporting, and halibut sorting on deck.</p> <p>The International Pacific Halibut Commission (IPHC) and National Marine Fisheries Service (NMFS) manage fishing for Pacific Halibut through regulations established under authority of the <i>Northern Pacific Halibut Act</i> of 1982. The 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.</p> <p>Federal regulatory changes for the 2021 fishery as well as those for 2022 (to June 30<sup>th</sup>) followed the normal pre-and in-season practices of amending specific provisions and rules as required to ensure that management measures reflected decisions made and were legally binding and enforceable. Typically, in-season actions may include, but are not limited to, establishment or modification of the following: (i) closed areas, (ii) fishing periods, (iii) fishing period limits, (iv) gear restrictions, (v) recreational bag limits, (vi) size limits, and (vii) vessel clearances. These are highlighted below as well as in Section 7.2.1.</p> <p><b>In February 2021</b>, (i) Council requested the Secretary promulgate emergency regulations under the authority of Section 305(c) of the <i>Magnuson-Stevens Act</i> to allow the temporary transfer of catcher vessel halibut IFQ for all individual quota shareholders for the 2021 fishing season, (ii) Council requested the Secretary promulgate expedited regulations to remove vessel use cap regulations under 50 CFR Section 679.42(h) for IFQ halibut harvested in IPHC regulatory Areas 4A, 4B, 4C, and 4D for the 2021 IFQ fishing season, and (iii) Council requested the Secretary promulgate emergency regulations under the authority of Section 305(c) of the <i>Magnuson-Stevens Act</i> to suspend the residency requirements applicable to the Adak Community Quota Entity (CQE) Program for 2021 (50 CFR 679.41(g)(6)(ii)).</p> <p><b>In October 2021</b>, (i) Council reviewed a plan that will serve to guide its work associated with the planned allocation review of NOAA’s Pacific halibut Catch Sharing Plan (CSP). Following discussion, Council adopted the proposed workplan and tentative scheduling for IPHC Areas 2C and 3A, (ii) Council reviewed the Draft 2022 Annual Deployment Plan (ADP) for the partial coverage category of the North Pacific Observer Program and provided recommendations to NMFS for the Final 2022 ADP, (iii) Council adopted the proposed 2022 and 2023 GOA groundfish specifications for OFLs and ABCs as recommended by the SSC and the TACs as presented. Final specifications will be approved in December, (iv) Council also adopted the proposed 2022 and 2023 annual and seasonal Pacific halibut PSC limits and apportionments in the GOA as presented, (v) Council adopted the proposed 2022 and 2023 halibut discard mortality rates for the GOA as presented, (vi) Council requested that NOAA</p>

**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.**

continue work with the IPHC to ensure the collection and timely input of CPUE data from the sablefish logbooks, and to continue efforts to input data from electronic monitoring logbooks, to support the sablefish stock assessment, (vii) Council adopted the proposed 2022 and 2023 BSAI groundfish harvest specifications for OFLs and ABCs as recommended by the SSC as well as the TACs. All proposed specifications consisted of rollovers of 2022 final specifications from the 2021/2022 harvest specifications as approved in December 2020, and (viii) Council also adopted the proposed 2022 and 2023 halibut discard mortality rates for the BSAI as presented.

**In December 2021,** (i) Council approved the 2021 BSAI Groundfish SAFE report as well as to adopt the 2022/2023 OFLs, ABCs and TACs for groundfish in the BSAI as presented, (ii) Council approved the PSC amounts and distributions as presented as well as the Pacific halibut DMRs for 2022/2023 as presented, (iii) Council approved the 2021 GOA Groundfish SAFE report as well as to adopt the final 2022 and 2023 GOA groundfish specifications for OFLs and ABCs as recommended by the SSC, and the TACs for groundfish as presented, and (iv) Council sets the final 2022 and 2023 Pacific halibut PSC limits, allowances, and apportionments in the GOA as presented and also approved the halibut discard mortality rates for 2022 and 2023 as presented.

**In February 2022,** (i) Council accepted the Allocation Review of the Halibut Catch Sharing Plan for Area 2C/3A allocation review as complete and final with the addition of information to the extent practicable recommended by the SSC, (ii) Council identified various issues regarding the current Groundfish Management Policy but took no specific action, (iii) Council requested that the Secretary promulgate emergency regulations under the authority of Section 305(c) of the *Magnuson-Stevens Act* to allow the temporary transfer of catcher vessel halibut IFQ for all individual quota shareholders for the 2022 fishing season, and (iv) Council requested that the Secretary promulgate expedited regulations to remove vessel use cap regulations under 50 CFR Section 679.42(h)(1) for IFQ halibut harvested in IPHC regulatory Areas 4A, 4B, 4C, and 4D for the 2022 IFQ fishing season.

**In April 2022,** Council proposed revisions to parts of the IFQ/CDQ Programs that included: (i) a change to biodegradable panel requirements to provide increased flexibility for innovation in gear designs for vessels fishing IFQ across the GOA and BSAI, (ii) removal of flagpole, radar reflector, and buoy requirements for GOA sablefish longline pot gear, (iii) an element which would allow vessels targeting halibut IFQ in pot gear in the GOA to use a tunnel opening larger than 9 inches if they also have sablefish IFQ on board. This element would allow vessels with both sablefish and halibut IFQ to target halibut and larger sablefish more efficiently in longline pot gear, (iv) a change to pot limits in Western Yakutat which would allow vessels fishing IFQ to use 200 pots per vessel, and modifications to gear retrieval requirements in the Central GOA and Southeast Outside Area, (v) an element which would authorize jig gear as a legal gear type to harvest sablefish IFQ/CDQ in the BSAI and GOA, and (v) a five-year exemption to Adak CQE residency requirements.

State regulatory changes for 2021 and 2022 (partial) for the Pacific halibut commercial fishery also followed the normal pre-and in-season practices of amending specific provisions and rules as required to ensure that management measures reflected decisions made and were legally binding and enforceable. The Alaska Board of Fisheries received 79 regulatory proposals for the 2021/22 cycle; however, only one specifically targeted the commercial halibut fishery i.e., Proposal 278 - Gear for halibut and escape mechanisms for shellfish and groundfish pots including halibut.

**In October 2021,** the Board approved by 7-0 vote to include pots as lawful gear for commercial halibut fishing statewide (5 AAC 28.051, 5 AAC 39.145). This allows holders of halibut IFQ or CDQ



**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.**

quotas to retain halibut from pot gear. State regulations were currently inconsistent with new federal and IPHC regulations for allowable gear types and pots were not legal gear in the commercial halibut fishery when the regulations were adopted in 2020.

In **March 2022**, the Board approved by a 6-0 vote to require CFEC permit holders fishing for groundfish, or halibut using hook-and-line, pot, or jig gear in the Eastern Gulf of Alaska Area to retain and land all rockfish, including thornyhead rockfish.

**Management Strategy Evaluation**

As previously reported, the MSE analysis was completed in 2020 with an evaluation and comparison of many candidate management procedures to be presented to the Commission for potential adoption and implementation in 2021. The MSE program of work was updated in 2021 for completion in 2023 and included items related to improving the MSE framework, investigating management procedures, and evaluation of the results. The Audit team understands that a meeting of the Management Strategy Advisory Board (MSAB) is scheduled to occur in late 2022 to review MSE results related to the current program of work.

A detailed paper on the MSE Program of Work (2021-2023) was tabled and reviewed at the 98<sup>th</sup> Session of the IPHC Annual Meeting. The Commission reviewed the paper and made numerous observations, including: (i) requesting that work continue on methods to evaluate MSE outcomes, including providing new alternative methods to quickly evaluate large sets of management procedures, which may involve ranking them in various ways, and (ii) recommending that an MSE agenda item be added to the upcoming special session to discuss and provide direction on elements of the MSE workplan.

The IPHC has defined 4 primary objectives for the MSE. Objective 1 is a biological sustainability (conservation) objective – Keep the female spawning biomass above a limit to avoid critical stock sizes and conserve spatial population structure. Objectives 2 to 4 are fishery objectives - Maintain spawning biomass around a level that optimizes fishing activities, limit catch variability, and provide directed fishing yield.

**IPHC Harvest Strategy Policy**

The policy’s interim status continued to progress with work under the MSE taking a prominent position in the policy’s final orientation. The document is based on an amalgamation of current IPHC practices and best practices in harvest strategy policy. It is not intended to be a definitive policy, noting that the IPHC is yet to adopt a formal harvest strategy for Pacific halibut.

The IPHC has set out 4 primary objectives for the MSE including a biological sustainability (conservation) objective and three fishery objectives. The former objective includes two measurable objectives: (i) maintain a female spawning stock biomass above a biomass limit reference point at least 95% of the time, and (ii) maintain a defined minimum proportion of female spawning biomass in each Biological Region. The fishery-specific objectives include eight measurable objectives: (i) maintain the coastwide female spawning biomass above a biomass target reference point at least 50% of the time, (ii) limit annual changes in the coastwide TCEY, (iii) limit annual changes in the Regulatory Area TCEY, (iv) optimize average coastwide TCEY, (v) optimize TCEY among Regulatory Areas, (vi) optimize the percentage of the coastwide TCEY among the Regulatory Areas, (vii) maintain a minimum TCEY for each Regulatory Area, and (viii) maintain a percentage of the coastwide TCEY for each Regulatory Area.

**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.**

**Alaska Bycatch Review Task Force**

Established in November 2021, the Task Force’s objective is to help better understand unintended bycatch of high value fishery resources in state and federal waters. Its mandate which sunsets on November 30, 2022, is to:

- Study what impacts bycatch has on fisheries.
- Evaluate and recommend policies informed by a better understanding of the issue of bycatch of high-value Alaska fishery resources.
- Ensure state agencies are leveraging available resources to better understand the issue of bycatch.
- Utilize the best available science to inform policy makers and the public about these issues.

*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. 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.

*1.3./1.4./1.5./1.6./ Transboundary stocks.*

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. 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 were 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 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.

*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. Meeting minutes for the IPHC and the NPFMC in 2020 and 2021 indicate that several adjustments were introduced to the fishery’s management and conservation measures in support of each agency’s strategic plans and objectives. These are detailed in the meeting summaries listed in sub-clause 1.1 (also Section 7.2.1 of the main report and Table 1).



<p>1.</p>	<p><b>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.</b></p>
	<p>The IPHC and the NPFMC set their 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. The continuous public input into both consultation and engagement processes effectively provides public scrutiny of their decision-making activities.</p> <p>According to the 2021 annual report for the Legislative Affairs Agency of the State of Alaska, there were no repeals, amendments of legislation or executive orders in respect of the Pacific halibut fishery in state waters (available at: <a href="http://akleg.gov/docs/pdf/SumAKLeg_2021.pdf">http://akleg.gov/docs/pdf/SumAKLeg_2021.pdf</a> and select Summary of legislation 2021).</p> <p>However, in its December 2021 report to the NPFMC, the ADFG noted that several proposals would be before the Alaska Board of Fisheries for consideration in January 2022. The lone Pacific halibut commercial fishery proposal was for the eastern GOA area and would require CFEC permit holders fishing for groundfish, or halibut using hook-and-line, pot, or jig gear to retain and land all rockfish. This proposal would mirror federal rockfish retention requirements to provide better estimates of rockfish catch, reduce waste and incentives to discard, and maintain consistency between state and federal fisheries management.</p> <p>Furthermore, an online search of the Board’s Proposal Book for the 2021/2022 cycle indicated that of the 79 proposals, the only proposed regulatory action affecting the Pacific halibut commercial fishery was Proposal 278 - Gear for halibut and escape mechanisms for shellfish and groundfish pots including halibut. The Board’s previous considerations regarding Pacific halibut are highlighted in Table 2.</p> <p>The state established a Bycatch Review Task Force in November 2021 to help better understand unintended bycatch of high value fishery resources in state and federal waters. Its mandate sunsets on November 30, 2022.</p> <p><u><i>1.8. Transparent management arrangements and decision making</i></u>  The IPHC remained active in furthering its’ action plan in relation to the 2<sup>nd</sup> Performance Review. In April 2019, it provided an update on the implementation of the recommendations arising from the 1<sup>st</sup> Performance Review. Criteria 5 of the current iteration addresses decision-making (and dispute resolution) processes by examining the extent to which the processes are transparent, consistent and facilitate the adoption of management regulations in a timely and effective manner. It is anticipated that the IPHC’s Rules of Procedure will be amended as changes to the decision-making processes are adopted.</p> <p>There were no reported changes to the current decision-making processes of other federal and state agencies.</p> <p><u><i>1.9. Compliance with international conservation and management measures</i></u>  The fishery does not occur in the high seas and as such this Clause is <b>not applicable</b>.</p>
<p>References:</p>	<ol style="list-style-type: none"> <li>1. Federal statutes: Magnuson-Stevens Fishery Conservation and Management Reorganization Act, Sustainable Fisheries Act, Marine Mammal Protection Act, Coastal Zone Management Act, Sustainable Fisheries Act, Endangered Species Act, National Environmental Policy Act, National Marine Sanctuaries Act, Northern Pacific Halibut Act.</li> <li>2. State statutes: Alaska Administrative Code, Alaska Statutes.</li> </ol>

<p><b>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.</b></p>	<ol style="list-style-type: none"> <li>3. Binational: Convention between the United States and Canada for the Preservation of the Halibut Fishery of the North Pacific Ocean and Bering Sea, Northern Pacific Halibut Act.</li> <li>4. IPHC Annual Report 2021: <a href="https://iphc.int/uploads/pdf/ar/iphc-2022-ar2021-r.pdf">https://iphc.int/uploads/pdf/ar/iphc-2022-ar2021-r.pdf</a></li> <li>5. IPHC Report of the 97<sup>th</sup> Session of the IPHC Annual Meeting (AM097): <a href="https://www.iphc.int/uploads/pdf/am/am097/iphc-2021-am097-r.pdf">https://www.iphc.int/uploads/pdf/am/am097/iphc-2021-am097-r.pdf</a></li> <li>6. IPHC Report of the 98<sup>th</sup> Session of the IPHC Annual Meeting (AM098): <a href="https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-r.pdf">https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-r.pdf</a></li> <li>7. IPHC Fishery Regulations 2022: <a href="https://www.iphc.int/uploads/pdf/regs/iphc-2022-regs.pdf">https://www.iphc.int/uploads/pdf/regs/iphc-2022-regs.pdf</a></li> <li>8. IPHC Harvest Strategy Policy (2019): <a href="https://iphc.int/uploads/pdf/hsp/iphc-2019-hsp2019.pdf">https://iphc.int/uploads/pdf/hsp/iphc-2019-hsp2019.pdf</a></li> <li>9. NPFMC Newsletter - April 2021: <a href="https://www.npfmc.org/april-2021-newsletter/">https://www.npfmc.org/april-2021-newsletter/</a></li> <li>10. ADFG Report to NPFMC - December 2021: <a href="https://meetings.npfmc.org/CommentReview/DownloadFile?p=ebc3d40d-da94-42e9-b13a-ad957a637fed.pdf&amp;fileName=B5%20ADFG%20Report.pdf">https://meetings.npfmc.org/CommentReview/DownloadFile?p=ebc3d40d-da94-42e9-b13a-ad957a637fed.pdf&amp;fileName=B5%20ADFG%20Report.pdf</a></li> <li>11. Alaska Board of Fisheries Proposal Book 2021 <a href="https://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.proposalbook#fixed,,2,,28,proposal_book.pdf">https://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.proposalbook#fixed,,2,,28,proposal_book.pdf</a> (alaska.gov)</li> <li>12. NOAA (ARO): Alaska Groundfish Harvest Specifications - Supplementary Information Report (Rev. January 2022): currently not available electronically.</li> <li>13. Site visit (virtual): June 21, 2022, with AFDFG staff - F. Bowers, R. Ehresmann, A. Beder, P. Joy.</li> <li>14. Site visit (virtual): June 22, 2022, with NOAA Regional staff - M. Furuness, A. Miller, M. Smith, M. Zaleski.</li> <li>15. Site visit (virtual): June 23, 2022, with NOAA staff - D. Witherell, S. Cunningham, D. Evans, S. Cleaver, A. Henry.</li> <li>16. Site visit (virtual): June 24, 2022, with IPHC staff - I. Stewart, A. Hicks, B. Hutniczak</li> <li>17. Site visit (virtual): June 30, 2022, with ABOF staff - K. Tibbles.</li> <li>18. Site visit (virtual): June 30, 2022, with client representative - W. Lew.</li> <li>19. Site visit (virtual): July 7, 2022, with NOAA Auke Bay Lab staff - C. Lunsford, C. Rodgveller.</li> </ol>
<p>Statement of consistency1. to the RFM Fishery Standard</p>	<p><b>The fishery conforms to the requirements of Fundamental Clause 1 of the RFM Fishery Standard.</b></p>

**7.9.1.2 Fundamental Clause 2**

<p><b>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.</b></p>	<p><u>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.</u></p> <p>The operations of the main federal and state organizations with mandates promoting fishery and coastal management and conservation at the state, federal and international levels continued to be guided by established multi-year strategic plans that encompass their core programs, and by internal policies and practices that govern all aspects of their operations.</p> <p>All the fishery agencies have processes, committees and groups that allow coastal zone resource management issues to be brought to formal review and engagement. The NPFMC, IPHC, NMFS and ADFG meetings are fora for consulting and creating awareness of issues to do with coastal, ecosystem-based resource management and their potential impact on fish stocks and socio-</p>
--	---

**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.**

economic interests. Large-scale projects in Alaska are managed by the Office of Project Management and Permitting of the Department of Natural Resource (ADNR). The Office is the lead coordinating agency for interstate agency participation in implementation of the *Alaska National Interest Lands Conservation Act (ANILCA)*. ANILCA specifically directs federal agencies to consult and coordinate with the State of Alaska.

