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SURVEILLANCE NO. 4

Report for the Alaska Pacific Cod Fishery

Alaska Fisheries Development Foundation (AFDF)

Authors: Andy Hough, Anna Kiseleva, Bill Brodie, Paul Knapman
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Customer:	Alaska Fisheries Development Foundation (AFDF) PO Box 2223 99929-2223, Wrangell, USA	DNV GL Business Assurance Norway AS Veritasveien 1 1322 HØVIK, Norway Tel: +47 67 57 99 00 http://www.dnvgl.com
Contact person:	Julie Decker	
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Objective:

The objective of this report is the fourth surveillance audit of the Alaska Cod fishery against the RFM standard.

Prepared by:
Anna Kiseleva
DNV GL Senior Assessor

Bill Brodie
Stock Assessment expert

Andy Hough
Ecosystem impacts expert

Paul Knapman
Management system expert

Keywords:
RFM, Alaska, cod

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GLOSSARY

Abbreviations & acronyms

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

1 SUMMARY AND RECOMMENDATION

1.1 Fundamental Clauses Summary

Fundamental Clause	Evidence adequacy rating:	Justification:
1: Structured and legally mandated management system	High	There is an effective legal (MSFCMA , FMPs) and administrative framework (NMFS/NPFMC – ADFG/BOF) established at the local and national level (state/federal) appropriate for fishery resource conservation and management
2: Coastal area management frameworks	High	Management organizations participate in coastal area management institutional frameworks, decision-making processes and activities related to the fishery and its users, in support of sustainable and integrated resource use, and conflict avoidance. The NPFMC and the BOF are required to manage the Pacific cod trawl, longline, pot and jig fisheries in a sustainable and transparent manner, as mandated by the MSFCMA
3: Management objectives and plan	High	The BSAI and GOA FMPs present long-term management objectives for the Alaska Pacific cod fisheries. Seven state-managed Pacific cod fisheries are subject to an annually-published FMP.
4: Fishery data	High	Reliable and accurate data required for assessing the status of fisheries and ecosystems - including data on retained catch of fish, bycatch, discards and waste are collected (BSAI and GOA surveys, catch data, observer data). The NMFS and the ADF&G collect fishery data and conduct fishery independent surveys to assess Pacific cod fisheries and ecosystems in GOA and BSAI areas. GOA and BSAI SAFE documents provide complete descriptions of data types and years collected.
5: Stock assessment	High	Alaska ensures that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science (NMFS, ADF&G, ASMI). The research is disseminated accordingly. Alaska also ensures the availability of research facilities and provides appropriate training, staffing and institution building to conduct the research.
6: Biological reference points and harvest control rule	High	The EBS, AI, and GOA groundfish management plans define target and limit reference points for Pacific cod and other groundfish. Each SAFE report describes the current fishing mortality rate, stock biomass relative to target and limit reference points.
7: Precautionary approach	High	When new uncertainties arise, research recommendations are made and there is accountability in subsequent years to follow up on related action items. However, these uncertainties do not lead to a postponement for providing advice; in all cases precaution is the rule.
8: Management measures	High	Alaska Pacific cod commercial fisheries are managed according to a modern management plan that attempts to balance long-term sustainability of the resources with optimum utilization. For every change/amendment or new development affecting fisheries management and therefore modifying the FMPs, there is an evaluation of alternative conservation and management measures, including considerations of their cost effectiveness and social impact.

