WHEN TRUST MATTERS

SURVEILLANCE NO. 2

RESPONSIBLE FISHERIES MANAGEMENT CERTIFICATION SCHEME, VERSION 2.1

Alaska cod

Certification Body	DNV Business Assurance USA
Assessment team	Jodi Bostrom, Giuseppe Scarcella, Paul Knapman
Fishery client	Alaska Fisheries Development Foundation (AFDF)
Date	June 26, 2025

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

ABC	Acceptable biological catch
ADFG	Alaska Department of Fish and Game
AFDF	Alaska Fisheries Development Foundation
AFSC	Alaska Fisheries Science Center
AI	Aleutian Islands
AKSC	Alaska Seafood Cooperative
APA	At-sea Processors Association
B40%	40% of the equilibrium SSB in the absence of fishing
BOF	Board of Fisheries
BSAI	Bering Sea and Aleutian Islands
CDQ	Community development quota
CPUE	Catch per unit effort
CQ	Cooperative quota
EBFM	Ecosystem-based fisheries management
EBS	Eastern Bering Sea
EEZ	Exclusive economic zone
EFH	Essential fish habitat
ESA	Endangered Species Act
ETP	Endangered, threatened, and protected (species)
F35%	Fishing mortality rate that reduces the equilibrium level of spawning per recruit to 35% of the unfished level
F40%	Fishing mortality rate that reduces the equilibrium level of spawning per recruit to 40% of the unfished level
FABC	Fishing mortality for acceptable biological catch
FAO	Food and Agriculture Organization of the United Nations
FMP	Fishery management plan
FOFL	Fishing mortality for overfishing limit
GHL	Guideline harvest level
GOA	Gulf of Alaska
HCR	Harvest control rule
LAPP	Limited Access Privilege Program
MSC	Marine Stewardship Council
mt	Metric tons
nm	Nautical mile
NMFS	National Marine Fisheries Service (NOAA Fisheries)
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
OFL	Overfishing limit
PBR	Potential biological removal
PCTC	Pacific Cod Trawl Cooperative
PDO	Pacific Decadal Oscillation
PSC	Prohibited Species Catch
RFM	Responsible Fisheries Management
SAFE	Stock Assessment and Fishery Evaluation (report)
SASH	Sexual assault, sexual harassment
SSB	Spawning stock biomass
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
USFWS	U.S. Fish and Wildlife Service

1 EXECUTIVE SUMMARY

Table 1. General information and the fishery

Fishery name	Alaska Cod Fishery		
Fishery being assessed	**Applicant Group:** Alaska Cod Fishery Client Group **Product Common Name (*Species*):** Pacific cod (*Gadus macrocephalus*) **Geographic Location:** Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) within Alaska jurisdiction (200 nautical mile [nm] exclusive economic zone [EEZ]) **Gear Types:** Bottom trawl, longline, pot, and jig gears **Principal Management Authority:** Federal (National Marine Fisheries Service [NMFS] and the North Pacific Fishery Management Council [NPFMC]) and state (Alaska Department of Fish and Game [ADFG] and Board of Fisheries [BOF])		
Date certified	December 6, 2011; recertified December 6, 2017; second recertification February 6, 2023	Date of certificate expiry	February 5, 2028
Surveillance type	On-site surveillance		
Date of surveillance audit	April 28-29, 2025		
Surveillance stage	1st Surveillance		
	2nd Surveillance	X	
	3rd Surveillance		
	4th Surveillance		
	Other (expedited etc)		
Surveillance team	Lead assessor: Jodi Bostrom Assessors: Giuseppe Scarcella, Paul Knapman		

The Responsible Fisheries Management (RFM) Certification Program is a voluntary program that is owned and managed by the Certified Seafood Collaborative (CSC) to provide an independent, third-party certification that can be used to verify that these fisheries are responsibly managed according to the RFM standard. Additionally, application to the RFM is only available for fisheries operating within the North American fisheries operating in the U.S. and Canadian 200 nm EEZ.

The RFM Certification Program uses the fundamental clauses of the RFM Fisheries Standard Version 2.1 and is in accordance with ISO 17065 accredited certification procedures. The assessment is based on the fundamental clauses specified in the RFM Fisheries Standard Version 2.1. It is based on four key components of responsible management derived from the Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries (1995) and Guidelines for the Eco-labeling of products from marine capture fisheries (2009).

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

The purpose of this annual surveillance report is to:

1. Establish and report on any material changes to the circumstances and practices affecting the original complying assessment of the fishery
2. Monitor any actions taken in response to non-conformances raised in the original assessment of the fisheries
3. Rescore any clauses where practice or circumstances have materially changed since the last audit

1.1 Audit conclusion

Fishery	Status of certification	Comment
The **Pacific cod** commercial fishing vessels within the Alaska Cod Fishery Client Group employing bottom trawl, longline, pot, and jig gears the GOA and BSAI within Alaska jurisdiction (200 nm U.S. EEZ) and subjected to federal (NMFS and NPFMC) and state (ADFG and BOF) management.	**Certified**	Following the second surveillance audit conducted on April 28-29, 2025, the team recommends the continued certification of this fishery according to the RFM Fisheries Standard v2.1.

2 ASSESSMENT TEAM DETAILS

Jodi Bostrom DNV Lead Assessor and main area of responsibility Fundamental clause D (Serious Impacts of the Fishery on the Ecosystem)	Jodi Bostrom is a senior assessor and team leader for Marine Stewardship Council (MSC) Fisheries and RFM Fisheries at DNV Business Assurance. She earned an M.Sc. in Environmental Science from American University and a B.Sc. in Zoology from the University of Wisconsin. She has over five years of experience in MSC fisheries assessment services. Prior to that, she worked for five years at the MSC as a Senior Fisheries Assessment Manager. Among other things, she developed the MSC's benthic habitats policy and the Consequence Spatial Analysis (a risk-based framework for assessing habitat impacts in data-deficient situations) as part of the MSC Standard revision. Prior to the MSC, Jodi spent 11 years with the US National Academy of Sciences' Ocean Studies Board where she worked on various projects from fisheries management and policy to bycatch and dredging impacts to eutrophication and sea level rise.
Paul Knapman Main areas of responsibility Fundamental clause A (Fisheries Management System) and C (Science, Stock Assessment Activities, and the Precautionary Approach)	Paul is an independent consultant based in Halifax, Nova Scotia, Canada. Paul began his career in fisheries more than 30 years ago as a fisheries officer in the UK, responsible for the enforcement of UK and EU fisheries regulations. He then joined the UK government's nature conservation advisors, establishing and managing their marine fisheries program. He developed an extensive program of work with fisheries managers, scientists, the fishing industry and ENGOs to integrate national and European fisheries and nature conservation requirements. He also helped lead a national four-year project contributing to the 2002 review of the Common Fisheries Policy. He then became Head of the largest inshore fisheries management organization in England, with responsibility for managing an extensive area of inshore fisheries on the North Sea coast. The organization's responsibilities and roles included: stock assessments; habitat monitoring; setting and ensuring compliance with total allowable catches and quotas; establishing and applying regional fisheries regulations; the development and implementation of fishery management plans; the lead authority for the largest marine protected area in England. In 2004, Paul moved to Canada and established his own consultancy providing analysis, advisory and developmental work on fisheries management policy in Canada and Europe. He drafted the first management plan for one of Canada's marine protected areas, undertook an extensive review on illegal, unreported, and unregulated fishing in the Baltic Sea and was appointed as rapporteur to the European Commission's Baltic Sea Regional Advisory Council. In 2008, Paul joined Moody Marine as their Americas Regional Manager, responsible for managing and developing their regional MSC business. He became General Manager of the business in 2012. Paul returned to consultancy in 2015.
Giuseppe Scarcella Main area of responsibility Fundamental clause B (Science, Stock Assessment Activities, and the Precautionary Approach)	Giuseppe Scarcella is an experienced fishery scientist and population analyst and modeler, with wide knowledge and experience in the assessment of demersal stocks. He holds a first degree in Marine Biology and Oceanography (110/110) from the Unversità Politecnica delle Marche, and a Ph.D. in marine Ecology and Biology from the same university, based on a thesis "Age and growth of two rockfish in the Adriatic Sea". After his degree he was offered a job as project scientist in several research programs about the structure and composition of fish assemblage in artificial reefs, off-shore platform and other artificial habitats in the Italian Research Council – Institute of Marine Science of Ancona now Institute for Biological Resources and Marine Biotechnologies. During the years of employment, he has gained experience in benthic ecology, statistical analyses of fish assemblages evolution in artificial habitats, fisheries ecology and impacts of fishing activities, stock assessment, otolith analysis, population dynamic and fisheries management. During the same years he attended courses of uni-multivariate statistics and stock assessment. He is also actively participating in the scientific advice process of FAO GFCM in the Mediterranean Sea and Scientific, Technical and Economic Committee for Fisheries for the European Commission. He is author and co-author of more than 50 scientific paper peer reviewed journals and more than 200 national and international technical reports, most of them focused on the evolution of fish assemblages in artificial habitats and stock assessment and fishery management.

3 BACKGROUND ON THE FISHERY

3.1 Fishery description

During the fourth surveillance audit of the last certification cycle, a non-conformance was placed on Fundamental Clause 3. This non-conformance was closed at the first surveillance audit of this new certification cycle. All information on this fishery can be obtained from the original full assessment report, subsequent surveillance reports, and recertification reports available for download at https://csicertified.org/certified-fishery-species/alaska-cod/. Recent catch is similar to previous years, and recent data are presented in Table 2.

Table 2. Total allowable catch (TAC) and catch data for 2024

Species	Latin name	2024 TAC (metric ton; mt)	2024 Total Catch (mt)
Pacific cod in Eastern Bering Sea (EBS)	*Gadus macrocephalus*	147,753	127,079
Pacific cod in Aleutian Islands (AI)	*Gadus macrocephalus*	8,080	3,569
Pacific cod in GOA	*Gadus macrocephalus*	23,766	16,860

3.2 Previous assessments and surveillance audits

The Alaska cod fisheries were first certified under the requirements of the Alaska RFM standard v1.2 on December 6, 2011. The initial certification and four annual surveillance audits were carried out by the certification body Global Trust.

On April 15, 2017, the certificate for this fishery was transferred from Global Trust to DNV GL (now DNV). The certificate transfer and the fourth surveillance audit were carried out by DNV. During June-December 2017, the fishery went through the full reassessment against a newer version of the standard, v1.3. This reassessment did not result in any changes in the compliance of the fishery with the RFM standard, and no non-conformances were raised. The new certificate was, therefore, issued with the validity date until December 5, 2022.

In January 2021, the fourth surveillance of the recertification took place via an off-site surveillance audit, which was done in conjunction with the reassessment site visit, and the surveillance report was issued on May 27, 2022. Following the results of the second reassessment, the fishery was recertified against the RFM Fisheries Standard v2.1 with one non-conformance. The certificate was issued with the validity date until February 5, 2028.

The first surveillance audit of this new certification cycle took place via an off-site surveillance audit on March 27, 2024. During the surveillance audit, the non-conformance was closed.

4 THE ASSESSMENT PROCESS

The RFM assessment/reassessment evaluates the fishery against the conformance criteria outlined in the RFM's Fishery Standard v2.1, which contains clauses that are categorized into four sections:

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

Scoring of each clause is based on a series of Evaluation Parameters: Process, Current Status/Appropriateness/Effectiveness, and Evidence Basis. The scoring guidelines, which are used for all clauses, are as follows:

- If all Evaluation Parameters are satisfied, the clause is scored in full conformance.
- If any single Evaluation Parameter is not satisfied, the clause is scored in minor non-conformance.
- If any two Evaluation Parameters are not satisfied, the clause is scored in major non-conformance.
- If any three or more Evaluation Parameters are not satisfied,the clause is scored in critical non-conformance.

During the assessment/reassessment, the fishery is assigned a confidence rating for each clause, which signifies the confidence of the assessment team that the fishery is demonstrated to be in conformity to the requirements of that clause. Clauses are scored according to the following confidence ratings:

- Low confidence rating (critical non-conformance level) – Information and/or evidence is completely absent or contradictory to whether an element of the fishery complies with the given requirements of a supporting clause. In these cases, a low confidence rating, equivalent to a critical non-conformance, is assigned.
- Medium confidence rating (major non-conformance) – Information and/or evidence is limited. In these cases, major improvement is needed to achieve full conformance, and a medium confidence rating with a major non-conformance is assigned.
- Medium confidence rating (minor non-conformance) – Information and/or evidence is broadly available; however, there are some information gaps. In these cases, minor improvement is needed to achieve full conformance, and a medium confidence rating with a minor non-conformance is assigned.
- High confidence rating (full conformance) – Sufficient information and/or evidence is available to demonstrate full conformance. In these cases, a high confidence rating is assigned.

Annual surveillance audits are undertaken to review any changes in the fishery since the last assessment, reassessment, or surveillance audit. Progress toward closing any non-conformances is also evaluated.

4.1 Surveillance audit meetings

The surveillance announcement was announced publicly on CSC's website (https://csicertified.org/certified-fishery-species/alaska-cod/) on March 27, 2025. The audit took place on-site in Seattle, Washington on April 28-29, 2025. (Note that the RFM surveillance audit was held in conjunction with the fishery's audit against the MSC Standard.)

4.2 Stakeholder input

Table 3 provides the agenda and list of participants. (Note that this RFM surveillance audit was held in conjunction with the fishery's audit against the MSC Standard and with the MSC and RFM audits for the Alaska pollock (At-sea Processors Association [APA]) and Alaska flatfish (Alaska Seafood Cooperative [AKSC]) fisheries, which in some cases involved MRAG Americas and their subcontractors.) DNV received no written stakeholder input before the audit and no requests to meet with the team. The team did receive an update on the fishery, including the latest catch data, from the client prior to the audit.

Table 3. Surveillance agenda and participants

Date	Topics	Attendees	All Times PDT
April 28	RFM/MSC AK groundfish joint client opening meeting • Introduction of the team, their roles and responsibilities • Review scope of assessment,	Austin Estabrooks (APA) Kristy Clement (AFDF) Ann Robertson (Consultant for AFDF) Beth Concepcion (AKSC) Sara Webster (AKSC)	10:00-10:30 am

Date	Topics	Attendees	All Times PDT
	audit criteria, assessment process and objectives of the audit • Review of the agenda and timeline for the assessment	Chris Woodley (AKSC) Giuseppe Scarcella (DNV and MRAG Americas subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG Americas) Nick Hahlbeck (MRAG Americas) Susan Ranck (ANAB observer) Wyatt Fournier (MSC observer)	
	RFM/MSC meeting with cod client • Review of basic info about the company • Review of scope • Review of fishing operations • Review of impact on ecosystem • Compliance with rules and regulations • Review of progress against conditions and recommendations • Review of traceability risks	Kristy Clement (AFDF) Ann Robertson (Consultant for AFDF) Giuseppe Scarcella (DNV subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Susan Ranck (ANAB observer) Wyatt Fournier (MSC observer)	10:30-11:30 am
	Lunch		12:30-2:00 pm
	RFM/MSC meeting with AFSC – BS cod stock • Review of stock status, HRCs, etc.	Steve Barbeaux (AFSC) Kristy Clement (AFDF) Ann Robertson (Consultant for AFDF) Giuseppe Scarcella (DNV subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Susan Ranck (ANAB observer) Wyatt Fournier (MSC observer)	2:00-3:00 pm
	End of Day 1		
April 29	RFM/MSC meeting with AFSC – AI and GOA cod stocks • Review of stock status, HRCs, etc.	Ingrid Spies (AFSC) Pete Hulson (AFSC) Kristy Clement (AFDF) Ann Robertson (Consultant for AFDF) Giuseppe Scarcella (DNV subcontractor) Jodi Bostrom (DNV) Susan Ranck (ANAB observer)	9:00-10:30 am
	Lunch		12:00-1:00 pm
	RFM/MSC meeting with NPFMC • Review of management measures, regulations, etc.	Dave Witherell (NPFMC) Diana Evans (NPFMC) Sarah Marrinan (NPFMC) Taylor Holman (NPFMC) Kate Haapala (NPFMC) Giuseppe Scarcella (DNV and MRAG Americas subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG Americas) Nick Hahlbeck (MRAG Americas) Susan Ranck (ANAB observer) Wyatt Fournier (MSC observer)	1:00-2:30 pm

Date	Topics	Attendees	All Times PDT
	Break		2:30-2:45 pm
	RFM/MSC closing meeting with cod client • Preliminary scorings results • Conclusion on conditions/milestones and recommendations for surveillances and re-assessment • Post-audit process and timeframes • Confirm availability of information and resources required by cutoff date	Kristy Clement (AFDF) Ann Robertson (Consultant for AFDF) Jim Armstrong (client group) Giuseppe Scarcella (DNV subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Susan Ranck (ANAB observer)	2:45-3:15 pm
	End of Audit		

5 UPDATES TO AND CHANGES WITHIN THE FISHERY

5.1 Target species biology

Pacific cod (*Gadus macrocephalus*) is a widely distributed transoceanic species inhabiting coastal waters from Santa Monica Bay, California, northward to Norton Sound in the Bering Sea and extending along the Asian coast to the northern Yellow Sea. It occupies a depth range from the shoreline to 500 meters, with its distribution spanning latitudes between approximately 34°N and 65°N (Ketchen 1961, Bakkala et al. 1984, Lauth 2011).

The biology of Pacific cod across GOA, AI, and EBS exhibits regional variations driven by environmental conditions, genetic structure, and migration patterns. Pacific cod exhibit depth and temperature-dependent distributions, particularly in the AI and EBS, where bottom temperatures influence habitat suitability and movement. Recent studies have identified temperature-driven growth variability, with warmer conditions leading to reduced recruitment success and increased metabolic stress, particularly in the AI (Spies et al., 2024). The decline in biomass observed in the AI and parts of the EBS may be partially attributed to these climate-induced changes. Overall, the biology of Pacific cod in these regions reflects a complex interplay of environmental factors, genetic differentiation, and seasonal migration. While stock assessments maintain distinct management units for the GOA, AI, and EBS, continued research is needed to refine the understanding of connectivity, recruitment dynamics, and climate-driven changes in Pacific cod populations.

The stock configuration and connectivity of Pacific cod in the GOA, AI, and EBS present a complex system influenced by genetic structure, environmental conditions, and seasonal migrations. Recent genetic studies confirm an isolation-by-distance pattern where geographically proximate populations exhibit greater genetic similarity. However, significant genetic breaks have been identified between key regions, such as the western and eastern GOA, reinforcing the idea of distinct subpopulations within the broader Pacific cod stock (Spies et al. 2022, 2024). Genetic analysis of Pacific cod using low-coverage whole-genome sequencing has confirmed an isolation-by-distance pattern, in which genetic similarity is higher among geographically proximate populations (Figure 1).

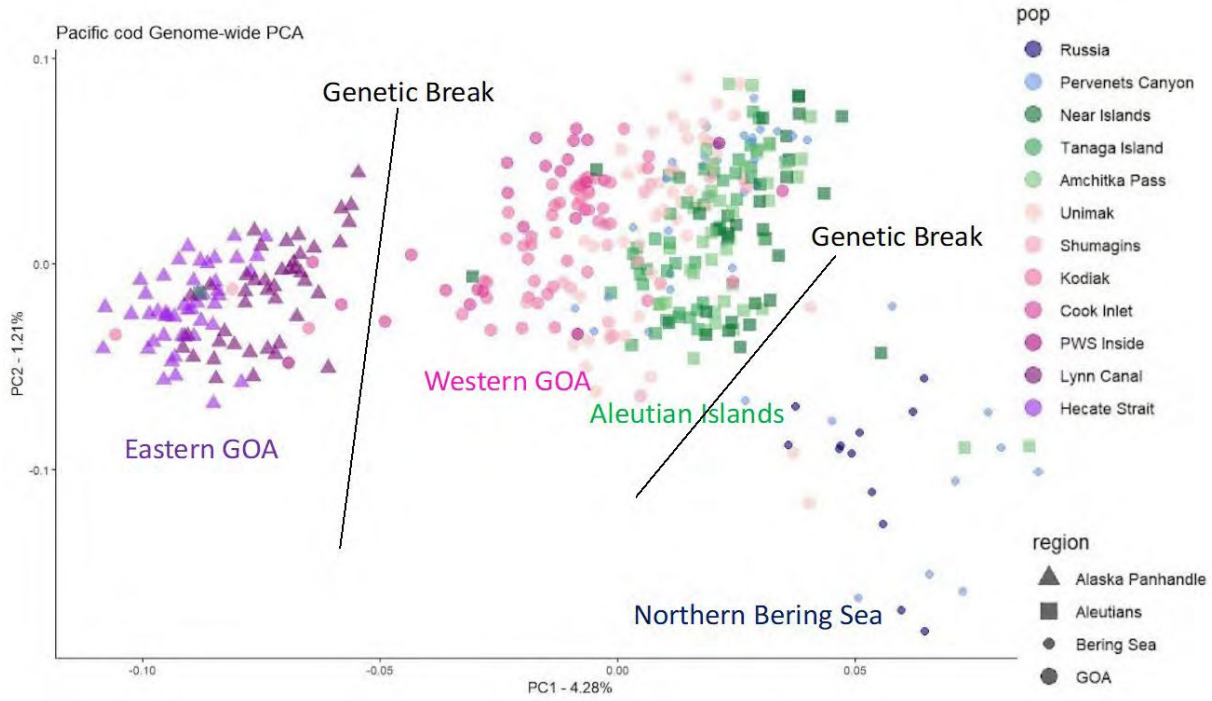


Figure 1. Principal components analysis of 1,922,927 polymorphic single nucleotide polymorphisms from the low-coverage whole-genome sequencing dataset. Source: Barbeaux et al. 2024

Satellite tagging data indicate strong seasonal movements between the western GOA and the Bering Sea, with approximately 50% of tagged Pacific cod migrating northward to summer foraging grounds in the EBS before returning to the western GOA for winter spawning. However, movement between the central GOA and the Bering Sea appears limited, suggesting that while some connectivity exists, distinct stock units may be appropriate for management (Nielsen et al. 2023). In AI, Pacific cod is largely self-sustaining, with

limited movement into or out of the region during non-spawning seasons. Genetic data suggest strong adaptive divergence in AI populations, further supporting their classification as a distinct management unit separate from the EBS stock (Spies et al. 2022). Nonetheless, tagging studies indicate that some Pacific cod in the western AI move into the EBS and Russian waters, introducing potential inter-stock dynamics that may influence recruitment and stock health (Schaal et al. 2024).

Environmental factors, particularly warming ocean temperatures, have impacted Pacific cod recruitment and distribution, particularly in AI and GOA. Increased temperatures have been linked to reduced condition factors, higher mortality rates, and altered spawning success, suggesting that climate change could further influence stock structure and connectivity in the coming years (Laurel et al. 2023). Overall, while Pacific cod stocks in the GOA, AI, and EBS exhibit some degree of connectivity, genetic and movement data suggest distinct management units with varying levels of interaction. Further research into migration patterns, recruitment success, and climate-related stressors will be necessary to refine stock assessments and ensure sustainable management across these regions.

During the site visit, scientists from the Alaska Fisheries Science Center (AFSC) provided further information about the tagging program of Pacific cod, which revealed consistent seasonal migration patterns, with fish moving south to spawn and north to feed, influenced by temperature changes.

5.2 Scientific stock assessment

5.2.1 EBS Pacific cod

5.2.1.1 Fishery details

The modern directed fishery for Pacific cod in EBS has evolved significantly since its early development in the 1960s. Initially targeted by Japanese longline fisheries and later as an incidental catch in the expanding pollock trawl fishery, Pacific cod became a key component of international fisheries until the implementation of the Magnuson-Stevens Fishery Conservation and Management Act in 1977. This act shifted control of fisheries within the U.S. EEZ, leading to the gradual replacement of foreign fleets by U.S. domestic fisheries. By 1991, domestic fleets had fully displaced foreign and joint-venture operations.

Currently, Pacific cod is harvested using a combination of trawl, longline, pot, and jig gear, though the contribution of jig gear remains minimal. Over the period from 2019 to 2023, longline gear accounted for approximately 47% of the catch, trawl gear 32%, and pot gear 23%. Fishing efforts are concentrated across several NMFS statistical areas, with the highest catches in areas 521 (29%) and 509 (21%), collectively comprising over half of the total EBS Pacific cod harvest (Figure 2).