The coastal zone is monitored as part of the coastal management process using physical, chemical, biological, economic, and social parameters. Involvement includes federal and state agencies and programs including the U.S. Fish and Wildlife Service, the NMFS Fisheries Science Centre, the NMFS’ Habitat Conservation Division, and their Essential Fish Habitat monitoring and protection program, the USCG, and the Alaska Department of Fish and Game. For example, in Alaska, the State has established Critical Habitat Areas (AS 16.20.500) to “protect and preserve habitat areas especially crucial to the perpetuation of fish and wildlife, and to restrict all other uses not compatible with the primary purpose.” Permits are required from the Habitat Section for any habitat altering activity (AS 16.20.520-530) or any activity which disturbs fish or wildlife other than lawful hunting, trapping, and fishing.

Moreover, mechanisms remained in place to allow cooperation between neighboring States to improve coastal resource management through information exchange, joint or coordinated planning and decision-making, and integrated coastal management plans. During the COVID-19 pandemic and thereafter, formal, and informal consultation and engagement processes were adjusted in order to continue to promote public and stakeholder involvement in the decision-making and management processes.

Laws, regulations, and public outreach activities were in place to settle conflicts that may arise within the fisheries sector, or between fisheries resource users and other coastal users. There was no evidence to indicate that the decisions rendered in 2021 and 2022 (partial) led to conflicts between users or others. Moreover, the management system was not subject to continual unresolved or repeated disputes or political instability.

All major agencies at the federal and state levels participate in the NEPA processes that are intended to manage coastal area resources in a transparent, responsible, and sustainable manner. Section 307(c)(1) of the federal *Coastal Zone Management Act* requires federal activities that affect any land or water use or natural resource of a state’s coastal zone be conducted in a manner consistent, to the maximum extent practicable, with approved state coastal management programs. The requirements for the consistency determination are set forth in NOAA regulations at 15 CFR part 930, subpart C.

*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 Centre runs the Economic and Social Sciences Research Program in Alaska. The aim of the Program is to provide economic and sociocultural information to assist NMFS in meeting its stewardship responsibilities. Regarding socio-economic data collection, the Program produces an annual Economic Status Report of the Groundfish fisheries in Alaska. NOAA staff also conduct research to evaluate the benefits and costs of alternative management actions for commercial fisheries, prioritize management needs, and design policies that sustainably maximize societal benefits from ocean and coastal resources. The agency’s main areas of interest include:

- Cost and earning reports

**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.**

- Economic performance of fisheries
- Regional economic impacts
- Spatial choice behavior
- Market dynamics and consumer preferences
- Capacity and technical efficiency measurement
- Allocation of resources among user groups

Under the Convention, the IPHC's mandate is optimum management of the Pacific halibut resource, which necessarily includes an economic dimension. The goal of the IPHC's economic studies is to provide stakeholders with an accurate and all-sectors assessment of the socioeconomic impact of the Pacific halibut resource that includes the full scope of Pacific halibut's contribution to regional economies of Canada and the United States of America. The most recent study (see ref #12) requires active participation of stakeholders, including commercial fishers (vessel owners), first wholesalers (processors), and charter business owners, in developing the necessary data for analysis.

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 federal and State agencies that cooperate at the sub-regional level 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)

The ADFG's Habitat Division conducts research on coastal and marine environments throughout Alaska to document and mitigate human-related impacts, changes in habitat and 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.

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 IPHC and NPFMC's administrative rules provide a venue for the 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.

References:	<ol style="list-style-type: none"> <li>1. IPHC Rules of Procedure (2022): <a href="https://iphc.int/uploads/pdf/basic-texts/iphc-rop-current.pdf">https://iphc.int/uploads/pdf/basic-texts/iphc-rop-current.pdf</a></li> <li>2. IPHC Strategic Plan 2019-2023: <a href="https://iphc.int/uploads/pdf/sp/iphc-2019-sp23.pdf">https://iphc.int/uploads/pdf/sp/iphc-2019-sp23.pdf</a></li> </ol>
-------------	---

<p><b>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.</b></p>	<ol style="list-style-type: none"> <li>3. IPHC Management Strategy Evaluation: <a href="https://iphc.int/management/science-and-research/management-strategy-evaluation">https://iphc.int/management/science-and-research/management-strategy-evaluation</a></li> <li>4. IPHC Annual Meeting (2021): <a href="https://iphc.int/venues/details/97th-session-of-the-iphc-annual-meeting-am097">https://iphc.int/venues/details/97th-session-of-the-iphc-annual-meeting-am097</a></li> <li>5. IPHC Annual Meeting (2022): <a href="https://www.iphc.int/venues/details/98th-session-of-the-iphc-annual-meeting-am098">https://www.iphc.int/venues/details/98th-session-of-the-iphc-annual-meeting-am098</a></li> <li>6. NOAA Alaska Geographic Strategic Plan 2020 - 2023: <a href="https://media.fisheries.noaa.gov/dam-migration/noaa_alaska_supdate.pdf">https://media.fisheries.noaa.gov/dam-migration/noaa_alaska_supdate.pdf</a></li> <li>7. NPFMC Committees: <a href="https://www.npfmc.org/committees/">https://www.npfmc.org/committees/</a></li> <li>8. NPFMC Management philosophy, policies, and community engagement: <a href="https://www.npfmc.org/management-policies/">https://www.npfmc.org/management-policies/</a></li> <li>9. ADFG Strategic plans: <a href="https://www.adfg.alaska.gov/index.cfm?adfg=plans.strategic">https://www.adfg.alaska.gov/index.cfm?adfg=plans.strategic</a></li> <li>10. ABOF Policies: <a href="https://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.findings">https://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.findings</a></li> <li>11. NOAA (ARO): Alaska Groundfish Harvest Specifications - Supplementary Information Report (Rev. January 2022): currently not available electronically.</li> <li>12. Site visit (virtual): June 21, 2022, with AFDFG staff - F. Bowers, R. Ehresmann, A. Beder, P. Joy.</li> <li>13. Site visit (virtual): June 22, 2022, with NOAA Regional staff - M. Furuness, A. Miller, M. Smith, M. Zaleski.</li> <li>14. Site visit (virtual): June 23, 2022, with NOAA staff - D. Witherell, S. Cunningham, D. Evans, S. Cleaver, A. Henry.</li> <li>15. Site visit (virtual): June 24, 2022, with IPHC staff - I. Stewart, A. Hicks, B. Hutniczak.</li> <li>16. Site visit (virtual): June 30, 2022, with ABOF staff - K. Tibbles.</li> <li>17. Site visit (virtual): June 30, 2022, with client representative - W. Lew.</li> <li>18. Site visit (virtual): July 7, 2022, with NOAA Auke Bay Lab staff - C. Lunsford, C. Rodgveller.</li> </ol>
<p>Statement of consistency to the RFM Fishery Standard</p>	<p><b>The fishery conforms to the requirements of Fundamental Clause 2 of the RFM Fishery Standard.</b></p>

**7.9.1.3 Fundamental Clause 3**

<p><b>3. Management objectives shall be implemented through management rules and actions formulated in a plan or other framework.</b></p>	<p><u><i>3.1. Long-term management objectives shall be translated into a plan or other management document and be subscribed to by all interested parties.</i></u></p> <p>The components of the management systems for the 2021 commercial Pacific halibut fishery at the binational level (IPHC Regulatory Area) and national level (GOA and BSAI Areas) continued to reflect various long-term and short-term objectives as prescribed by established statutes, rules, and measures.</p> <p>The processes remained highly integrated and timed throughout the year to allow for an assortment of scientific, economic, and social data to be collected, modelled and evaluated against various management objectives. Established rules continued to be applied and resulted in annual adjustments to the Fishery Management Plans (FMPs) for the GOA and BSAI Areas. The Plans themselves are composites of several sub-plans such as those for (i) at-sea observer deployments, (ii) electronic monitoring, (iii) ecosystem management, and (iv) research.</p> <p><b>IPHC - Management Strategy Evaluation</b></p> <p>The IPHC continued to undertake a major Management Strategy Evaluation (MSE) process with the aim of developing a formal process of evaluating existing and alternative management procedures</p>
---	---

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

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.

**IPHC - Stock Assessment**

The IPHC’s current interim management procedure specifies a target level of fishing intensity of a Spawning Potential Ratio (SPR) corresponding to an F43%; this equates to the level of fishing that would reduce the lifetime spawning output per recruit to 43% of the unfished level given current biology, fishery characteristics and demographics. Based on the 2021 assessment, the 2021 fishing intensity is estimated to correspond to an F46% (credible interval: 35-63%).

The projections for this assessment are more optimistic than those from the 2019 and 2020 assessments due largely to the increasing projected maturity of the 2012-year class. This translates to a lower probability of stock decline for 2022 than in recent assessments as well as a decrease in this probability through 2023-24. There is greater than a 50% probability of stock decline in 2023 (55-64/100) for the entire range of SPR values from 40-46%, which include the status quo TCEY and the F43% reference level. The 2022 “3-year surplus” alternative, corresponds to a TCEY of 38.0 million pounds (~17,240 t), and a projected SPR of 48% (credible interval 32-63%). At the reference level (a projected SPR of 43%), the probability of spawning biomass decline from 2022 to 2023 is 59%, decreasing to 55% in three years, as the 2012 cohort matures. The one-year risk of the stock dropping below SB30% ranges from 43% at the F46% level to 45% at the at the F40% level of fishing intensity.

**Alaska Groundfish Harvest Specifications for 2022 and 2023:**

Annually, the Council’s harvest specifications process is to apply the harvest strategy to the best available scientific information to derive annual harvest specifications. The Council’s Groundfish Plan Teams and Scientific and Statistical Committee (SSC) use stock assessments to calculate biomass, overfishing levels, and acceptable biological catch (ABC) limits for each species or species group for specified management areas. Overfishing levels and ABCs provide the foundation for the Council and NMFS to develop the total allowable catch (TAC) for each species or species group. Overfishing levels and ABC amounts reflect fishery science, applied in light of the requirements of the FMPs. The TACs recommended by the Council are either at or below the ABCs. The sum of the TACs for each area (the BSAI or GOA) is constrained by the optimum yield established for that area. The annual harvest specifications also set or apportion the prohibited species catch (PSC) limits.

As for the current 2020 and 2021 specifications, the revised harvest strategy provides for orderly and controlled commercial fishing for groundfish; promotes sustainable incomes to the fishing, fish processing, and support industries; supports sustainable fishing communities; and provides a steady supply of fish products to consumers. The harvest strategy balances groundfish harvest in the fishing year with ecosystem needs such as non-target fish stocks, marine mammals, seabirds, and habitat.

**Alaska EEZ:**

The NPFMC and the NOAA-NMFS continued to collaborate throughout 2020 on several administrative and regulatory changes of importance to the GOA and BSAI groundfish management plans including for Pacific halibut.

*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.*



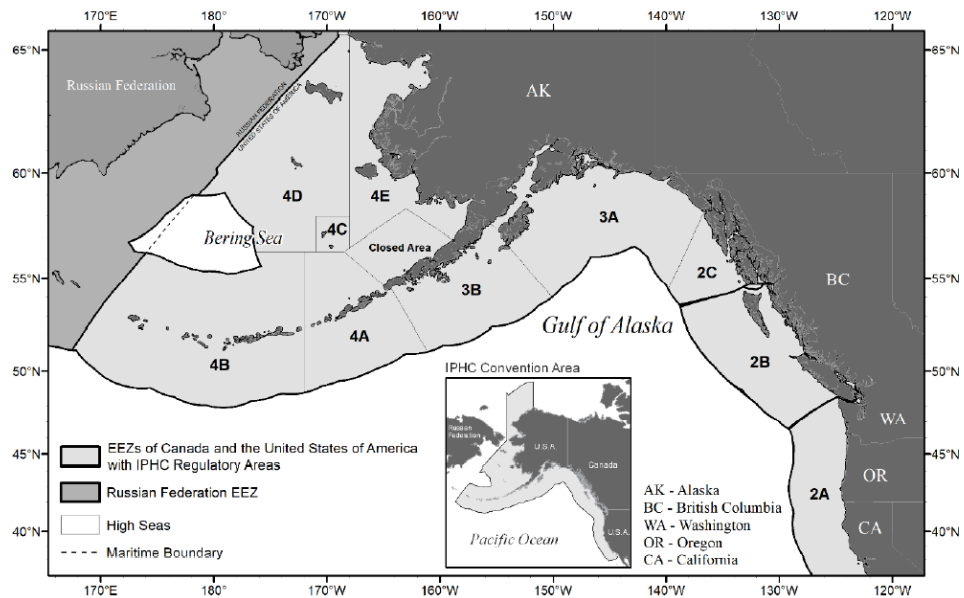
<b>3. Management objectives shall be implemented through management rules and actions formulated in a plan or other framework.</b>	<p>The groundfish fisheries in Federal waters off Alaska are managed under the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI FMP) and the Fishery Management Plan for Groundfish of the Gulf of Alaska (GOA FMP). In the Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI), groundfish harvests are managed subject to annual limits on the amounts of each species of fish, or of each group of species, that may be taken. The fishery is a closed access fishery managed under an Individual Fishing Quota (IFQ) system. The Pacific halibut fishery is jointly managed by the IPHC and NOAA under a suite of rules, measures and policies that are harmonized and complimentary.</p> <p>Each agency has a multi-year strategic plan that guide fisheries management decisions against a framework of long and short-term objectives that (i) support responsible and sustainable fisheries, (ii) promote economic viability across all sectors, (iii) recognize and respect indigenous treaty rights, and (iv) sustain dependent, rural communities.</p>
<b>References:</b>	<ol style="list-style-type: none"> <li>1. Official meeting minutes and reports as they appeared on the websites of the NPFMC, the NMFS and the IPHC, including associated links to other documents.</li> <li>2. IPHC Report IPHC-2022-AM098-10: Summary of the data, stock assessment, and harvest decision table for Pacific halibut (<i>Hippoglossus stenolepis</i>) at the end of 2021: <a href="https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-10.pdf">https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-10.pdf</a></li> <li>3. NOAA (ARO): Alaska Groundfish Harvest Specifications - Supplementary Information Report (Rev. January 2022): currently not available electronically.</li> <li>4. Site visit (virtual): June 21, 2022, with AFDFG staff - F. Bowers, R. Ehresmann, A. Beder, P. Joy.</li> <li>5. Site visit (virtual): June 22, 2022, with NOAA Regional staff - M. Furuness, A. Miller, M. Smith, M. Zaleski.</li> <li>6. Site visit (virtual): June 23, 2022, with NOAA staff - D. Witherell, D. Evans, S. Cunningham, S. Cleaver, A. Henry.</li> <li>7. Site visit (virtual): June 24, 2022, with IPHC staff - I. Stewart, A. Hicks, B. Hutniczak.</li> <li>8. Site visit (virtual): June 30, 2022, with ABOF staff - K. Tibbles.</li> <li>9. Site visit (virtual): June 30, 2022, with client representative - W. Lew.</li> <li>10. Site visit (virtual): July 7, 2022, with NOAA Auke Bay Lab staff - C. Lunsford, C. Rodgveller.</li> </ol>
<b>Statement of consistency to the RFM Fishery Standard</b>	<b>The fishery conforms to the requirements of Fundamental Clause 3 of the RFM Fishery Standard.</b>

## 7.9.2 Section B. Science and Stock Assessment Activities

### 7.9.2.1 Fundamental Clause 4

<b>4. There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.</b>	
<b>Summary of relevant changes:</b>	<p><b><u>4.1. All fishery removals and mortality of the target stock(s) shall be considered by management. All fishery removals and mortality of the target stocks is considered by management.</u></b></p> <p>A comprehensive suite of data sources is used to support the statistical stock assessment model produced by the International Pacific Halibut Commission and these data are collected using an integrated data collection scheme. The input data of fishery removals are updated annually to include newly available information and refined to reflect the most current and accurate information available to the IPHC. Data sources relative to management include commercial fishery WPUE, commercial fishery age composition data, and 2021 mortality estimates for all fisheries still operating after 31 October. Data for assessment use are aggregated to four Biological Regions: Region 2 (Areas 2A, 2B, and 2C), Region 3 (Areas 3A,3B), Region 4 (4A, 4CDE) and Region 4B and then coastwide.</p>



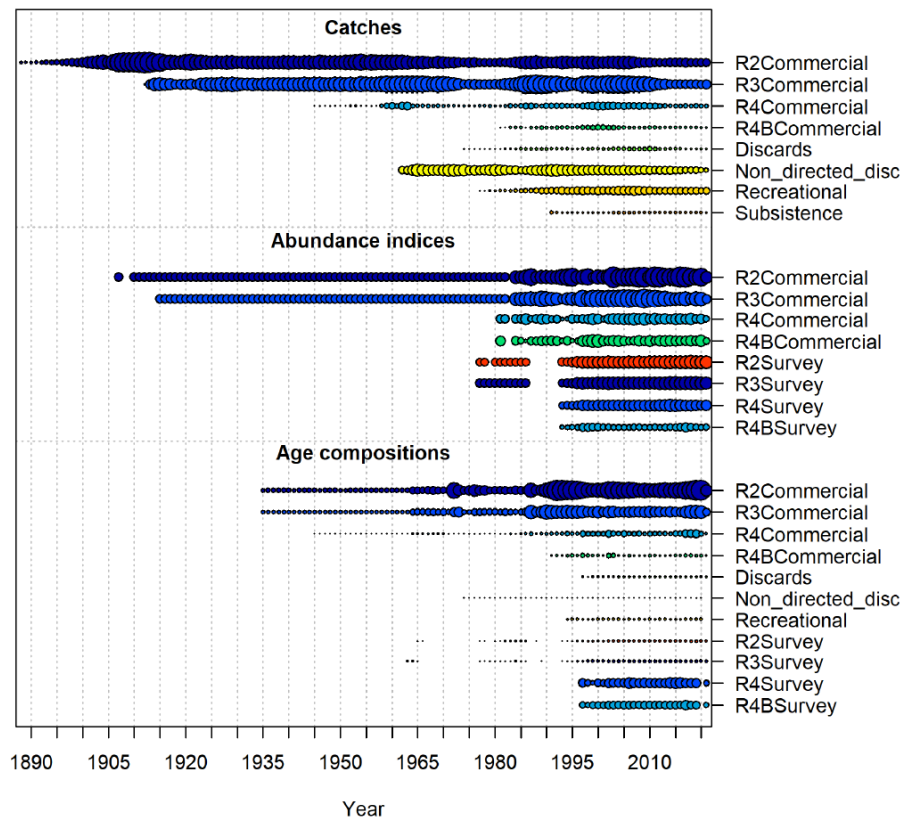


**Figure 7. IPHC Convention Area (Insert) and IPHC Regulatory Areas**

In addition to the aggregate mortality (including all sizes of Pacific halibut), the assessment includes data from both fishery dependent and fishery independent sources as well as auxiliary biological information, with the most spatially complete data available since the late-1990s. Primary sources of information for this assessment include modelled indices of abundance (IPHC-2021-AM097-07; based on the FISS [in numbers and weight] and other surveys), commercial fishery Catch-Per-Unit-Effort (weight), and biological summaries from both sources (length-, weight-, and age-composition data). In aggregate, the historical time series of data available for this assessment represents a considerable resource for analysis. The range of relative data quality and geographical scope are also considerable, with the most complete information available only in recent decades. A detailed summary of input data used in this stock assessment can be found in IPHC-2022-SA-02 on the IPHC’s stock assessment webpage (the input data files are publicly available). A visual representation of the length of each data stream and associated precision of each input estimate is displayed below.