9: Management measures to produce maximum sustainable levels	High	Specific management measures are designed and implemented to maintain stocks at levels capable of producing maximum sustainable levels. Also, efforts are made to ensure that resources and habitats critical to the wellbeing of such resources (EFH) which have been adversely affected by fishing or other human activities are restored.
10: Appropriate standards of fisher's competence	High	Alaska enhances through education and training programs the education and skills of fishers and, where appropriate, their professional qualifications. Records of fishers are maintained up to date by the fishery management organizations.
11: Effective legal and administrative framework	High	The Alaska Pacific cod fishery uses enforcement measures including vessel monitoring systems (VMS) on board vessels, USCG boardings and inspection activities. The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce fisheries laws and regulations. OLE Special Agents and Enforcement Officers conduct complex criminal and civil investigations, board vessels fishing at sea, inspect fish processing plants, review sales of wildlife products on the internet and conduct patrols on land, in the air and at sea. NOAA Agents and Officers can assess civil penalties directly to the violator in the form of Summary Settlements (SS) or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation (GCEL).
12: Framework for sanctions	High	The Magnuson-Stevens Act (50CFR600.740 Enforcement policy) provides four basic enforcement remedies for violations: 1) Issuance of a citation (a type of warning), usually at the scene of the offense, 2) Assessment by the Administrator of a civil money penalty, 3) for certain violations, judicial forfeiture action against the vessel and its catch, 4) Criminal prosecution of the owner or operator for some offenses. In some cases, the Magnuson-Stevens Act requires permit sanctions following the assessment of a civil penalty or the imposition of a criminal fine. The 2011 Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions issued by NOAA Office of the General Counsel – Enforcement and Litigation, provides guidance for the assessment of civil administrative penalties and permit sanctions under the statutes and regulations enforced by NOAA. The Alaska Wildlife Troopers enforce state water regulations with a number of statutes that enable the government to fine, imprison, and confiscate equipment for violations and restrict an individual's right to fish if convicted of a violation.
13: Impacts of the fishery on the ecosystem	High	The NPFMC, NOAA (NMFS) and other relevant organisations continue to closely monitor the fisheries and their respective environmental effects. Appropriate significance appears to be allocated to issues of concern (including in response to stakeholder concerns – such as effects on bycatch populations and effects on habitat). Fishery management plans, Environmental Impact Assessments and other assessments are kept under review. No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses. Full conformance continues against all supporting clauses.

1.2 Audit conclusion

Fishery	Status of certification	Comment
Pacific cod commercial fishery employing bottom trawl gear, longline gear, pot gear and jig gear within Alaska jurisdiction (200 nautical miles EEZ), and subjected to federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADF&G) & Board of Fisheries (BOF)] management.	**Certified**	Following the results of the 4th surveillance audit finalized in June 2017, the assessment team concludes that the RFM Certificate for this fishery shall remain active until the certificate expiry date of 16 April 2018. The fishery has entered the re-assessment process on the 16th May 2017 and it is expected that the fishery will be covered by the new certificate when the current certificate expires.

2 GENERAL INFORMATION

Table 1 General information

Fishery name	Alaska Cod Fishery			
Unit(s) of Assessment (UoA)	Applicant Group:	Alaska Cod Fishery Client Group		
	Product Common Name (Species):	Pacific cod (Gadus macrocephalus)		
	Geographic Location:	Gulf of Alaska and Bering sea & Aleutian Islands within Alaska jurisdiction (200 nautical miles EEZ).		
	Gear Types:	Bottom trawl, Longline, Pot and Jig gear		
	Principal Management Authority:	National Marine Fisheries Service; North Pacific Fishery Management Council; Alaska Department of Fish and Game; Alaska Board of Fisheries		
Date certified	17 April 2013	Date of certificate expiry	16 April 2018	
Surveillance type	Off-site surveillance/document review			
Date of surveillance audit	1-16 June 2017			
Surveillance stage	1st Surveillance			
	2nd Surveillance			
	3rd Surveillance			
	4th Surveillance	**X**		
	Other (expedited etc)			
Surveillance team	Lead assessor: Anna Kisseleva Assessor(s): Andrew Hough, Bill Brodie, Paul Knapman			

This report contains the findings of the fourth annual RFM Fisheries surveillance audit conducted for the Alaska cod fishery during 1-16 June 2017.

The Alaska RFM programme is a voluntary program that has been developed by ASMI to provide an independent, third- party certification that can be used to verify that these fisheries are responsibly managed according to the Alaska RFM standard.

The Alaska RFM Certification programme uses the fundamental clauses of the Alaska RFM Conformance Criteria Version 1.3 and is in accordance with ISO 17065 accredited certification procedures. The assessment is based on the fundamental clauses specified in the Alaska RFM Conformance Criteria. It is based on six major components of responsible management derived from the FAO Code of Conduct for Responsible Fisheries (1995) and Guidelines for the Eco-labeling of products from marine capture fisheries (2009). The fundamental clauses are:

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

The purpose of this annual Surveillance Report is:

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

3 ASSESSMENT TEAM DETAILS

Anna Kiseleva
DNV GL Lead Assessor:

Anna is a senior assessor responsible for MSC Fisheries and RFM certification schemes at DNV GL Business Assurance. She holds MSc degree in International fisheries management from the University of Tromsø and MSc degree in Business Management from Murmansk State Technical University. She has over 10 years of experience in the global seafood industry incl. assessment services, consultancy and project management. She is an experienced project management with proven ability to lead cross-disciplinary teams. She has been involved in the delivery of the Fisheries assessment services since 2008.