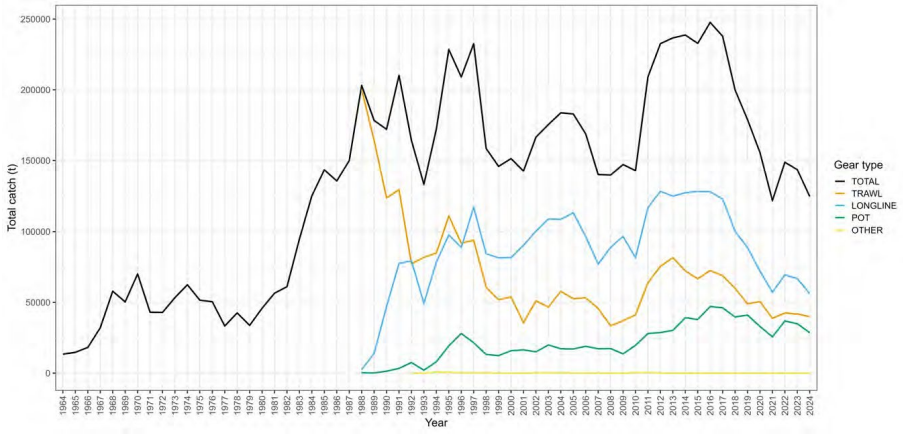


Figure 2. Total EBS catch and catch by gear type. Catch for 2024 is through October 3. Source: Barbeaux et al. 2024

The timing and efficiency of fisheries vary by gear type. In 2024, the trawl fishery commenced later than in previous years but accelerated after the tenth week. Longline catch rates remained relatively stable compared to fluctuations observed in 2019 and 2020. The pot fishery, in contrast, exhibited slower early-season catch rates, similar to 2023, and a weaker fall season, with little catch recorded from August through October (Figure 3). Spatially, significant changes in fishing effort have been observed since 2020, with trawl and longline fleets shifting away from northern fishing grounds. By 2024, few longline sets occurred north of St. Lawrence and St. Mathews Islands, while the pot fishery remained concentrated along the Alaska Peninsula and near the Pribilof Islands.

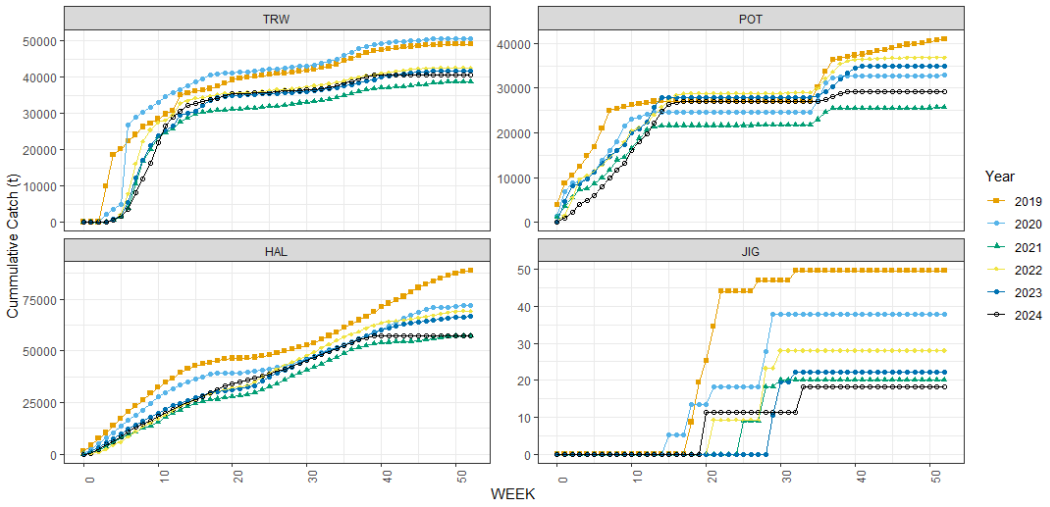


Figure 3. Cumulative EBS Pacific cod catch by gear type for 2019-2024. Data for 2024 are current through October 8. Source: Barbeaux et al. 2024

Catch per unit effort (CPUE) trends highlight key changes in the fishery. The CPUE index by number remained stable from 2015 to 2022 before experiencing a sharp decline in 2023, followed by a recovery in 2024, largely driven by the pot fishery. In contrast, CPUE by weight showed a rising trend from 2014 to 2020, followed by a decline through 2023 and an increase in 2024. The pot fishery contributed to the CPUE rise in both number and weight, while other gear types exhibited declines. Fishing activity in the western Bering Sea, under Russian jurisdiction, also plays a role in Pacific cod dynamics. Data from Russian fisheries between 2001 and 2021 indicate continued harvests, though official reporting has become increasingly limited in recent years.

Discard rates in the EBS Pacific cod fishery have declined significantly since the implementation of Amendment 49 in 1998, which mandated improved retention and utilization. Between 1991 and 1997, discard rates averaged 14%, dropping to around 2% in subsequent years. A temporary increase in trawl fishery discards was noted in 2021 (5%), but this figure returned to 2% in 2022 and further declined to 1% in 2023 and 2024.

The management of Pacific cod in the EBS has evolved in response to changes in stock assessments, environmental conditions, and fishing practices. Historically, TAC has averaged about 85% of the acceptable biological catch (ABC) since 1980, with total commercial catches averaging 82% of TAC. Although the TAC was exceeded in certain years, adjustments were made to account for state-managed fisheries. Since 1992, an overfishing limit (OFL) has been established, and while catch exceeded OFL in 1992 by 10%, it has remained below this threshold in all subsequent years (Table 2).

Table 4. History of BSAI (1977-2013) and EBS (2014-2024) Pacific cod catch, TAC, Alaska State guideline harvest level (GHL) (2016-2024), ABC, and OFL (t). Catch for 2024 is through October 3. Note that specifications through 2013 were for the combined BSAI region, so BSAI catch is shown rather than the EBS catches from Table 2.3 for the period 1977-2013. Source: Barbeaux et al. 2024

Year	Catch	TAC	ABC	OFL	Year	Catch	TAC	GHL	ABC	OFL
1977	35,597	58,000			2002	197,356	200,000		223,000	294,000
1978	45,838	70,500			2003	207,900	207,500		223,000	324,000
1979	39,354	70,500			2004	212,621	215,500		223,000	350,000
1980	51,649	70,500	148,000		2005	205,633	206,000		206,000	265,000
1981	63,941	78,700	160,000		2006	193,029	189,768		194,000	230,000
1982	69,501	78,700	168,000		2007	174,484	170,720		176,000	207,000
1983	103,231	120,000	298,000		2008	171,030	170,720		176,000	207,000
1984	133,084	210,000	291,000		2009	175,756	176,540		182,000	212,000
1985	150,384	220,000	347,000		2010	171,850	168,780		174,000	205,000
1986	142,511	229,000	249,000		2011	220,089	227,950		235,000	272,000
1987	163,110	280,000	400,000		2012	250,840	261,000		314,000	369,000
1988	208,236	200,000	385,300		2013	250,301	260,000		307,000	359,000
1989	182,865	230,681	370,600		2014	238,715	246,897		255,000	299,000
1990	179,608	227,000	417,000		2015	232,821	240,000		255,000	346,000
1991	220,038	229,000	229,000		2016	247,617	238,680	16,320	255,000	390,000
1992	207,278	182,000	182,000	188,000	2017	237,845	223,704	15,296	239,000	284,000
1993	167,391	164,500	164,500	192,000	2018	199,851	188,136	12,864	201,000	238,000
1994	193,802	191,000	191,000	228,000	2019	178,903	166,475	15,204	181,000	216,000
1995	245,033	250,000	328,000	390,000	2020	155,657	141,799	14,074	155,873	191,386
1996	240,676	270,000	305,000	420,000	2021	121,734	111,380	12,426	123,805	147,949
1997	257,765	270,000	306,000	418,000	2022	148,813	136,466	16,917	153,383	183,012
1998	193,256	210,000	210,000	336,000	2023	143,533	127,409	17,425	144,834	172,495
1999	173,998	177,000	177,000	264,000	2024	127,097	147,753	20,154	167,952	200,995
2000	191,060	193,000	193,000	240,000						
2001	176,749	188,000	188,000	248,000						

Management strategies have been refined through improvements in stock assessment models, beginning with basic projections in the early 1980s and transitioning to more sophisticated age-structured models. The adoption of Stock Synthesis software in 1992 improved assessments by incorporating age- and length-based data. The model structure has undergone multiple refinements, with significant updates in 2016, 2018, and 2020. A model ensemble approach was briefly used from 2021 to 2022 but was abandoned in 2023 in favor of a new base model (Barbeaux et al. 2024). State management measures have also played a role in this fishery. Since 2014, GHLs have been set for state waters, with percentages of the EBS ABC allocated to these fisheries. The proportion of ABC allocated to state-managed fisheries has gradually increased, reaching 13% by 2025. Additional allocations for jig gear were introduced between 2020 and 2024.

Regulatory changes affecting access to the fishery have been implemented, including a 2021 rule restricting federally permitted vessels from participating in state parallel fisheries unless they meet specific licensing conditions. These measures aim to align federal and state management strategies (Federal Register, 2020).

In recent years, directed fishing closures have impacted Pacific cod fisheries, particularly in the non-CDQ (community development quota) sector. Closures were enacted from 2020 to 2023 to prevent exceeding non-CDQ allocations, with seasons ending earlier than

expected. Despite these closures, incidental catch and CDQ fishing continued. In 2024, directed fishing remained open through mid-October.

5.2.1.2 Stock status and management advice

The assessment incorporates the latest data on catch biomass, fishery-dependent and independent surveys, and environmental influences on the stock. Various modeling approaches, including the Stock Synthesis model and the VAST model for spatial distribution, are employed to estimate population trends and inform management decisions.

Catch estimates indicate fluctuations in Pacific cod abundance over time, influenced by recruitment variability and environmental conditions. Notably, the abundance of Pacific cod has declined significantly since a peak in 2014, with the 2024 estimate showing the lowest numbers since 2008. These declines correlate with environmental changes, particularly warming ocean temperatures and shrinking cold pool extent, which have led to a shift in cod distribution from the northern Bering Sea back towards the southern EBS shelf. Despite a slight increase in recruitment from the 2018-year class, recent year classes appear weaker, raising concerns about future stock sustainability.

The assessment highlights the role of the directed fishery and bycatch in determining Pacific cod removals. Data from multiple gear types, including longline, trawl, and pot fisheries, indicate a shift in fishing distribution, with the longline sector exhibiting the most pronounced movement trends. CPUE indices show declines in 2023, followed by a partial rebound in 2024, particularly in the pot fishery. However, CPUE trends vary by gear type, with longline and trawl sectors exhibiting declines while pot gear has shown a recovery.

The model presented and accepted for use in 2023 was re-run with the updated data as parameterized in last year's assessment, removal of ages from otoliths read from 1994-1999, inclusion of length composition data from 1994-1999, annually varying growth limited to 2000 through 2024, updated aging error and aging bias matrix, and retuned for sigmas and variance adjustment factors. In addition, four alternative models were developed. The following additional model configurations were considered:

- Model 24.0
  - Model 23.1.0.d with 5 cm length bins
- Model 24.1
  - Model 24.0 with splined aging error, and growth with a random walk on K, instead of the Richard's ρ parameter
- Model 24.2
  - Model 24.1 with non-time varying survey selectivity
- Model 24.3
  - Model 24.2 with all annually varying sigma values and variance adjustment factors retuned.

Model 24.1 and Model 24.3 have very similar diagnostics, with little discernible differences in overall fits. There are trade-offs between Model 24.1 and 24.3 in model performance that makes it difficult to choose one over the other. Both models fit the survey index well, Model 24.3 has a marginally better fit to that data component when considering likelihood, and both models fit the age and length composition data well, however Model 24.1 fits the survey length composition data better. Both models performed equally well with the fishery lengths and survey age composition data. Although the point estimate management advice (i.e., ABCs and OFLs) for the two models differ, the uncertainty around these estimates in both models show the confidence bounds overlapping making them statistically indistinguishable.

In consideration of overall model performance and consistency in management advice with last year's, Model 24.1 was recommended for setting management advice for 2025. The principal results from alternative Model 24.1 are listed in the table below (biomass and catch figures are in units of t) and compared with the corresponding quantities as specified last year by the Council's Scientific and Statistical Committee (SSC).

Modeling results suggest continued declines in total biomass and female spawning stock biomass (SSB). The assessment compares various stock projections, with some scenarios indicating a potential for stabilization if recruitment improves. However, projections also highlight increased uncertainty in stock dynamics, reinforcing the need for adaptive management strategies. The implementation of GHLs in state waters since 2014 and adjustments in catch allocation strategies reflect ongoing efforts to balance conservation with sustainable fisheries.

The values of 2025 female spawning biomass, relative spawning biomass, maximum fishing mortality for acceptable biological catch (FABC), and maximum ABC do not differ markedly from last year's projections of those same quantities from last year's Model 23.1.0.d

and this year's Model 24.1 (Figure 4). Model 24.3, however, recommends a substantial change in maximum ABC and maximum FABC. The change in maximum ABC from last year's Model 23.1.0.d to Model 24.3 is primarily due to a 14.6% reduction in estimated 2025 SSB and reduction of the status of the stock from B37% to B34%. This resulted in a reduction of maximum F from 0.35 to 0.30, a 13.7% reduction in F, causing a 22.6% reduction in maximum ABC from 151 kt to 117 kt as the status of the stock drops on the steep slope of the control rule.

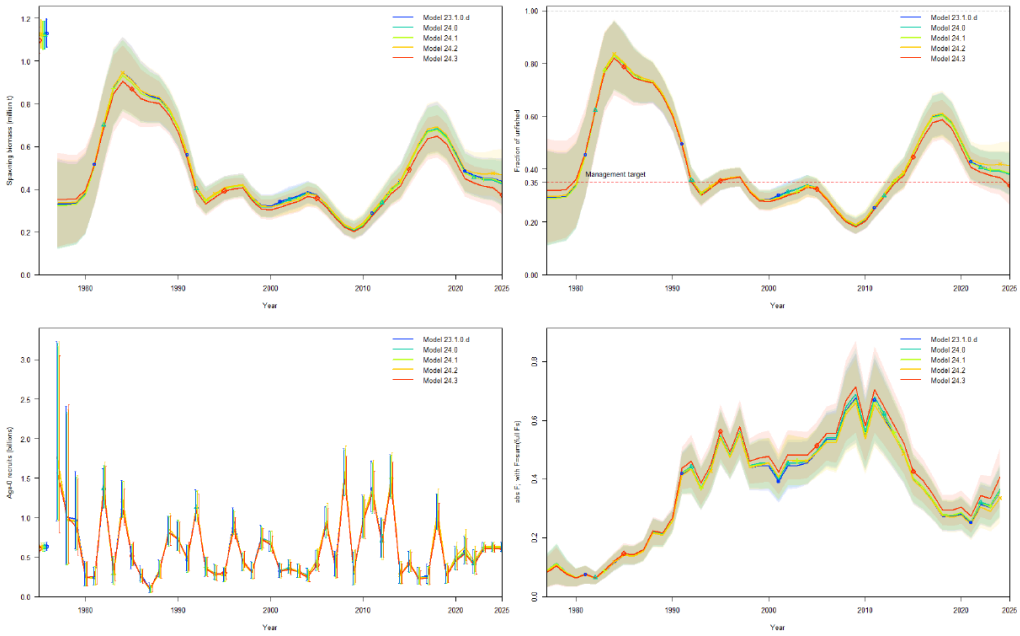
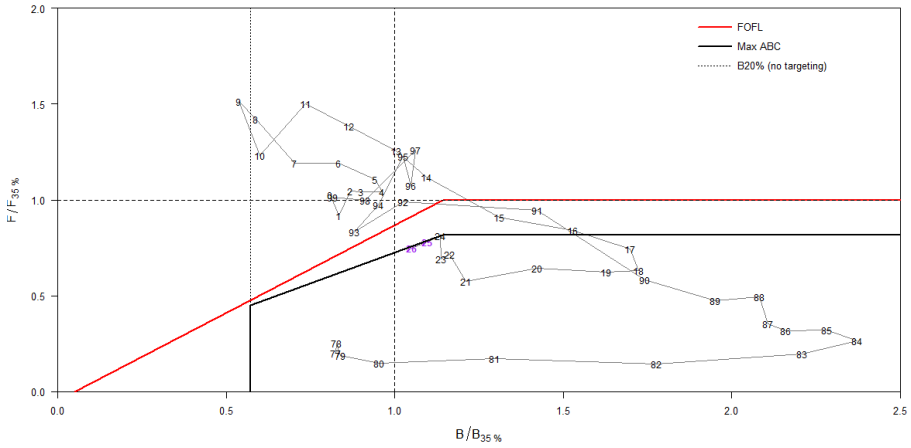


Figure 4. (Top left) Total spawning biomass (t), (top right) spawning biomass/unfished biomass, (bottom left) Age-0 recruits, and (bottom right) F (sum of the apical fishing mortality) for the (yellow, dashed) 2022 ensemble and (blue solid) Model 23.1.0.d. Source: Barbeaux et al. 2024

Figure 5 plots the estimated/projected trajectory of relative fishing mortality (F/F35%) and relative female spawning biomass (B/B35%) from 1977 through 2026 based on apical fishing mortality, overlaid with the current harvest control rules (HCRs) (Table 5). Models prior to 2016 featured dome-shaped survey selectivity, while models since 2016 have forced survey selectivity to be asymptotic, which changed the appearance of the trajectory considerably, so that, in hindsight, the stock was being subjected to fishing mortality rates in excess of the retroactively calculated fishing mortality for overfishing limit (FOFL) values (but not the official FOFL values that were calculated at the time) in all years from the early 1990s through 2017.



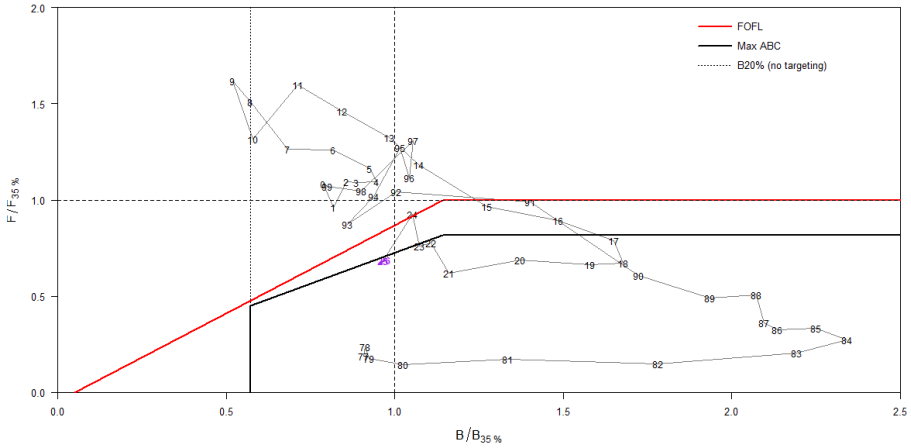


Figure 5. Phase plane plot for Model 24.1 (upper panel) and 24.3 (lower panel). Source: Barbeaux et al. 2024

Table 5. Model outputs. Source: Barbeaux et al. 2024

Quantity	As estimated or *specified last* year for: 2024	2025	As estimated or *recommended this* year for: 2025*	2026*
M (natural mortality rate)	0.386	0.386	0.386	0.386
Tier	3b	3b	3b	3b
Projected total (age 0+) biomass (t)	808,203	787,837	769,813	762,206
Projected female spawning biomass	223,107	211,131	215,747	206,498
$B_{100\%}$	567,465		561,915	
$B_{40\%}$	226,986		224,767	
$B_{35\%}$	198,612		196,671	
F_{OFL}	0.46	0.43	0.43	0.41
$maxF_{ABC}$	0.37	0.35	0.35	0.33
F_{ABC}	0.37	0.35	0.35	0.33
OFL (t)	200,995	180,798	183,509	169,243
maxABC (t)	167,952	150,876	153,617	141,520
ABC (t)	167,952	150,876	153,617	141,520
Status	As determined *last* year for: 2022	2023	As determined *this* year for: 2023	2024
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No

*Projections are based on assumed catches of 165,659 t, and 153,617 t in 2024 and 2025, respectively.

Management measures have evolved to account for changing stock conditions. Regulatory amendments have influenced the allocation of Pacific cod among gear types, with the most recent updates refining the proportion of allowable catch across sectors. The role of discards in total removals remains a focus, with discard rates declining significantly since the implementation of Amendment 49 in 1998, though some fluctuations have occurred in recent years.

The analysis incorporates extensive survey data, including bottom trawl surveys conducted by AFSC. The 2024 survey results show a continued decline in overall Pacific cod abundance, with a notable reduction in biomass in the northern Bering Sea, offset slightly by stable or increasing numbers in the southern regions. The data also indicate a shift in cod size distribution, with recent surveys capturing an increasing proportion of smaller fish, indicative of recruitment variability.

The assessment underscores the complex interplay of environmental changes, fishing pressure, and regulatory measures in shaping the current status of Pacific cod in EBS. The continued decline in abundance, coupled with uncertainties in recruitment and environmental variability, necessitates ongoing monitoring and potential adjustments in harvest strategies.

The current assessment for Pacific cod in the EBS follows a Tier 3b management approach under NPFMC's system. Under this framework, the spawning biomass reference points are derived from an age-structured population model. The Tier 3 designation is applied when there are reliable estimates of the spawning biomass per recruit and natural mortality (M). The stock assessment estimates indicate that the projected female spawning biomass for 2025 is 215,747 mt, which is above the B35% threshold (196,671 mt), classifying the stock under the Tier 3b category. The HCR associated with Tier 3b adjusts the fishing mortality rate according to the stock's status relative to the reference biomass thresholds. When the biomass (B) is above B40%, FOFL is set at F35%, and FABC is lower than F40%. When the spawning biomass falls below B40% but remains above 5% of B40%, the FOFL and FABC are scaled down proportionally to avoid overfishing. If the biomass declines below 5% of B40%, both FOFL and FABC are set to zero to prevent further depletion of the stock. For the 2025 assessment, the recommended ABC is 153,617 mt, while the OFL is 183,509 mt, indicating a precautionary approach to harvest management. These figures are based on the application of the model-generated fishing mortality rates, with FABC set at 0.35 and FOFL at 0.43 for 2025. The HCR ensures that catch levels remain sustainable, aiming to maintain SSB above the B35% threshold while allowing for responsible exploitation of the Pacific cod resource.

During the site visit, AFSC experts discussed an observed increase in CPUE for the pot fishery in 2024, while bottom trawl and longline fisheries faced CPUE declines. The current catch was reported at approximately 85% of ABC. Moreover, these experts plan to utilize ongoing efforts to address the overlap between EBS and Western GOA stocks, with intentions to combine these areas into a single model. The movement of fish between GOA and BS was emphasized, particularly the implications of unaccounted Russian catch, which has increased during warmer periods. A risk analysis was proposed to evaluate the implications of not accounting for this catch in stock assessments.

AFSC scientists shared insights on the collection of Russian catch data, which has been sporadically available online. They emphasized the need for assistance to access additional data, including survey information. The discussion included observations on the fluctuations in fish abundance related to temperature changes, with the current Russian catch reported at approximately 40,000 mt.

5.2.2 AI Pacific cod

5.2.2.1 Fishery details

During the early 1960s, Japanese vessels initiated the harvesting of Pacific cod in AI. However, foreign catches remained relatively low, not exceeding 4,200 t before the implementation of the Magnuson-Stevens Fishery Conservation and Management Act in 1977. Joint venture fisheries emerged in 1981 and peaked in 1987 at over 10,000 t, before ceasing in 1990. Domestic fishing began in 1981, reaching its highest recorded catch of over 43,000 t in 1992. Historically, Pacific cod was harvested throughout AI. Before Steller sea lion (*Eumetopias jubatus*) protective regulations were enforced in 2011, the distribution of cod catch was 58% in the Eastern AI, 19% in the Central AI, and 23% in the Western AI. Following the regulations (2011-2014), catch was redistributed to 84%, 16%, and 0%, respectively. In 2015, Area 543 (Western AI) was reopened with limited fishing, shifting average catch proportions between 2019 and 2024 to 58% Eastern AI, 30% Central AI, and 12% Western AI.

The management of AI Pacific cod stock evolved significantly over time. Until 2014, the AI and EBS stocks were managed together under a single TAC, ABC, and OFL. From 2014 onward, the two stocks were managed separately. The catch/TAC ratio for AI Pacific cod has varied, reaching its lowest level of 0.44 in 2024 (Table 6). Over time, ABC adjustments have been influenced by resource abundance, management strategies, and stock assessment models.

State fisheries began managing AI Pacific cod inside state waters in 2006, originally with GHLs set at 3% of the BSAI ABC. Since 2014, separate GHL formulas have been used for AI and EBS stocks. The 2025 GHL formula could lead to a maximum of 5,386 t (39% of ABC) if ABC remains at the 2024 level (12,431 t). State fisheries regulations ensure that Federal and State catches combined do not exceed ABC. Since 1997, Steller sea lion protection measures have influenced Pacific cod fisheries.

Currently, Pacific cod fisheries utilize multiple gear types, including pot, trawl, and longline gear (Figure 6). In 2024, trawl gear dominated (92%), followed by pot (5%) and longline (2%). Over the past five years, non-target fisheries accounted for 13% of total Pacific cod catch, averaging 2,324 t annually, while targeted fisheries contributed 10,583 t (Table 2A.9). Discards of Pacific cod have decreased since Amendment 49 (1998), which mandated increased retention. From 1991-1998, discard rates averaged 5.6%, but since 1998, they have averaged about 1.0%.