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. 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<sup>18</sup> 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. Full stock assessment consistent with contemporary methods, was completed at the end of 2021, and all fishery removals and mortality of Pacific Halibut are considered in the assessment and management of the stock.

<sup>18</sup> <https://elandings.alaska.gov/>



**Figure 8.** Overview of data Sources. Circle areas are Proportional to magnitude (mortality/catches) or precision of the data (larger circles indicate greater precision for indices of abundance and age composition data)

In the 2021 assessment, Pacific halibut mortality consists of directed/targeted commercial fishery landings and discard mortality (including research), recreational fisheries, subsistence, and non-directed discard mortality ('bycatch') in fisheries targeting other species and where Pacific halibut retention is prohibited. Over the period 1888-2021 mortality has totaled 7.3 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 mortality was above this long-term average from 1985 through 2010 and has averaged 38.5 million pounds (~17,500 t) from 2017-21. Coastwide commercial Pacific halibut fishery landings (including research landings) in 2021 were approximately 24.5 million pounds (~11,100 t), up 9% from 2020. Discard mortality in non-directed fisheries was estimated to be 3.5 million pounds in 2021 (~1,600 t)<sup>2</sup>, down 23% from 2020 and representing the smallest estimate in the time-series. The total recreational mortality (including estimates of discard mortality) was estimated to be 7.6 million pounds (~3,470 t) up 43% from reduced fisheries that occurred in 2020. Mortality from all sources increased by 10% to an estimated 37.7 million pounds (~17,100 t) in 2021.

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

The North Pacific Observer Program (Observer Program, administered by NOAA Fisheries) works on commercial groundfish and halibut fisheries in the Bering Sea, Aleutian Islands, and Gulf of Alaska. The program trains, briefs, debriefs, and oversees over 450 observers annually who collect catch data onboard fishing vessels and at onshore processing plants that is used for in-season management and scientific purposes such as stock assessments and ecosystem studies. The program ensures that the

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

data collected by observers are of the highest quality possible by implementing rigorous quality control and quality assurance processes for the data collected by observers.

The Observer Program provides the regulatory framework for NOAA Fisheries certified observers to collect data on groundfish and halibut fisheries. The information collected by observers provides the best scientific information to manage the fisheries and to develop measures to minimize bycatch. Observers collect biological samples and fishery-dependent information on total catch and interactions with protected species. Managers use data collected by observers to monitor quotas, manage groundfish and prohibited species catch, and document and reduce fishery interactions with protected resources. Division staff process data and make it available to the Sustainable Fisheries Division of the Alaska Regional Office for quota monitoring, to scientists at the Alaska Fisheries Science Center for stock assessment, ecosystem investigations, and an array of research investigations, as well as the fishing industry itself which relies on observer data to monitor quotas and prohibited species catch (PSC).

In January 2013, NOAA Fisheries changed how observers in the partial coverage category are deployed, how observer coverage in the partial coverage category is funded, and which vessels and processors must have some or all of their operations observed. These changes increased the statistical reliability of data collected by the program, addressed cost inequality among fishery participants, and expanded observer coverage to previously unobserved fisheries. This program information constitutes the Small Entity Compliance Guide required under section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996.

All participants in the federally managed commercial groundfish fisheries off Alaska (except catcher vessels delivering unsorted cod ends to a mothership) are subject to Observer Program requirements. Through the Annual Deployment Plan, NOAA Fisheries has the flexibility to decide when and where to deploy observers in the partial coverage category based on a scientifically defensible deployment plan reviewed annually by the Council. Catcher vessels operating in the halibut IFQ or CDQ are in the 'partial coverage category' Three pools are specified (<https://www.fisheries.noaa.gov/alaska/fisheries-observers/north-pacific-observer-program>):

1. No-selection pool: The no-selection pool is composed of vessels that will have no probability of carrying an observer on any trips for the 2019 fishing season. These vessels are:
  - fixed-gear vessels less than 40 ft LOA and vessels fishing with jig gear, which includes handline, jig, troll, and dinglebar troll gear; and
  - four fixed-gear vessels voluntarily participating in EM innovation and research (Appendix D).
2. Electronic monitoring (EM) trip-selection pool: NMFS has approved 169 fixed gear vessels in the EM selection pool in 2020. Once NMFS approves a vessel for the EM selection pool, that vessel will remain in the EM selection pool for the duration of the year. Prior to fishing, each vessel must have a NMFS-approved VMP.
3. Observer Trip-Selection Pool: There are 3 sampling strata in the trip-selection pool for the deployment of observers:
  - Hook-and-line: This pool is composed of all vessels in the partial coverage category that are greater than or equal to 40 ft LOA that are fishing hook-and-line gear.
  - Pot: This pool is composed of all vessels in the partial coverage category that are greater than or equal to 40 ft LOA that are fishing pot gear.

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

- Trawl: This pool is composed of all vessels in the partial coverage category fishing trawl gear making a trip not covered by the EM EFP, including all trips using non-pelagic gear.
- 4. Trawl EM trip-selection pool: If the EFP application is approved and fishing occurs in 2020, this pool would be composed on all vessels fishing under the EFP permit.

In the near term (2022) there are no plans for observer coverage on halibut vessels less than 40' LOA. Previous work by the surveillance team, using data provided to us by a joint NFMS and IPHC effort, indicated that there was high spatial overlap in effort between the two fleets (<40ft fleet and >40ft fleet). The under-40 ft fleet had more near-shore activity in southeast Alaska than the >40ft vessels. We also found that effort for vessels <40ft from 2010-2017 was highest in the Bering 4C area, and 270. Besides Bering 4C, there was high spatial overlap in effort between the two fleets, though the under 40ft fleet had more near-shore activity in southeast Alaska than the >40ft vessels. The catch of halibut (lbs) corresponded to the level of effort exerted by the two fleets. Bering Sea 4C and 270 both had a high proportion of vessels over 40ft subject to observer coverage (over 75% and 50%, respectively). Observer coverage was low across the southeast region, where <40ft of vessels comprise roughly 50% of the effort in some regions. However, effort and volume of catch of halibut is comparatively low across this region, and thus of less concern that substantial non-target and ETP interactions are going unrecorded. NMFS expects inshore areas to have relatively lower observer coverage rates than outer areas where relatively greater effort is expended. Based on the observer coverage of >40ft fleet and the IPHC logbook effort data, there is decent, and probably representative, observer coverage on the larger fleet in areas where the <40ft fleet operates. Thus, assuming that the catch profiles of the two fleets are similar when fishing in the same statistical area, the collected observer data is believed to be representative of the halibut fishery across the two fleets.

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

The agencies tasked with management and monitoring of the fishery, primarily NOAA Fisheries, ADF&G, and IPHC have extensive scientific databases which include halibut. NPFMC has extensive information on management of halibut for public dissemination. Data and data summaries are made widely available through websites, publications and at various publicly attended meetings. Some aspects of the commercial fishing data are confidential, such as those data that can be directly ascribed to individuals or individual vessels (e.g. for use in the determination of CPUE). Confidentiality is determined by the number of individuals or entities involved. For the current surveillance report, all necessary documentation such as the stock assessment report, observer report, and other documents, relevant records, and regulations were available on the website for the Pacific Halibut Research & Stock Management (IPHC, <https://iphc.int/>). On this site, there is all information associated with the stock assessment including computer code and data input files.

These data, accessible to the user, via the IPHC website ([iphc.int/data](https://iphc.int/data)) is extensive and includes:

1. Directed commercial fisheries data
2. Fishery-independent Setline Survey data
3. Non-directed commercial discard mortality fisheries
4. Geospatial data
5. Recreational fisheries data
6. Time series data
7. Subsistence fisheries data
8. Water column profile data

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

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.

The research on the social, economic, and institutional factors of the Commercial Halibut fishery are extensive.

State and national policies regarding seafood are guided by the Alaska Seafood Marketing Institute<sup>19</sup> (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 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 (Fissel *et al.*, 2022). The Economic SAFE report contains detailed information about economic aspects of the groundfish fisheries, including figures and tables, economic performance indices, 2021 product price and ex-vessel price projections, year-to-date information on volume and value, an Amendment 80 fishery economic data report (EDR) summary, a Gulf Trawl fishery EDR summary, and market profiles for the most commercially valuable species. Data tables are organized into four sections: (1) All Alaska, (2) BSAI, (3) GOA, and (4) Pacific halibut.

In work funded by Alaska Sea Grant, Criddle<sup>20</sup> evaluated the economic impacts of the commercial halibut industry, such as adoption of individual fishing quotas and guideline harvest limits. The modelling work they derived were used to develop a comprehensive economic model that considers biological factors such as halibut population dynamics, and market information such as prices, inventories, production costs, and markets. Their model allows fishery managers to examine the economic consequences of changes in Pacific halibut abundance and changes in the allocation of halibut among commercial, sport, and subsistence user groups. Lew et al. (2015) studied economic value of sport fishing charters in Alaska, including the significant contribution of Pacific Halibut to this sector.

Because the IPHC mandate is optimum management of the Pacific Halibut resource, it is necessary to understand the economic dimensions of the harvest. To that end, the IPHC has undertaken the an economic study to understand the socioeconomic impacts of the Pacific Halibut Resource (iphc.int/management/economic-research). This work includes a full characterization of the halibut’s contribution to the regional economies of Canada and the US. The document (IPHC-2022-ECON-01) documents the scope and outcome of the work.

Fisheries management policies that alter catch limits have a direct impact on commercial harvesters, but at the same time, there is a ripple effect through the economy. The Pacific Halibut multiregional economic impact assessment (PHMEIA) assesses three **economic impact (EI)** components pertaining to Pacific halibut.

<sup>19</sup> <http://www.alaskaseafood.org>

<sup>20</sup> <https://seagrant.uaf.edu/research/projects/summary.php?id=559>

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

- **Direct EIs** reflect the changes realized by the direct Pacific halibut resource stock users (fishers, charter business owners), as well as the forward-linked Pacific halibut processing sector (i.e., EI related to downstream economic activities).
- **Indirect EIs** are the result of business-to-business transactions indirectly caused by the direct EIs. The indirect EIs provide an estimate of the changes related to expenditures on goods and services used in the production process of the directly impacted industries. In the context of the PHMEIA, this includes an impact on upstream economic activities associated with supplying intermediate inputs to the direct users of the Pacific halibut resource stock, for example, impact on the vessel repair and maintenance sector or gear suppliers.
- Finally, **induced EIs** result from increased personal income caused by the direct and indirect effects. In the context of the PHMEIA, this includes economic activity generated by households spending earnings that rely on the Pacific halibut resource, both directly and indirectly.

The economic impact is most commonly expressed in terms of output, that is the total production linked (also indirectly) to the evaluated sector. PHMEIA also provides estimates using several other metrics, including compensation of employees, contribution to the gross domestic product (GDP), employment opportunities, and households' prosperity (income by place of residence).

The model also accounts for **interregional spillovers**, which accommodate an increasing economic interdependence of regions and nations. Economic impact of Pacific halibut is not necessarily limited to where it is fished or processed. Economic benefits from the primary area of the resource extraction are leaked when inputs to production are imported, when wages earned by nonresidents are spent outside the place of employment, or when earnings from quota holdings flow to nonresident beneficial owners. At the same time, there is an inflow of economic benefits to the local economies from when products are exported, or services are offered to non-residents.

The study offers the first multiregional economic impact analysis tracing the transmission of economic impacts originating from the fisheries sectors internationally. It consistently estimates both backward-linked (related to inputs) and forward-linked (input-dependent) effects related to commercial and recreational (both guided/charter and unguided) Pacific halibut sectors. Moreover, the study currently details the geography of impacts in Alaska, paying particular attention to quantifying leakage of economic benefits from regions strongly dependent on fisheries, addressing the Commission's interest in community impacts.

The results of the study suggest that the revenue generated by Pacific halibut at the harvest stage accounts for only a fraction of economic activity that would be forgone if the resource was not available to fishers in the Pacific Northwest. On average, in 2019, one USD/CAD of Pacific halibut commercial landings were linked to over four USD/CAD-worth economic activity in Canada and the United States and contributed USD/CAD 1.3 to households. This adds up to USD 551 mil. (CAD 731 mil) of economic impact in terms of output and USD 179 mil (CAD 238 mil) impact on households. The charter sector contribution to economic activity is estimated at USD/CAD 3.4 per one USD/CAD spent on party/charter fishing services, adding up to USD 133 mil (CAD 177 mil) economic impact in terms of output. However, when the economic impact of marine angler expenditures on fishing trips and durable goods is added, the Pacific halibut recreational fishing total contribution stands at USD 463 mil. (CAD 615 mil.) and contribution to households at USD 147 mil. (CAD 195 mil.). The total economic activity linked to Pacific halibut sectors in 2019 is estimated at USD 1,014 mil. (CAD 1,346 mil), and contribution to households at USD 326 mil. (CAD 432 mil.). These estimates represent what is considered a more typical year in the economy. Pacific halibut commercial sector contribution to



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

households' income in 2020 dropped by a quarter, highlighting the devastating impact of the covid-19 pandemic.

*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.*

Ceremonial and subsistence (personal use) fishing is a component of small-scale fisheries for Alaskan Halibut. 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. Members of these groups 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 were reviewed in the 2018 stock assessment documentation (Stewart and Webster, 2018). Specific details on what constitutes subsistence use are also documented in the federal register (US), Title 50, Chapter III, Part 300, Subpart E. This is the implementation the North Pacific Halibut Act of 1982 (Act). The subpart is intended to supplement, not conflict with, the annual fishery management measures adopted by the International Pacific Halibut Commission (Commission) under the Convention between the United States and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea (Convention).<sup>21</sup>

Landings from this sector are collected and available on the IPHC's website:

<sup>21</sup> [https://www.ecfr.gov/cgi-bin/text-idx?SID=a80834c850cc5d3289207892d2caf382&pitd=20200205&node=se50.11.300\\_160&rgn=div8](https://www.ecfr.gov/cgi-bin/text-idx?SID=a80834c850cc5d3289207892d2caf382&pitd=20200205&node=se50.11.300_160&rgn=div8)



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

**Table 9.** Time series of subsistence Pacific Halibut Removals.

(t = net lb \* 0.000453592)  
Original subsistence values in millions of pounds to an accuracy of three decimal places were converted to the values below in tonnes

IPHC Regulatory Area	Subsistence Fishery Removals										
	Year										
	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
2A	19	15	13	12	13	15	14	13	15	11	11
2B <sup>1</sup>	184	184	184	184	184	184	184	184	184	184	184
2C <sup>2</sup>	166	166	166	198	198	192	192	180	180	176	193
3A <sup>2</sup>	85	85	85	101	101	109	109	115	115	121	142
3B <sup>2</sup>	8	8	8	6	6	6	6	7	7	10	10
4A <sup>2</sup>	6	6	6	4	4	4	4	4	4	6	7
4B <sup>2</sup>	1	1	1	0	0	0	0	1	1	0	0
4C <sup>2</sup>	2	2	2	2	2	2	2	1	1	1	5
4D <sup>2</sup>	0	0	0	0	0	0	0	0	0	0	1
4E <sup>2</sup>	11	11	11	19	19	32	32	4	4	3	5
4D/4E <sup>2</sup> (CDQ U32)	1	3	5	3	2	2	2	5	9	8	4
Total	483	481	480	529	529	546	546	513	519	519	561

<sup>1</sup> British Columbia, CANADA estimates from Fisheries and Oceans Canada/Pêches et Océans Canada have remained consistent from 2010-2020.

<sup>2</sup> Alaska, USA estimates were carried over for the 2013 estimates from 2012, for the 2015 estimates from 2014, for the 2017 estimates from 2016, and for the 2020 estimates from 2019, with the exception that 4D/4E subsistence harvest in the CDQ fishery were updated.