Andrew Hough
Main area of responsibility
Fundamental clause F (Serious Impacts of the Fishery on the Ecosystem):

Following three years PhD research on crustacean ecology, Andy has worked in the field of marine research and management for over twenty years, including marine conservation biology, fishery impacts on marine ecosystems, marine and coastal environmental impact assessment and policy development.
Andrew has been active in the development of Marine Stewardship Council certification since 1997, when involved in the pre-assessment of the Thames herring fishery. He was a founding Director of Moody Marine and led the establishment of Moody Marine fishery certification systems. He has also worked with MSC on several specific development projects, including those concerned with the certification of small scale/data deficient fisheries. He has been Lead Assessor on many fishery assessments to date. This has included Groundfish (e.g. cod, haddock, pollock, hoki, hake, flatfish), Pelagics (e.g. tuna species, herring, mackerel, sprat, krill, sardine) and shellfish (molluscs and crustacea); included evaluation of the environmental effects of all main gear types and considered many fishery administrations including the North Atlantic, South Atlantic, Pacific, Southern Ocean and in Europe, North America, Australia and New Zealand, Japan, China, Vietnam and Pacific Islands. He has recently acted solely as an expert team member of Principle 2 inputs of European inshore fisheries and Falkland Islands Toothfish. Andrew has also been involved in the development of certification schemes for individual vessels (Responsible Fishing Scheme) and evaluation of the Marine Aquarium Council standards for trade in ornamental aquarium marine species. Consultancy services have included policy advice to the Association of Sustainable Fisheries, particularly with regard to the implications of MSC standard development, and assistance to fisheries preparing for, or engaged in, MSC assessment.

William (Bill) Brodie
Main area of responsibility
Fundamental clause B (Science and Stock Assessment activities) and C (The precautionary approach) and D (Management measures):

Bill Brodie is an independent fisheries consultant with previously, a 36-year career with Science Branch of Fisheries and Oceans Canada (DFO, Newfoundland and Labrador Region). He has a BSc in Biology from Memorial University of Newfoundland and Labrador. For the last twelve years with DFO he

worked as Senior Science Coordinator/Advisor on Northwest Atlantic Fisheries Organization (NAFO) issues, serving as chair of the Scientific Council of NAFO and chairing 3 of its standing committees. As a stock assessment biologist, he led assessments and surveys for several flatfish species and stocks, including American plaice, Greenland halibut, yellowtail and witch flounders. These include the largest stocks of flatfish in the NW Atlantic. He also participated in assessments of flatfish, gadoid, and shrimp stocks in the NE Atlantic and North Sea. Bill has participated in over 30 scientific research vessel surveys on various Canadian and international ships, and he has over 200 publications in the scientific and technical literature, primarily on flatfish stock assessment. He has been involved with fishery managers and the fishing industry on a variety of issues, including identification of ecologically sensitive areas, and developing rebuilding plans for groundfish under a Precautionary Approach. Since retirement from DFO, Bill has been contracted to serve as an assessor on several FAO-based Responsible Fisheries Management certification assessment and surveillance audits for Alaskan stocks including Pacific cod, halibut, sablefish, pollock, and flatfish. He has also provided peer review for an MSC certification assessment for a redfish stock in the Grand Banks area.

Paul Knapman
Main area of responsibility
Fundamental clause A (The Fisheries Management System) and E (Implementation monitoring and control):

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 programme. He developed an extensive programme 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 organisation in England, with responsibility for managing an extensive area of inshore fisheries on the North Sea coast. The organisations 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 fisheries 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 IUU 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 has been involved as a lead assessor, team member and technical advisor/reviewer for more than 50 different fisheries. Paul returned to consultancy in 2015.

4 BACKGROUND TO THE FISHERY

4.1 Fishery description

No material changes occurred within this fishery since the last surveillance audit carried out in October 2016. All information on this fishery could be obtained from the original full-assessment report and subsequent surveillance reports available for the download at: http://www.alaskaseafood.org/rfm-certification/certified-fisheries/alaska-cod/. Catches taken in this fishery are aligned with the numbers from the previous years (2015-2016).