Table 6. Pacific cod catch in mt by year, TAC, ABC, and OFL, 1991-2024. Note that specifications were combined for the BSAI

cod stocks through 2013 and are shown for AI alone for 2013 onwards. Catch for 2024 is through September 22. ABC, OFL, and TAC for 2024 are based on last year's model output. Source: Spies et al. 2024

Year	Catch (t)	ABC	TAC	OFL
1991	9,797	229,000	229,000	-
1992	43,067	182,000	182,000	188,000
1993	34,204	164,500	164,500	192,000
1994	21,539	191,000	191,000	228,000
1995	16,534	328,000	250,000	390,000
1996	31,609	305,000	270,000	420,000
1997	25,164	306,000	270,000	418,000
1998	34,726	210,000	210,000	336,000
1999	28,130	177,000	177,000	264,000
2000	39,684	193,000	193,000	240,000
2001	34,207	188,000	188,000	248,000
2002	30,800	223,000	200,000	294,000
2003	32,456	223,000	207,500	324,000
2004	28,873	223,000	215,500	350,000
2005	22,693	206,000	206,000	365,000
2006	24,211	194,000	189,768	230,000
2007	34,354	176,000	170,720	207,000
2008	31,228	176,000	170,720	207,000
2009	28,581	182,000	176,540	212,000
2010	29,006	174,000	168,780	205,000
2011	10,888	235,000	227,950	272,000
2012	18,220	314,000	261,000	369,000
2013	13,608	307,000	260,000	359,000
2014	10,603	15,100	6,997	20,100
2015	9,216	17,600	9,422	23,400
2016	13,245	17,600	12,839	23,400
2017	15,202	21,500	15,695	28,700
2018	20,414	21,500	15,695	28,700
2019	19,200	20,600	14,214	27,400
2020	14,250	20,600	13,796	27,400
2021	12,882	20,600	13,796	27,400
2022	10,547	20,600	13,796	27,400
2023	7,312	13,812	8,425	18,416
2024	3,570	12,431	8,080	18,416

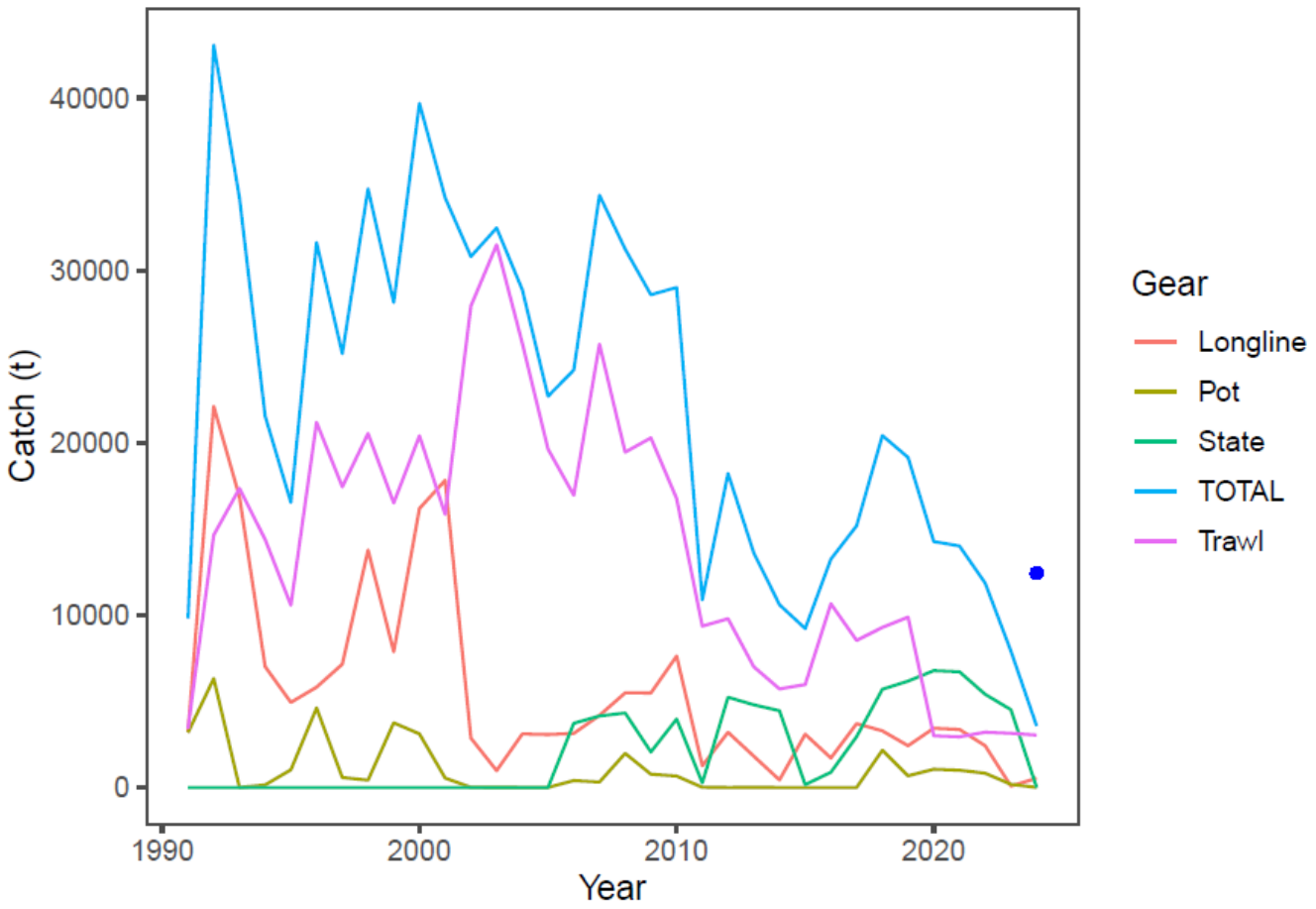


Figure 6. AI Pacific cod catch history, with federal catches by gear type, from 1991-2024 (through September 22). The blue dot represents the ABC for 2024. Source: Spies et al. 2024

Data sources used in the assessment (see next section) include fishery catch records, survey biomass estimates, and observer length composition data. The Tier 5 stock assessment model utilizes biomass estimates from NMFS AI research surveys (1991-2022). The most recent trawl survey (2022) indicated a significant decline in AI Pacific cod biomass, dropping from over 180,000 t in 1991 to 51,539 t in 2022. Eastern and Central AI experienced a decline (>50% and 32%, respectively), while Western AI showed a 20% increase from 2018 to 2022 (Figures 2A.6 & 2A.7). Survey methods include biennial NMFS bottom trawl surveys using standardized high-rise poly-Noreastern 4-seam bottom trawls (27.2m headrope, 36.8m footrope). The surveys cover NMFS Areas 541, 542, and 543, while data from NMFS Areas 518 and 519 are excluded from the AI stock model. The 2022 survey biomass estimate was the lowest on record. A 2024 survey is underway, with new biomass data expected in November.

Longline surveys also provide data but are not incorporated into the Tier 5 model due to their primary focus on sablefish rather than Pacific cod (Table 2A.14). Fishery-independent indices, such as CPUE, indicate a decline in fishery performance since 2018, potentially due to reduced effort or changes in spawning aggregation behavior (Figure 2A.5). In summary, AI Pacific cod fisheries have undergone multiple management shifts, including the end of foreign and joint venture fishing, the separation from EBS stock in 2014, the introduction of state fisheries, and implementation of Steller sea lion protection measures. While Western AI stock has shown some recovery, Eastern and Central AI stocks have declined, necessitating further assessments to ensure sustainable management.

Regulatory changes affecting access to the fishery have been implemented, including a 2021 rule restricting federally permitted vessels from participating in state parallel fisheries unless they meet specific licensing conditions. These measures aim to align federal and state management strategies (Federal Register, 2020).

In recent years, directed fishing closures have impacted Pacific cod fisheries, particularly in the non-CDQ sector. Closures were enacted from 2020 to 2023 to prevent exceeding non-CDQ allocations, with seasons ending earlier than expected. Despite these closures, incidental catch and CDQ fishing continued. In 2024, directed fishing remained open through mid-October.

5.2.2.2 Stock status and management advice

The 2024 Stock Assessment and Fishery Evaluation (SAFE) report (Spies et al., 2024) outlines different modeling approaches, including age-structured and Tier 5 models, to estimate biomass, recruitment, and mortality rates. The preferred model, 24.1, incorporates a time block for natural mortality from 2016 to 2024, correlating with observed environmental changes. This model improves the fit to survey data compared to alternative models that do not include this adjustment. Data sources include fishery catch records, survey length compositions, and age structures. The survey estimates show a long-term decline in biomass, with the 2022 and 2024 estimates being the lowest recorded. The decline is attributed to a combination of environmental stressors and fishery impacts. Fishery catch has also declined significantly since 2020. The assessment includes projections for stock sustainability under various harvesting scenarios, with recommendations for adopting Model 24.1 for determining ABC and OFLs. The risk table highlights concerns about stock trends, with increased risks associated with environmental and ecosystem factors.

It is important to stress that AI and EBS Pacific cod stocks were first managed separately in 2014. Since 2014, age-structured models have been explored in assessments but harvest specifications for AI Pacific cod have been managed under Tier 5. However, the last assessment presents three age structured models for the AI Pacific cod stock, as well as two Tier 5 harvest specification models.

Age structured models:

- Model 24.1: This model includes a timeblock on natural mortality from 2016-2024. The breakpoint between 2015 and 2016 corresponds to a shift to warmer temperatures in AI during the past decade (Xiao and Ren 2022). This is the preferred model.
- Model 24.0: This is a sensitivity model, which is similar to Model 24.1 but does not contain the natural mortality timeblock from 2016-2024.
- Model 24.1a: This model shows sensitivity to the Richards vs. von Bertalanffy growth curves. It differs from Model 24.1 in its growth curve, using the von Bertalanffy rather than the Richards growth curve.

Tier 5 random effects model:

- Model 13.4: There has been no change to the input data for the Tier 5 models; they use existing biomass estimates from 1991-2024 implemented using the REMA package. The natural mortality estimate (M = 0.34) used in past models is retained for 2024.
- Model 24.2: This is the same Tier 5 model as 13.4, except it assumes natural mortality, M = 0.417.

This is the preferred Tier 5 model because it assumes a new externally estimated natural mortality. The following substantive changes have been made to the AI Pacific cod age structured assessment relative to the November 2023 assessment.

Changes in the input data (Tier 3 models):

- Realized catches for 2023, as well as a preliminary catch estimate through September 22, 2024. The current year's catch was projected to the end of the year based on the proportion caught over the past five years after this the period prior to September 22.
- Commercial fishery size compositions for 2023, as well as preliminary size composition from the 2024 commercial fisheries through September 22.
- The 2024 survey biomass index and error estimates are incorporated, as well as the 2024 length compositions and estimate of survey input sample size.
- The maturity curve was updated through September 2024 with observer records of maturity at length.
- The fishery length composition sample sizes were updated with the number of hauls per year, weighted such that the mean is equivalent to the mean survey input sample size.

Changes in the input data (Tier 5 model):

- The Tier 5 model uses survey biomass estimates from 1991-2024.
- Model 24.2 incorporates a new fixed M, 0.417.

Changes in the assessment methodology:

- Initial F was estimated based on the average catch from 1981-1990.
- Natural mortality was estimated externally and fixed at 0.417, except in Model 24.1 after 2015 (which incorporated a time block on natural mortality).

- The timeblock on natural mortality from 2016-2024 (Model 24.1) was estimated.
- A Richards growth curve was estimated within the models, except Model 24.1a which used the von Bertalanffy growth curve.
- Maximum age was changed from 10+ to 13+.
- Fishery length composition did not incorporate a plus group (max = 143 cm) whereas previous models used a plus group of 117+ cm.
- The time of settlement was changed to indicate that larvae settle as juveniles in the same year as spawning, rather than in the following year, for biological accuracy and consistency with other cod models.

The 2024 catch of Pacific cod in AI as of September 22, 2024 was 3,570 t. Over the past 5 years (2019-2023), 76.3% of the catch has taken place by this date. Therefore, the full year's estimate of catch in 2024 was extrapolated to be 4,676 t. This is lower than the average catch over the past five years of 13,435 t.

Model 24.1 improved the fit to the data over Model 24.0. Model 24.1 estimated a total biomass of 73,679 t, a spawning biomass of 25,078 t, and an exploitable biomass of 58,208 t for 2025. Model 24.1 ABCs were 13,376 t and 12,973 t for 2025 and 2026. Model 24.1 OFLs were 16,782 t and 16,273 t for 2025 and 2026.

The random effects model which estimated biomass used in Tier 5 models 13.4 and 24.2 estimated an exploitable biomass of 51,504 t. This is comparable with the exploitable survey biomass estimated by Model 24.1 (58,208 t). The Model 13.4 Tier 5 ABCs and OFLs for 2025 and 2026 are 13,133 t and 17,511 t. Note the Tier 5 ABCs and OFLs are the same for 2025 and 2026. Tier 5 Model 24.2 estimated higher OFLs (21,477 t) and ABCs (16,107 t) for 2025 and 2026 due to the higher natural mortality parameter.

Model 24.1 (and 24.1a) accounted for changing environmental conditions due to the shift in temperature through the 2016-2024 timeblock on natural mortality. The year 2016 was selected because it is two years after the beginning of the documented thermal shift (Xiao and Ren 2022). While this thermal shift has not been documented as an ecological regime shift, it is significant and should be considered as a potential factor for changes in abundance or distribution. The time block did not start earlier because it incorporated a ~two-year lag for effects of higher temperatures to be observed, the effect of cumulative stress that increased temperatures can incur (e.g., Laurel and Rogers 2020). Pacific cod is known to respond poorly to temperatures that exceed their preferred thermal range; therefore, increased natural mortality due to the thermal shift may be the optimal model configuration. The lag also corresponded to the time required for cod to grow to a size/age at first survey selectivity. The assumption that increased natural mortality due to higher temperatures is supported by evidence in the laboratory and in situ and includes all life stages. Accordingly, the time block on natural mortality in Model 24.1 indicated higher natural mortality which was freely estimated and not on a bound (0.57). As of August 2024, heatwave conditions in AI appear to be less extreme than in past years during all months with the exception of August in the western AI, but periods of moderate heatwave conditions have occurred. The time block on natural mortality in Models 24.1 and 24.0A improves the fit to survey index of abundance, particularly later years in the survey. The survey index declined from 2018-2022; therefore, the spawning stock size relative to unfished is lowest for the models that include the natural mortality timeblock (Figure 7).

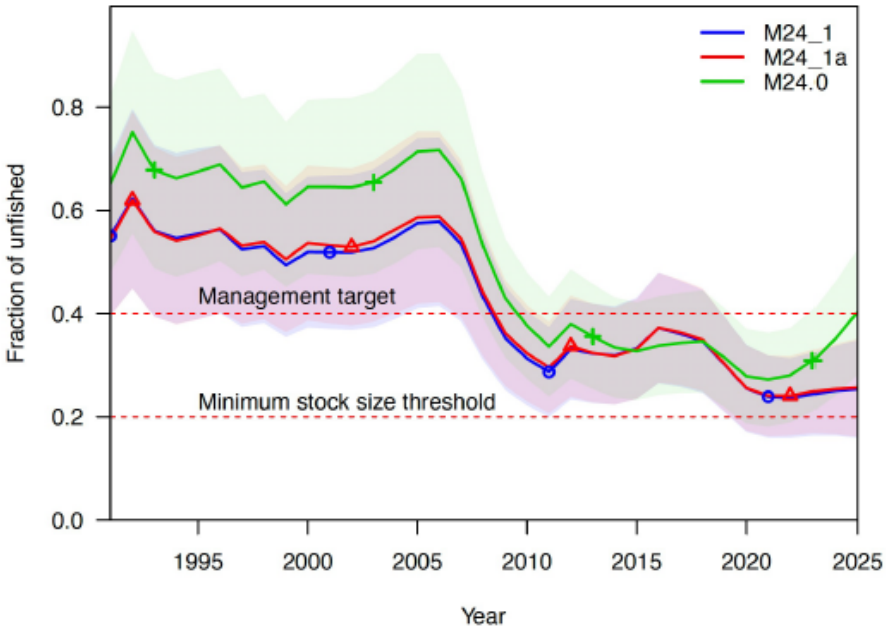


Figure 7. SSB of Pacific cod in AI relative to unfished for all Models 24.1, 24.1a, and 24.0. Source: Spies et al. 2024

The Tier 3 model 24.1 has been adopted for ABC/OFL and status determination advice under the fishery management plan (FMP). This model makes use of more information (fishery and survey lengths, survey ages, maturity curve) and allows the Council to have clear advice on the status of this important stock (Table 7).

Table 7. Model outputs for Pacific cod in AI. Source: Spies et al. 2024

	As estimated or *specified last* year for:		As estimated or *recommended this* year for:	
Quantity	2024	2025	2025	2026
M (natural mortality rate)	0.34	0.34	0.42, 0.57*	0.42, 0.57*
Tier	5	5	3b	3b
Projected total (age 1+) biomass (t)	54,165	54,165	73,679	77,731
Projected female spawning biomass (t)	-	-	25,078	24,729
$B_{100\%}$	-	-	102,361	102,361
$B_{40\%}$	-	-	40,944	40,944
$B_{35\%}$	-	-	35,826	35,826
F_{OFL}	0.34	0.34	0.655	0.645
$maxF_{ABC}$	0.255	0.255	0.502	0.494
F_{ABC}	0.255	0.255	0.502	0.494
OFL	18,416	18,416	16,782	16,273
$maxABC$	12,431	12,431	13,376	12,973
ABC	12,431	12,431	13,376	12,973
Status	2022	2023	2023	2024
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No

Finally, the stock appears to have declined to close to B20%, despite relatively light fishing (Figure 8). Models 24.0 and 24.1 both indicate a period of high recruitment during the 1990s, followed by lower recruitment from 2001-2010. This lower recruitment during 2001-2010 may have resulted in declining stock sizes. For Model 24.1, the mean age-0 recruitment during 2001-2010 was 42,836 (x1,000) and the mean used for forecasting, was 61,854 (x1,000). Model 24.0 used a somewhat lower estimate for forecasting, 59,243

(x1,000). A second reason for the low stock sizes despite low fishing mortality is climate-related mortality. While Model 24.1 provides a link between the modeled population dynamics and climate, future research may develop a more complex understanding of the relationship between climate stress and stock size.

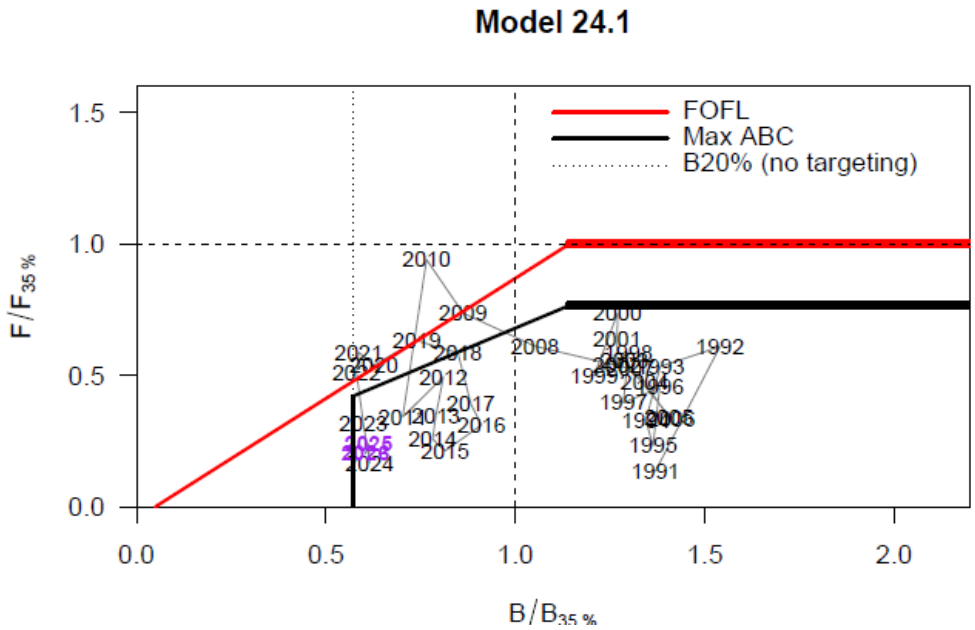


Figure 8. Phase plane plot for Model 24.1 (upper panel) and 24.3 (lower panel) for AI Pacific cod. Source: Spies et al. 2024

5.2.3 GOA Pacific cod

5.2.3.1 Fishery details

The Pacific cod fishery in GOA has been managed using various measures, including multiple gear types such as trawl, longline, pot, and jig fisheries. Historical catch data since 1991 are documented in Hulson et al. (2022), while earlier records are found in Thompson et al. (2011). The management framework includes regulations on TAC, ABC, OFL, and Alaska GHLs. Recent fishery performance has been monitored through observer programs (Faunce et al. 2017) and electronic reporting systems (Cahalan et al. 2014). The spatial distribution of directed cod fishing varies by gear type. Catch levels declined significantly from 2015 to 2018, prompting a drastic reduction in ABC. In 2020, SSB dropped below the B20% threshold, leading to the closure of the federal directed Pacific cod fishery, though state-managed fisheries remained open. Since then, stock conditions improved, allowing the federal fishery to reopen in 2021. By 2024, TAC was set at 23,766 t, with 72% of the ABC harvested by October (Table 8).

Table 8. History of GOA Pacific cod catch (t, includes catch from State waters), federal TAC (does not include Alaska GHL), ABC, OFL, and Alaska GHL (1997-Present) since 1991. Catch for 2024 is current through 2024-10-17 and includes catch from Alaska fisheries. See Hulson et al. 2022 (Table 2.2) for catch history prior to 1991. Source: Hulson et al. 2024

Year	Catch	TAC	ABC	OFL	GHL
1991	76,301	77,900	77,900	-	-
1992	80,747	63,500	63,500	87,600	-
1993	56,488	56,700	56,700	78,100	-
1994	47,486	50,400	50,400	71,100	-
1995	68,985	69,200	69,200	126,000	-
1996	68,279	65,000	65,000	88,000	-
1997	77,170	69,115	81,500	180,000	12,385
1998	72,624	66,060	77,900	141,000	11,840
1999	82,543	67,835	84,400	134,000	16,565
2000	66,551	59,800	76,400	102,000	17,685
2001	51,531	52,110	67,800	91,200	15,690
2002	54,638	44,230	57,600	77,100	13,370
2003	52,582	40,540	52,800	70,100	12,260
2004	56,623	48,033	62,810	102,000	14,777
2005	47,585	44,433	58,100	86,200	13,667
2006	47,897	52,264	68,859	95,500	16,595
2007	52,261	52,264	68,859	97,600	16,595
2008	59,014	50,269	66,493	88,660	16,224
2009	53,196	41,807	55,300	66,600	13,493
2010	78,593	59,563	79,100	94,100	19,537
2011	85,368	65,100	86,800	102,600	21,700
2012	77,930	65,700	87,600	104,000	21,900
2013	68,576	60,600	80,800	97,200	20,200
2014	84,945	64,738	88,500	107,300	23,762
2015	79,480	75,202	102,850	140,300	27,648
2016	64,054	71,925	98,600	116,700	26,675
2017	48,727	64,442	88,342	105,378	23,900
2018	15,150	13,096	18,000	23,565	4,904
2019	15,715	12,368	17,000	23,669	4,632
2020	6,842	6,431	14,621	17,794	2,537
2021	19,172	17,321	23,627	28,977	6,306
2022	25,921	24,111	32,811	39,555	8,700
2023	21,725	18,103	24,634	29,737	6,531
2024	23,171	23,766	32,272	38,712	8,506

The Pacific cod fishery experiences incidental catches of other groundfish species, with skate, walleye pollock, and arrowtooth flounder being the most common. Prohibited Species Catch (PSC) includes Bairdi Tanner crab and halibut. Bycatch trends indicate that trawl, longline, and pot fisheries contribute differently to the overall catch. The trawl fishery has been active in the central and western GOA, with catch patterns shifting over the years. Despite the 2020 closure of the directed federal fishery, bycatch from other fisheries resulted in continued catches above 3,000 t. The longline fishery, historically concentrated in deeper waters, has fluctuated in vessel

participation, declining from 2018 to 2020 and rebounding since the 2021 reopening. The pot fishery, dominant in state-managed waters, suffered from reduced observer coverage, affecting data accuracy (Figure 9). Participation dropped in 2020 but returned to pre-closure levels by 2022.