**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 (Ualesi et al. 2022). In 2018<sup>22</sup> 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.

**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.

<sup>22</sup> <https://iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf>

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

References:

Alaska Department of Fish and Game, International Pacific Halibut Commission, and NOAA Fisheries “eLandings” Interagency electronic reporting system for commercial fishery landings in Alaska. Website: <https://elandings.alaska.gov/>.

International Pacific Halibut Commission. 2018. Annual Report. <https://iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf>

Ualesi, K., Wilson, D., Jones, C., Rillera, R., and Jack, T. 2022. IPHC Fishery Independent Setline Survey (FISS) design and implementation in 2021. IPHC-2022-AM098-07. 13 p.

NOAA Fisheries Alaska Region. Website: [https://alaskafisheries.noaa.gov/sites/default/files/final\\_2018\\_adp.pdf](https://alaskafisheries.noaa.gov/sites/default/files/final_2018_adp.pdf)

NOAA Observed Catch 2013 to 2017. Website: <https://alaskafisheries.noaa.gov/sites/default/files/2013-2017-observed-catch-tables.xlsx>

Alaska Seafood Marketing Institute. Website: <http://www.alaskaseafood.org>

Alaska Sea Grant Research Products. Website: <https://seagrant.uaf.edu/research/projects/summary.php?id=559>

NOAA Alaska Fisheries 2018 Economic Plan. Website link: [https://www.afsc.noaa.gov/refm/stocks/plan\\_team/2018/economic.pdf](https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/economic.pdf)

Assessment of the Pacific halibut (*Hippoglossus stenolepis*) stock at the end of 2021  
 PREPARED BY: IPHC SECRETARIAT (I. STEWART & A. HICKS; 16 DECEMBER 2022)  
 IPHC-2022-SA-01

<sup>1</sup> <https://elandings.alaska.gov/>

Statement of consistency to the RFM Fishery Standard	<b>The fishery conforms to the requirements of Fundamental Clause 4 of the RFM Fishery Standard.</b>
--	--

**7.9.2.2 Fundamental Clause 5**

**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.**

Summary of relevant changes: *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.*

Although some modifications in terms of additional data implemented in the stock assessment some minor modelling changes there were no significant changes in the terminal year 2021 assessment. The changes are documented in the stock assessment and include:

The 2021 stock assessment represents a second update since 2019. Changes, new data, and extensions to existing time-series for 2021 include:

1. Update the version of the stock synthesis software (Methot and Wetzel 2013) used for the analysis (3.30.17).

**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.**

2. New modelled trend information from the 2021 IPHC’s FISS (fishery-independent setline survey), including estimates covering the entire 1890 station design and all IPHC Regulatory Areas.
3. Age, length, individual weight, and average weight-at-age estimates from the 2021 FISS for all IPHC Regulatory Areas.
4. 2021 (and a small amount of 2020) commercial fishery logbook trend information from all IPHC Regulatory Areas.
5. 2021 commercial fishery biological sampling (age, length, individual weight, and average weight-at-age) from all IPHC Regulatory Areas. Sex-ratios-at-age for the 2020 commercial fishery (building on the 2017-2019 sex-ratios used in the 2020 stock assessment).
6. Biological information (lengths and/or ages) from non-directed discards (IPHC Regulatory Areas where available) and the recreational fishery (IPHC Regulatory Area 3A only) from 2020.
7. Updated mortality estimates for 2020 (where preliminary values were used) and estimates for all sources in 2021.

The International Pacific Halibut Commission (IPHC)<sup>23</sup> 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 funding from both the U.S. and Canadian governments to support a director and staff. The IPHC is composed of professional scientists, researchers, and statisticians tasked with providing 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 impact of IPHC’s publications are noteworthy. IPHC staff members are involved in collaborative projects with other researchers and institutions.

The IPHC conducts numerous research projects annually to support its ability to provide assessment for management advice<sup>24</sup>. 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
- 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<sup>25</sup>.

<sup>23</sup> <http://www.iphc.int/about-iphc.html>

<sup>24</sup> <https://iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-13.pdf>

<sup>25</sup> [http://www.nprb.org/assets/images/uploads/01.10\\_bsag\\_web.pdf](http://www.nprb.org/assets/images/uploads/01.10_bsag_web.pdf)

**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.**

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<sup>26</sup>. This comprehensive report (Fissel et. al. 2021) 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 analysed 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- and sex-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 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 2022), 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 2021.

The results of the 2021 stock assessment indicate that the Pacific halibut stock declined continuously from the late 1990s to around 2012. That trend is estimated to have been largely a result of decreasing size-at-age, as well as somewhat weaker recruitment strengths than those observed during the 1980s. The spawning biomass (SB) is estimated to have increased gradually to 2016, and then decreased to an estimated 191 million pounds (~86,600 t) at the beginning of 2022, with an approximate 95% credible interval ranging from 129 to 277 million pounds (~58,700-125,400 t). The recent spawning biomass estimates from the 2021 stock assessment are very consistent with previous analyses for the period from 2012 to the present. Pacific halibut recruitment estimates show the large cohorts in 1999 and 2005, and for the first time clearly, 2012. Cohorts from 2006

<sup>26</sup> [https://www.afsc.noaa.gov/refm/stocks/plan\\_team/2018/economic.pdf](https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/economic.pdf)

**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.**

through 2011 are estimated to be much smaller than those from 1999-2005, which has led to recent estimated declines in both the stock and fishery yield as these low recruitments become increasingly important to the age range over which much of the harvest and spawning takes place. Based on age data through 2021, all four assessment models suggest that the 2012 year-class will mature over the next few years and contribute importantly to trends in spawning biomass.

In an ecosystem context, NOAA’s Alaska Fisheries Science Center produces annual “Alaska Marine Ecosystem Status Reports” which describe oceanographic and productivity characteristics of the Eastern Bering Sea, Aleutian Islands, and Gulf of Alaska.

For the Eastern Bering Sea they report that along with much of the North Pacific, the eastern Bering Sea has remained in an extended warm phase since approximately 2014. Satellite observations of sea surface temperatures (SSTs) in both the northern and southern Bering Sea have remained higher than the average from 1985-2014. However, after the extremely warm years of 2018 and 2019, conditions in 2020 and 2021 subsided to 1°C above average. The extended warm phase also impacts sea ice formation and extent. Water temperature and winds play key roles in the annual development and retreat of sea ice.

For the Aleutian Islands they report that sea surface temperatures during August and September 2021 in the western and central Aleutians were the highest since the satellite record began in 2003. In the eastern Aleutians, temperatures were mostly cooler relative to last year and closer to the long-term average. Low sea level pressure caused a stormier winter than usual. This was followed by westerly winds in spring, which suppressed transport through eastern passes. Slightly stormier conditions returned in summer in the western and central Aleutians. In general, environmental conditions were near average over much of the year, continuing the largely more favourable conditions for the biota in 2020 relative to recent years.

Overall, sea surface temperatures are expected to decrease to average levels through winter 2021 and early spring 2022. Both planktivorous and piscivorous seabirds had reproductive success above the long-term average, suggesting wide availability of prey. The abundance of Eastern Kamchatka pink salmon was the second highest on record. This may be expected to have ecosystem impacts, as increased competition for prey and trophic cascades have been shown in years of high abundance of pink salmon. Lastly, paralytic shellfish toxins were reported to be 75x above the regulatory limit in Unalaska. This continues to pose a risk to human health and food webs in the region.

And for the Gulf of Alaska, they report that the area is in its second consecutive non-marine heatwave year, with average ocean temperatures at surface and depth. There are mixed trends in prey abundance and reduced abundance of groundfish apex predators (Pacific cod, arrowtooth flounder, Pacific halibut). They speculate that the biological community experiencing continued impacts from the 2014-2016 and 2019 marine heatwave periods

*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.

**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.**

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<sup>27</sup>, 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 research to promote sustainable 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 analysed and presented in peer reviewed meetings and/or in primary literature, following rigorous and established 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. Halibut-specific information for 2020 is documented on the IPHC website page as well as in the stock assessment.

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)<sup>28</sup>, 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.

References: Assessment of the Pacific halibut (*Hippoglossus stenolepis*) stock at the end of 2021  
 PREPARED BY: IPHC SECRETARIAT (I. STEWART & A. HICKS; 16 DECEMBER 2022)  
 IPHC-2022-SA-01

North Pacific Research Board. Website:  
[http://www.nprb.org/assets/images/uploads/01.10\\_bsag\\_web.pdf](http://www.nprb.org/assets/images/uploads/01.10_bsag_web.pdf)

<sup>27</sup> <https://www.npfmc.org/halibut-management-committee/>

<sup>28</sup> <http://touchngo.com/iglcnt/akstats/Statutes/Title16/Chapter05/Section815.htm>



5.	<p><b>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.</b></p>
	<p>NOAA Alaska Fisheries 2018 Economic Plan. Website link:  <a href="https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/economic.pdf">https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/economic.pdf</a></p> <p>International Pacific Halibut Commission. 2018. Annual Report.  <a href="https://iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf">https://iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf</a></p> <p>Ecosystems &amp; Fisheries-Oceanography Coordinated Investigations Website, IPHC Stock Assessment Survey profile data. Website: <a href="https://www.ecofoci.noaa.gov/projects/IPHC/efoci_IPHCData.shtml">https://www.ecofoci.noaa.gov/projects/IPHC/efoci_IPHCData.shtml</a></p> <p>Alaska Fisheries Science Center. Website: <a href="https://access.afsc.noaa.gov/reem/ecoweb/">https://access.afsc.noaa.gov/reem/ecoweb/</a></p> <p>Halibut Management Committee. Website: <a href="https://www.npfmc.org/halibut-management-committee/">https://www.npfmc.org/halibut-management-committee/</a></p> <p>Alaska Legal Resource Center, Alaska Statute Title 15, Chapter 5, Section 810. Website link: <a href="http://touchngo.com/iglcnt/akstats/Statutes/Title16/Chapter05/Section815">http://touchngo.com/iglcnt/akstats/Statutes/Title16/Chapter05/Section815</a>.</p>
Statement of consistency to the RFM Fishery Standard	<p><b>The fishery conforms to the requirements of Fundamental Clause 5 of the RFM Fishery Standard.</b></p>

### 7.9.3 Section C. The Precautionary Approach

#### 7.9.3.1 Fundamental Clause 6

6.	<p><b>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.</b></p>
Summary of relevant changes:	<p><u>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.</u></p> <p>Full, age-structured, statistical 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 <math>t+1</math> from the stock assessment in year <math>t</math>.</p> <p>The results of the 2021 stock assessment indicate that the Pacific halibut stock declined continuously from the late 1990s to around 2012. That trend is estimated to have been largely a result of decreasing size-at-age, as well as somewhat weaker recruitment strengths than those observed during the 1980s. The spawning biomass (SB) is estimated to have increased gradually to 2016, and then decreased to an estimated 191 million pounds (~86,600 t) at the beginning of 2022, with an approximate 95% credible interval ranging from 129 to 277 million pounds (~58,700-125,400 t). The recent spawning biomass estimates from the 2021 stock assessment are very consistent with previous analyses for the period from 2012 to the present. Pacific halibut recruitment estimates show the large cohorts in 1999 and 2005, and for the first time clearly, 2012. Cohorts from 2006 through 2011 are estimated to be much smaller than those from 1999-2005, which has led to recent</p>



<p><b>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.</b></p>	<p>estimated declines in both the stock and fishery yield as these low recruitments become increasingly important to the age range over which much of the harvest and spawning takes place. Based on age data through 2021, all four assessment models suggest that the 2012 year-class will mature over the next few years and contribute importantly to trends in spawning biomass.</p> <p>The IPHC’s interim management procedure uses a relative spawning biomass of 30% as a fishery trigger, reducing the reference fishing intensity if relative spawning biomass decreases further toward a limit reference point at 20%, where directed fishing is halted due to the critically low biomass condition. The relative spawning biomass at the beginning of 2022 was estimated to be 33% (credible interval: 22-54%), the same value estimate for 2021. The probability that the stock is below <i>SB30%</i> is estimated to be 45% at the beginning of 2022, with less than a 1% chance that the stock is below <i>SB20%</i>. The IPHC’s current interim management procedure specifies a target level of fishing intensity of a Spawning Potential Ratio (SPR) corresponding to an <i>F43%</i>; this equates to the level of fishing that would reduce the lifetime spawning output per recruit to 43% of the unfished level given current biology, fishery characteristics and demographics. Based on the 2021 assessment, the 2021 fishing intensity is estimated to correspond to an <i>F46%</i> (credible interval: 35-63%). 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 2021 directed fisheries and other sources of mortality. The projections for this assessment are more optimistic than those from the 2019 and 2020 assessments due largely to the increasing projected maturity of the 2012 year- class. This translates to a lower probability of stock decline for 2022 than in recent assessments as well as a decrease in this probability through 2023-24. There is greater than a 50% probability of stock decline in 2023 (55-64/100) for the entire range of SPR values from 40-46%, which include the <i>status quo</i> TCEY and the <i>F43%</i> reference level. The 2022 “3-year surplus” alternative, corresponds to a TCEY of 38.0 million pounds (~17,240 t), and a projected SPR of 48% (credible interval 32-63%). At the reference level (a projected SPR of 43%), the probability of spawning biomass declines from 2022 to 2023 is 59%, decreasing to 55% in three years, as the 2012 cohort matures. The one-year risk of the stock dropping below <i>SB30%</i> ranges from 43% at the <i>F46%</i> level to 45% at the at the <i>F40%</i> level of fishing intensity.</p>
<p>References:</p>	<p>Assessment of the Pacific halibut (<i>Hippoglossus stenolepis</i>) stock at the end of 2021          PREPARED BY: IPHC SECRETARIAT (I. STEWART &amp; A. HICKS; 16 DECEMBER 2022)</p>
<p>Statement of consistency to the RFM Fishery Standard</p>	<p><b>The fishery conforms to the requirements of Fundamental Clause 6 of the RFM Fishery Standard.</b></p>

**7.9.3.2 Fundamental Clause 7**

<p><b>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.</b></p>	
<p>Summary of relevant changes:</p>	<p><u><i>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.</i></u></p> <p>To conserve Pacific halibut resources and preserve their ecosystem, the precautionary approach is used in their conservation, management, and exploitation. Specific management information is summarized via a decision table reporting the estimated risks associated with alternative management actions. Mortality tables projecting detailed summaries for fisheries in each IPHC Regulatory Area (and reference levels indicated by the IPHC’s interim management</p>

**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.**

procedure) can be explored via the IPHC’s mortality projection tool, which is updated in early January each year to reflect end-of-year mortality estimates from all sources.

**Table 10.** Harvest decision table for 2022. 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.

2022 Alternative		3-Year Surplus		Status quo		Reference $F_{42\%}$								
Total mortality (M lb)	0.0	31.2	38.7	39.2	39.9	40.2	41.1	42.4	43.8	45.2	46.6	61.2		
TCEY (M lb)	0.0	30.0	37.5	38.0	38.7	39.0	39.9	41.2	42.6	44.0	45.4	60.0		
2022 fishing intensity	$F_{100\%}$	$F_{53\%}$	$F_{48\%}$	$F_{46\%}$	$F_{45\%}$	$F_{45\%}$	$F_{44\%}$	$F_{43\%}$	$F_{42\%}$	$F_{41\%}$	$F_{40\%}$	$F_{32\%}$		
Fishing intensity interval	--	38-49%	32-44%	32-63%	32-63%	31-63%	31-62%	30-61%	29-60%	28-59%	28-59%	21-51%		
<b>Stock Trend</b> (spawning biomass)	in 2023	is less than 2022	<1	39	55	55	56	57	58	59	61	63	64	84
		is 5% less than 2022	<1	3	14	16	18	19	21	25	30	34	37	58
	in 2024	is less than 2022	<1	39	53	54	55	55	56	58	59	61	62	80
		is 5% less than 2022	<1	16	37	39	40	41	43	46	48	50	52	66
	in 2025	is less than 2022	<1	33	49	50	51	52	53	55	56	58	60	77
	is 5% less than 2022	<1	18	38	39	41	42	43	46	48	50	52	67	
<b>Stock Status</b> (Spawning biomass)	in 2023	is less than 30%	31	40	43	43	43	43	44	44	44	45	45	48
		is less than 20%	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
	in 2024	is less than 30%	16	34	39	39	40	40	41	41	42	43	44	49
		is less than 20%	<1	<1	<1	<1	<1	1	1	1	1	1	1	6
	in 2025	is less than 30%	4	29	36	37	37	37	38	40	41	42	43	49
	is less than 20%	<1	<1	1	1	1	1	1	1	2	2	3	12	
<b>Fishery Trend</b> (TCEY)	in 2023	is less than 2022	0	21	48	49	49	49	50	50	50	50	51	70
		is 10% less than 2022	0	7	41	42	44	45	47	48	49	50	50	58
	in 2024	is less than 2022	0	22	48	48	49	49	50	50	50	50	50	69
		is 10% less than 2022	0	9	41	42	44	45	46	48	49	50	50	58
	in 2025	is less than 2022	0	22	47	48	48	49	49	50	50	50	50	68
	is 10% less than 2022	0	10	40	42	43	44	46	48	49	49	50	58	
<b>Fishery Status</b> (Fishing intensity)	in 2022	is above $F_{42\%}$	0	20	48	49	49	50	50	50	50	50	51	70

References: Assessment of the Pacific halibut (*Hippoglossus stenolepis*) stock at the end of 2021  
PREPARED BY: IPHC SECRETARIAT (I. STEWART & A. HICKS; 16 DECEMBER 2022)

Statement of consistency to the RFM Fishery Standard **The fishery conforms to the requirements of Fundamental Clause 7 of the RFM Fishery Standard.**

**7.9.4 Section D. Management Measures**

**7.9.4.1 Fundamental Clause 8**

**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.**

Summary of relevant changes: 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

**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.**

Potential Ratio (SPR) is equal to 43%<sup>29</sup>.

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.

The reference fishing intensity of F43 percent SPR seeks to allow a level of fishing intensity that is expected to result in approximately 43 percent of the spawning biomass per recruit compared to an unfished stock (i.e., no fishing mortality). Overall, the spawning biomass is estimated to be approximately 191,000,000 lb (86,636.14 mt) at the beginning of 2022. The stock is currently estimated to be at 33 percent of its unfished state.

**Distribution of Mortality limits**

For year 2022, the Commission has adopted the following distributed mortality (TCEY) limits for Alaska region.

**Table 11.** Distributed mortality Limits for Alaska Regions (TCEY) (Net weight)

IPHC Regulatory Area	Tonnes (t)	Million Pounds (Mlb)
Area 2C (southeastern Alaska)	2681	5.91
Area3A (Central Gulf of Alaska)	6600	14.55
Area 3B (western Gulf of Alaska)	2769	3.9
Area 4A (Eastern Aleutians)	953	2.1
Area 4B (central/western Aleutians)	658	1.45
Areas 4CDE (Bering Sea)	1860	4.1
<b>Total</b>	<b>15521</b>	<b>32.01</b>

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 2022 season also include vessel licensing, provisions for in-season actions to establish or modify current management measures, seasonal closures per regulatory area, 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

<sup>29</sup> <https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-10.pdf>

**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.**

catch of halibut also occurs in groundfish hook-and-line and pot fisheries that typically focus on Pacific cod. 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 in the GOA and the BSAI. The NPFMC is in the process of amending the current PSC limits for halibut (further information below).

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 2020 Annual Report<sup>30</sup> offered a number of highlights relevant to the halibut fisheries:

- In 2020, EM data were collected from 106 vessels from 258 trips (195 longline trips and 63 pot trips). By target species, there were 122 halibut trips, 23 Pacific cod trips, and 113 sablefish trips. The data spanned 682 halibut sea days, 86 Pacific cod sea days, and 674 sablefish sea days for a total of 1,442 sea days with trips averaging 5.6 days across all fisheries. Of the 11,491 hauls on reviewed trips, the catch level data was recorded for 3,814 hauls.

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<sup>100</sup>. 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 analyse 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.<sup>31</sup>

***8.1 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<sup>32</sup>. 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.

<sup>30</sup> <https://repository.library.noaa.gov/view/noaa/30732>

<sup>31</sup> <https://www.epa.gov/nepa/what-national-environmental-policy-act>

<sup>32</sup> [https://www.ecfr.gov/cgi-bin/text-idx?SID=0cc954068b4cef56066a93c0ecbd605f&mc=true&node=pt50.13.679&rgn=div5#se50.13.679\\_124](https://www.ecfr.gov/cgi-bin/text-idx?SID=0cc954068b4cef56066a93c0ecbd605f&mc=true&node=pt50.13.679&rgn=div5#se50.13.679_124)

**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.**

8.3 States shall seek to identify domestic parties having a legitimate interest in the use and management of the fishery.

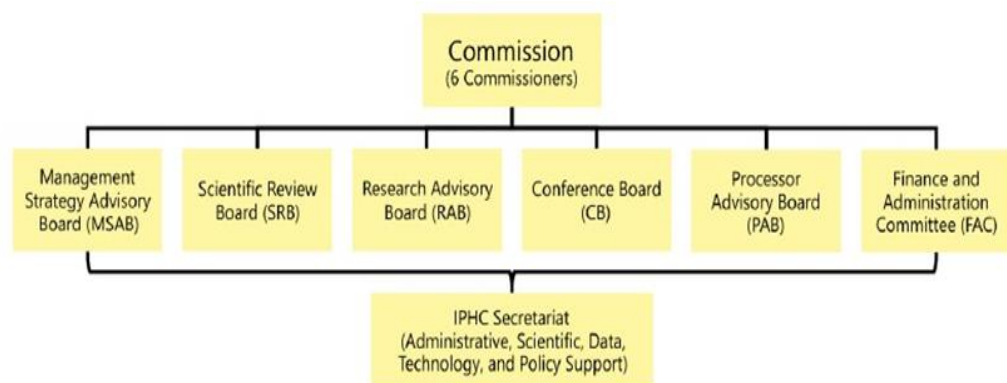
The IPHC currently apportions the quota shares for the halibut fishery among commercial, sport and personal use subsistence sectors coastwise in the US and Canada. The NPFMC, on the other hand, is responsible for allocation of the halibut resource among user (e.g. commercial, sport, customary) groups in Alaska waters<sup>33</sup>. 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 2021 there were 66 representative members and two officers in the CB<sup>34</sup>.

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.

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 9Figure 9).



**Figure 9.** Structure of IPHC Boards.

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

<sup>33</sup> <http://www.adfg.alaska.gov/index.cfm?adfg=halibut.management>

<sup>34</sup> <https://www.iphc.int/uploads/pdf/cb/cb092/iphc-2022-cb092-r.pdf>

**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.**

*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<sup>35</sup>. 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<sup>36</sup>. 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.

*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 2022 can be found on the IPHC website<sup>37</sup>. The full suite of NMFS fishery regulations for Alaskan waters can be found on their website<sup>38</sup>. Concerning specific technical measures, a brief summary by category, as contained in these IPHC regulations, is show below.

Fishery regulations for the 2022 season include vessel licensing, provisions for in-season actions to establish or modify current management measures, seasonal closures per regulatory areas, 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 2022 Pacific Halibut Regulations on the IPHC website<sup>39</sup>.

Incidental halibut catch is controlled in the groundfish fisheries (i.e., non-halibut-sablefish IFQ fisheries) using PSC limits<sup>40</sup> in the GOA and the BSAI.

Areas closed to halibut fishing are defined in IPHC regulations and include certain specific waters in

<sup>35</sup> <https://www.sciencedirect.com/science/article/pii/S0165783616300649>

<sup>36</sup> <https://www.fisheries.noaa.gov/alaska/commercial-fishing/pacific-halibut-and-sablefish-individual-fishing-quota-ifq-program>

<sup>37</sup> <https://www.iphc.int/uploads/pdf/regs/iphc-2022-regs.pdf>

<sup>38</sup> <https://www.ecfr.gov/current/title-50/chapter-VI/part-679>

<sup>39</sup> <https://www.iphc.int/uploads/pdf/regs/iphc-2022-regs.pdf>

<sup>40</sup> <https://www.npfmc.org/bsai-halibut-bycatch/>



**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.**

the Bering Sea in Isanotski Strait (note recommendation for revision during RAB020 meeting). 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<sup>41</sup>.

Further to these, trawl sweep gear modification has 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<sup>42</sup>.

8.6 Fishing gear shall be marked.

The 2022 IPHC gear regulations<sup>43</sup> 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 2022<sup>44</sup>.

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 2021<sup>45</sup> and relied on an ensemble of four population dynamics models to estimate the probability distributions describing the current stock size, trend, and demographics. Current (beginning of 2022) female spawning biomass is estimated to be 191 million pounds (86,600 t), which corresponds to an 45% chance of being below the IPHC trigger reference point of SB30%, and less than a 1% chance of being below the IPHC limit reference point of SB20%. The stock is estimated to have declined by 17% since 2016 but is currently at 33% of the unfished state. Therefore, the stock is considered to be ‘not overfished’. Projections indicate that mortality consistent with the interim management procedure reference fishing intensity (F43%) is likely to result in further declining biomass levels in the near future. The 2021 fishing mortality corresponded to a point estimate of SPR = 46%; there is a 47% chance that fishing intensity exceeded the IPHC’s current reference level of F43%. The Commission does not currently have a coastwide fishing intensity limit reference point.

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,

<sup>41</sup> <https://www.npfmc.org/habitat-protections/>

<sup>42</sup> <https://www.npfmc.org/habitat-protections/gear-modifications/>

<sup>43</sup> <https://www.iphc.int/uploads/pdf/regs/iphc-2022-regs.pdf>

<sup>44</sup> <https://www.govinfo.gov/content/pkg/FR-2022-03-07/pdf/2022-04639.pdf>

<sup>45</sup> <https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-10.pdf>



**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.**

as specified in the Management Strategy Advisory Board (MSAB013) meeting held in May 2019 (see table 1 in the meeting report document<sup>46</sup>). Currently IPHC is investigating management procedures related to the distribution of the Total Constant Exploitation Yield (TCEY). The TCEY is the mortality limit composed of mortality from all sources except under- 26-inch (66.0 cm, U26) non-directed discard mortality, and is determined by the Commission at each Annual Meeting for each IPHC Regulatory Area<sup>47</sup>.

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<sup>48</sup>. 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 2021 fishing regulations state the following<sup>49</sup>:

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 minimized.

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,

<sup>46</sup> <https://www.iphc.int/uploads/pdf/msab/msab13/iphc-2019-msab013-r.pdf>

<sup>47</sup> <https://iphc.int/uploads/pdf/am/2020am/iphc-2020-am096-12.pdf>

<sup>48</sup> <https://www.npfmc.org/habitat-protections/>

<sup>49</sup> <https://iphc.int/uploads/pdf/regs/iphc-2021-regs.pdf>

**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.**

size, bait, effect of fish size) and discard survival assessment<sup>50</sup>.

In late 2020, a final report was provided for NPFMC consideration on a halibut deck-sorting experimental fishing permit (EFP), authorized by NMFS to better elucidate the mortality rate of discarded halibut. The report highlighted increased vessel participation (22 CP vessels in 2019) in the study, and that average discard mortality from 2015-2019 was averaging 49.5<sup>51</sup>.

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<sup>52</sup>. The results showed that halibut bycatch was reduced numerically by 57% and by 62% by weight. Target species loss ranged from 9% to 22%.

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 2021 Regulations).

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 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.

At their October 2018 meeting, the North Pacific Fishery Management Council (Council) adopted retention of halibut in longline or single pots in the Bering Sea in the halibut and sablefish IFQ fishery. In the October 2018 meeting the NPFMC took final action<sup>53</sup> to allow for: (1) more efficient harvest of

<sup>50</sup> <https://iphc.int/uploads/pdf/regs/iphc-2021-regs.pdf>

<sup>51</sup> <https://media.fisheries.noaa.gov/dam-migration/efp-halibut2018-01-final-rpt.pdf>

<sup>52</sup> <http://marineconservationalliance.org/seafacts-the-development-of-halibut-excluders/>

<sup>53</sup> <http://meetings.npfmc.org/CommentReview/DownloadFile?p=94b0f940-78a1-45d9-bc75-3686b6ccb3a9.pdf&fileName=C4%20Action%20Memo.pdf>

**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.**

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<sup>54</sup>: 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.

On January 2020 a NOAA NMFS issued a final rule that implements Amendment 118 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI FMP) where it Authorize the Retention of Halibut in Pot Gear in the BSAI effective in February 2020<sup>55</sup>.

As summarized above, this 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 <sup>56</sup>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 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 2020, 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.*

<sup>54</sup> <https://www.npfmc.org/halibut-in-pots/>

<sup>55</sup> <https://www.federalregister.gov/documents/2020/01/08/2019-27903/fisheries-of-the-exclusive-economic-zone-off-alaska-authorize-the-retention-of-halibut-in-pot-gear>

<sup>56</sup> <https://www.fisheries.noaa.gov/national/bycatch/national-bycatch-reduction-strategy>

<b>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.</b>	
	This clause is not applicable. The halibut fishery is not an enhanced fishery.
References:	
Statement of consistency to the RFM Fishery Standard	<b>The fishery conforms to the requirements of Fundamental Clause 8 of the RFM Fishery Standard.</b>

#### 7.9.4.2 Fundamental Clause 9

<b>9. Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards and guidelines and regulations.</b>	
Summary of relevant changes:	<p><u>9.1./9.2./9.3. Education and training programs.</u></p> <p>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<sup>57</sup> in the U.S.</p> <p>There are several avenues for fishermen to receive training to ensure they have appropriate standards of competence.</p> <p>AMSEA provides marine safety training for commercial fishermen<sup>58</sup>, subsistence &amp; recreational boaters, and youth &amp; 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.</p> <p>The State of Alaska, Department of Labor and Workforce Development (ADLWD) includes the Alaska's Institute of Technology, also called Alaska Vocational Training &amp; 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<sup>59</sup>. 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.</p> <p>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. 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</p> <p>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</p>

<sup>57</sup> <https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska>

<sup>58</sup> <https://www.amsea.org/commercial-fishermen>

<sup>59</sup> <https://avtec.edu/department/alaska-maritime-training-center>

<b>9. Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards and guidelines and regulations.</b>	
	<p>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<sup>60</sup>.</p> <p>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.</p> <p>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 found online at the NMFS website. Data on fishing in state- managed fisheries can be found in the State of Alaska’s CFEC website<sup>61</sup>.</p>
References:	
Statement of consistency to the RFM Fishery Standard	<b>The fishery conforms to the requirements of Fundamental Clause 9 of the RFM Fishery Standard.</b>

**7.9.5 Section E. Implementation, Monitoring and Control**

**7.9.5.1 Fundamental Clause 10**

<b>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.</b>	
Summary of relevant changes:	<p><u><i>10.1 Enforcement agencies and framework</i></u></p> <p>The legal and administrative frameworks that define how the principal management agencies are to operate and the environment in which they are to do so at the state, national and binational levels have been in place for many decades. There is recurring evidence of an ongoing and effective level of cooperation between all the agencies that collectively continue to deliver positive conservation and sustainability outcomes for the sablefish resource and the marine environment on which the species depends.</p> <p>The Monitoring, Control and Surveillance (MCS) programs operated by the federal and state enforcement agencies (NMFS, USCG; ADPS’s AWT) continued to perform at a high rate of effectiveness in monitoring the diverse Pacific halibut fishing fleet that operates within state waters (0-3 nm) and Alaska’s EEZ (3-200 nm) and in applying the significant number of federal and state regulations they are mandated to enforce. The IPHC does not actively enforce regulations 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.</p> <p>The USCG and NMFSs Office of Law Enforcement (OLE) enforce Alaska fisheries laws and regulations, especially 50 CFR 679 (on the management of fisheries off the Alaska EEZ). The AWT enforces halibut regulations in state waters. All landings of halibut must be reported to NMFS via its mandatory “e-landings” reporting system.</p>

<sup>60</sup> <https://alaskaseagrant.org/event/2020-alaska-young-fishermens-summit/>

<sup>61</sup> [https://www.cfec.state.ak.us/fishery\\_statistics/earnings.htm](https://www.cfec.state.ak.us/fishery_statistics/earnings.htm)

**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.**

While Pacific halibut fishery-specific data are not reported, it is known that in 2021, USCG District 17 conducted 515 boardings on commercial, charter, and recreational vessels targeting halibut and sablefish. Personnel conducted 152 boardings of IFQ halibut or sablefish vessels, detecting 22 fisheries violations, representing 76% of the commercial violations detected. The overall compliance rate for these fisheries was 96% in 2021. The top violations included (i) logbook discrepancies, (ii) no IFQ permit and/or FFP onboard, (iii) sea-bird avoidance gear not onboard or improperly constructed, (iv) improper marked buoys, and (v) failure to retain Pacific cod.

The NOAA Office of General Counsel, Enforcement Section (GCES) issued seven Notices of Violation and Assessment (NOVAs) and closed seven Settlement Agreements including one in the amount of \$55,270. for discarding IFQ sablefish (and IFQ halibut), failing to report discards, and failing to register an IFQ fishing trip in the ODDS (observer deployment). A default judgment in the amount of \$72,000. was finalized against a crew member under the MSA for observer assault.

During 2021, the Coast Guard conducted 14 flights out of Kodiak, Nome (via FOL Kotzebue), and Sitka in support of Marine Protected Resources and NOAA’s Protected Resources Division (PRD). While no violations were detected on these flights, officials noted that they were instrumental in collecting and reporting marine mammal stranding data, including for the gray whale and ice seal unusual mortality events (UMEs).

10.2./10.3./10.4. Fishing permit requirements

All vessels harvesting halibut must be authorized and permitted to fish, in accordance with federal regulations, 50 CFR 679. Data on the number and location of Alaskan fishers, permits issued, current Quota Share with holders and QS Units - by species, area, vessel category, blocks, and CDQ compensation flag etc. can be found online at the NMFS website. Data on fishing in Alaskan state-managed fisheries can be found on the State’s CFEC website.