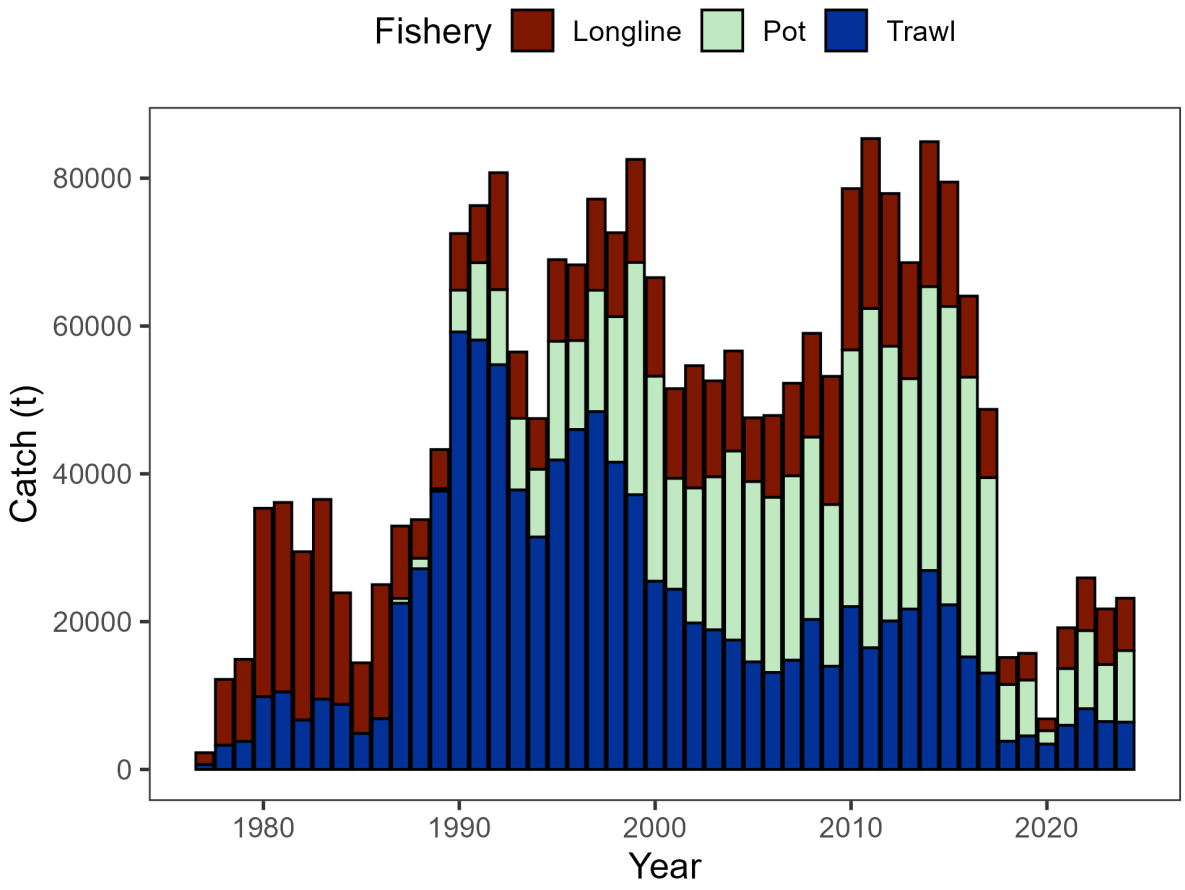


Figure 9. Commercial catch (mt) of Pacific cod in the GOA in trawl (FshTrawl), longline (FshLL), and pot (FshPot) gear from 1977-2024. Note that 2024 catch was through October 17. Source: Hulson et al. 2024

Non-directed and non-commercial Pacific cod catches remain low, with jig fishing primarily state-managed and recreational catch accounting for a minor portion. Indices for stock health rely on non-targeted catch data, tracking Pacific cod occurrence in pollock and flatfish fisheries. The 2024 catch in the pelagic pollock fishery indicates increased recruitment compared to previous years. Stock assessment data include catch biomass, length and age composition, and environmental indices. The AFSC bottom trawl survey has tracked Pacific cod abundance since 1984, showing significant fluctuations in biomass. The 2017 estimate marked a historic low, with modest recovery in subsequent years. The longline survey, primarily targeting sablefish, follows similar trends, with catch concentrated in the western and central GOA. Depth distribution of Pacific cod correlates with temperature variations. The ADFG bottom trawl survey, which monitors nearshore areas, confirms abundance declines from 1998-2017, with gradual recovery in recent years. Environmental conditions significantly impact cod distribution. CFSR bottom temperature indices show temperature anomalies affecting depth preferences, with cod shifting deeper in warmer years. This factor, along with stock trends observed in trawl and longline surveys, provides insight into the population dynamics of GOA Pacific cod.

5.2.3.2 Stock status and management advice

The 2024 SAFE report (Hulson et al. 2024) provides an in-depth analysis of GOA Pacific cod stock, focusing on historical fishery performance, stock assessment methodologies, and key environmental factors influencing population dynamics. It discusses the history of management measures, including TAC, ABC, and OFLs, with an emphasis on recent changes and their impact on stock

sustainability. The analysis includes figures and tables, such as those showing catch distribution by gear type and regulatory area. Recent fishery performance is outlined, detailing data collection methods, including on-board observers and electronic monitoring. It highlights the varying performance of different fishing gears—trawl, longline, and pot fisheries—along with their spatial distributions. Notable trends include the decline in catch between 2015 and 2019, the closure of the federal fishery in 2020 due to low spawning biomass, and the reopening in 2021 as stock conditions improved. By 2024, the TAC was set at 23,766 tons, with state fisheries harvesting 6,311 tons and federal fisheries taking 16,860 tons. Environmental factors, such as temperature fluctuations and their impact on cod distribution, are also discussed. Studies show that Pacific cod exhibit depth-dependent responses to warming temperatures, shifting to deeper waters in warmer years.

Survey data from the AFSC bottom trawl and longline surveys provide further insights into stock trends. The surveys reveal fluctuations in biomass and abundance estimates, with recent years showing an increase following a period of decline. Age and length compositions are examined, noting shifts in the size structure of the population over time. The data show that longline surveys encounter fewer small fish compared to bottom trawl surveys, with mean fish size varying depending on environmental conditions.

The SAFE report also explores incidental catch in Pacific cod fisheries, including bycatch species such as skate, walleye pollock, and arrowtooth flounder. Bycatch regulations and their impact on cod fishing operations are analyzed. The importance of monitoring indices, such as CPUE in non-directed fisheries, is emphasized as a means of assessing population health. Methodological improvements in stock assessment models are discussed, including refinements in age composition analysis and the integration of federal and state fishery data. The report recommends using Model 24.0 due to its enhanced ability to estimate population trends efficiently while addressing previous limitations in data processing.

The biomass estimates presented in the assessment report are defined in two ways: 1) total biomass was defined as age 0+ biomass, consisting of the biomass of all fish aged 0 years or greater in a given year; and 2) spawning biomass was defined as the biomass of all spawning females in a given year. The recruitment estimates presented are defined as numbers of age-0 fish in a given year; actual recruitment to fishery and survey depends on selectivity curves as estimated (noting that there are no indices involving age-0 Pacific cod). Total biomass estimates show a long decline from their peak in 1988 (Figure 10) to a low in 2006 and then an increase to another peak in 2014, after which there was a sharp decline through 2018 followed by a slight increase through 2024 and is forecasted to increase through 2029. Spawning biomass (Figure 10) shows a similar trend of decline since the late 1980s with a peak in 1989 to a low in 2008. There was then a short increase in spawning biomass coincident with the maturation of the 2005-2008 year classes through 2014, after which the decline continued to lowest level in 2019 and 2020. The spawning biomass then slightly increased in 2021 and 2022 and is projected to slightly decrease through 2026 and then increase through 2029.

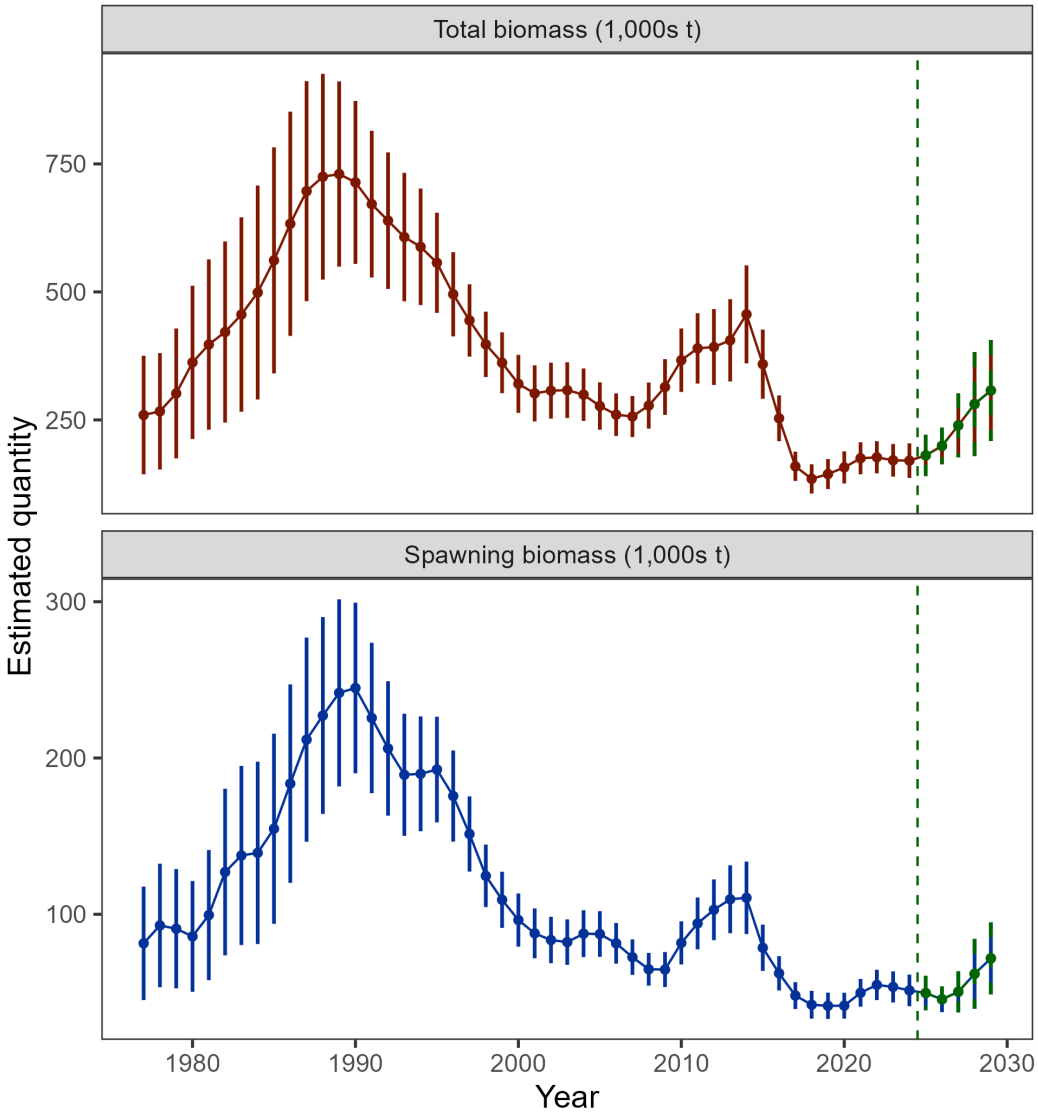


Figure 10. Estimated total biomass (top panel) and spawning biomass (bottom panel) of GOA Pacific cod from the author's recommended model with 95% confidence intervals. The five-year forecasted biomass values are denoted in green shading and with the vertical dashed line in each plot. Source: Hulson et al. 2024

Fishing mortality appears to have increased steadily with the decline in abundance from 1990 through a peak in 2008 with continued high fishing mortality through 2017. 2017 had the highest total exploitation rate of the time series. The period between 1990 and 2008 saw both a decline in recruitment paired with increases in catch. The period of increasing fishing mortality was mainly attributed to the rise in the pot fishery, which also shows the largest increase in continuous F. In 2018 through 2020 there was a sharp decrease in fishing mortality coincident with the drastic cuts in ABC and closure of the federal directed fishery in 2020. In 2021 with the reopening of the federal fishery mortality once again increased but remained lower than observed in the previous decade prior to 2017. In retrospect the phase plane plots (Figure 11) show that F was estimated to have been above the ABC control rule advised levels from 2015 to 2017 and biomass has been below B35% since 2017 and projected to continue to be below through 2026. It should be noted that this plot shows what the current model predicts, not what the past assessments had estimated.

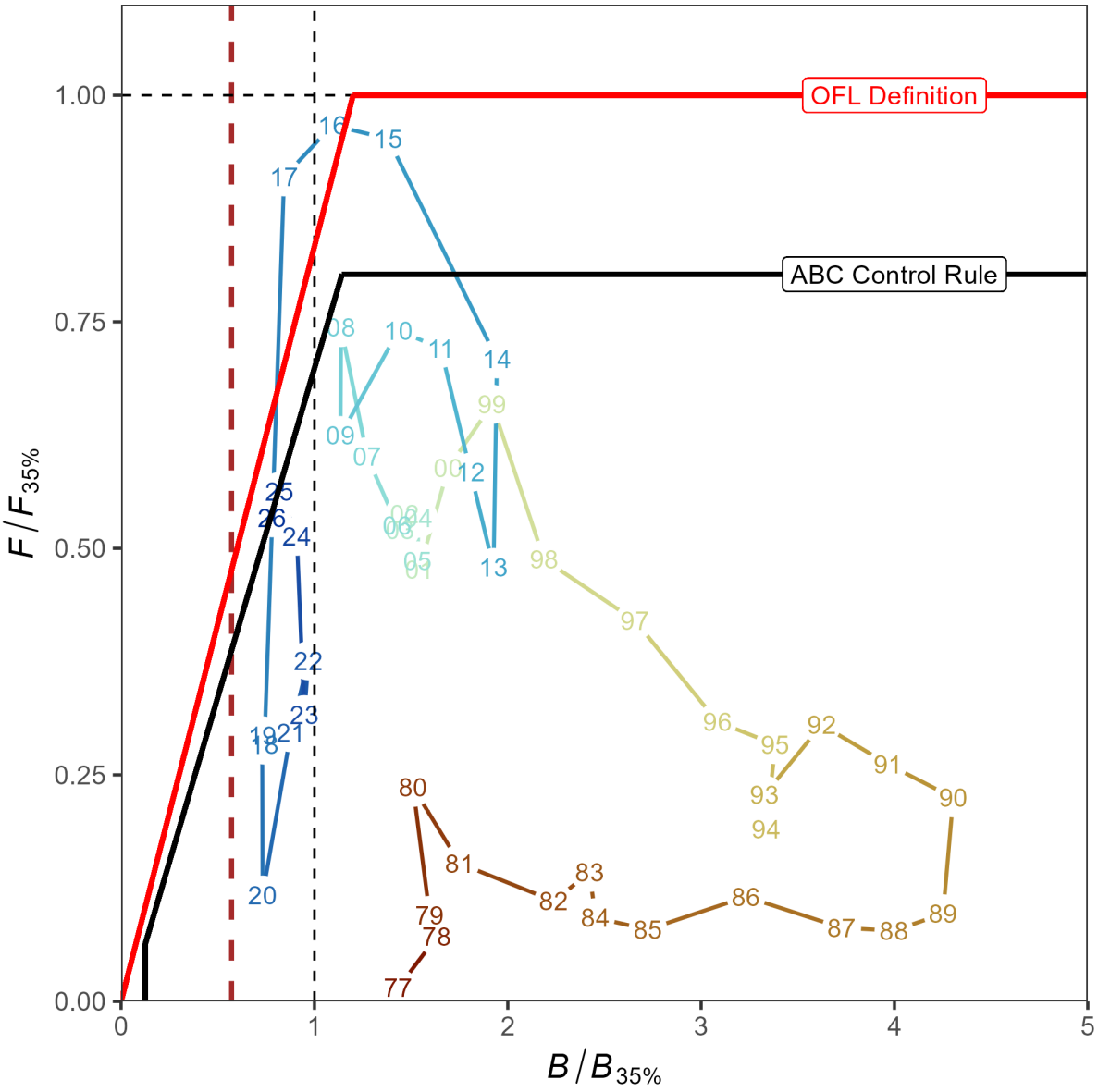


Figure 11. Ratio of historical F/F35% versus female spawning biomass relative to B35% for GOA Pacific cod, 1977-2026 from the author's recommended model. The Fs presented are the sum of the full Fs across fleets. Dashed vertical red line is at B20%, Steller sea lion closure rule for GOA Pacific cod. Source: Hulson et al. 2024

Model 24.0 indicates that the stock remains at low levels but is above B20%; for 2025 the stock is estimated to be at B28.7%, less than B40%, placing it in sub-tier "b" of Tier 3. For the 2025 fishery, stock assessors recommend the maximum allowable ABC of 32,141 t. This ABC is less than 1% different from the 2024 ABC of 32,272 t. The 2025 ABC is 14% larger than the 2025 ABC projected in last year's assessment. The corresponding reference values are summarized in the following table, with the recommended ABC and OFL values in bold (Table 9).

Table 9. Model outputs for GOA Pacific cod. Source: Hulson et al. 2024

Quantity	As estimated or *specified last* year for: 2024	2025	As estimated or *specified this* year for: 2025	2026
M (natural mortality rate)	0.46*	0.46*	0.49*	0.49*
Tier	3b	3b	3b	3b
Projected total (age 0+) biomass (t)	184,242	202,618	177,497	200,521
Female spawning biomass (t)				
Projected	51,959	47,698	46,920	44,674
$B_{100\%}$	175,187	175,187	163,585	163,585
$B_{40\%}$	70,075	70,075	65,434	65,434
$B_{35\%}$	61,315	61,315	57,255	57,255
F_{OFL}	0.52	0.48	0.57	0.51
$maxF_{ABC}$	0.42	0.38	0.46	0.43
F_{ABC}	0.42	0.38	0.46	0.43
OFL (t)	38,712	33,970	**38,688**	36,459
maxABC (t)	32,272	28,184	32,141	30,193
ABC (t)	32,272	28,184	**32,141**	30,193
Status	As determined *last* year for: 2022	2023	As determined *this* year for: 2023	2024
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No

**Base natural mortality M varies between 0.49 and 0.82*
*** Assumed 2024 catch to be the 2024 ABC. For 2026 projections the 2025 catch was assumed to be at the projected ABC.*

As evidenced above, the stock is classified as a Tier 3 stock under Amendment 56 of the GOA Groundfish FMP. The stock falls into sub-tier "b" of Tier 3, as its estimated spawning biomass for 2025 (49,605 t) is below the B40% reference point (65,434 t). Tier 3 stocks use spawning biomass-based reference points and fishing mortality rates to determine OFL and ABC. The HCRs are defined as follows:

1. If B/B40% > 1:
    - FOFL = F35%
    - FABC < F40%
2. If 0.05 < B/B40% < 1:
    - FOFL = F35% × (B/B40% - 0.05) × (1/0.95)
    - FABC < F40% × (B/B40% - 0.05) × (1/0.95)
3. If B/B40% < 0.05:
    - FOFL = 0
    - FABC = 0

For the 2025 fishery, the model estimates an OFL of 38,688 t and a maximum permissible ABC of 32,141 t. The corresponding fishing mortality rates are 0.57 for OFL and 0.46 for ABC. The projections also include multiple harvest scenarios to evaluate stock sustainability, including fishing at maximum permissible ABC, maintaining recent fishing mortality rates, reducing fishing effort, or ceasing fishing entirely.

5.3 Management practices of the competent management authority

5.3.1 Pacific Cod Trawl Cooperative (PCTC) Program

As reported at last year's audit, the PCTC Program began in 2024 with the intent of improving the prosecution of the fishery, stabilising the harvesting and processing sectors, maximising the value of the fishery and helping to minimise bycatch in Pacific cod A and B seasons (January 20th – April 1st and April 1st – June 10th, respectively). Cooperatives must annually apply for cooperative quota (CQ), which is derived from the quota share that belongs to their members (harvester and associated processor derived quotas). PSC allocations (which includes Pacific halibut, king crab, Tanner crab, snow crab) are also provided to the cooperatives and are proportional to their cod CQ.

On review of cooperative reports presented to NPFMC in 2024, it was reported that vessels captains communicate bycatch rates to their coop managers on a tow by tow basis to support bycatch avoidance. PCTC fleet bycatch data are also synthesised by Sea State Inc. (a third-party data manager) and disseminated to the PCTC coop managers to share bycatch information.

CQ and PSC allocation can be leased within and between coops, subject to PCTC program restrictions. None of the coop reports indicated an overshoot of their CQ or PSC allocations.

5.3.2 BSAI Pacific cod pot gear cooperative program

At its June 2024 Council meeting, the NPFMC reviewed a discussion paper covering a broad range of topics that could inform the potential development of a cooperative-based Limited Access Privilege Program (LAPP, or "catch shares") for BSAI Pacific cod pot fisheries for catcher-processors and catcher vessels ≥60 feet in length. The Council requested that staff develop a subsequent discussion paper that focuses on the following seven topics in greater depth of detail:

1. Pacific cod allocation by harvest area: Consider whether quota should be allocated across the BSAI or by subarea (BS, AI), noting that eligible pot cod licenses differ in their area endorsements. Identify ways in which the timing or logistics of these fisheries might affect the fleet's ability to harvest an allocation.
2. PSC allocation: Identify PSC species that occur in the BSAI Pacific cod pot fishery, by area, and how NMFS might manage newly set limits. Provide encounter rate data on PSC and other non-target species to help the Council envision a reasonable range of limits that could be analyzed, and discuss reasons why encounter rates under a LAPP might differ from rates under current management. Consider how PSC limit apportionments under a LAPP might affect other cod sectors
3. Discuss how extended pot cod seasons might have implications for compliance under Improved Retention/Improved Utilization regulations, and how those concerns could be addressed.
4. Monitoring: Define and preliminarily assess trade-offs between observer coverage and electronic monitoring – especially with regard to crab PSC accounting, timeliness of data availability, and cost. Identify decision-points in program design that might determine the level of monitoring that is required.
5. Processing sector: Describe the current state of the shoreside processing sector that receives BSAI Pacific cod. Consider the effects of allowing mothership processing in the fishery. Consider how tendering helps or complicates the prosecution and management of the fishery under a LAPP. Scope potential tools that could recognize the historical participation of current processors while allowing for new entrants in the processing sector.
6. Provide more detailed demographic information on License Limitation Program license holders who have only a BS or only and AI pot cod area endorsement.
7. Describe ways in which other programs provide opportunities for new entrants that might be applicable to a BSAI pot cod LAPP.

5.3.3 Programmatic evaluation process

As reported at last year's audit, the NPFMC had initiated a Programmatic Evaluation (i.e., a review of its management policies, goals, and objectives for all federally managed fisheries in the BSAI and GOA with the intent of ensuring the Council's management framework is adequate to address current and future challenges, including climate change, and to improve the council's ecosystem-based management approach). At the April 2025 Council, it was to pause the process, given the uncertainty regarding forthcoming changes to NMFS' priorities, funding, and other resources.

On a similar theme of uncertainty of future priorities and funding, the NPFMC April Newsletter notes that the Council's SSC have reviewed several AFSC survey-related aspects including the existing AFSC organisational structure, current fishery resource and ecosystem surveys, their spatial coverage and frequency, and the current AFSC modernization efforts and prioritization of surveys, and

survey impacts to data streams. The SSC acknowledged the high degree of uncertainty in future federal funding for surveys, and the loss of staff and expertise that has already occurred in 2025, and emphasized that both will have substantive impacts on the information and data produced from the AFSC surveys that inform federal fisheries management in the North Pacific. A core set of surveys were identified, including bottom trawl surveys in the EBS, GOA, and the AI, acoustic surveys in the EBS and Shelikof Strait, and the longline survey, which are essential to support the stock assessments that underpin sustainable fisheries management in the North Pacific. Additional suggestions for consideration of data streams and potential impacts on assessments are contained in the SSC minutes.

5.3.4 Climate Change Task Force

The Council convened a two-day Climate Scenarios Workshop on June 5-6, 2024. The purpose was to generate ideas for short- and long-term management approaches to improve climate resiliency of federally managed fisheries in the North Pacific. The workshop included case studies of climate change impacts in Alaska fisheries, and examples of ongoing work by the Council, NMFS, and communities to build climate readiness and support adaptation. The main focus of the workshop was a set of four hypothetical future scenarios that described varying degrees of climate change impacts that could be experienced in the future, as well as a range of ecosystem-based management approaches that could be practiced by the Council. Participants explored these hypothetical scenarios through small group breakout sessions.

No decisions were made at the workshop. Council staff provided a preliminary overview of themes of workshop discussions during Council staff tasking. The final workshop report will be available in September 2025, and the public is invited to share additional comments and ideas. The Council will receive a presentation on the workshop report in October, consider how ideas from the workshop may fit into new or existing Council initiatives, and consider how and when to take further action.