References:	<ol style="list-style-type: none"> <li>1. Annual enforcement reports provided to the NPFMC for 2021 and 2022 (partial) by USCG and NOAA-OLE.</li> <li>2. Federal and State enforcement profiles and statistical information - Section 7.7.</li> <li>3. Site visit (virtual) on July 6, 2022, with ADPS - AWT Captain A. Frenzel.</li> </ol>
-------------	---

Statement of consistency to the RFM Fishery Standard	<p>The legal and administrative frameworks that inform the federal and state MCS programs within the US EEZ and Alaska’s territorial waters continued to support a robust suite of MSC operational activities that enforcement personnel require to effectively discharge their duties. The compliance level in 2021 by commercially permitted vessels with the fishery’s regulations remained relatively high; sanctions were effective in deterring recidivism. The program continued to achieve a high level of effectiveness.</p> <p><b>The fishery conforms to the requirements of Fundamental Clause 10 of the RFM Fishery Standard.</b></p>
--	--

**7.9.5.2 Fundamental Clause 11**

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

Summary of relevant changes:	<p><u>11.1./11.2./11.3. Enforcement policies and regulations, state and federal.</u></p> <p>For federally managed fisheries, law enforcement agents and prosecutors rely upon NOAA’s Office of General Counsel, Enforcement Section’s Penalty Policy (2019) for guidance in assessing civil</p>
------------------------------	---



<b>11. There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.</b>	<p>administrative penalties and permit sanctions under the statutes and regulations enforced by NOAA and the USCG.</p> <p>The purpose of this Policy is to continue to ensure that: (i) civil administrative penalties and permit sanctions are assessed in accordance with the laws that NOAA enforces in a fair and consistent manner; (ii) penalties and permit sanctions are appropriate for the gravity of the violation; (iii) penalties and permit sanctions are sufficient to deter both individual violators and the regulated community as a whole from committing violations; (iv) economic incentives for noncompliance are eliminated; and (v) compliance is expeditiously achieved and maintained to protect natural resources. In 2021, the compliance level by harvesters across all commercial halibut and sablefish fisheries was approximately 96% according to the USCG, suggesting that the federal sanctions and penalties framework is effective in achieving compliance and discouraging repeat offenders.</p> <p>For state-managed fisheries in Alaska, misdemeanor commercial fishing penalties are described in the Alaska Statutes, Title 16 (Fish and Game), Chapter 5 (Fish and Game Code), Section 723. Strict liability commercial fishing penalties are covered in Section 722.</p> <p>There is a longstanding practice of cooperation between Federal and state enforcement agencies in relation to planning and operations through Joint Enforcement Agreements. Federal funding is provided to the state to undertake incremental enforcement of federally-managed fisheries jointly with federal agents. The funding agreement includes specific operational goals the state is required to achieve.</p>
References:	<ol style="list-style-type: none"> <li>1. Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions NOAA Office of General Counsel - Enforcement Section: <a href="https://www.gc.noaa.gov/documents/Penalty-Policy-CLEAN-June242019.pdf">https://www.gc.noaa.gov/documents/Penalty-Policy-CLEAN-June242019.pdf</a></li> <li>2. Alaska misdemeanor commercial fisheries penalties: <a href="http://www.touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter05.htm">http://www.touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter05.htm</a></li> <li>3. Alaska strict liability commercial fishing penalties: <a href="http://www.touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter05/Section722.htm">http://www.touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter05/Section722.htm</a></li> <li>4. Annual enforcement reports provided to the NPFMC for 2021 and 2022 (partial) by USCG and NOAA-OLE.</li> <li>5. Federal and State enforcement profiles and statistical information - Section 7.7.</li> <li>6. Site visit (virtual) on July 6, 2022, with ADPS-AWT Captain A. Frenzel.</li> </ol>
Statement of consistency to the RFM Fishery Standard	<b>The fishery conforms to the requirements of Fundamental Clause 11 of the RFM Fishery Standard.</b>

## 7.9.6 Section F. Serious Impacts of the Fishery on the Ecosystem

### 7.9.6.1 Fundamental Clause 12

<b>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.</b>	
Summary of relevant changes:	<p><u><i>12.1. Assessment of environmental effects on target stocks and ecosystem.</i></u></p> <p>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</p>

**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.**

harvest strategies. Every year, as part of the IPHC fishery-independent setline survey (FISS)<sup>62</sup>, 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.

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 2021 IPHC stock assessment<sup>63</sup> 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 (71 and 72% 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 2019 were positive with 2020 and 2021 (through September) showing negative average conditions. Although strongly correlated with historical recruitments, it is unclear whether recent conditions are comparable to those observed in previous decades.

Furthermore, in 2019, the IPHC published the 5-year Biological and Ecosystem Sciences Research Program Update<sup>64</sup>. 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 also publishes yearly Ecosystem Status Reports that provide links between ecosystem research and fishery management.

<sup>62</sup> <https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-07.pdf>

<sup>63</sup> <https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-10.pdf>

<sup>64</sup> <https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-14.pdf>

**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.**

Key findings from the 2021 status reports are briefly summarized below<sup>65</sup>.

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.

**Eastern Bering Sea<sup>66</sup>**

Northern Bering Sea

Two winters (2017/2018 and 2018/2019) of little sea ice in the NBS, and two summers (2018 and 2019) of reduced cold pool extent, resulted in ecosystem changes across the Bering Sea. NOAA bottom trawl surveys saw northward shifts in fish species. The northward movement of stocks into the NBS changed the through predation pressure. Concerns about the food web dynamics and carrying capacity of the NBS have existed since 2018.

The groundfish community had shifted to the north and into shallower water since 2014, but between 2019 and 2021 the distribution shifted back to the southeast. Catch per unit effort (CPUE) of fish and invertebrates sampled during the 2021 NOAA bottom trawl survey decreased. In the NBS, CPUE decreased substantially between 2019 and 2021. In the southern portion of the survey, CPUE decreased between 2019 and 2021 to the lowest level since 2009.

Coincident Collapses in the NBS:

In 2021, multiple ecosystem 'red flags' occurred in the NBS:

(1) crab population declines, (2) salmon run failures in the Arctic-Yukon-Kuskokwim region, and (3) seabird die-offs combined with low colony attendance and poor reproductive success. Although the collapses are coincident in 2021, they reflect cumulative dynamics over the last few years. The mechanisms are not fully understood, but a common thread in these collapses is the marine environment in the NBS, which underwent an abrupt and dramatic change starting in late 2017.

1) In 2018 more than 50% of Pacific cod biomass was found in the NBS. Pacific cod predation on snow crab is one potential contributing factor that may be behind the decline in snow crab observed in 2021.

2) Salmon run failures in 2021 in the Arctic-Yukon Kuskokwim Region included Chinook, chum, and coho salmon. The low returns in 2021 reflect a multiple age-class failure as warm ocean conditions over several years affected juvenile salmon life stages across multiple years.

3) Fish-eating seabirds (i.e., black-legged kittiwakes, common murre) had poor reproductive success or complete reproductive failure, on both St. Lawrence Island and Hall Island. Plankton eating seabirds had mixed reproductive success – least auklets did well on both Hall Island and St. Lawrence Island, but crested auklets (on St. Lawrence Island) had poor reproductive success.

South-eastern Bering Sea

The loss of sea ice leads to increased water temperature (i.e., lack of cold pool), decreases in ice-associated algae, and increases in salinity that change water density and stratification. Community-led monitoring on St. Paul Island shows an increasing trend in salinity and water density since 2014. Water density and stratification impact the distribution of organisms in the water column. Visual predators, such as seabirds, may have had reduced foraging success due to an algal coccolithophore

<sup>65</sup> <https://www.fisheries.noaa.gov/alaska/ecosystems/ecosystem-status-reports-gulf-alaska-bering-sea-and-aleutian-islands>

<sup>66</sup> <https://apps-afsc.fisheries.noaa.gov/refm/reem/ecoweb/pdf/2021EBS-ESR-Brief.pdf>

**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.**

bloom over the southern shelf, although the timing of breeding and abundance of fish-eating seabirds (i.e., murre and puffins) appeared average at St. Paul Island.

Chlorophyll-a biomass was low along the shelf-break, continuing that trend since 2014, and winds did not consistently demonstrate upwelling or downwelling conditions. Small copepod abundance was slightly reduced in spring but unlikely to impact food availability for larval fish.

Observations of *Calanus* spp. suggest they were developing more slowly. This would increase this important prey for juvenile fish and help increase overwinter survival of the fish. Fish and invertebrate guilds can tell us about different parts of the ecosystem and food web. For example, motile epifauna (including sea stars and crabs) tell us about benthic productivity. In 2021, motile epifauna remained above average because brittle stars, sea stars, and other echinoderms off-set below-average biomass for all crabs.

Benthic foragers were at their lowest level. The aggregate forage fish guild describes available prey for seabirds and larger fish (i.e., adult pollock). This guild has declined since 2014 and may have contributed to other substantial ecosystem changes in the south-eastern Bering Sea. In 2021, pelagic foragers dropped to their second lowest value. Apex predators, largely driven by adult Pacific cod, were below average in 2021.

Under warm ocean conditions, groundfish experience increased thermal exposure and metabolic demands. Fish condition trended downward from 2019 to 2021 for multiple groundfish species, including benthic, pelagic, and apex predators, indicating poor feeding conditions across guilds.

However, the condition of juvenile pollock (100-250mm) has trended upward since 2017, indicating good food availability. Additionally, juvenile pollock experienced less predation due to declining biomass of predators.

The 2021 Bristol Bay sockeye salmon inshore run is the largest on record since 1963. These stocks experienced positive ocean conditions in the EBS in the summers of 2018 and 2019, and winters of 2018-2019 and 2019-2020.

Management Uses

Ecosystem and stock assessment scientists worked together to account for the influence of environmental conditions in the Bering Sea on commercially-important fish stocks. They considered ecosystem information in seven full assessments for the Bering Sea and Aleutian Islands stocks plus the Alaska-wide sablefish stock in 2021. Four of these assessments classified ecosystem dynamics at risk level 2 (out of 4), noting substantially increased concerns: EBS pollock, EBS and AI Pacific cod, and yellowfin sole.

The acceptable biological catch (ABC) for EBS pollock was reduced 11% from the Tier 1 to Tier 2 maximum permissible noting assessment, ecosystem, and fishery performance concerns. For yellowfin sole (YFS), the Scientific and Statistical Committee (SSC) recommended the maximum permissible ABC rather than the proposed reduction by the stock assessment author and BSAI Groundfish Plan Team. During deliberation, the SSC agreed that some concerns existed for YFS but they did not appear elevated from the previous assessment and did not warrant a reduction at this time.

**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.**

For the remaining six stocks, including EBS and AI Pacific cod, precautionary measures already incorporated into setting catch levels were considered sufficient to address uncertainty about current ecosystem dynamics.

**Aleutian Islands<sup>67</sup>**

Western Aleutians

The western Aleutians experienced enhanced storminess during summer due to negative sea level pressure anomalies. During August and September, the highest sea surface temperatures since observations began in 2003 exceeded the threshold for a moderate heatwave. Temperatures quickly returned to near normal by October. This heatwave coincided with the start of the spawning season of Atka mackerel when they nest at depths between 32 – 144m. As a result, nests in the shallower areas may have experienced warm temperatures close to 10 – 11°C, or near the upper limit of historical spawning temperatures. Eddy kinetic energy was below average, suggesting low fluxes of nutrients, heat and salt through the passes. Satellite derived chlorophyll concentration, often a proxy for phytoplankton biomass, was near average during early spring and above average in June, particularly north of the western Aleutian Islands. It was an exceptionally successful season for fish-eating seabirds (tufted and horned puffins, and thick-billed murre). Conditions have continued to improve since 2019, when birds experienced poor reproductive success.

The above-average reproductive success of fish-eating seabirds and zooplankton-eating seabirds at Buldir Island suggests that a wide variety of prey was available. Their average hatch dates fall between mid-June to late July and average chick-rearing periods last 30 to 42 days, suggesting prey were available throughout the summer. Chick diets included age-0 commercial groundfish species.

Atka mackerel comprise 14% of tufted puffin and 56% of horned puffin chick diet composition in 2021. There was an increase in the proportion of gadids in chick diets relative to previous years. Rockfish have also remained present in the chick diets of both tufted (25%) and horned puffins (8%) at Buldir Island. The presence of rockfish in seabird diets suggests they are more available to seabirds as prey, potentially reflecting the increasing trend in Pacific Ocean perch and northern rockfish biomass.

Central Aleutians

The central Aleutians experienced the same pattern of enhanced storminess during summer and high sea surface temperatures during August and September as in the western Aleutians. Eddy kinetic energy was average in the region this year, meaning there was likely an average flux of nutrients and heat across the passes. Eddy kinetic energy north of the central Aleutian Islands is usually the lowest in magnitude compared to that in the western and eastern Aleutians. Events are characterized either by multiyear or continuous eddies of low intensity in this area. Phytoplankton biomass, as represented by chlorophyll-a concentration, was slightly above average offshore from the islands, but slightly below average on the south side of the islands during June.

The central Aleutians had the highest number of reports of beachcast dead seabirds, particularly shearwaters in Atka (200 birds). Bycatch estimates of shearwaters seem to be low during low (even) pink salmon abundance years and higher in high (odd) pink salmon abundance years. This suggests

<sup>67</sup> <https://apps-afsc.fisheries.noaa.gov/refm/reem/ecoweb/pdf/2021AI-ESR-Brief.pdf>

**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.**

increased competition between shearwaters and pink salmon. Weekly mussel collections for Paralytic Shellfish Toxin were taken at Adak this summer. A late-summer, single collection of a suite of other species also occurred as part of Knik Tribe’s monitoring efforts. While results are not yet available, toxin levels have been within regulatory limits in past years.

Eastern Aleutians

In the eastern Aleutians, sea surface temperatures were not as high as in the western and central Aleutians. Temperatures were higher in September than last year, but only a few days exceeded the moderate marine heatwave threshold. Mid-water temperatures also seem to have cooled compared to 2019 and previous years. Temperatures were similar to those recorded last year by the longline survey at depths between between 100-300 m. Winds blowing from the west to the east in the eastern Aleutians caused low flows through Unimak Pass.

Eddy kinetic energy, which is typically driven by intense pulse eddies in these areas, remained below average. Chlorophyll-a concentration suggested that spring phytoplankton biomass was also below average. Fish eating seabirds, such as murre and puffins, had mostly high reproductive success, although gulls had average reproductive success. These indicators suggest good availability of forage fish to rear chicks and potentially for fish-eating groundfish. No auklets, which are primarily zooplankton-eaters, were monitored for reproductive success in the region. However, the euphausiids in tufted puffins chick meals (34% of diet composition by number) suggest zooplankton were available to predators. There were a few reports of dead seabirds (20-50 birds) in Cold bay and Unalaska.

Monitoring of harmful algal blooms indicates that peak toxin levels occurred during June. This year toxins in blue mussels were 75x above the regulatory level. This level is much lower than in the reported shellfish that caused a fatality last year (140x above the regulatory level). Public awareness efforts have increased in the area to minimize impacts on human health.

Multi-year patterns observed across the Aleutians include:

- 1) Sustained environmental conditions since 2013, which include above-average water temperatures, weaker eddies and lower flow through the passes, and below-average abundance of large diatoms and biomass of mesozooplankton
- 2) Increased abundance of Eastern Kamchatka pink salmon in odd years
- 3) The groundfish pelagic foraging guild continuing to be dominated by rockfish, with the combined biomass of Pacific Ocean perch and northern rockfish being higher than Atka mackerel and walleye pollock combined.

Potential cumulative effects include lower productivity across the system with increased bioenergetic needs for fish, faster growth rates for zooplankton, increased competition for prey, and changes in prey field timing, availability, quality, and composition.

Management Uses

Ecosystem information was formally considered in seven groundfish stock assessments for the Bering Sea/Aleutian Islands region, and one state-wide stock (sablefish) in 2021. Four of these assessments classified ecosystem dynamics at risk level 2 (out of 4) noting substantially increased concerns: AI Pacific cod, yellowfin sole, EBS pollock and EBS Pacific cod. For the AI Pacific cod, the author recommended Tier 5 allowable biological catch (ABC) as a reduction from Tier 3 due to assessment and ecosystem concerns. As the Tier 5 model was retained, the Scientific and Statistical Committee (SSC) supported the BSAI Groundfish Plan Team (PT) decision that no additional reduction was



**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.**

needed. For yellowfin sole, the SSC agreed that some concern existed but did not warrant the reduction recommended by the author and PT. For EBS pollock the ABC was reduced 11% from Tier 1 to Tier 2 maximum permissible noting fishery performance, assessment, and ecosystem concerns. For the rest of the stocks, precautionary measures already incorporated into setting catch levels were considered sufficient to address uncertainty about current ecosystem dynamics.

**Gulf of Alaska<sup>68</sup>**

The Gulf of Alaska (GOA) temperatures at the surface and depth generally hovered around long-term means, cooling from 2019. These temperatures are within the range for moderate growth and physiological conditions of commercially important groundfish species.

Surface temperatures are predicted to continue cooling into 2022. This is consistent with a second La Niña winter and potentially continued negative Pacific Decadal Oscillation. Strong, persistent eddies were located along the shelf edge off Seward and Kodiak in the winter and spring. This indicated greater movement of nutrients across the shelf.

Around Kodiak Island there was a lower abundance of large copepods. This is similar to lower productive, warmer years (e.g., 2019). Closer to the central GOA, the Seward Line survey observed average to above average spring abundance of large calanoid copepods in association with a large spring phytoplankton bloom. This productivity was not reflected in higher trophic levels as planktivorous seabirds had below average reproductive success in this region (East Amatuli fork-tailed storm petrels). Above-average copepod abundance was observed in southeast Alaska inside waters. However, eastern GOA shelf conditions may have been less productive, given the below-average reproductive success of planktivorous seabirds in that area. So, while we saw average to cooler ocean temperatures, that didn't translate into predicted higher abundance of large copepods. However, the community composition was supplemented by a more diverse suite of species. Herring spawning stock biomass continues to increase, which supports fish eating groundfish (e.g., sablefish), the increasing population of humpback whales in Glacier Bay, and fish-eating seabirds (e.g., murre and gulls). Juvenile pollock (age-1; a common prey species) were seen in high abundance. Sand lance (a warm-water associated species) was observed in moderate amounts while (a cold-water associated species) remain at low abundance since the 2014-2016 marine heatwave.

Juvenile salmon in Icy Strait were, on average, observed at lower abundance. While not considered forage fish, other prey species including Tanner crab and shrimp around Kodiak continue to increase.

There remains lower predation pressure from major groundfish predators in the system (reduced populations of Pacific cod, Pacific halibut, arrowtooth flounder, and lower but increasing sablefish). This may enable other species to increase in abundance. Low abundance of predators may also reflect lower system productivity and prey availability.

Salmon returns increased in 2021, driven by abundant pink salmon. There was some evidence of the large population of pink salmon impacting the food web in the western GOA. This was apparent through reduced abundance of large copepods (pink salmon prey), increased biomass of large diatoms (fewer eaten by copepod predators), and reduced reproductive success of black-legged kittiwakes (competitors of pink salmon for large copepods).

<sup>68</sup> <https://apps-afsc.fisheries.noaa.gov/refm/reem/ecoweb/pdf/2021GOA-ESR-Brief.pdf>

**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.**

Paralytic shellfish toxins in shellfish (harmful algal blooms) were observed in reduced frequency and concentrations in 2021 (from 2020 and 2019). Fewer shellfish samples exceeded the regulatory limit for human consumption. This is likely due to cooler ocean conditions.

Management Uses

Ecosystem information was formally considered in fourteen groundfish stock assessments for Gulf of Alaska stocks, and one state-wide stock (sablefish) in 2021. There were no ecosystem-related reductions from the maximum acceptable biological catch (ABC) for Gulf of Alaska groundfish stocks. Precautionary measures already incorporated into setting catch levels were considered sufficient to address uncertainty.

**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<sup>69</sup>. 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”<sup>70</sup>.

Accordingly, in June 2019, 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. 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 the 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

<sup>69</sup> <https://www.fisheries.noaa.gov/alaska/ecosystems/alaska-climate-integrated-modeling-project>

<sup>70</sup> <https://meetings.npfmc.org/CommentReview/DownloadFile?p=c334ad33-4139-4b5a-b205-a8b7c5028562.pdf&fileName=D6%20Final%20BS%20FEP%20Jan%202019.pdf>

**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.**

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<sup>71</sup>. 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 and will continue for a minimum of five years.

The NPRB's Bering Sea Project<sup>72</sup> 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<sup>73</sup>. 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. The results of this project are already being communicated to a variety of audiences. Researchers regularly share news via blogs from the field that appear on the project website (<http://gulfofalaska.nprb.org/>). This research is also being presented at scientific meetings such as the annual Alaska Marine Science Symposium and public events such as the Sitka WhaleFest.

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 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<sup>74</sup>.

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-

<sup>71</sup> <https://www.nprb.org/long-term-monitoring-program/about-the-program/>

<sup>72</sup> <https://www.nprb.org/bering-sea-project/about-the-project/>

<sup>73</sup> <https://www.nprb.org/gulf-of-alaska-project/about-the-project/>

<sup>74</sup> <https://www.epa.gov/nepa/what-national-environmental-policy-act>

**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.**

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 2021), 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<sup>75</sup>. 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)<sup>76</sup>.

*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 2021 are available on the NMFS website, under the BSAI/GOA prohibited species heading<sup>77</sup>. 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 2019, but were largely offset by a decrease in IPHC Regulatory Area 3B. The total bycatch in 2019 has one of the smallest estimates since the beginning of foreign industrial fishing in Alaska in the early 1960s<sup>78</sup>.

**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<sup>79</sup>.

<sup>75</sup> [https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview\\_417.pdf](https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf)

<sup>76</sup> [https://marinedebris.noaa.gov/sites/default/files/publications-files/Ghostfishing\\_DFG.pdf](https://marinedebris.noaa.gov/sites/default/files/publications-files/Ghostfishing_DFG.pdf)

<sup>77</sup> <https://www.fisheries.noaa.gov/alaska/commercial-fishing/fisheries-catch-and-landings-reports-alaska>

<sup>78</sup> <https://iphc.int/uploads/pdf/am/2020am/iphc-2020-am096-09.pdf>

<sup>79</sup> <https://iphc.int/uploads/pdf/am/2020am/iphc-2020-am096-09.pdf>

**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.**

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<sup>80</sup>.

**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.

A preliminary bycatch analysis of the observer data for years 2019-2021 showed that bycatch species composition on the halibut directed longline fishery was composed of sharks and skates as well as sablefish.

---

<sup>80</sup><https://iphc.int/management/science-and-research/biological-and-ecosystem-science-research-program-bandesrp/-bandesrp-discard-mortality-and-Survival>

**Table 12.** Average bycatch of halibut directed longline from 2019-2021 in metric tons (t).

Species	2019	2020	2021	Average	Percentage
Halibut	9651.419	8928.723	10157.27	9579.137	61.37
Sharks	1105.179	1026.681	1267.196	1133.019	7.26
Other skates	905.7179	757.7277	1200.478	954.6413	6.12
Sablefish	1094.522	790.1876	926.7253	937.1449	6.00
Pacific cod	669.6238	942.2482	1164.867	925.5795	5.93
Longnose skate	539.9742	449.0189	946.2832	645.0921	4.13
Big skate	496.2025	431.5102	450.9736	459.5621	2.94
Other rockfish	226.5465	366.7421	193.3385	262.209	1.68
Sculpins	377.7575	292.7661	0	223.5079	1.43
Arrowtooth flounder	151.9771	115.1602	113.3083	126.8152	0.81
Shortraker rockfish	91.4338	52.22251	192.8966	112.1843	0.72
Demersal shelf rockfish	105.8385	103.1552	110.2633	106.419	0.68
Blackspotted/rougheyeye rockfish	53.85411	35.1488	70.82228	53.27506	0.34
Thornyhead rockfish	41.24028	21.48084	21.84771	28.18961	0.18
Octopus	38.38826	15.03632	10.41225	21.27894	0.14
Pollock	8.635125	2.269296	36.28362	15.72935	0.10
Kamchatka flounder	10.28539	7.466907	1.543107	6.431801	0.04
Deep water flatfish	2.768969	5.560794	10.52421	6.284658	0.04
Shallow-water flatfish	3.787059	7.037433	6.47758	5.767358	0.04
Dusky rockfish	4.885619	2.903795	1.662833	3.150749	0.02
Flathead sole	1.291594	0.403151	0.686303	0.793683	0.01
Greenland turbot	0.713278	0.436543	0.784466	0.644762	0.00
Other flatfish	0.836322	0.15681	0.532517	0.50855	0.00
Rock sole	0.113044	0.657768	0.454245	0.408352	0.00
Northern rockfish	0.546649	0.37661	0.01578	0.313013	0.00
Pacific ocean perch	0.296699	0.01471	0.125801	0.145736	0.00
Atka mackerel	0.132795	0.217613	0.055135	0.135181	0.00
Yellowfin sole	0.045995	0.091051	0.071096	0.06938	0.00
Rex sole	0	0	0.151611	0.050537	0.00
Alaska plaice	0.00557	0	0	0.001857	0.00
<b>Total</b>	<b>15584.02</b>	<b>14355.4</b>	<b>16886.05</b>	<b>15608.49</b>	<b>100.00</b>

However, there are other sources of information available on bycatch in the halibut fishery, which are summarized 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<sup>81</sup> 2018 was the first year that EM was integrated into the Observer Program under regulations. In 2020<sup>82</sup>, EM data were collected from 106 vessels from 258 trips (195 longline trips and 63 pot trips). By target species, there were 122 halibut trips, 23 Pacific cod trips, and 113 sablefish trips. The data spanned 682 halibut sea days, 86 Pacific cod sea days, and 674 sablefish sea days for a total of 1,442 sea days with trips averaging 5.6 days across all fisheries. Of the 11,491 hauls on reviewed trips, the catch level data was recorded for 3,814 hauls. All catch data presented is from this subset of hauls.



**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.**

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 shortraker/rougeye and yelloweye rockfish, sablefish (most of which is retained when IFQ is present), Pacific cod, arrowtooth flounder, grenadiers, sculpin, spiny dogfish and longnose skate.

**Seabird bycatch**

Demersal Longline Gear

Based on standard observer sampling protocols, demersal longline gear in Alaska groundfish fisheries accounted for 75 percent of the estimated seabird mortality in 2020 (2,612 birds), which is comparatively lower than the average estimated seabird mortality from 2011 through 2019 (86 percent; range 76 to 96 percent). From 2011 through 2020, most of the estimated seabird bycatch from demersal longline gear occurred in the BS (95 percent) when compared to the AI (< 1 percent) and GOA (4 percent). In fact, most (72 percent) of the total (all gear types) seabird bycatch off Alaska occurred in the BS from fisheries using demersal longline gear (range 55 percent to 86 percent from 2011 through 2020). Consistent with results for all gear types combined, most 2020 estimated seabird bycatch by demersal longline gear was Northern fulmar (61 percent; 1,599 birds); shearwaters (13 percent; 331 birds); and gulls (7 percent; 180 birds). Estimated bycatch of all three species in 2020 was comparatively lower when compared to the 2011 through 2019 times series average.

Estimates of seabird bycatch were also analyzed to compare C/Ps and CVs. In the BSAI, 95 percent of the total estimated seabird bycatch for vessels using demersal longline gear occurred on C/Ps in 2020 (2,469 birds). This is higher than the 2011 through 2019 time series average (81 percent; 6,013 birds; range of 2,097 to 9,491 birds). Northern fulmar, shearwaters, and gulls accounted for 96 percent of total estimated bycatch for C/Ps in 2020 (1,585; 325; 178 birds, respectively). On CVs, Northern fulmar (14 birds), shearwaters (7 birds) and gulls (2 birds) comprised 23 of the 25 total estimated seabirds caught as bycatch in the BSAI in 2020 (Table 7). In the GOA, 94 percent of total estimated seabird bycatch for vessels using longline gear occurred on CVs in 2020 (110 birds). This proportion is slightly more than the 2011 through 2019 average (776 birds; 89 percent). Black-footed albatross and Laysan albatross were the two most prevalent seabird bycatch species for CVs in 2020 (82 and 17 birds, respectively). The difference in proportion of seabird bycatch attributed to CVs and C/Ps in the BSAI and GOA is most likely a reflection of the differences in fleet characteristics between the two regions.

In the BSAI, most of the longline effort is by C/Ps targeting Pacific cod, while in the GOA, most of the longline effort is by CVs targeting halibut, sablefish, and Pacific cod. Of the demersal longline fisheries

<sup>81</sup> <https://www.fisheries.noaa.gov/resource/document/north-pacific-observer-program-2018-annual-report>

<sup>82</sup> <https://meetings.npfmc.org/CommentReview/DownloadFile?p=9e77fc11-b9c8-44b5-a153-69bdf5d75b8.pdf&fileName=C1%20Observer%20Program%202020%20Annual%20Report.pdf>

**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.**

that have seabird bycatch, the bulk of recent fishery effort in the BS 12 occurs in the Pacific cod demersal longline fleet (Eich et al. 2016). While this fishery accounts for the greatest amount of seabird bycatch (2011 through 2020 average of 67 percent), it captures an average of 10 percent of the total albatross bycatch. However, nearly all of the estimated short-tailed albatross takes that have occurred since 2003 have been in the Pacific cod demersal longline fleet (26 of the total 33 birds), while the remainder were taken in the Greenland turbot demersal longline fishery. As noted earlier, two endangered short-tailed albatross takes were reported by vessel using demersal longline gear in 2020 in the Federal fisheries off Alaska.

Examining the three fisheries responsible for the majority of seabird bycatch—Pacific cod, sablefish, and halibut demersal longline—the average annual seabird bycatch for 2011 through 2019 was 5,037, 715, and 241 birds per year, respectively. In 2020, the Pacific cod, sablefish, and halibut demersal longline estimated seabird bycatch was quite reduced when compared to the 2011 through 2019 averages (2,924, 125, and 22 birds, respectively). Focusing solely on the bycatch of albatross (unidentified, short-tailed, Laysan, and black-footed), the Pacific cod, sablefish, and halibut fisheries using demersal longline gear average 31, 342, and 103 albatross per year, respectively, for 2011 through 2020 (average for halibut fisheries calculated for 2013 through 2020). Seabird bycatch levels and rates are highly variable among years; however, sablefish has higher estimated albatross bycatch relative to other fisheries. Therefore, future conservation efforts for mitigating albatross bycatch should focus on the sablefish fleet for maximum benefit.

For endangered species bycatch, the focus should remain on the Pacific cod fleet; however, the average estimated mortality (2011 through 2020) is about 2 short-tailed albatross per year. Takes of short-tailed albatross have not been observed in the sablefish fishery since the mid-1990s. The only other fishery with a shorttailed albatross take is the BSAI Greenland turbot fishery in which 2 short-tailed albatross were recorded taken in 2014 (only 1 bird was in the observer sample). When expanded by the CAS, the average estimated mortality (2011 through 2020) across the Greenland turbot fishery is less than 1 short-tailed albatross per year.

**Marine Mammals**

The 2021 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 sablefish fisheries in the GOA are listed as Category II (occasional interactions with North Pacific sperm whale and Steller sea lion, Western US) while the BSAI and state fisheries are classified as Category III<sup>83</sup> (remote likelihood of/no known interactions with no marine mammal species mentioned).

**Sperm Whales**

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).

<sup>83</sup> <https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables#table-1-category-iii>

**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.**

Between 2013 and 2017, three serious injuries of sperm whales were observed in the Gulf of Alaska sablefish longline fishery (two in 2013 and one in 2016) and one in the Bering Sea/Aleutian Islands halibut longline fishery (in 2015). Each of these injuries was prorated at a value of 0.75 and extrapolated to fishery-wide estimates when possible, resulting in a minimum estimated mean annual mortality and serious injury rate of 4.7 sperm whales in U.S. commercial fisheries between 2013 and 2017<sup>84</sup>).

The Potential Biological Removal (PBR) for sperm whales is 0.5, however, this is likely an underestimate given that it 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).

**Steller Sea Lions**

Mean estimated annual mortality of Western DPS Steller sea lion was 1.1 in the GOA sablefish fishery. The minimum estimated mean annual U.S. commercial fishery-related mortality and serious injury rate (36 sea lions) is more than 10% of the PBR (10% of PBR = 32) and, therefore, cannot be considered insignificant and approaching a zero mortality and serious injury rate. Based on available data, the minimum estimated mean annual level of human-caused mortality and serious injury (247 sea lions) is below the PBR level (322) for this stock<sup>85</sup>. The Western U.S. stock of Steller sea lions is currently listed as endangered under the ESA and, therefore, designated as depleted under the MMPA. As a result, the stock is classified as a strategic stock. The population previously declined for unknown reasons that are not explained by the documented level of direct human-caused mortality and serious injury.

**Bait fisheries**

Most longline bait is purchased frozen and thawed before using. Salmon, herring, cod, and octopus or squid are typically purchased for bait. These bait species are well managed by either the State of Alaska or the NMFS, and none are classified as depleted, endangered or threatened.

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<sup>86</sup>. 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 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

<sup>84</sup> [https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids%2%A0\(eared-seals-or-fur-seals-and-sea-lions\)](https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids%2%A0(eared-seals-or-fur-seals-and-sea-lions))

<sup>85</sup> [https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids%2%A0\(eared-seals-or-fur-seals-and-sea-lions\)](https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids%2%A0(eared-seals-or-fur-seals-and-sea-lions))

<sup>86</sup> <https://www.fishbase.se/Ecology/FishEcologySummary.php?StockCode=530&GenusName=Hippoglossus&SpeciesName=stenolepis>

**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.**

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 MOU225 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.*

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)<sup>87</sup>. 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 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

<sup>87</sup> <https://www.iphc.int/uploads/pdf/am/2018am/iphc-2017-rara27-r.pdf>

**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.**

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<sup>88</sup>.

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<sup>89</sup>.

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<sup>90</sup>.

*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 regard 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<sup>91</sup>.

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 regard to the proposed NPFMC action to allow halibut retention in BSAI sablefish pots, issued for public review in October 2018<sup>92</sup>. This measure was adopted by NPFMC in 2020<sup>93</sup> and 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.

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

<sup>88</sup> <https://www.iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-propa1.pdf>

<sup>89</sup> <https://iphc.int/uploads/pdf/am/2020am/iphc-2020-am096-00.pdf>

<sup>90</sup> <https://www.fisheries.noaa.gov/resource/document/essential-fish-habitat-5-year-review-summary-report-2010-through-2015>

<sup>91</sup> [https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview\\_417.pdf](https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf)

<sup>92</sup> <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>

<sup>93</sup> <https://www.federalregister.gov/documents/2020/01/08/2019-27903/fisheries-of-the-exclusive-economic-zone-off-alaska-authorize-the-retention-of-halibut-in-pot-gear>

**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.**

socio- economic fisheries for all fisheries in Alaska, pursued with all allowed gear types<sup>94</sup> .

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:

- a catch accounting system for all species caught (FMP, non-target, PSC, seabirds, marine mammals)
- an observer program to estimate catches of non-target species (observers + EM data),
- fishery independent surveys,
- statistical stock assessments for most non-target species,
- 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,
- mandatory use of seabird avoidance devices on all vessels larger than 55', and
- 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 2020 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 are 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<sup>95</sup> (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 were caught as bycatch in 2020 in the halibut IFQ fishery<sup>96</sup>.

<sup>94</sup> <https://apps-afsc.fisheries.noaa.gov/refm/docs/2020/econGroundfishSafe.pdf>

<sup>95</sup> <https://www.fisheries.noaa.gov/alaska/bycatch/seabird-avoidance-gear-and-methods>

<sup>96</sup> <https://repository.library.noaa.gov/view/noaa/32076>



**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.**

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 fisheries are required to be released without harm.