5.3.5 Revised Ecosystem-Based Fisheries Management (EBFM) Road Map

In January 2024, NMFS updated its EBFM Policy, which provides the background, definition, rationale, and legislative context for implementing EBFM under relevant mandates. In September 2024, NMFS released the 2024 revised EBFM Road Map, which provides specific actions under each goal identified in the EBFM Policy that will guide the Council's efforts to implement the Policy over the next five years. This includes specific actions aimed at advancing climate-ready decision-making, which includes climate-informed science and management for trust resources and habitats.

The EBFM Policy provides six Guidelines to implement EBFM, builds on past progress, and clarifies NMFS's commitment to integrating its management programs for living marine resources and their habitats. The EBFM Road Map provides a national implementation strategy for the Policy. This Road Map describes how to operationalize the Policy's six Guidelines with Goals and Action Items to implement each Goal. The Guidelines are:

1. Implement ecosystem-level planning,
2. Advance understanding of ecosystem processes,
3. Prioritise vulnerabilities and risks to ecosystems and their components,
4. Explore and address trade-offs within an ecosystem,
5. Implement ecosystem considerations into management, and
6. Support ecosystem resilience via monitoring and adjusting of management actions.

NMFS' progress in the eight years since the initial 2016 Road Map was released, includes completing climate vulnerability assessments in all regions, providing ecosystem status reports in most regions, testing risk tables and scenario planning in multiple regions, and advancing the use of ecosystem models.

NMFS revised the final revised Road Map to incorporate ideas and comments from fishery management councils, including NPFMC. NMFS agrees with the NPFMC's principle comment on the importance of at-sea surveys to fisheries science and management; that idea is already part of the guiding documents and the EBFM Road Map. NMFS also revised the Road Map based on comments received from Alaska fisheries interests, including Alaska Native communities and organisations.

5.3.6 Gear trials to reduce risk of orca mortalities

In December 2023, the National Oceanic and Atmospheric Administration (NOAA) published a technical memorandum summarising 37 orca entanglement reports in 1991-2022. NMFS stated that these entanglements demonstrate the need for more research and development of orca depredation deterrents or other mitigation measures for commercial fisheries. At the April Council meeting there was a presentation on gear modification to avoid killer whale entanglement. While operational steps have been taken to avoid

entanglement, e.g., no discarding from the factory when setting and hauling, monitoring with hydrophones has indicated that orcas are swimming in the front of trawls during setting, fishing and hauling and so may be vulnerable to being entangled in the trawls. Gear modifications have been used in ¼ scaled down versions of a flatfish trawl and tested in Memorial University's flume tank (Newfoundland, Canada). A panel of large mesh was tied into the net entrance to cover approximately 60-80%. This appeared not to affect the shape of the net. Trials are underway on commercial vessels to test this new design and incorporate sound reflective material in the panels to enhance the ability of orcas to detect it.

5.4 Impacts of fishery on ecosystem

5.4.1 Associated and endangered, threatened, and protected (ETP) species

"The 'Main' and 'Minor' bycatch classification together makes up 95% of the associated species bycatch profile of a given target fishery. The top 95% is assessed, while the bottom 5% is not assessed. Of the 95% assessed, the top 80% is classified as Main Associated Species Catch, while the bottom 15% is classified as Minor Associated Species Catch" (RFM Guidance to Performance Evaluation v2.0). Additionally, "ETP species must be acknowledged as such when recognized by national legislation adopted at the state and federal level in Alaska, or when recognized through a binding international agreement. Alternatively, species listed under Appendix 1 of the Convention on International Trade in Endangered Species or under the International Union for the Conservation of Nature Red List and impacted negatively1 by the fishery (i.e., direct or indirect mortality) shall be assessed as ETP unless it can be proven that their status in Alaska waters is above the point where recruitment is impaired or where other similar proxies indicate that the species is not biologically depleted" (RFM Guidance to Performance Evaluation v2.0).

It is known that certain gear types have more impact on certain species (e.g., longline are more likely to catch seabirds than demersal trawl). While gear-specific bycatch data are not available (except for seabirds and marine mammals), Section 6.1.2 provides details on the observer program and level of coverage.

Table 10 and Table 11 show catch data for the BSAI cod and GOA cod fisheries, respectively. None of the species are listed in Convention on International Trade in Endangered Species Appendix 1 or the International Union for the Conservation of Nature Red List; however, the ones labelled as PSC (ETP) are protected by federal management measures limiting bycatch of these species. Overall, these catches and interactions are similar to previous years. Refer to Section 6.1.4 for more details.

1 "For ETP species, interactions with the stock under consideration shall not cause departure from agreed management measures, such as those designed to allow for species restoration across a given geographical area. In other words, any interaction with or bycatch of ETP species shall be minimal and not considered significant, and/or disruptive in terms of ensuring the effectiveness of agreed management measures set up in order to achieve the management and conservation objectives for the ETP species in question." (RFM's Guidance to Performance Evaluation v2.0)

Table 10. Catch data of target, non-target, PSC/ETP, and habitat species for 2020-2024 by the BSAI cod fishery. Blue = target species, green = main associated species, orange = minor associated species, yellow = PSC/ETP species, purple = habitats. Source: observer data

Species	Target, Main Associated, Minor Associated, Other Bycatch, PSC/ETP, or Habitat	Catch (in mt)						Percent of Total Average	Percent of Total Average Bycatch
		2020	2021	2022	2023	2024	Five-Year Average		
Pacific cod	Target	118,683.25	92,130.34	139,099.98	130,288.57	126,669.26	121,374.28	79.48%	NA
Alaska plaice	Other bycatch	34.56	6.22	9.81	9.11	14.55	14.85	0.01%	0.05%
Alaska skate	Main associated	1,511.14	1,281.07	20,480.13	17,370.59	19,835.35	12,095.66	7.92%	38.60%
Aleutian skate	Main associated	82.69	40.35	1,185.73	2,014.23	1,075.16	879.63	0.58%	2.81%
Arrowtooth flounder	Minor associated	308.21	268.05	432.57	602.22	1,144.06	551.02	0.36%	1.76%
Atka mackerel	Other bycatch	43.47	115.40	84.87	7.36	95.56	69.33	0.05%	0.22%
Auklets*	Other bycatch	0.00	0.00	0.00	0.00	20.44	4.09	NA	NA
Bairdi tanner crab*	PSC (ETP)	90,548.00	43,664.00	118,440.05	84,877.30	87,379.53	84,981.78	NA	NA
Benthic urochordata	Other bycatch	13.41	0.39	0.55	3.59	16.38	6.86	0.00%	0.02%
Big skate	Minor associated	101.30	71.91	235.11	570.75	592.00	314.21	0.21%	1.00%
Bigmouth sculpin	Other bycatch	239.80	0.00	0.00	0.00	0.00	47.96	0.03%	0.15%
Birds, unidentified*	Other bycatch	368.75	148.77	264.66	216.19	446.00	288.87	NA	NA
Black-footed albatross*	Other bycatch	0.00	0.00	7.08	0.00	0.00	1.42	NA	NA
Blue king crab*	PSC (ETP)	1,161.00	361.00	4,563.41	1,143.79	1,522.16	1,750.27	NA	NA
Butter sole	Other bycatch	45.48	23.52	45.48	149.62	126.08	78.04	0.05%	0.25%
Chinook salmon*	PSC (ETP)	235.00	147.00	269.10	1,265.53	954.12	574.15	NA	NA
Corals bryozoans, unidentified	Habitat	15.42	13.14	5.80	0.87	4.28	7.90	0.01%	0.03%
Dusky rockfish	Other bycatch	14.94	32.24	19.55	10.99	16.66	18.88	0.01%	0.06%
Eelpouts	Other bycatch	6.26	6.60	0.34	0.53	1.48	3.04	0.00%	0.01%
English sole	Other bycatch	1.59	0.83	1.28	33.34	0.08	7.43	0.00%	0.02%
Flatfish, unidentified	Minor associated	53.10	14.68	343.54	51.58	55.77	103.73	0.07%	0.33%
Flathead sole	Minor associated	590.06	324.27	539.50	556.54	667.90	535.65	0.35%	1.71%

Giant grenadier	Other bycatch	156.73	27.54	17.29	2.76	1.48	41.16	0.03%	0.13%
Golden king crab*	PSC (ETP)	3,304.00	25,977.00	3,470.26	3,422.90	121.56	7,259.14	NA	NA
Great sculpin	Minor associated	505.68	0.00	0.00	0.00	0.00	101.14	0.07%	0.32%
Greenland turbot	Other bycatch	63.23	11.81	17.94	28.41	13.05	26.89	0.02%	0.09%
Gulls*	Other bycatch	179.94	142.10	691.46	126.87	795.67	387.21	NA	NA
Halibut	PSC (ETP)	244.61	182.42	370.14	355.26	319.62	294.41	0.19%	0.94%
Herring	PSC (ETP)	0.18	0.56	0.08	0.98	0.09	0.38	0.00%	0.00%
Kamchatka flounder	Other bycatch	41.90	68.88	72.48	64.37	64.38	62.40	0.04%	0.20%
Kittiwakes*	Other bycatch	20.90	6.14	24.20	18.11	0.00	13.87	NA	NA
Laysan albatross*	Other bycatch	0.00	36.67	44.01	34.01	298.96	82.73	NA	NA
Longnose skate	Other bycatch	2.00	9.21	3.73	4.35	6.37	5.13	0.00%	0.02%
Misc. crab	Other bycatch	9.84	5.13	17.76	22.66	2.32	11.54	0.01%	0.04%
Misc. fish	Other bycatch	22.17	17.43	29.04	46.28	45.44	32.07	0.02%	0.10%
Misc. flatfish	Other bycatch	0.00	0.00	15.56	7.60	0.03	4.64	0.00%	0.01%
Murre*	Other bycatch	6.44	7.79	0.00	0.00	0.00	2.85	NA	NA
Non-Chinook salmon*	PSC (ETP)	115.00	88.00	108.73	68.76	159.77	108.05	NA	NA
Northern fulmar*	Other bycatch	2,140.68	778.85	1,679.68	1,575.43	2,586.26	1,752.18	NA	NA
Northern rockfish	Other bycatch	63.00	72.18	36.94	30.37	50.14	50.53	0.03%	0.16%
Octopus	Minor associated	672.32	154.32	222.38	110.92	231.89	278.37	0.18%	0.89%
Opilio tanner crab*	PSC (ETP)	158,964.00	87,898.57	69,927.71	57,667.57	62,095.19	87,310.61	NA	NA
Other alcids*	Other bycatch	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
Other birds*	Other bycatch	7.50	0.00	81.75	0.00	0.00	17.85	0.01%	0.06%
Pacific ocean perch	Other bycatch	14.55	6.47	3.12	3.72	116.62	28.90	0.02%	0.09%
Pacific sleeper shark	Other bycatch	18.26	16.62	19.96	12.65	11.63	15.82	0.01%	0.05%
Plain sculpin	Other bycatch	25.95	0.00	0.00	0.00	0.00	5.19	0.00%	0.02%
Pollock	Main associated	5,585.72	4,378.16	6,328.01	7,187.00	6,178.29	5,931.44	3.88%	18.93%
Red king crab*	PSC (ETP)	23,752.00	296,862.35	150,695.62	95,243.85	31,142.92	119,539.35	NA	NA
Rex sole	Other bycatch	10.87	5.33	18.89	25.89	22.53	16.70	0.01%	0.05%

Rock sole	Minor associated	411.61	360.80	670.95	1,334.99	1,461.61	847.99	0.56%	2.71%
Rockfish, unidentified	Other bycatch	108.65	143.77	33.32	15.09	23.11	64.79	0.04%	0.21%
Rougheye rockfish	Other bycatch	56.47	42.95	39.02	3.80	20.73	32.59	0.02%	0.10%
Sablefish	Minor associated	147.28	199.81	209.93	126.94	196.27	176.05	0.12%	0.56%
Sculpin	Main associated	18.34	0.00	2,812.62	2,082.15	2,478.92	1,478.41	0.97%	4.72%
Sculpin, unidentified	Minor associated	1,373.68	0.00	0.00	0.00	0.00	274.74	0.18%	0.88%
Scypho jellies	Other bycatch	29.30	67.78	99.85	99.75	122.07	83.75	0.05%	0.27%
Sea anemone, unidentified	Other bycatch	49.16	21.70	63.73	63.98	151.08	69.93	0.05%	0.22%
Sea pens, whips	Habitat	15.70	5.41	35.04	19.41	50.01	25.11	0.02%	0.08%
Sea star	Minor associated	245.91	207.76	494.44	339.68	358.65	329.29	0.22%	1.05%
Shearwaters*	Other bycatch	368.91	1,116.10	530.04	665.44	580.05	652.11	NA	NA
Shortraker rockfish	Other bycatch	8.73	31.46	3.01	2.71	2.22	9.63	0.01%	0.03%
Skate, unidentified	Main associated	11,910.94	11,486.61	1,076.56	833.29	948.36	5,251.15	3.44%	16.76%
Snails	Other bycatch	0.00	0.00	36.88	36.62	46.62	24.02	0.02%	0.08%
Spiny dogfish	Other bycatch	0.92	0.84	1.26	3.58	3.19	1.96	0.00%	0.01%
Sponge, unidentified	Habitat	14.64	6.37	10.43	0.70	5.85	7.60	0.00%	0.02%
Starry flounder	Minor associated	78.53	64.60	33.99	187.95	84.72	89.96	0.06%	0.29%
Thornyhead rockfish	Other bycatch	14.38	18.55	16.26	0.24	3.63	10.61	0.01%	0.03%
Warty sculpin	Other bycatch	11.10	0.00	0.00	0.00	0.00	2.22	0.00%	0.01%
White blotched skate	Minor associated	45.56	21.66	311.87	327.21	207.42	182.74	0.12%	0.58%
Yellow Irish lord	Other bycatch	186.98	0.00	0.00	0.00	0.00	37.40	0.02%	0.12%
Yellowfin sole	Minor associated	825.13	773.30	818.42	433.24	635.14	697.05	0.46%	2.22%
Total**	Other bycatch	144,734.87	112,738.45	176,428.17	165,486.88	164,179.25	152,713.52		

Notes:
Associated and other bycatch species with percent of total average bycatch of ≤0.00% are not shown in table.
* Number of individuals instead of mt
** Does not include species with individual numbers instead of weight

Table 11. Catch data of target, non-target, PSC/ETP, and habitat species for 2020-2024 by the GOA cod fishery. Blue = target species, green = main associated species, orange = minor associated species, yellow = PSC/ETP species, purple = habitats. Source: observer data

Species	Target, Main Associated, Minor Associated, Other Bycatch, PSC/ETP, or Habitat	Catch (in mt)						Percent of Total Average	Percent of Total Average Bycatch
		2020	2021	2022	2023	2024	Five-Year Average		
Pacific cod	Target	0.00	8,526.04	20,005.87	15,195.51	22,736.86	13,292.86	88.60%	NA
Alaska skate	Minor associated	0.00	5.31	0.79	3.47	1.22	2.16	0.01%	0.12%
Albatross, unidentified*	Other bycatch	0.00	0.00	11.16	0.00	0.00	2.23	NA	NA
Aleutian skate	Main associated	0.00	11.31	200.43	152.45	191.28	111.09	0.74%	6.42%
Arrowtooth flounder	Main associated	50.51	148.28	99.17	91.89	286.15	135.20	0.90%	7.82%
Atka mackerel	Minor associated	0.00	2.92	0.46	0.00	0.50	0.78	0.01%	0.04%
Bairdi tanner crab*	PSC (ETP)	166.01	30,379.10	24,692.96	28,090.17	11,074.90	18,880.63	NA	NA
Big skate	Main associated	4.36	202.51	360.08	363.31	251.39	236.33	1.58%	13.66%
Birds, unidentified*	Other bycatch	0.00	10.13	0.00	8.84	0.00	3.79	NA	NA
Butter sole	Minor associated	0.00	0.00	0.00	0.00	11.57	2.31	0.02%	0.13%
Chinook salmon*	PSC (ETP)	0.00	3,827.35	0.00	856.95	13.62	939.58	NA	NA
Corals bryozoans, unidentified	Habitat	1.36	0.08	0.08	0.62	0.32	0.49	0.00%	0.03%
Dover sole	Minor associated	0.10	1.00	1.95	0.96	0.59	0.92	0.01%	0.05%
Dusky rockfish	Minor associated	0.81	4.79	4.54	3.00	6.63	3.95	0.03%	0.23%
English sole	Minor associated	0.00	2.13	0.22	0.76	9.81	2.58	0.02%	0.15%
Flatfish, unidentified	Minor associated	0.06	7.34	13.91	7.01	0.72	5.81	0.04%	0.34%
Flathead sole	Minor associated	0.11	20.88	8.89	9.46	62.82	20.43	0.14%	1.18%
Giant grenadier	Minor associated	0.00	79.55	48.08	0.00	1.03	25.73	0.17%	1.49%
Golden king crab*	PSC (ETP)	22.05	26.48	16.22	84.88	265.08	82.94	NA	NA
Greenland turbot	Minor associated	0.00	0.00	0.00	5.56	0.07	1.13	0.01%	0.07%
Gulls*	Other bycatch	0.00	8.52	36.98	47.70	0.00	18.64	NA	NA
Halibut	PSC (ETP)	5.87	104.65	57.09	61.54	73.35	60.50	0.40%	3.50%
Herring	PSC (ETP)	0.01	0.00	0.00	0.00	0.01	0.00	0.00%	0.00%

Invertebrate, unidentified	Minor associated	0.86	0.01	0.78	1.96	0.02	0.73	0.00%	0.04%
Kamchatka flounder	Minor associated	0.00	0.15	0.44	0.77	0.33	0.34	0.00%	0.02%
Longnose skate	Main associated	7.49	121.72	190.52	336.68	202.93	171.87	1.15%	9.94%
Misc. crab	Minor associated	0.00	0.14	0.05	4.38	1.64	1.24	0.01%	0.07%
Misc. fish	Minor associated	0.00	34.74	36.87	21.79	132.18	45.12	0.30%	2.61%
Misc. flatfish	Minor associated	0.00	0.00	5.07	0.01	2.32	1.48	0.01%	0.09%
Non-Chinook salmon*	PSC (ETP)	1.24	0.00	0.02	0.12	8.77	2.03	NA	NA
Northern fulmar*	Other bycatch	0.00	22.47	226.73	18.81	0.00	53.60	NA	NA
Northern rockfish	Minor associated	0.00	4.42	1.24	2.82	3.50	2.40	0.02%	0.14%
Octopus	Main associated	12.04	37.75	109.72	95.75	117.90	74.63	0.50%	4.31%
Opilio tanner crab*	PSC (ETP)	9.48	0.00	0.00	0.00	0.00	1.90	NA	NA
Pacific ocean perch	Minor associated	7.77	1.72	7.06	0.00	13.17	5.94	0.04%	0.34%
Pacific sleeper shark	Minor associated	0.00	0.00	3.67	1.42	11.80	3.38	0.02%	0.20%
Pollock	Main associated	15.75	293.53	183.38	107.03	229.93	165.92	1.11%	9.59%
Quillback rockfish	Minor associated	0.34	7.24	7.80	10.09	6.18	6.33	0.04%	0.37%
Red king crab*	PSC (ETP)	0.00	22.93	0.00	0.00	0.00	4.59	NA	NA
Rex sole	Minor associated	0.00	1.65	8.75	7.75	16.22	6.88	0.05%	0.40%
Rock sole	Main associated	0.04	16.19	125.70	21.36	420.14	116.69	0.78%	6.75%
Rockfish, unidentified	Minor associated	3.31	5.54	46.45	18.61	2.27	15.24	0.10%	0.88%
Rougheye rockfish	Minor associated	0.25	3.34	1.05	1.79	3.72	2.03	0.01%	0.12%
Sablefish	Main associated	29.68	141.41	121.94	84.73	81.49	91.85	0.61%	5.31%
Sculpin	Main associated	0.20	122.24	177.93	120.06	79.07	99.90	0.67%	5.78%
Scypho jellies	Minor associated	0.15	0.19	0.03	0.09	0.93	0.28	0.00%	0.02%
Sea anemone, unidentified	Minor associated	0.00	1.15	1.16	1.78	2.59	1.34	0.01%	0.08%
Sea pens, whips	Habitat	0.00	0.05	1.54	0.26	0.66	0.50	0.00%	0.03%
Sea star	Minor associated	12.65	18.84	22.82	19.53	55.34	25.83	0.17%	1.49%
Short-tailed albatross*	ETP	0.00	0.00	0.00	2.17	0.00	0.43	NA	NA

Shortraker rockfish	Minor associated	0.07	4.92	1.99	1.98	1.27	2.05	0.01%	0.12%
Skate	Main associated	2.74	278.32	202.85	122.58	30.86	127.47	0.85%	7.37%
Snails	Minor associated	0.47	0.27	2.22	3.80	0.58	1.47	0.01%	0.08%
Spiny dogfish	Main associated	12.84	186.52	70.28	166.06	48.74	96.89	0.65%	5.60%
Sponge, unidentified	Habitat	0.00	0.05	1.18	0.72	2.17	0.82	0.01%	0.05%
Starry flounder	Minor associated	0.00	0.20	0.00	1.05	7.39	1.73	0.01%	0.10%
State-managed rockfish	Minor associated	0.00	2.34	2.55	2.03	0.47	1.48	0.01%	0.09%
Thornyhead rockfish	Minor associated	0.02	0.90	4.31	7.14	5.35	3.54	0.02%	0.20%
Yellow Irish lord	Minor associated	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Yelloweye rockfish	Minor associated	0.33	13.89	13.08	57.38	39.90	24.92	0.17%	1.44%
Yellowfin sole	Minor associated	0.00	0.52	0.90	0.29	5.30	1.40	0.01%	0.08%
Total**		170.19	10,416.76	22,154.91	17,117.22	25,160.68	15,003.95		

Notes:
Associated and other bycatch species with percent of total average bycatch of ≤0.00% are not shown in table.
* Number of individuals instead of mt
** Does not include species with individual numbers instead of weight

5.4.2 Habitats and ecosystem

There have been no changes in where the fishery operates, its relative footprint, or how it impacts the habitat and ecosystem. See Fundamental Clause 6.1.4 for more details.

5.5 External factors (such as environmental issues) that may affect the fishery and its management

As stated in previous reports, the effects of environmental variation on production of cod in BSAI and GOA have been studied extensively in terms of physical oceanography, ecosystem variability, and fish production. NMFS and the regional offices coordinate the production of a vast amount of new environmental and other information expected to improve groundfish fishery management in Alaska. Several ecosystem-wide oceanographic phenomena have been identified. The Pacific Decadal Oscillation, with decadal changes in 'warm' and 'cold' phases has been correlated with a number of factors, including sea level pressure, precipitation, and salmon landing in the Pacific Ocean (https://www.fisheries.noaa.gov/feature-story/understanding-ocean-changes-and-climate-just-got-harder).

Groundfish species show interannual variability in recruitment that may be related to El Niño Southern Oscillation driven climate variability. Years of strong onshore transport, typical of warm years in the BS, often corresponds with strong recruitment. The extent and timing of the presence of sea ice in the BS also determines the area where cold bottom water temperatures will persist throughout the following spring and summer. This EBS area of cold water, known as the cold pool, varies with the annual extent and duration of the ice pack and can influence fish distributions.

Past conditions have been an unusually warm phase. In 2014-2016, sea surface temperatures were as much as 3° C (about 5.4° F) higher than average, lasted for months, and appeared on large-scale temperature maps as a red-orange mass of warm water many hundreds of miles across (aka 'the blob'). This appeared to be different from normal patterns of ocean conditions such as the El Niño Southern Oscillation or Pacific Decadal Oscillation (PDO). Figure 12 show sea surface temperature changes in the PDO for 1950-2021.

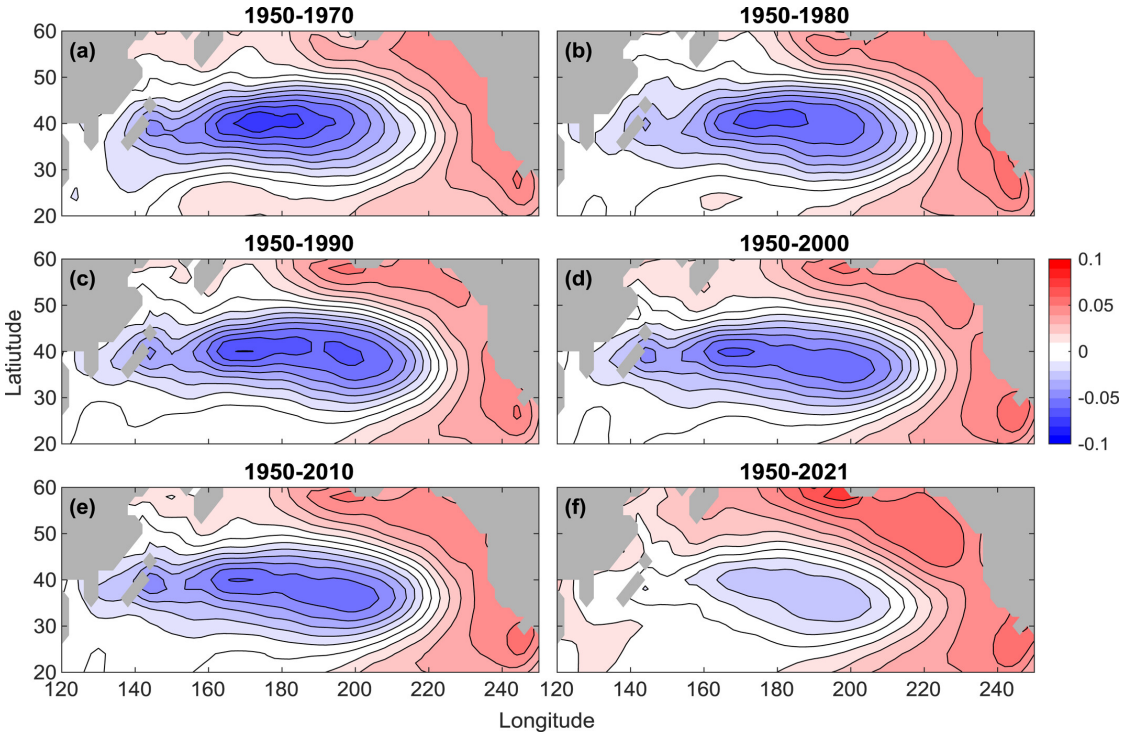


Figure 12. Sea surface temperature changes within the PDO for the period 1950-2021. Source: Werb and Rudnick 2023

6 ASSESSMENT OUTCOME SUMMARY / FUNDAMENTAL CLAUSES SUMMARIES

According to the RFM Standard Version 2.1, the following fisheries management issues would cause a fishery to fail assessment:

- Dynamiting, poisoning, and other comparable destructive fishing practices.
- Significant IUU fishing activities in the country jurisdiction.
- Shark finning (i.e., removal and retention of shark fins while the remainder of the shark is discarded in the ocean).
- Slavery and slave labor on board fishing vessels.
- Any significant lack of compliance with the requirements of an international fisheries agreement to which the United States 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 United States has been notified of that citation of non-compliance.

As was the case during the second reassessment, there is no evidence that the fishery has undertaken such practices or has been non-compliant. At the last recertification, Supporting Clause 3.1 achieved a score of 7, owing to the lack of long-term management objectives within Alaska state-managed groundfish fisheries. This resulted in a medium confidence rating and application of a minor non-conformity. Prior to the first surveillance audit, action had been undertaken, and evidence was provided by the client that led to the rescoring at 10 of the Supporting Clause and the closing of the non-conformity. Table 12 shows the scores for each supporting clause at recertification and the scoring change. Additional information is provided in the sections below.

Table 12. Scoring table

Key Component	Fundamental Clause	Supporting Clause	Applicable?	Score	Confidence Rating	Conformance Level	NC Number
A – Fisheries Management System	1	1.1	Yes	10	High	Full	
		1.2	Yes	10	High	Full	
		1.2.1	Yes	10	High	Full	
		1.3	Yes	10	High	Full	
		1.3.1	Yes	10	High	Full	
		1.4	Yes	10	High	Full	
		1.4.1	Yes	10	High	Full	
		1.5	Yes	10	High	Full	
		1.6	Yes	10	High	Full	
		1.6.1	No	NA	NA	NA	
		1.7	Yes	10	High	Full	
		1.8	Yes	10	High	Full	
		1.9	No	NA	NA	NA	
	2	2.1	Yes	10	High	Full	
		2.1.1	Yes	10	High	Full	
		2.1.2	Yes	10	High	Full	
		2.2	Yes	10	High	Full	
		2.3	Yes	10	High	Full	
		2.4	Yes	10	High	Full	
		2.5	Yes	10	High	Full	
		2.6	Yes	10	High	Full	
		2.7	Yes	10	High	Full	
	3	3.1	Yes	10	High	Full	
		3.1.1	Yes	10	High	Full	
		3.1.2	Yes	10	High	Full	
		3.1.3	Yes	10	High	Full	
		3.2	NA	NA	NA	NA	
		3.2.1	Yes	10	High	Full	
		3.2.2	Yes	10	High	Full	
B – Science, Stock		3.2.3	Yes	10	High	Full	
		3.2.4	Yes	10	High	Full	

Key Component	Fundamental Clause	Supporting Clause	Applicable?	Score	Confidence Rating	Conformance Level	NC Number
Assessment Activities, and the Precautionary Approach	4	4.1	Yes	10	High	Full	
		4.1.1	Yes	10	High	Full	
		4.1.2	Yes	10	High	Full	
		4.2	Yes	10	High	Full	
		4.2.1	Yes	10	High	Full	
		4.3	Yes	10	High	Full	
		4.4	Yes	10	High	Full	
		4.5	Yes	10	High	Full	
		4.6	Yes	10	High	Full	
		4.7	Yes	10	High	Full	
		4.8	Yes	10	High	Full	
		4.9	No	NA	NA	NA	
		4.10	No	NA	NA	NA	
		4.11	No	NA	NA	NA	
	5	5.1	Yes	10	High	Full	
		5.1.1	Yes	10	High	Full	
		5.1.2	Yes	10	High	Full	
		5.2	Yes	10	High	Full	
		5.3	Yes	10	High	Full	
		5.4	Yes	10	High	Full	
		5.5	Yes	10	High	Full	
	6	6.1	Yes	10	High	Full	
		6.2	Yes	10	High	Full	
		6.3	Yes	10	High	Full	
		6.4	Yes	10	High	Full	
		6.5	Yes	10	High	Full	
	7	7.1	Yes	10	High	Full	
		7.1.1	Yes	10	High	Full	
		7.1.2	Yes	10	High	Full	
		7.2	No	NA	NA	NA	
C – Management Measures, Implementation, Monitoring, and Control	8	8.1	Yes	10	High	Full	
		8.1.1	Yes	10	High	Full	
		8.1.2	Yes	10	High	Full	
		8.2	Yes	10	High	Full	
		8.3	Yes	10	High	Full	
		8.4	Yes	10	High	Full	
		8.4.1	Yes	10	High	Full	
		8.5	Yes	10	High	Full	
		8.5.1	Yes	10	High	Full	
		8.6	Yes	10	High	Full	
		8.7	Yes	10	High	Full	
		8.8	Yes	10	High	Full	
		8.9	Yes	10	High	Full	
		8.10	No	NA	NA	NA	
		8.11	Yes	10	High	Full	
		8.12	Yes	10	High	Full	
		8.13	No	NA	NA	NA	

Key Component	Fundamental Clause	Supporting Clause	Applicable?	Score	Confidence Rating	Conformance Level	NC Number
	9	9.1	Yes	10	High	Full	
		9.2	Yes	10	High	Full	
		9.3	Yes	10	High	Full	
	10	10.1	Yes	10	High	Full	
		10.2	Yes	10	High	Full	
		10.3	No	NA	NA	NA	
		10.3.1	No	NA	NA	NA	
		10.4	No	NA	NA	NA	
		10.4.1	No	NA	NA	NA	
	11	11.1	Yes	10	High	Full	
		11.2	Yes	10	High	Full	
		11.3	Yes	10	High	Full	
		11.4	No	NA	NA	NA	
D – Serious Impacts of the Fishery on the Ecosystem	12	12.1	Yes	10	High	Full	
		12.2	No	NA	NA	NA	
		12.2.1	Yes	10	High	Full	
		12.2.2	Yes	10	High	Full	
		12.2.3	Yes	10	High	Full	
		12.2.4	Yes	10	High	Full	
		12.2.5	Yes	10	High	Full	
		12.2.6	Yes	10	High	Full	
		12.2.7	Yes	10	High	Full	
		12.2.8	Yes	10	High	Full	
		12.2.9	Yes	10	High	Full	
		12.2.10	Yes	10	High	Full	
		12.2.11	Yes	10	High	Full	
		12.3	Yes	10	High	Full	
		12.4	Yes	10	High	Full	
		12.5	Yes	10	High	Full	
		12.6	Yes	10	High	Full	
		12.7	Yes	10	High	Full	
	13	13.1	No	NA	NA	NA	
		13.1.1	No	NA	NA	NA	
		13.2	No	NA	NA	NA	
		13.2.1	No	NA	NA	NA	
		13.3	No	NA	NA	NA	
		13.4	No	NA	NA	NA	
		13.5	No	NA	NA	NA	
		13.6	No	NA	NA	NA	
		13.7	No	NA	NA	NA	
		13.7.1	No	NA	NA	NA	
		13.7.2	No	NA	NA	NA	
		13.7.3	No	NA	NA	NA	
		13.8	No	NA	NA	NA	
		13.9	No	NA	NA	NA	
		13.10	No	NA	NA	NA	
		13.11	No	NA	NA	NA	

Key Component	Fundamental Clause	Supporting Clause	Applicable?	Score	Confidence Rating	Conformance Level	NC Number
		13.12	No	NA	NA	NA	
		13.13	No	NA	NA	NA	

6.1 Update on consistency with Fundamental Clauses

6.1.1 Key Component A: The Fisheries Management System

Fundamental Clause 1. There shall be a structured and legally mandated management system based upon and respecting international, State, and local fishery laws, for the responsible utilization of the stock under consideration and conservation of the marine environment.	
1.1 There shall be an effective legal and administrative framework established at international, State and local levels appropriate for fishery resource conservation and management. The management system and the fishery operate in compliance with the requirements of international, State, and local laws and regulations, including the requirements of any regional and/or international fisheries management agreement. 1.2 Management measures shall consider (1) stock status (i.e., overfished, biomass) and genetic diversity (stock structure) over its entire area of distribution, and (2) other biological characteristics of the fish stock (stock) including age of maturity and reproductive potential. 1.2.1 Previously agreed management measures established and applied in the same region is region shall be taken into account by management. 1.3 Where transboundary, shared, straddling, highly migratory, or high seas stocks are exploited by two or more States (neighboring or not), the applicant and appropriate management organizations concerned shall cooperate and take part in the formal fishery commission or arrangements appointed to ensure effective conservation and management of the stock(s) in question and their environment. 1.3.1 Conservation and management measures established for the *stock under consideration* within the jurisdiction of the relevant States for transboundary, shared, straddling, highly migratory, or high seas stocks, shall be compatible in a manner consistent with the rights, competence, and interests of the States concerned. 1.4 A State's fishery management organization not member or participant of a sub-regional or regional fisheries management organization shall cooperate, in accordance with relevant international agreements and law, in the conservation and management of the relevant fisheries resources by giving effect to any relevant measures adopted by such organization or arrangement. 1.4.1 A fishery management organization seeking to take any action through a non-fishery organization which may affect the conservation and management measures taken by a competent sub-regional or regional fisheries management organization or arrangement shall consult with the latter, in advance to the extent practicable, and take its views into account. 1.5 The applicant's fishery management system, when appropriate for the *stock under consideration*, shall actively foster cooperation between States with regard to (1) information gathering and exchange, (2) fisheries research, (3) fisheries management, and (4) fisheries development. 1.6 A fishery management organization and sub-regional or regional fisheries management organizations and arrangements, as appropriate, shall agree on the means by which the activities of such organizations and arrangements will be financed, bearing in mind, *inter alia*, the relative benefits derived from the fishery and the differing capacities of States to provide financial and other contributions. Where appropriate, and when possible, such organizations and arrangements shall aim to recover the costs of fisheries conservation, management, and research. 1.6.1 Without prejudice to relevant international agreements, States or fishery management organizations shall encourage banks and financial institutions not to require, as a condition of a loan or mortgage, fishing vessels or fishing support vessels to be flagged in a jurisdiction other than that of the State of beneficial ownership where such a requirement would have the effect of increasing the likelihood of non-compliance with international conservation and management measures. 1.7 Within the fishery management system, procedures shall be in place to keep the efficacy of current conservation and management measures and their possible interactions under continuous review, and to revise or abolish them in the light of new information. 1.8 The management arrangements and decision-making processes for the fishery shall be organized in a transparent manner. 1.9 Management organizations not party to the Agreement to Promote Compliance with International Conservation and Management Measures by Vessels Fishing in the High Seas shall be encouraged to accept the Agreement and to adopt laws and regulations consistent with the provisions of the Agreement.	
Summary of relevant changes	**Clause 1.6** The NPFMC April Newsletter notes that the Council's SSC have reviewed several AFSC survey-related aspects including the existing AFSC organisational structure, current fishery resource and ecosystem surveys, their spatial coverage and frequency, and the current AFSC modernization efforts and prioritization of surveys, and survey impacts to data streams. The SSC acknowledged the high degree of uncertainty in

	future federal funding for surveys, and the loss of staff and expertise that has already occurred in 2025, and emphasized that both will have substantive impacts on the information and data produced from the AFSC surveys that inform federal fisheries management in the North Pacific. A core set of surveys were identified, including bottom trawl surveys in EBS, GOA, and AI, acoustic surveys in EBS and Shelikof Strait, and the longline survey, which are essential to support the stock assessments that underpin sustainable fisheries management in the North Pacific. Additional suggestions for consideration of data streams and potential impacts on assessments are contained in the SSC minutes. **Clause 1.1, 1.2, 1.2.1, 1.7, 1.8** No relevant changes were reported. **Clause 1.3.1, 1.4, 1.4.1, 1.5, 1.6.1, 1.9** Not applicable
References	NPFMC Newsletter, April 2025, https://www.npfmc.org/april-2025-newsletter/ Scientific and Statistical Committee Draft Report to the North Pacific Fisheries Management Council, March 31 April 1 2025. https://meetings.npfmc.org/CommentReview/DownloadFile?p=d7cd81d1-1ffa-480b-97d7-fb93ab611f8b.pdf&fileName=DRAFT%20SSC%20Report.pdf
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

Fundamental Clause 2. Management organizations shall participate in coastal area management, decision making processes and activities related to the fishery and its users, supporting sustainable and integrated resource use, and conflict avoidance.	
2.1 Within the fisheries management organization's jurisdiction, an appropriate policy, legal, and institutional framework shall be adopted in order to achieve sustainable and integrated use of living marine resources, (1) taking into account the fragility of coastal ecosystems and finite nature of their natural resources, (2) allowing for determination of the possible uses of coastal resources and governing access to them, and (3) recognizing the rights and needs of coastal communities and their customary practices to the extent compatible with sustainable development. In setting policies for the management of coastal areas, States shall take due account of the risks and uncertainties involved. 2.1.1 States shall establish mechanisms for cooperation and coordination in planning, development, conservation, and management of coastal areas. 2.1.2 The fisheries management organization shall ensure that the authority or authorities representing the fisheries sector and fishing communities in the coastal management process have the appropriate technical capacities and financial resources. 2.2 Representatives of the fisheries sector and fishing communities shall be consulted in the decision-making processes involving activities related to coastal area management planning and development. The public, as well as others affected, shall also be kept aware of the need for protection and management of coastal resources, and shall participate in the coastal management process. 2.3 Fisheries practices that avoid conflict among fishers and other users of the coastal area (e.g., fisheries enhancement facilities, tourism, energy) shall be adopted, and fishing shall be regulated in such a way as to avoid risk of conflict among fishers using different vessels, gear, and fishing methods. Procedures and mechanisms shall be established at the appropriate administrative level to settle conflicts that arise within the fisheries sector and between fisheries resource users and other coastal users. 2.4 States' fisheries management organizations and sub-regional or regional fisheries management organizations and arrangements shall give due publicity to conservation and management measures and ensure that laws, regulations, and other legal rules governing their implementation are effectively disseminated. The bases and purposes of such measures shall be explained to users of the resource in order to facilitate their application and thus gain increased support in the implementation of such measures. 2.5 The economic, social, and cultural value of coastal resources shall be assessed by the appropriate fisheries management organization in order to assist decision making on their allocation and use. 2.6 States shall cooperate to support and improve coastal area management, and in accordance with capacities, measures shall be taken to establish or promote (1) systems for research and monitoring of the coastal environment, and (2) multidisciplinary research of the coastal area using physical, chemical, biological, economic, social, legal, and institutional capabilities. 2.7 In the case of a States' activities that may have an adverse environmental effect on coastal areas of other States, States shall provide timely information and if possible, prior notification to potentially affected States, and consult with those States as early as possible.	
Summary of relevant changes	**Clause 2.1, 2.1.1, 2.1.2, 2.2, 2.3.** In January 2024, NMFS updated its EBFM Policy, (EBFM Policy, 2024) which provides the background, definition, rationale, and legislative context for implementing EBFM under relevant mandates. In September 2024, NMFS released the 2024 revised EBFM Road Map, which provides specific actions under each goal identified in the EBFM Policy that will guide the Council's efforts to implement the Policy over the next five years. This includes specific actions aimed at advancing climate-ready decision-making, which includes climate-informed science and management for trust resources and habitats. NMFS revised the Road Map to incorporate ideas and comments from fishery management councils, including NPFMC. NMFS agrees with the NPFMC's principle comment on the importance of at-sea surveys to fisheries science and management; that idea is already part of the guiding documents and the EBFM Road Map. NMFS also revised the Road Map based on comments received from Alaska fisheries interests, including Alaska Native communities and organisations. **Clause 2.4, 2.5, 2.6** As reported at last year's audit, NPFMC had initiated a Programmatic Evaluation (i.e., a review of its management policies, goals, and objectives for all federally managed fisheries in the BSAI and GOA with the intent of ensuring the Council's management framework is adequate to address current and future challenges, including climate change, and to improve the council's ecosystem-based management

	approach). At the April 2025 Council, it was to pause the process, given the uncertainty regarding forthcoming changes to NMFS' priorities, funding, and other resources. **Clause 2.7** No relevant changes were reported.
References	EBFM Policy, Ecosystem-Based Fisheries Management Policy of the National Marine Fisheries Service National Oceanic and Atmospheric Administration, Policy Statement, January 2024. https://www.fisheries.noaa.gov/s3/2024-02/Revised-EBFM-Policy-FINAL-2.12.24-508-signed-JC.pdf Ecosystem-Based Fisheries Management Road Map. https://www.fisheries.noaa.gov/resource/document/ecosystem-based-fisheries-management-road-map NPFMC Newsletter, April 2025, https://www.npfmc.org/april-2025-newsletter/
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

Fundamental Clause 3. Management objectives shall be implemented through management rules and actions formulated in a plan or other framework.	
3.1 Long-term management objectives shall be translated into a plan or other management document (taking into account uncertainty and imprecision) and be subscribed to by all interested parties. 3.1.1 There shall be management objectives seeking to ensure that ETP species are protected from adverse impacts resulting from interactions with the unit of certification and any fisheries enhancement activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible. 3.1.2 There shall be management objectives seeking to avoid, minimize, or mitigate impacts of the unit of certification on the *stock* under consideration's essential habitats, and on habitats that are highly vulnerable to damage by the unit of certification's fishing gear. 3.1.3 There shall be management objectives seeking to minimize adverse impacts of the unit of certification (including any fishery enhancement) on the structure, and function of the ecosystems that are likely to be irreversible or very slowly reversible. 3.2 Management measures shall provide, *inter alia,* that: 3.2.1 Excess fishing capacity shall be avoided, and exploitation of the stocks shall remain economically viable. 3.2.2 The economic conditions under which fishing industries operate shall promote responsible fisheries. 3.2.3 The interests of fishers, including those engaged in subsistence, small-scale, and artisanal fisheries shall be taken into account. 3.2.4 Biodiversity of aquatic ecosystems shall be conserved and ETP species shall be protected. Where relevant, there shall be management objectives, and as necessary, management measures.	
Summary of relevant changes	**Clause 3.1, 3.1.1, 3.1.2, 3.1.3, 3.2, 3.2.1, 3.2.2, 3.2.3, 3.2.4** No relevant changes were reported.
References	NA
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

6.1.2 Key Component B: Science and Stock Assessment Activities, and the Precautionary Approach

Fundamental Clause 4. There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.	
4.1 All significant fishery removals and mortality of the target species (shall be considered by management. Specifically, reliable and accurate data required for assessing the status of fishery(ies) and ecosystems—including data on retained catch, bycatch, discards, and waste—shall be collected. Data can include relevant traditional, fisher, or community knowledge, provided their validity can be objectively verified. These data shall be collected, at an appropriate time and level of aggregation, by relevant management organizations connected with the fishery, and provided to relevant States regional, and international fisheries organizations. 4.1.1 Timely, complete, and reliable statistics shall be compiled on catch and fishing effort and maintained in accordance with applicable international standards and practices, and in sufficient detail to allow sound statistical analysis for stock assessment. Such data shall be updated regularly and verified through an appropriate system. The use of research results as a basis for setting 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) shall be promoted. Results of analysis shall be distributed accordingly as a contribution to fisheries conservation, management, and development. 4.1.2 In the absence of specific information on the *stock under consideration*, generic evidence based on similar stocks can be used. However, the greater the risk of overfishing, the more specific evidence is necessary to ascertain the sustainability of intensive fisheries. 4.2 An observer scheme designed to collect accurate data for research and support compliance with applicable fishery management measures shall be established. 4.2.1 Where necessary, fisheries management organizations and regional fisheries management organizations and other such arrangements should strive to achieve a level and scope of observer programs sufficient to provide quantitative estimates of total catch, discards, and incidental takes of living aquatic resources. 4.3 A fisheries management organization, regional fisheries management organizations or arrangements shall compile data and make them available, in a manner consistent with any applicable confidentiality requirements, in a timely manner and in an agreed format to all members of these organizations and other interested parties in accordance with agreed procedures. 4.4 States shall stimulate the research required to support policies related to fish as food. 4.5 There shall be sufficient knowledge of the economic, social, marketing, and institutional aspects of fisheries collected through data gathering, analysis, and research, as well as comparable data generated for ongoing monitoring, analysis, and policy formulation. 4.6 The fisheries management organization 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. 4.7 If a fisheries management organization is conducting scientific research activities in waters of another State, it shall ensure that their vessels comply with the laws and regulations of that State and international law. 4.8 Adoption of uniform guidelines governing fisheries research conducted on the high seas shall be promoted and, where appropriate, support the establishment of policies that include, *inter alia*, facilitating research at the international and sharing the research results with affected States. 4.9 If appropriate, the fisheries management organization and relevant international organizations shall promote and enhance the research capacities of developing countries, *inter alia*, in the areas of data collection and analysis, information, science and technology, human resource development, and provision of research facilities, in order for them to participate effectively in the conservation, management, and sustainable use of living aquatic resources. 4.10 Competent national organizations shall, where appropriate, render technical and financial support to States upon request and when engaged in research investigations aimed at evaluating stocks which have been previously unfished or very lightly fished. 4.11 Relevant technical and financial international organizations shall, upon request, support States in their research efforts, devoting special attention to developing countries—in particular the least developed among them and small developing island countries.	
Summary of relevant changes	Information for assessing the status of Alaska Pacific cod comes from the 2024 SAFE reports (https://www.fisheries.noaa.gov/tags/north-pacific-groundfish-stock-assessments) – EBS (Barbeaux et al., 2024), AI (Spies et al., 2024), and GOA (Hulson et al., 2024) – and is discussed in detail in Sections 5.1 and 5.2.