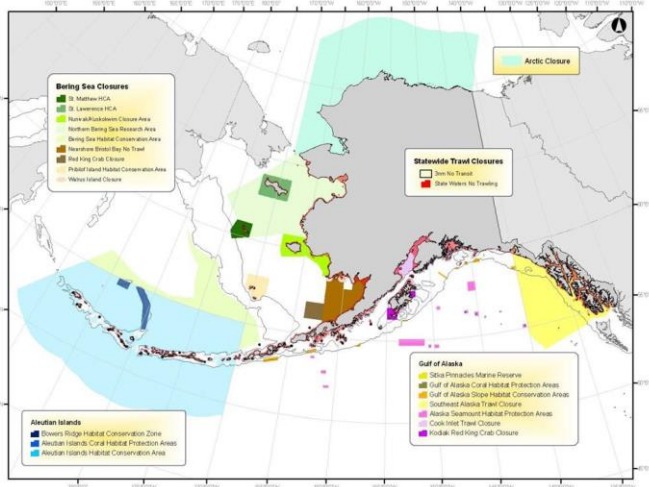
The 2020 List of Fisheries Summary Tables list U.S. commercial fisheries by categories according to the level of interactions that result in incidental mortality or serious injury of marine mammals. The halibut fisheries in the GOA and the BSAI are currently listed as Category III (remote likelihood of/ no known interactions). 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 indicators 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 severe and lasting effects on marine habitats and vulnerable epifauna<sup>97</sup>. In addition to this there are extensive habitat closures in Alaska.

These are shown in Figure 10. No new closures have been implemented in 2021. Further information on these is provided at <https://www.npfmc.org/habitat-protections/>.

<sup>97</sup> <http://www.fao.org/3/y3427e/y3427e04.htm#bm04.3.2>



**Figure 10.** Fishery closures and marine reserves in Alaska.

Furthermore, the NPFMC also implemented the Arctic Fishery Management Plan<sup>98</sup> 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 nm<sup>2</sup>).

**12.14 Outcome indicators 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 indicators 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.

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. 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 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<sup>99</sup>. Recent trends in climate and the physical environment, ecosystems, and fishing and fisheries are highlighted in bulleted lists of these reports.

**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.**

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”<sup>100</sup>. Accordingly, in June 2019<sup>101</sup>, 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<sup>102</sup>.

References:

Statement of consistency to the RFM Fishery Standard

**The fishery conforms to the requirements of Fundamental Clause 12 of the RFM Fishery Standard.**

<sup>98</sup> <https://www.npfmc.org/habitat-protections/>

<sup>99</sup> <https://www.fisheries.noaa.gov/alaska/ecosystems/ecosystem-status-reports-gulf-alaska-bering-sea-and-aleutian-islands#2020-alaska-marine-ecosystem-status-reports>

<sup>100</sup> <https://meetings.npfmc.org/CommentReview/DownloadFile?p=c334ad33-4139-4b5a-b205-a8b7c5028562.pdf&fileName=D6%20Final%20BS%20FEP%20Jan%202019.pdf>

<sup>101</sup> <https://www.npfmc.org/feptaskforce/>

<sup>102</sup> <https://www.fisheries.noaa.gov/alaska/ecosystems/ecosystem-status-reports-gulf-alaska-bering-sea-and-aleutian-islands>

## 8 Update on compliance and progress with non-conformances and agreed action plans

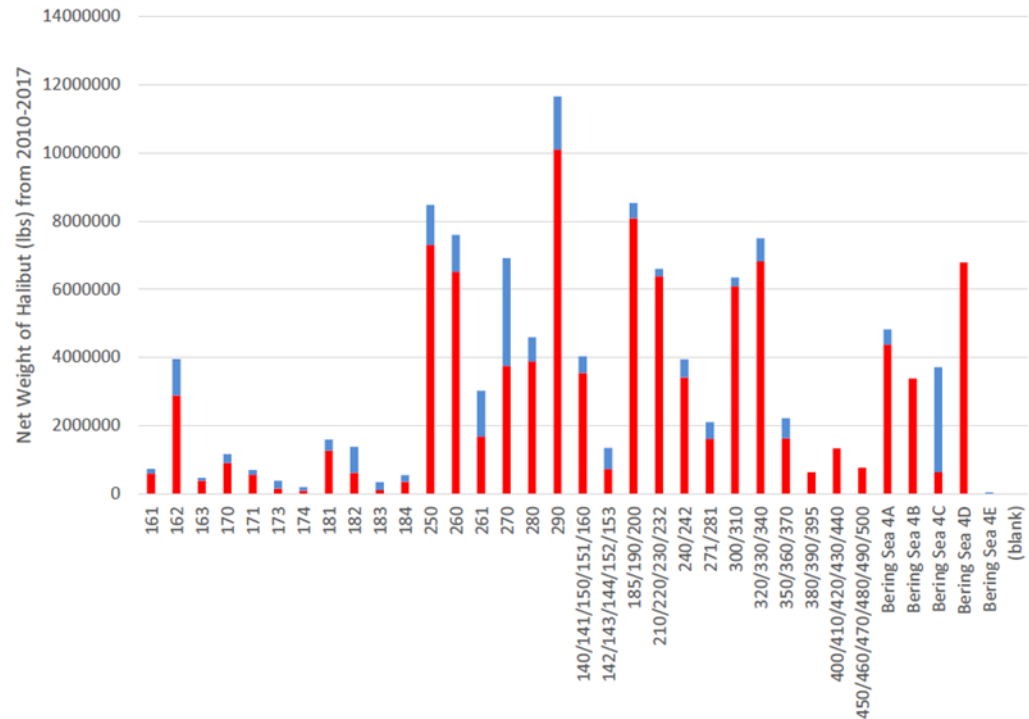
This section details compliance and progress with non-conformances and agreed action plans including:

- a) A review of the performance of the Client specific to agreed corrective action plans to address non-conformances raised in the most recent assessment or re-assessment or at subsequent surveillance audits including a summary of progress toward resolution.
- b) A list of pre-existing non-conformances that remain unresolved, new nonconformances raised during this surveillance, and non-conformances that have been closed during this surveillance.
- c) Details of any new or revised corrective action plans including the Client’s signed acceptance of those plans.
- d) An update of proposed future surveillance activities.

### 8.1.1 Closed non-conformances

Non-conformance 1 (of 1)	
Clause:	4.2
Non-conformance level:	Minor
Non-conformance:	
Rationale:	<p>Beginning January 1, 2013, amendment 86 (BSAI) and amendment 76 (GOA) were added to the Federal Fisheries Regulations 50 CFR Part 679: Fisheries of the Exclusive Economic Zone Off Alaska. 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. Details on the amended program can be found in Faunce (2013). Details on the sampling program, including biological data on halibut, carried out by the observers are extensively documented<sup>135</sup>.</p> <p>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 at the October and December meetings of NPFMC. Detailed information on the observer program can be found in the NOAA/NMFS North Pacific Groundfish and Halibut Observer Program Annual Reports website<sup>136</sup>.</p> <p>The NPFMC has 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 has 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. A fixed gear EM Workgroup (EMWG) provides a forum for all stakeholders, including the commercial fishing industry, agencies, and EM service providers, to cooperatively and collaboratively design, test, and develop EM systems, consistent with NPFMC’s goal to integrate EM into the Observer Program. A document describing the EM pre-implementation plan for 2016 exists, and also noting other EM research and development that is scheduled to take place in 2016 is available on the NPFMC website.</p> <p>No observer coverage in 2016 was scheduled (i.e. vessels in the “no-selection pool”) for catcher vessels less than 40 ft LOA, or vessels fishing with jig gear, or fixed gear vessels that have opted into the EM selection pool. For 2016, 58 fixed-gear vessels 40-57.5 ft LOA will participate in the EM selection pool and will carry EM systems as described in the EM Plan. The Observer Program Annual Report (NMFS 2015a) and the Observer Program Supplement Environmental</p>

Non-conformance 1 (of 1)	
	<p>Assessment (NMFS 2015b) have highlighted the data gaps caused by not having any observer information on vessels less than 40 ft LOA. In 2014, vessels less than 40 ft took about 20% (in value) of the longline halibut catch in Alaska (Fissel et al. 2015). NMFS recommended in its 2016 Deployment Plan that vessels less than 40ft LOA be considered for electronic monitoring in the future, and there are plans to partially implement EM in this sector in 2017. The lack of observer coverage for vessels less than 40 ft LOA constitutes a minor non- conformance, as there is still observer coverage for a large portion of the fishery.</p>
Corrective Action Plan (CAP):	<p>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 (3rd year).</p>
Progress against the CAP:	<p>On the third surveillance assessment following the re-assessment in January 2017 it was found that some progress was 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 was not yet sufficient to be considered fulfillment of the NC. Therefore? The NC remained open.</p> <p>On the 4rth surveillance, to address the minor NC, the assessment team used the analysis provided by a joint NFMS and IPHC effort and relayed to us by FVOA. The data and analysis had the goal to investigate gaps in observer coverage from 2010- 2017 for hook and line vessels less than 40ft LOA compared to larger vessels &gt; 40ft LOA and describe the observer coverage by IPHC statistical area.</p> <p>The NMFS and IPHC analysts provided FVOA haul-level information summarized by IPHC statistical area based on geo retrieval locations. The observer haul summaries included all hook and line data for a given IPHC statistical area, with data summaries on unique vessel count (vessels observed), total haul weight (lb), and year fishing occurred. This information was joined with the logbook information based on the IPHC area grouping factors in the logbook data. The primary issues are to understand the proportion of catch, in the form of unreported discards, that are not accounted for.</p> <p>These analyses were undertaken to get a more complete understanding of the impacts of the vessels &gt; 40ft LOA. The analysis addressed the following questions:</p> <ul style="list-style-type: none"> <li>• In what areas are the &lt;40ft fleet fishing, where is the greatest effort exerted, and how does this compare with the &gt;40ft fleet subject to observer coverage?</li> </ul> <p>The primary findings of this aspect of the analysis indicated that there was high spatial overlap in effort between the two fleets (&lt;40ft fleet and &gt;40ft fleet). The under 40ft fleet had more near-shore activity in southeast Alaska than the &gt;40ft vessels.</p>



**Figure 11.** Net weight of halibut catches (lbs) of the <40ft and >40ft fleet of halibut vessels across the IPHC statistical areas from 2010-2017 reported in logbooks. Red bars represent the sum of the catch for the over 40ft fleet (i.e., fleet subject to observer coverage) and the blue bars are the <40ft fleet.

- In the areas where there is substantial <40ft coverage, what is the level of observer coverage in the >40ft fleet?

Effort for vessels <40ft from 2010-2017 was highest in the Bering 4C area, and 270. Besides Bering 4C, there was high spatial overlap in effort between the two fleets, though the under 40ft fleet had more near-shore activity in southeast Alaska than the >40ft vessels. The catch of halibut (lbs) corresponded to the level of effort exerted by the two fleets.

- Based on the above results, what is the level of concern that the discarded catch from the <40ft fleet is not adequately captured by the current observer program for the >40ft fleet?

Bering Sea 4C and 270 both had a high proportion of vessels over 40ft subject to observer coverage (over 75% and 50%, respectively). Observer coverage was low across the southeast region, where <40ft vessels comprise roughly 50% of the effort in some regions. However, effort and volume of catch of halibut is comparatively low across this region, and thus of less concern that substantial non-target and ETP interactions are going unrecorded. NMFS expects inshore areas to have relatively lower observer coverage rates than outer areas where relatively greater effort is expended. Based on the observer coverage of >40ft fleet and the IPHC logbook effort data, there is decent, and probably representative, observer coverage on the larger fleet in areas where the <40ft fleet operates. Thus, assuming that the catch profiles of the two fleets are similar when fishing in the same statistical area, the collected observer data is believed to be representative of the halibut fishery across the two fleets.

With the overlap and magnitude analysis presented above, **the team considered that the client**



Non-conformance 1 (of 1)	
	<p><b>has addressed the minor nonconformance.</b> Catch data and other biological information and research results serve as inputs 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). Uncertainty in estimates of mortality create bias in this assessment. However, the analysis demonstrated that the relative volume of catch by the &lt;40ft fleet would not present a risk to main bycatch species, where estimated catches that could be theoretically attributed to the ~20% of landings taken by the &lt;40' fleet and overall Halibut fleet catches are not considered to jeopardize the status of any main bycatch species. The data demonstrates that in terms of effort, the &gt;40ft fleet is dominant in most stat areas and there are few stat areas in which the &lt;40ft fleet has significant effort with little to no effort by the &gt;40ft fleet for the years reviewed. The data is presented as summed for all years, but has also been reviewed by year, with year-over effort generally consistent.</p>
Non-conformance status:	Closed – following surveillance audit 4.

### 8.1.2 Progress against open non-conformances

There are no open non-conformances for this surveillance.

### 8.1.3 New non-conformances

There are no new non-conformances found during this surveillance.

### 8.1.4 New or revised corrective action plans

There are no new corrective action plans or pre-existing plans at the moment.

### 8.1.5 Proposed surveillance activities

There are no proposed future surveillance activities as this is the 5th surveillance audit.

## **9 Recommendations for continued certification**

### **9.1 Certification Recommendation**

Following this surveillance audit, the Audit Team determines that the fishery Alaska Pacific Halibut Commercial fishery meets the requirements of the RFM Certification Program Fisheries Standard Version 1.3. Therefore, the withdrawal shall be terminated, and the certificate reinstated.

## 10 References

- IPHC Annual Report 2021: <https://iphc.int/uploads/pdf/ar/iphc-2022-ar2021-r.pdf>
- IPHC Fishery Regulations 2022: <https://www.iphc.int/uploads/pdf/regs/iphc-2022-regs.pdf>
- IPHC Harvest Strategy Policy (2019): <https://iphc.int/uploads/pdf/hsp/iphc-2019-hsp2019.pdf>
- IPHC Management Strategy Evaluation: <https://iphc.int/management/science-and-research/management-strategy-evaluation>.
- IPHC Report of the 97th Session of the IPHC Annual Meeting (AM097):  
<https://www.iphc.int/uploads/pdf/am/am097/iphc-2021-am097-r.pdf>
- IPHC Report of the 98th Session of the IPHC Annual Meeting (AM098):  
<https://www.iphc.int/uploads/pdf/am/am098/iphc-2022-am098-r.pdf>
- IPHC Rules of Procedure (2022): <https://iphc.int/uploads/pdf/basic-texts/iphc-rop-current.pdf>
- IPHC Strategic Plan 2019-2023: <https://iphc.int/uploads/pdf/sp/iphc-2019-sp23.pdf>
- IPHC. Annual Report 2018. <https://iphc.int/uploads/pdf/ar/iphc-2018-annual-report.pdf>
- Methot Jr, R.D. and Wetzel, C.R., 2013. Stock synthesis: a biological and statistical framework for fish stock assessment and fishery management. *Fisheries Research*, 142, pp.86-99.
- Stewart I and A. Hicks. 2022 Assessment of the Pacific halibut (*Hippoglossus stenolepis*) stock at the end of 2021 IPHC 2022-SA 01.
- Ualesi, K., Wilson, D., Jones, C., Rillera, R., and Jack, T. 2022. IPHC Fishery Independent Setline Survey (FISS) design and implementation in 2021. IPHC-2022-AM098-07. 13 p.

## 11 Appendices

### 11.1 Appendix 1 – Assessment Team Bios

#### 11.1.1 Assessment Team Bios

Based on the technical expertise required to carry out this assessment, an Assessment Team was selected as follows.

#### **Dr. Ivan Mateo, Lead Assessor**

Dr. Ivan Mateo has over 25 years' experience working with natural resources population dynamic modelling. 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 bio-energetic modelling 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 Defence 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 modelling of Alaska sablefish.

#### **Dr. Robert Leaf, Assessor 1**

Dr. Robert Leaf has 20 years of experience working in the field of natural resource management of fin and shellfish. He specializes in the evaluation of management strategies of harvested species and the identification of environmental drivers that impact their population dynamics. Dr. Leaf received his Master's Degree in Marine Science at Moss Landing Marine Laboratories and his PhD in Fisheries and Wildlife Sciences from Virginia Polytechnic and State Institute. His last professional post was as a post-doc under Dr. Kevin Friedland at the Northeast Fishery Science Center's Narragansett Laboratory. There, he worked on understanding the impact of environmental conditions on fish stock productivity and recruitment. He has worked in the Gulf of Mexico for the last three years working on fish stock assessment of commercially and recreationally important species in that area. Dr. Leaf is a member of the Gulf of Mexico Fishery Management Council's Red Drum working group and NOAA's Marine Fisheries and Climate Taskforce. He currently supervises four masters level students working on various state and federally managed fish stocks.

#### **Mr. Robert Allain, Assessor 2**

Mr. Allain is a graduate of Saint Mary's University in Halifax, Nova Scotia with undergraduate degrees in Commerce (Business Administration) and Science (Chemistry). In 1977, he joined the then Federal Department of Fisheries and Environment as a Fishery Officer (International Surveillance) and carried out inspections of foreign and domestic fishing vessels within and beyond Canada's EEZ. During his 32-year career with the now Department of Fisheries and Oceans (DFO), Mr. Allain served in a variety of fisheries management, strategic planning and policy positions in Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland and Labrador, and at Departmental Headquarters in Ottawa. He served as a senior executive from 1991 to 2008.

Currently, Mr. Allain is the president of the consulting firm OceanIQ Management Services in Dieppe, New Brunswick. He is a Marine Stewardship Council-certified P3 assessor who has participated in approximately 25 assessments and surveillance audits in Canada and the U.S. in respect of demersal, pelagic, invertebrate and crustacean fisheries. He is also fully conversant with the Alaska Responsible Fisheries Management (AK RFM)

model through his participation as a technical expert to the ASMI's Fisheries Standard Committee that developed the certification scheme.