	Recent stock assessments have incorporated updated survey data, fishery catch and size compositions, and refinements in model structure. In EBS, the 2024 assessment applied an updated age-structured model using expanded data through 2024, resulting in slightly lower ABC recommendations compared to the previous year but with no change in the overall status determination — the stock is not overfished or subject to overfishing. In AI, a new Tier 3 model (Model 24.1) was brought forward, incorporating time-varying natural mortality linked to climate conditions. This model produced improved fits to survey and fishery data, resulting in updated ABC and OFL recommendations. However, the stock remains managed under Tier 5, with a precautionary ABC reflecting continued concerns over declining biomass and environmental stressors. In GOA, the assessment continues to apply a statistical age-structured model (Model 24.0), updated with new fishery and survey data through 2024. The stock remains at a low but stable level above B20%, managed under Tier 3b, with recommended ABCs similar to the previous year. The stock is not overfished or subject to overfishing, although long-term ecosystem and climate risks remain under consideration. Stock assessment methods continue to use a combination of bottom trawl and longline surveys, fishery-dependent data, genetic analyses, and environmental indicators. These methods are tailored to reflect the biology, spatial distribution, and habitat use of Pacific cod across their range. Ecosystem considerations, including temperature effects on growth, recruitment, and mortality, have been increasingly integrated, particularly in GOA and AI assessments. Risk tables are used to document uncertainties and ecosystem risks, ensuring transparency in management recommendations. Assessments are conducted according to standards set by NPFMC, with robust peer review and collaboration among AFSC scientists, state agencies, industry stakeholders, and the Council's advisory bodies. These efforts ensure that management remains science-based, precautionary, and responsive to both biological and ecosystem conditions. In summary, while assessment methods have advanced and new data have been integrated, the overarching framework for Pacific cod stock assessment and management remains consistent, continuing to support sustainable and EBFM.
References	Barbeaux, S.J., I. Barnett, P. Hulson, J. Nielsen, S.K. Shotwell, E. Siddon, and I. Spies. 2024. Assessment of the Pacific cod stock in the Eastern Bering Sea. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/EBSpcod.pdf. Hulson, P.-J.F., S. J. Barbeaux, B. Ferriss, K. Echave, J. Nielsen, S. McDermott, B. Laurel, A. Abookire, I. Spies, and S.K. Shotwell. 2024. Assessment of the Pacific cod stock in the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/GOApcod.pdf. Spies, I., M. Kapur, S. Barbeaux, M. Haltuch, P. Hulson, I. Ortiz, L. Spencer, and S. Lowe. 2024. Assessment of the Pacific cod stock in the Aleutian Islands. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/AIpcod.pdf.
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

Fundamental Clause 5. There shall be regular stock assessment activities appropriate for the fishery, its range, the species biology, and the ecosystem, undertaken in accordance with acknowledged scientific standards to support its optimum utilization.	
5.1 An appropriate institutional framework shall be established to determine the applied research required and its proper use (i.e., assess/evaluate stock assessment model/practices) for fishery management purposes. 5.1.1 Less elaborate stock assessment methods are frequently used for small-scale or low-value capture fisheries resulting in greater uncertainty about the status of the *stock under consideration*. A more precautionary approach to managing fisheries on such resources shall be required, including, where appropriate, a lower level of resource utilization. A record of good management performance may be considered as supporting evidence of the adequacy of the management system. 5.1.2 The fisheries management organization shall ensure that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, and fishery enhancement. Analysis results shall be distributed in a timely and readily understandable fashion in order that the best scientific evidence available contributes to fisheries conservation, management, and development. The fisheries management organization shall also ensure the availability of research facilities and provide appropriate training, staffing, and institution building to conduct the research. 5.2 There shall be established research capacity necessary to assess and monitor (1) the effects of climate or other environmental change on stocks and aquatic ecosystems, (2) the status of the stock under State jurisdiction, and (3) the impacts of ecosystem changes resulting from fishing activity, pollution, or habitat alteration. 5.3 Management organizations shall cooperate with relevant international organizations to encourage research in order to ensure optimum utilization of fishery resources. 5.4 The fishery management organizations shall directly, or in conjunction with other States, develop collaborative technical and research programs to improve understanding of the biology, environment, and status of transboundary, shared, straddling, highly migratory and high seas stocks. 5.5 Data generated by research shall be analyzed and the results of such analyses published in a way that ensures confidentiality is respected, where appropriate.	
Summary of relevant changes	Information for assessing the status of Alaska Pacific cod comes from the annual SAFE reports, which are publicly available through NOAA Fisheries (SAFE Reports Library). The most recent assessments for EBS (Barbeaux et al., 2024), AI (Spies et al., 2024), and GOA (Hulson et al., 2024) provide region-specific evaluations, with details discussed in Sections 5.1 and 5.2. EBS: Stock assessment methods continue to apply age-structured modeling incorporating extensive fishery-dependent and fishery-independent data. The assessment in 2024 included updated catch, size compositions, and survey indices through 2024, and explored several alternative model configurations. The recommended Model 24.1 suggests that the stock remains healthy, above B35%, and not subject to overfishing. However, ecosystem considerations—particularly environmental changes influencing distribution and productivity—continue to present a moderate risk level, as highlighted in the risk table. AI: The AI assessment continues to explore both Tier 3 and Tier 5 modeling approaches. The preferred 2024 model (Model 24.1) includes updated biological parameters such as time-varying natural mortality associated with warming ocean conditions. Although age-structured models provided a more informative fit, management continues under the conservative Tier 5 approach due to data limitations. Both model types suggest that the stock is not overfished nor subject to overfishing, but recent fishery catches are well below historical averages, raising ecosystem and fishery performance concerns. GOA: The GOA assessment retained the age-structured Model 24.0, which integrates updated fishery and survey data. While the stock remains below B40%, it is above the overfished threshold and not subject to overfishing. Environmental influences such as ocean warming and poor recruitment since 2014 remain key concerns. Nevertheless, the stock is projected to remain stable under current HCRs. Continued research into temperature-linked growth and recruitment dynamics is underway to refine future assessments. Across all regions, stock assessments continue to apply robust methodologies that integrate acoustic and trawl surveys, fishery catch and composition data, genetic studies, and ecosystem considerations. Recent advances include: • The use of the VAST model for improving spatial index estimates in EBS. • Incorporation of environmental linkages to growth and mortality in GOA and AI. • Refinement of aging error and bias models across all regions.

	• Evaluation of genetic stock structure and tagging studies that reveal seasonal connectivity between the GOA and EBS, while indicating limited connectivity with the AI. Stock assessments are conducted in accordance with the scientific standards of NPFMC, ensuring transparency, peer review, and methodological rigor. Risk tables are used in all assessments to document uncertainties in population dynamics, ecosystem conditions, and fishery performance. Ecosystem considerations are increasingly integrated into the assessments, with attention to climate-driven changes in temperature, prey availability, and spatial distribution. This holistic approach aligns with EBFM principles and supports the sustainable management of Pacific cod. Ongoing collaboration among industry stakeholders, scientists, and regulatory agencies remains a cornerstone of the assessment process. This includes cooperative data collection, tagging programs, and active engagement in the NPFMC review process, ensuring that management decisions are informed by the best available science and stakeholder input.
References	Barbeaux, S.J., I. Barnett, P. Hulson, J. Nielsen, S.K. Shotwell, E. Siddon, and I. Spies. 2024. Assessment of the Pacific cod stock in the Eastern Bering Sea. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/EBSpcod.pdf. Hulson, P.-J.F., S. J. Barbeaux, B. Ferriss, K. Echave, J. Nielsen, S. McDermott, B. Laurel, A. Abookire, I. Spies, and S.K. Shotwell. 2024. Assessment of the Pacific cod stock in the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/GOApcod.pdf. Spies, I., M. Kapur, S. Barbeaux, M. Haltuch, P. Hulson, I. Ortiz, L. Spencer, and S. Lowe. 2024. Assessment of the Pacific cod stock in the Aleutian Islands. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/AIpcod.pdf.
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

Fundamental Clause 6. The current state of the stock shall be defined in relation to reference points, relevant proxies, or verifiable substitutes that allow effective management objectives and targets to be set. Remedial actions shall be available and taken where reference points or other suitable proxies are approached or exceeded.	
6.1 The fishery management organization shall establish safe target reference point(s) for management. Management targets are consistent with achieving maximum sustainable yield (MSY), a suitable proxy, or a lesser fishing mortality—if that is optimal in the circumstances of the fishery (e.g., multispecies fisheries) or is needed to avoid adverse impacts on dependent predators. 6.2 The fishery management organization shall establish appropriate limit reference point(s) for exploitation (i.e., consistent with avoiding recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible; RFM v2.1 Guidance Appendix 1, Part 1[2]). When a limit reference point is approached, measures shall be taken to ensure that it will not be exceeded. For instance, if fishing mortality (or its proxy) is above the associated limit reference point, actions should be taken to decrease the fishing mortality (or its proxy) below that limit reference point. 6.3 Data and assessment procedures that measure the position of the fishery in relation to the reference points shall be established. Accordingly, the *stock under consideration* shall not be overfished (i.e., above limit reference point or proxy) and the level of fishing permitted shall be commensurate with the current state of the fishery resources, maintaining its future availability, and taking into account that long-term changes in productivity can occur due to natural variability and/or impacts other than fishing (RFM v2.1 Guidance Appendix 1, Part 1[3]). 6.4 Accordingly, contingency plans shall be agreed in advance to allow an appropriate management response to serious threats to the resource as a result of overfishing, adverse environmental changes, or other phenomena that may have adverse impacts on the fishery resource (RFM v2.1 Guidance Appendix 1, Part 2[4]). Such measures may be temporary and shall be based on best scientific evidence available. 6.5 Measures shall be introduced to identify and protect depleted stocks and those stocks 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 stocks, which have received adverse impacts by fishing or other human activities, are restored.	
Summary of relevant changes	Information for assessing the status of Alaska Pacific cod comes from the most recent SAFE reports for the EBS (Barbeaux et al., 2024), AI (Spies et al., 2024), and GOA (Hulson et al., 2024), as discussed in Section 5.1. These assessments apply internationally recognized scientific standards to ensure data quality, analytical rigor, and peer-reviewed transparency. Across all three regions, the Pacific cod stocks are currently managed under Tier 3b or Tier 5 frameworks, depending on data availability and model performance. All three stocks continue to be above their respective biological reference points for overfished status, with exploitation rates below the fishing mortality rates associated with maximum sustainable yield. EBS: The EBS stock remains in Tier 3b with spawning biomass projected at 215,747 t for 2025, well above the B35% threshold of 198,612 t. The stock is not overfished, and overfishing is not occurring. The recommended 2025 ABC is 153,617 t, with an FABC of 0.35, which is below FOFL of 0.43, ensuring exploitation remains within sustainable limits. AI: While the AI stock remains under Tier 5 management, recent age-structured models (Model 24.1) provide improved assessments. The spawning biomass for 2025 is estimated at 25,078 t, above B35% (35,826 t) but below B40% (40,944 t), consistent with Tier 3b status if accepted. The recommended ABC of 13,376 t and FABC of 0.502 are below FOFL of 0.655. This indicates that the stock is not overfished, and overfishing is not occurring. GOA: The GOA stock remains classified as Tier 3b, with a projected spawning biomass of 46,920 t in 2025, above B35% (57,255 t) but below B40% (65,434 t). The recommended ABC for 2025 is 32,141 t, with FABC of 0.46, below the FOFL of 0.57. The stock is not overfished, overfishing is not occurring, and projections suggest stable biomass under current management measures. Each assessment applies ecosystem and environmental considerations, including temperature-dependent growth and recruitment models, particularly in the GOA and AI regions. Despite these environmental challenges, current exploitation rates remain precautionary and adaptive management strategies are in

[2] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)
[3] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)
[4] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

	place. The inclusion of risk tables in all assessments ensures that uncertainties, ecosystem variability, and fishery performance are explicitly considered when setting harvest specifications. In conclusion, the 2024 assessments confirm that Pacific cod stocks in the EBS, AI, and GOA are in a safe biological condition, with biomass above conservation thresholds and fishing mortality rates below levels that would compromise long-term sustainability.
References	Barbeaux, S.J., I. Barnett, P. Hulson, J. Nielsen, S.K. Shotwell, E. Siddon, and I. Spies. 2024. Assessment of the Pacific cod stock in the Eastern Bering Sea. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/EBSpcod.pdf. Hulson, P.-J.F., S. J. Barbeaux, B. Ferriss, K. Echave, J. Nielsen, S. McDermott, B. Laurel, A. Abookire, I. Spies, and S.K. Shotwell. 2024. Assessment of the Pacific cod stock in the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/GOApcod.pdf. Spies, I., M. Kapur, S. Barbeaux, M. Haltuch, P. Hulson, I. Ortiz, L. Spencer, and S. Lowe. 2024. Assessment of the Pacific cod stock in the Aleutian Islands. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/AIpcod.pdf.
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

Fundamental Clause 7. Management actions and measures for the conservation of stock and the ecosystem shall be based on the precautionary approach. Where information is deficient a suitable method using risk management shall be adopted to consider uncertainty.	
7.1 The precautionary approach shall be applied widely to conservation, management, and exploitation of ecosystems to protect them and preserve the ecosystem. This should take due account of fishery enhancement procedures, where appropriate. Absence of scientific information shall not be used as a reason for postponing or failing to take conservation and management measures. Relevant uncertainties shall be taken into account through a suitable method of risk management, including those associated with the use of introduced or translocated species.[5] 7.1.1 In implementing the PA, the fishery management organization shall take into account, *inter alia*, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality, the impact of fishing activities (including discards) on non-target and associated or dependent predators, and environmental and socioeconomic conditions. 7.1.2 In the absence of adequate scientific information, appropriate research shall be initiated in a timely fashion. 7.2 In the case of new or exploratory fisheries, the fishery management organization shall adopt, as soon as possible, cautious conservation and management measures, including, *inter alia*, catch limits and effort limits. Such measures should remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment should be implemented. Management measures should, if appropriate, allow for the gradual development of the fisheries.	
Summary of relevant changes	No substantial changes have been identified in the key management actions and measures governing the Alaska Pacific cod fishery. Current management continues to adhere to the precautionary approach, which is designed to prevent overfishing and mitigate ecological risks despite scientific uncertainties. This consistency in management has been confirmed through stakeholder engagement during site visits and is well-documented in the most recent SAFE reports for EBS, AI, and GOA. The precautionary approach remains the foundation of fisheries management in Alaska, emphasizing proactive measures such as: • Biologically based harvest limits (OFL and ABC) derived from peer-reviewed stock assessments. • Spatial management through area-specific ABC apportionments to reflect localized stock dynamics. • Incorporation of environmental and ecosystem considerations such as temperature-related mortality blocks and recruitment dynamics, especially noted in GOA and AI assessments. • Use of risk tables across all regions to document and respond to stock, ecosystem, and fishery performance risks. Despite changes in stock assessment inputs, including updated catch data, survey indices, and model refinements, the management framework has not shifted from its conservative, ecosystem-based orientation. For example: • In the EBS, harvest advice continues to rely on a multi-model ensemble that balances recent data with long-term trends while recognizing increased ecosystem risk due to warming conditions and distribution shifts. • In the AI, the stock remains managed under Tier 5 despite exploratory age-structured models, reflecting a conservative stance due to survey data gaps and ecosystem uncertainty. • In the GOA, environmental drivers such as heatwave effects on recruitment and mortality have been explicitly modeled, but the fishery remains under Tier 3b with ABCs set below long-term averages to account for low stock levels. Stakeholders and management bodies, including NPFMC and ADFG, continue to collaborate with scientific experts to ensure assessments and management decisions are informed by the best available science. This includes integrating: • Ongoing genetic and tagging studies to better understand stock structure and migration. • Ecosystem and socioeconomic profiles to contextualize biological data with fishery and community impacts. • Recommendations from the SSC and Plan Teams to improve model assumptions and data quality.

[5] FAO Technical Guidelines for Responsible Fisheries No. 2 – Precautionary approach to capture fisheries and species introductions. http://www.fao.org/docrep/003/w3592e/w3592e00.htm

	Importantly, while data gaps and environmental variability present challenges, these uncertainties are explicitly considered in risk assessments. The application of precautionary catch limits and the requirement for frequent stock assessment updates further demonstrate management's commitment to adaptive, EBFM.
References	Barbeaux, S.J., I. Barnett, P. Hulson, J. Nielsen, S.K. Shotwell, E. Siddon, and I. Spies. 2024. Assessment of the Pacific cod stock in the Eastern Bering Sea. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/EBSpcod.pdf. Hulson, P.-J.F., S. J. Barbeaux, B. Ferriss, K. Echave, J. Nielsen, S. McDermott, B. Laurel, A. Abookire, I. Spies, and S.K. Shotwell. 2024. Assessment of the Pacific cod stock in the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/GOApcod.pdf. Spies, I., M. Kapur, S. Barbeaux, M. Haltuch, P. Hulson, I. Ortiz, L. Spencer, and S. Lowe. 2024. Assessment of the Pacific cod stock in the Aleutian Islands. https://www.npfmc.org/wp-content/PDFdocuments/SAFE/2024/AIpcod.pdf.
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

6.1.3 Key Component C: Management Measures, Implementation, Monitoring, and Control

Fundamental Clause 8. Management shall adopt and implement effective management measures designed to maintain stocks at levels capable of producing maximum sustainable yields, including harvest control rules and technical measures applicable to sustainable utilization of the fishery, and based upon verifiable evidence and advice from available objective scientific and traditional sources.

8.1 Conservation and management measures shall be designed to ensure the long-term sustainability of fishery resources at levels which promote optimum utilization and are based on verifiable and objective scientific and/or traditional, fisher, or community sources.

8.1.1 When evaluating alternative conservation and management measures, the fishery management organization shall consider their cost-effectiveness and social impact.

8.1.2 Responsible fisheries management organizations shall adopt and implement measures necessary to ensure the management of bycatch and reduction of discards as part of fisheries management (1) in accordance with the PA, as reflected in Article 6 of the UN Fish Stocks Agreement, and as set out in Article 6.5 and 7.5 of the Code; (2) in accordance with the responsible use of fish as set out in the Code; and (3) based on the best scientific evidence available, taking into account fishers' knowledge.

8.2 The fishery management organization shall prohibit dynamiting, poisoning, and other similar destructive fishing practices.

8.3 The fishery management organization shall seek to identify domestic parties having a legitimate interest in the use and management of the fishery. When deciding on use, conservation, and management of the resource, due recognition shall be given, where relevant, in accordance with national laws and regulations, to the traditional practices, needs, and interests of indigenous people and local fishing communities which are highly dependent on these resources for their livelihood. Arrangements shall be made to consult all the interested parties and gain their collaboration in achieving responsible fisheries.

8.4 Where excess capacity exists, mechanisms shall be established to reduce capacity to levels commensurate with sustainable use of the resource. Fleet capacity operating in the fishery shall be measured and monitored. The fishery management organization shall maintain, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations and a record of all authorizations to fish allowed by them.

8.4.1 Studies shall be promoted that provide an understanding of the costs, benefits, and effects of alternative management options designed to rationalize fishing, especially options relating to excess fishing capacity and excessive levels of fishing effort.

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

8.5.1 Appropriate measures shall be applied to minimize catch, waste, and discards of non-target species (both fish and non-fish species), and impacts on associated, dependent, or endangered species.

8.6 Gear marking requirements shall take into account uniform and internationally recognizable gear marking systems.

8.7 The fishery management organization and relevant groups from the fishing industry shall measure performance and encourage the development, implementation, and use of selective, environmentally safe, and cost-effective gear, technologies, and techniques that are sufficiently selective as to minimize catch, waste, discards of non-target species (both fish and non-fish species) and impacts on associated or dependent predators. The use of fishing gear and practices that lead to discarding the catch shall be discouraged, and the use of fishing gear and practices that increase survival rates of escaping fish shall be promoted. Inconsistent methods, practices, and gears shall be phased out accordingly.

8.8 Technologies, materials, and operational methods or measures—including, to the extent practicable, the development and use of selective, environmentally safe, and cost-effective fishing gear and techniques—shall be applied to minimize the loss of fishing gear, the ghost fishing effects of lost or abandoned fishing gear, pollution, and waste.

8.9 The intent of fishing selectivity and fishing impacts-related regulations shall not be circumvented by technical devices. Information on new developments and requirements shall be made available to all fishers.

8.10 Assessment and scientific evaluation shall be carried out on the impacts of habitat disturbance on the fisheries and ecosystems prior to the commercial-scale introduction of new fishing gear, methods, and operations. Accordingly, the impacts of such introductions shall be monitored.

8.11 International cooperation shall be encouraged for research programs involving fishing gear selectivity, fishing methods and strategies, dissemination of the results of such research programs, and the transfer of technology.

8.12 The fishery management organization and relevant institutions involved in the fishery shall collaborate in developing standard methodologies for research into fishing gear selectivity, fishing methods and strategies, and on the behavior of

	target and non-target species regarding such fishing gear—as an aid for management decisions and with a view to minimizing non-utilized catches. 8.13 Where appropriate, policies shall be developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures. The fishery management organization shall ensure that, when selecting the materials to be used in the creation of artificial reefs, as well as when selecting the geographical location of such artificial reefs, the provisions of relevant international conventions concerning the environment and the safety of navigation are observed.
Summary of relevant changes	**Clause 8.1, 8.1.1, 8.2, 8.3, 8.4, 8.4.1, 8.6, 8.9, 8.10, 8.11, 8.12** No relevant changes were reported. **Clause 8.1.2** The PCTC Program began in 2024 with the intent of improving the prosecution of the fishery, stabilising the harvesting and processing sectors, maximising the value of the fishery and helping to minimise bycatch in Pacific cod A and B seasons (January 20th – April 1st and April 1st – June 10th, respectively). Cooperatives must annually apply for CQ which is derived from the quota share that belongs to their members (harvester and associated processor derived quotas). Prohibitive Species Catch (PSC) allocations (which includes Pacific halibut, king crab, Tanner crab, snow crab) are also provided to the cooperatives and are proportional to their cod CQ. On review of cooperative reports presented to NPFMC in 2024, it was reported that vessels captains communicate bycatch rates to their coop managers on a tow by tow basis to support bycatch avoidance. PCTC fleet bycatch data are also synthesised by Sea State Inc. (a third-party data manager) and disseminated to the PCTC coop managers to share bycatch information. CQ and PSC allocation can be leased within and between coops, subject to PCTC program restrictions. None of the coop reports indicated an overshoot of their CQ or PSC allocations. **Clause 8.5, 8.7, 8.8** In December 2023, NOAA published a technical memorandum summarising 37 orca entanglement reports from 1991 – 2022. NMFS stated that these entanglements demonstrate the need for more research and development of orca depredation deterrents or other mitigation measures for commercial fisheries. At the April Council meeting there was a presentation on gear modification to avoid killer whale entanglement. While operational steps have been taken to avoid entanglement, e.g., no discarding from the factory when setting and hauling, monitoring with hydrophones has indicated that orcas are swimming in the front of trawls during setting, fishing and hauling and so may be vulnerable to being entangled in the trawls. Gear modifications have been used in ¼ scaled-down versions of a flatfish trawl and tested in Memorial University's flume tank (Newfoundland, Canada). A panel of large mesh was tied into the net to sit in front of approximately 60-80% of the net entrance. This appeared not to affect the shape of the net. Trials are underway on commercial vessels to test this new design and incorporate sound reflective material in the panels to enhance the ability of orcas to detect it. **Clause 8.13** Not applicable
References	NPFMC Council Meeting, Anchorage April 4-9. https://meetings.npfmc.org/Meeting/Details/3039 Update on development of a gear modification to reduce potential for killer whale entanglements, John Gauvin and Sarah Webster, Alaska Seafood Cooperative https://meetings.npfmc.org/Meeting/Details/3039 Summary of flume tank gear modification trip to help prevent Killer Whale entanglements in Bering Sea deepwater flatfish fishery https://meetings.npfmc.org/CommentReview/DownloadFile?p=24d781d8-139e-427f-8704-de9de123b583.pdf&fileName=B1%20Summary%20of%20Flume%20Tank%20Gear%20Mod.pdf Pacific Cod Trawl Cooperative Program https://www.fisheries.noaa.gov/alaska/commercial-fishing/pacific-cod-trawl-cooperative-program
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

Fundamental Clause 9. Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards, guidelines and regulations.	
9.1 States shall advance, through education and training programs, the education and skills of fishers and, where appropriate, their professional qualifications. Such programs shall take into account agreed international standards and guidelines. 9.2 States, with the assistance of relevant international organizations, shall endeavor to ensure, through education and training, that all those engaged in fishing operations be given information on the most important provisions of the FAO CCRF (1995), as well as provisions of relevant international conventions and applicable environmental and other standards that are essential to ensure responsible fishing operations. 9.3 The fishery management organization shall, as appropriate, maintain records of fishers which shall, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their State's laws.	
Summary of relevant changes	**Clause 9.1, 9.2, 9.3** No relevant changes were reported.
References	NA
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

Fundamental Clause 10. An effective legal and administrative framework shall be established and compliance ensured, through effective mechanisms for monitoring, surveillance, control, and enforcement for all fishing activities within the jurisdiction.	
10.1 Effective mechanisms shall be established for fisheries monitoring, surveillance, control, and enforcement measures including, where appropriate, observer programs, inspection schemes, and vessel monitoring systems, to ensure compliance with the conservation and management measures for the fishery in question. This could include relevant traditional, fisher, or community approaches, provided their performance could be objectively verified. 10.2 Fishing vessels shall not be allowed to operate on the stock under consideration in question without specific authorization. 10.3 States involved in the fishery shall, in accordance with international law, and within the framework of fisheries management organizations or arrangements, cooperate to establish systems for monitoring, control, surveillance, and enforcement of applicable measures with respect to fishing operations and related activities in waters outside the States jurisdiction. 10.3.1 Fishery management organizations which are members of or participants in fisheries management organizations or arrangements, shall implement internationally agreed measures adopted in the framework of such organizations or arrangements and consistent with international law to deter the activities of vessels flying the flag of non-members or non-participants engaging in activities that undermine the effectiveness of conservation and management measures established by such organizations or arrangements. In that respect, port States shall also proceed, as necessary, to assist other States in achieving the objectives of the FAO CCRF (1995) and should make known to other States details of regulations and measures they have established for this purpose without discrimination for any vessel of any other State. 10.4 jurisdiction of other States, unless such vessels have been issued with a Certificate of Registry and have been authorized to fish by the competent authorities. Such vessels shall carry on board the Certificate of Registry and their authorization to fish. 10.4.1 Fishing vessels authorized to fish on the high seas or in waters under the jurisdiction of a State other than the flag State shall be marked in accordance with uniform and internationally recognizable vessel marking systems such as the FAO Standard Specifications and Guidelines for Marking and Identification of Fishing Vessels.	
Summary of relevant changes	**Clause 10.1, 10.2** No major compliance issues in 2023 were reported. **Clause 10.3, 10.3.1, 10.4, 10.4.1** Not applicable.
References	17th Coast Guard District Enforcement Report, June 2024. https://meetings.npfmc.org/CommentReview/DownloadFile?p=fcb2e345-48b5-45af-91ef-a65e4d628257.pdf&fileName=B7%20USCG%20Report.pdf 17th Coast Guard District Enforcement Report, April 2025. https://meetings.npfmc.org/CommentReview/DownloadFile?p=58d0dcd2-d10f-4ce3-aec4-5e07287918df.pdf&fileName=B6%20USCG%20Report.pdf Office of Law Enforcement, Alaska Enforcement Division, June 2024 Report to the NPFMC. https://meetings.npfmc.org/CommentReview/DownloadFile?p=3dbbb852-2322-4075-9be4-e56334a4a37b.pdf&fileName=B4%20OLE%20Report.pdf Office of Law Enforcement, Alaska Enforcement Division, December 2024 Report to the NPFMC. https://meetings.npfmc.org/CommentReview/DownloadFile?p=4da1b576-f601-484e-b0ca-58417b08e02d.pdf&fileName=B4%20NOAA%20Enforcement%20Report.pdf Office of Law Enforcement, Alaska Enforcement Division, December 2024, Presentation to the Council https://meetings.npfmc.org/CommentReview/DownloadFile?p=fd06740c-ac08-4909-824a-ecf55eef86ee.pdf&fileName=PPT%20B4%20NOAA%20Enforcement%20Report.pdf
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

Fundamental Clause 11. There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.	
11.1 States laws of adequate severity shall be in place that provide for effective sanctions. 11.2 Sanctions applicable to violations and illegal activities shall be adequate in severity to be effective in securing compliance and discouraging violations wherever they occur. Sanctions shall also be in force to affect authorization to fish and/or to serve as masters or officers of a fishing vessel in the event of noncompliance with conservation and management measures. 11.3 Fisheries management organizations shall ensure that sanctions for IUU fishing by vessels and, to the greatest extent possible, nationals under its jurisdiction are of sufficient severity to effectively prevent, deter, and eliminate IUU fishing and to deprive offenders of the benefits accruing from such fishing. This may include the adoption of a civil sanction regime based on an administrative penalty scheme. Fisheries management organizations shall ensure the consistent and transparent application of sanctions. 11.4 Flag States shall take enforcement measures towards fishing vessels entitled to fly their flag, which have been found by the State to have contravened applicable conservation and management measures. The State shall, where appropriate, make the contravention of such measures an offense under national legislation.	
Summary of relevant changes	**Clause 11.1, 11.2, 11.3** Noting that the Office of Law Enforcement and the U.S. Coast Guard reports include updates on action taken and outcomes, including penalties, for all reported non-compliances. No significant fisheries offences were reported within the Pacific cod fleet sectors. In February 2024, as part of an annual observer operation to Dutch Harbor, Special Agents, and the Workplace Violence Prevention and Response Regional Coordinator undertook to provide outreach and education to the fishing industry to ensure a safe work environment for observers that is free from sexual assault, sexual harassment (SASH), and hostile work environments. Special Agents also undertook a review and investigation in relation to: 1. SASH of observers 2. Hostile work environment 3. Incidents that impact the general health and safety of observers 4. Interference/sample biasing of observer data 5. Failure to abide by catcher processor operational requirements that may result in a negative impact to the fishery resource There were 10 reports of SASH incidents resulting in Special Agents conducting multiple interviews, reviewing video footage, and measuring and photographing areas within the vessels. Non-SASH investigations were investigated. also furthered. A Notice of Violation and Assessment for a SASH case was also served to a subject during the operation. **Clause 11.4** Not applicable.
References	17th Coast Guard District Enforcement Report, June 2024. https://meetings.npfmc.org/CommentReview/DownloadFile?p=fcb2e345-48b5-45af-91ef-a65e4d628257.pdf&fileName=B7%20USCG%20Report.pdf 17th Coast Guard District Enforcement Report, April 2025. https://meetings.npfmc.org/CommentReview/DownloadFile?p=58d0dcd2-d10f-4ce3-aec4-5e07287918df.pdf&fileName=B6%20USCG%20Report.pdf Office of Law Enforcement, Alaska Enforcement Division, June 2024 Report to the NPFMC. https://meetings.npfmc.org/CommentReview/DownloadFile?p=3dbbb852-2322-4075-9be4-e56334a4a37b.pdf&fileName=B4%20OLE%20Report.pdf Office of Law Enforcement, Alaska Enforcement Division, December 2024 Report to the NPFMC. https://meetings.npfmc.org/CommentReview/DownloadFile?p=4da1b576-f601-484e-b0ca-58417b08e02d.pdf&fileName=B4%20NOAA%20Enforcement%20Report.pdf Office of Law Enforcement, Alaska Enforcement Division, December 2024, Presentation to the Council https://meetings.npfmc.org/CommentReview/DownloadFile?p=fd06740c-ac08-4909-824a-ecf55eef86ee.pdf&fileName=PPT%20B4%20NOAA%20Enforcement%20Report.pdf
Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

6.1.4 Key Component D: Serious Impacts of the Fishery on the Ecosystem

Fundamental Clause 12. Considerations of fishery interactions and effects on the ecosystem shall be based on the best scientific evidence available, local knowledge where it can be objectively verified, and a risk assessment-based management approach for determining most probable adverse impacts. Adverse impacts of the fishery on the ecosystem shall be appropriately assessed and effectively addressed.

12.1 The fishery management organization shall assess the impacts of environmental factors on target stocks and associated or dependent species in the same ecosystem, and the relationship among the populations in the ecosystem.

12.2 The most probable adverse impacts from human activities, including fishery effects on the ecosystem/environment, shall be assessed and, where appropriate, addressed and or/corrected, taking into account available scientific information and local knowledge. This may take the form of an immediate management response or a further analysis of the identified risk. In this context, full consideration should be given to the special circumstances and requirements in developing fisheries, including financial and technical assistance, technology transfer, training, and scientific cooperation. In the absence of specific information on the ecosystem impacts of fishing on the unit of certification, generic evidence based on similar fishery situations can be used for fisheries with low risk of severe adverse impact. However, the greater the risk, the more specific evidence shall be necessary to ascertain the adequacy of mitigation measures.

12.2.1 The fishery management organization shall consider the most probable adverse impacts of the unit of certification on main associated species (RFM v2.1 Guidance Appendix 1, Parts 3 and 7[6]), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) shall be monitored and shall not threaten these non-target species with serious risk of extinction, recruitment overfishing, or other impacts that are likely to be irreversible or very slowly reversible. If such impacts arise, effective remedial action shall be taken.

12.2.2 The fishery management organization shall consider the most probable adverse impacts of the unit of certification on minor associated species (RFM v2.1 Guidance Appendix 1, Parts 3 and 7[7]), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) shall be monitored and shall not threaten these non-target species with serious risk of extinction, recruitment overfishing, or other impacts that are likely to be irreversible or very slowly reversible. If such impacts arise, effective remedial action shall be taken.

12.2.3 There shall be outcome indicator(s) consistent with achieving management objectives for non-target species (i.e., avoiding overfishing and other impacts that are likely to be irreversible or very slowly reversible).

12.2.4 The fishery management organization shall consider the most probable adverse impacts of the unit of certification on ETP species (RFM v2.1 Guidance Appendix 1, Parts 4 and 7[8]), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge.

12.2.5 There shall be outcome indicator(s) consistent with achieving management objectives seeking to ensure that ETP species are protected from adverse impacts resulting from interactions with the unit of certification and any associated enhanced fishery activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.

12.2.6 The fishery management organization shall consider the most probable adverse impacts of the unit of certification on habitats (RFM v2.1 Guidance Appendix 1, Parts 5 and 7[9]), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge.

12.2.7 There shall be knowledge of the essential habitats for the *stock under consideration* and potential fishery impacts on them. Impacts on essential habitats, and on habitats that are highly vulnerable to damage by the fishing gear involved, shall be avoided, minimized, or mitigated. In assessing fishery impacts, the full spatial range of the relevant habitat shall be considered, not just the part of the spatial range that is potentially affected by fishing.

12.2.8 There shall be outcome indicator(s) consistent with achieving 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.

12.2.9 The fishery management organization shall consider the most probable adverse impacts of the fishery under assessment on the ecosystem (RFM v2.1 Guidance Appendix 1, Part 6[10]), by assessing and, where appropriate, addressing and or/correcting them, taking into account available scientific information and local knowledge.

12.2.10 There shall be outcome indicator(s) consistent with achieving management objectives seeking to minimize adverse impacts of the unit of certification (including any fishery enhanced activities) on the structure, processes,

[6] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)
[7] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)
[8] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)
[9] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)
[10] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible. Any modifications to the habitat for enhancing the stock under consideration must be reversible and not cause serious or irreversible harm to the natural ecosystem's structure, processes, and function. 12.2.11 The fishery management organization shall consider the most probable adverse human impacts on the stock/ecosystem under consideration, by assessing and, where appropriate, addressing and or/correcting them, taking into account available scientific information and local knowledge. 12.3 The role of the *stock under consideration* in the food web shall be considered, and if it is a key prey species[11] in the ecosystem, management objectives and measures shall be in place to avoid severe adverse impacts on dependent predators. 12.4 There shall be outcome indicator(s) consistent with achieving management objectives seeking to avoid severe adverse impacts on dependent predators resulting from the unit of certification fishing on a *stock under consideration* that is a key prey species.[12] 12.5 States shall introduce and enforce laws and regulations based on the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78). 12.6 Research shall be promoted on the environmental and social impacts of fishing gear especially on the impact of such gear on biodiversity and coastal fishing communities. 12.7 The fishery management organization shall make use, where appropriate, of Marine Protected Areas (MPAs). The general objectives for establishing MPAs shall include ensuring sustainability of fish stocks and fisheries and protecting marine biodiversity and critical habitats.	
Summary of relevant changes	**Clauses 12.1, 12.3, and 12.4** NOAA and NOAA Fisheries (NMFS) continue to have a series of programs monitoring and modelling oceanographic processes in Alaska and adjoining waters. The data, together with a range of other environmental monitoring information such as plankton, low trophic level fish species, fish populations, and population dynamics of higher predators are all assembled through NMFS. The relationship between environmental factors (biotic and abiotic) and BSAI and GOA cod are evaluated annually in the SAFE process (Barbeaux et al. 2024, Spies et al. 2024, Hulson et al. 2024). All significant and commercial species are assessed individually according to the SAFE Tier system. Most of the species' SAFE reports contain details on ecosystem effects on the species (e.g., prey availability) and fishery effects on the ecosystem. The SAFE evaluations provide a process by which a wide range of relevant environmental information is assembled and evaluated in relation to its potential effects. Ecosystem Status Reports are done annually for EBS, AI, and GOA, updating the climate, biological, and fishing effects in each region (Siddon 2024, Ortiz and Zador 2024, Ferriss 2024). In addition, the relationship between different populations in the ecosystem is evaluated through ongoing ecosystem and multi-species modelling programs within NMFS. These information sources are presented and considered annually at Council meetings. TAC-setting within the Council demonstrably follows the precautionary principle. This is also informed by the range of ecosystem indicators reported to the plan teams as part of the SAFE process. These indicators include mammalian predators of groundfish (e.g., Northern fur seals, Seller sea lions), which are considered by the stock assessment plan teams, SSC, and the Council in setting TACs. For mammalian predators of groundfish (e.g., cod, pollock), outcome indicators of direct mortality are required by the Marine Mammal Protection Act and Endangered Species Act (ESA) in terms of allowable mortalities. As noted in Section 5.5, recent conditions have been unusually warm with sea surface temperatures as much as 3° C (about 5.4° F) higher than average. Additionally, in recent years, the annual ice cover in the BS has decreased dramatically, which has likely affected several species' survivability and reproductive success. These changes have been and continue to be investigated. The Council's SSC and the Groundfish Plan Teams are considering these factors on an ongoing basis as they assess the groundfish stocks (e.g., Barbeaux et al. 2024, Spies et al. 2024, Hulson et al. 2024). **Clauses 12.2, 12.2.1, 12.2.2, and 12.2.3** There is a comprehensive set of measures in place to minimize catch, waste, and discards of non-target species, as described above. Each of the BSAI and GOA cod fisheries have limited non-target catches with cod making up more than 80% in both regions (Table 10 and Table 11).

[11] See Appendix 1 page 150 of the Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1).
[12] See Appendix 1 page 150 of the Guidance to Performance Evaluation forthe Certification of Wild Capture and Enhanced Fisheries in North America (v2.1).

BSAI cod fishery

For the cod fishery, there are some main associated species with each making up less than 8% of the total average catch. The main associated species include:

- Alaska skate – According to Tribuzio et al. (2024), the stock is not overfished.
- Aleutian skate – Falls within "other skate (*Bathyraja*)" and is not overfished (Tribuzio et al. 2023).
- Pollock – RFM and MSC certified; not overfished
- Sculpin – According to Spies et al. (2019a), the stock complex is not overfished. Also, the grouping makes up 0.97% of total catch and 4.72% of total bycatch; however, this is a complex that is made up of several sculpin species so no single species is likely to be main associated species.
- Skate, unidentified – Regarding Alaska skate catch within the BSAI UoAs, NMFS (pers. comm.) stated that the species identification improved in 2022. Previously, most of the skate catch was reported under "skate, unidentified". Tribuzio et al. (2023) states that "the Alaska skate is the dominant species of skate caught in the BSAI FMP area, accounting for over 90% of the skate biomass on the eastern Bering Sea (EBS) continental shelf (most commonly at depths of 50-200 m)." It is likely that in coming years, the "skate, unidentified" catch will fall below the main associated threshold.

There are several minor associated species with each of them making up <0.6% of the total average catch. Given the large number of minor associated species but the low catch rate, the audit team has determined that it is unnecessary to list each one of them here. Refer to Table 10 for more details. None of the minor associated species are overfished so none are likely to be negatively impacted by the cod fishery.

Overall, these main and minor associated species and their catch amounts are similar to previous years. Therefore, the combined with operational measures employed by industry to meet the specific targets are effective at achieving the specified management objectives.

GOA cod fishery

For the GOA fishery, there are some main associated species with each making up less than 2% of the total average catch. The main associated species include:

- Aleutian skate – Falls within "other skate (*Bathyraja*)" and is not overfished (Cronin-Fine 2023).
- Arrowtooth flounder – MSC certified; not overfished
- Big skate – According to Cronin-Fine (2023), the stock is not overfished.
- Longnose skate – According to Cronin-Fine (2023), the stock is not overfished.
- Octopus – According to Ormseth (2021), the stock is not overfished.
- Pollock – RFM and MSC certified; not overfished
- Rock sole –MSC certified; not overfished
- Sablefish – RFM and MSC certified; not overfished
- Sculpin – According to Spies et al. (2019b), the stock complex is not overfished. Also, the grouping makes up 0.67% of total catch and 5.78% of total bycatch; however, this is a complex that is made up of several sculpin species so no single species is likely to be main associated species. It is unlikely that the fishery under assessment is negatively impacting the species.
- Skate, unidentified – According to Cronin-Fine (2023), none of the skate stocks are overfished.
- Spiny dogfish – Does not appear to be overfished (https://www.fisheries.noaa.gov/species/pacific-spiny-dogfish). Makes up 0.65% of total catch and 5.60% of total bycatch so unlikely that the fishery under assessment is negatively impacting the species.

There are several minor associated species with each making up <0.3% of the total average catch. Given the large number of minor associated species but the low catch rate, the audit team has determined that it is unnecessary to list each one of them here. Refer to Table 11 for more details. None of the minor associated species are overfished so none are likely to be negatively impacted by the cod fishery.

Overall, these main and minor species and their catch amounts are similar to previous years. Therefore, this combined with operational measures employed by industry to meet the specific targets are effective at achieving the specified management objectives.

Clauses 12.2.4 and 12.2.5

There continues to be a process in place for the development of management objectives to ensure that endangered species are protected from adverse impacts from interactions with the unit of certification. The

endangered species inhabiting the BSAI and GOA are primarily under the responsibility of the U.S. Fish and Wildlife Service (USFWS) for seabird species and NOAA Fisheries for other protected species. For these fisheries, these are primarily marine mammals.

Annually, NOAA Fisheries categorizes all U.S. commercial fisheries under the Marine Mammal Protection Act's List of Fisheries according to the levels of marine mammal mortality and serious injury (https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables). Category III fisheries interact with marine mammal stocks with annual mortality and serious injury ≤1% of the marine mammal's potential biological removal (PBR) level and total fishery-related mortality <10% of PBR. Any fishery in Category III is considered to have achieved the target level of mortality and serious injury. Category II fisheries have a level of mortality and serious injury that is >1% but is <50% of the stock's PBR level, if total fishery related mortality is ≥10% of the PBR. Category I fisheries have frequent mortality and serious injury of marine mammal resulting in annual mortality ≥50% of PBR. In 2024, the BSAI cod pot fishery, the BSAI cod longline and trawl fisheries, and the GOA cod longline and trawl fisheries are Category III. The GOA Pacific cod pot fishery has not had any interactions in the last five years of available data (i.e., 2016-2020), and as of 2021, the BSAI and GOA Pacific cod jig fisheries are no longer classified due to the lack of any interactions. Observer program data continue to provide annual estimates of takes of endangered species – fish, seabirds, and marine mammals in the BSAI and GOA cod fisheries.

BSAI cod fishery

The pot fishery interacted with the following number of species during the period 2018-2022 (Brower et al. 2024):

- Harbor seal (Bristol Bay) – 0
- Harbor seal (Pribilof Islands) – 1
- Humpback whale (Hawai'i, Mexico-North Pacific, and western North Pacific – 2

The longline fishery interacted with the following number of species during the period 2018-2022 (Brower et al. 2024):

- Bearded seal (Alaska) – 1
- Killer whale – 1
- Northern fur seal (eastern Pacific) – 0
- Ribbon seal – 0
- Steller sea lion (western U.S.) – 0

The trawl fishery interacted with the following number of species during the period 2018-2022 (Brower et al. 2024):

- Bearded seal (Alaska) – 0
- Ribbon seal – 0
- Ringed seal – 1
- Steller sea lion (western U.S.) – 1

As noted above, marine mammals are rarely taken incidentally in the BSAI cod trawl fishery. Overall, all of these catch numbers are significantly less than the species' PBRs (Young et al. 2024). Considering the cumulative impacts of all certified BSAI fisheries, the catch numbers are also below PBRs.

Regarding Steller sea lions, BSAI and GOA cod fisheries have a negligible impact on the species. Additionally, mitigation measures are in place to limit interactions (e.g., closed areas for Steller sea lion breeding; https://www.fisheries.noaa.gov/species/steller-sea-lion/conservation-management).

Seabird interactions with fishing gear are recorded through the NMFS Observer Program (summarized in Tide and Eich 2022), and population trends are monitored by the USFWS (summarized in Dragoo et al. 2020). The catch numbers of seabird species in this fishery are minimal, and data show no significant changes to the amount of bycatch. The only recent seabird bycatch are auklets, black-footed albatross, gulls, kittiwakes, Laysan albatross, murres, northern fulmar, and shearwaters; none of these are ESA-listed species. Short-tailed albatross remains the main endangered bird species of concern in the Alaska fisheries, and the BSAI fishery has not caught any in at least the last 10 years.

Three ESA-threatened salmon stocks that migrate to Alaskan waters include Lower Columbia River Chinook salmon, upper Willamette River Chinook salmon, and Lower Columbia River Chinook, spring. The

bycatch of ESA-listed Chinook salmon by the BSAI cod fishery increased in 2023 but decreased again in 2024. All recent catch totals remain within the 45,000 PSC limit. Data continue to be collected, and the bycatch numbers are analyzed annually (NOAA Fisheries 2023, 2024). Cumulatively, the catch numbers are also below limits.

GOA cod fishery

The GOA Pacific cod longline and trawl fisheries continue to be Category III. The longline fishery interacted with the following number of species during the period 2018-2022 (Brower et al. 2024):

- Harbor seal (Cook Inlet/Skelikof Strait) – 1
- Steller sea lion (western U.S.) – 0

The GOA Pacific cod trawl fishery interacted with the following number of species during the period 2018-2022 (Brower et al. 2024):

- Steller sea lion (Western U.S.) – 0

As noted above, marine mammals are rarely taken incidentally in the GOA cod trawl fishery. These catch numbers are significantly less than the species' PBRs. Cumulatively, the catch numbers are also below the PBR. Recent surveys indicate that in the GOA pup and non-pup numbers have increased, showing positive population trends.

Seabird interactions with fishing gear are recorded through the NMFS Observer Program (summarized in Tide and Eich 2022), and population trends are monitored by the USFWS (summarized in Dragoo et al. 2020). The catch numbers of seabird species in this fishery are minimal, and data show no significant changes to the amount of bycatch. The only recent seabird bycatch are gulls, northern fulmar, and short-tailed albatross. Short-tailed albatross remain the main endangered bird species of concern in the Alaska fisheries, and this fishery has caught only 2 in at least the last 10 years.

Clauses 12.2.6, 12.2.7, 12.2.8, and 12.7

In April 2022, a new five-year review of essential fish habitat (EFH) was announced. The review evaluated:

1) published scientific literature
2) unpublished scientific reports
3) information solicited from interested parties
4) previously unavailable or inaccessible data

In 2023, the Council revised the EFH sections of its FMPs to address the results of the five-year review, and the results of the review led to improved species distribution mapping using a more uniform approach as well as an update to the fishing effects model to remove a coding error that omitted unobserved catch events (https://www.fisheries.noaa.gov/alaska/habitat-conservation/alaska-essential-fish-habitat-reviews). All groundfish species had EFH impacts that were determined to be minimal and temporary.

There were two key issues regarding pelagic trawl gear:

1. The Council chose not to take action to close the Red King Crab Savings Area due to concerns that fishing effort by pot, longline, and pelagic trawl gear could be having adverse effects on the recovery of the severely depleted Bristol Bay red king crab stock. However, the Council established an unobserved mortality working group for crab that has met and will provide a report to Council at their June 2025 meeting.
2. A discussion paper was produced for the Council looking at the pelagic trawl gear definition to both align current regulations with objectives of the Council, which are to promote gear innovation and improvements as well as fixing more straightforward regulatory items (fix the codend not intended as part of the pelagic trawl/floats in salmon excluders, etc.). There is some interest in removing outdated regulations and improving the definition to meet the future needs of innovation and development particularly regarding benthic habitat impacts of pelagic trawl gear.

Bait usage within the fishery is primary sardines, herring, and *Illex spp.* squid (client, pers. comm.). These species are not ETP species.

Clauses 12.2.9, 12.2.10, and 12.2.11

Management measures continue to be in place, based on sound, fishery-related evidence platforms and extensive evaluations designed to achieve the stated objectives for relevant ecosystem components. These

	specifically include marine mammals, seabirds, prohibited species, target and bycatch species, EFH, HAPCs, and food-web effects. Also, ongoing monitoring and ecosystem modelling are in place to meet the overarching objective of effective ecosystem-based management (NPFMC 2007, 2019, 2020, 2024). **Clause 12.5** All fishing vessels operating in federal waters are required to comply with MARPOL Annex V, which specifically prohibits the at-sea disposal of all plastics. Vessels operating in the North Pacific therefore have three options: 1) non-plastics can be disposed of at sea within the legal restrictions, 2) they can incinerate wastes onboard the vessel, or 3) they can hold the wastes for shoreside disposal at port. Vessels are required to post oil pollution and garbage placards; have a written solid waste management plan that describes procedures for collecting, processing, storing, and discharging garbage; and have a designated person in charge of carrying out the plan. The BSAI and GOA cod fishing vessels continue to be compliant with MARPOL Annex V (client, pers. comm.). **Clause 12.6** The Council's overarching policy continues to include the objective of applying judicious and responsible fisheries management practices, based on sound scientific research and analysis. Also, all management measures are to be based on the best scientific information available. Key to delivering this scientific evidence base remains the work of the AFSC and their five-year strategic plan (NOAA Fisheries 2022). Research is often promoted and encouraged by academic institutions, furthering the aim of the Council. Research continues into community development associated with fisheries. Industry is also regularly involved in research.
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Summary of consistency with RFM Fisheries Standard	The fishery continues to meet the requirements of this Fundamental Clause of the RFM Fisheries Standard.

7 NON-CONFORMANCES

No non-conformances were raised during this surveillance audit.

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9 APPENDICES

Appendix 1: Stakeholder submissions

No stakeholder comments were received during the announced consultation opportunities.

ABOUT DNV

DNV is a global independent certification, assurance and risk management provider, operating in more than 100 countries. Through its broad experience and deep expertise, DNV advances safety and sustainable performance, sets industry benchmarks, drives innovative solutions.

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