4.2 Original Assessment and Previous surveillance audits

The Alaska Bering Sea/Aleutian Islands and Gulf of Alaska Pacific Cod fisheries were first certified under the requirements of the Alaska Responsible Fisheries Management standard v1.2 on 17th of April 2013. The initial certification and three annual surveillance audits were carried out by the certification body Global Trust (GT).

15.April 2017, the certificate for this fishery was transferred from GT to the DNV GL. The certificate transfer and the fourth surveillance audit carried out by the DNV GL did not result in any changes in the compliance of the fishery with the RFM standard and the certificate remains valid until the original expiry date of 16 April 2018. No non-conformities were raised as the result of the fourth annual surveillance audit and the fishery will proceed to the full re-assessment against the new version of the Alaska Responsible Fisheries Management standard v1.3.

5 THE ASSESSMENT PROCESS

5.1 Meetings attended

No on-site stakeholder consultancy was carried out during the fourth surveillance audit. DNV GL has carefully reviewed the full-assessment report and all subsequent surveillance reports and concluded that the low risk nature of the fishery, absence of conditions and history of excellent compliance with the rules and regulations in the client operations do allow for the remote surveillance audit with the desk-top review of new information only.

5.2 Stakeholder input

The annual surveillance audit for this fishery was publicly announced on 16th of May 2017. No stakeholder input was received by the assessment team.

6 ASSESSMENT OUTCOME SUMMARY/ FUNDAMENTAL CLAUSES SUMMARIES

6.1 The Fisheries Management System (A)

Fundamental Clause 1.

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

No. supporting clauses	17
Applicable supporting clauses	9
Non-applicable supporting clauses	8
Overall level of conformity	High
Non-conformance	0

Summary of Changes and Evidence of continuous compliance.

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

Summarised evidence:
The principle legislative instrument for fisheries management in the U.S. is the MSFCMA, as amended 2007. The MSFCMA, sets ten National Standards (NS) for fishery conservation and management (16 U.S.C. § 1851), with which all FMPs must be consistent[1].

The NMFS implements the MSFCMA and the National Standards. The procedures on how NMFS follows the NSs are published in the US Federal Register at 50 CFR Part 600 subpart D[2]. The NMFS is also charged with carrying out the federal mandates of the U.S. Department of Commerce with regard to commercial fisheries such as approving and implementing FMPs and FMP amendments.

The NPFMC[3] is one of eight regional councils established by the MSFCMA to manage fisheries in the 200-mile Exclusive Economic Zone (EEZ). The NPFMC is authorized to prepare and submit to the Secretary of Commerce for approval, an FMP and any necessary amendments for each fishery under its authority that requires conservation and management actions. The NPFMC primarily manages groundfish in the GoA and BSAI, targeting cod, pollock, flatfish, mackerel, sablefish, and rockfish species. The NPFMC conducts public hearings so as to allow all interested persons an opportunity to be heard in the development of FMPs and amendments, and reviews and revises, as appropriate, the assessments and specifications with respect to the optimum yield from each fishery.

The NPFMC also works very closely with the ADFG[4] and the BOF[5] to coordinate management programs in federal and state waters (0-3 nm from shore). Many fishery resources are harvested in waters under both state and federal jurisdiction. As such, the NPFMC and state work together to address habitat concerns, catch limits, allocation issues, and other management issues through coordination meetings and delegation of management oversight to one agency or the other.

There are seven state-managed Pacific cod regions: Kodiak, Chignik, South Alaska Peninsula, Aleutian Islands, Southeast Alaska, Prince William Sound, and Cook Inlet. Each area supports two distinct Pacific cod fisheries: a parallel and state-waters fishery.

A parallel groundfish fishery occurs where the State allows the federal species total allowable catch

[1] http://www.nmfs.noaa.gov/sfa/laws_policies/msa/.
[2] https://www.law.cornell.edu/cfr/text/50/part-600/subpart-D
[3] https://www.npfmc.org
[4] http://www.adfg.alaska.gov
[5] http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.main

(TAC) to be harvested in State waters. Parallel fisheries occur for pollock, Pacific cod, and Atka mackerel species, for some or all gear types. The parallel fishery is managed by the state adopting most of the NMFS rules and management actions (5 AAC 28.087), including seasons, and catch in this fishery is counted towards federal quotas.

The state-waters fishery is managed independently of the federal/parallel fishery by the ADFG under guidelines developed by the BOF (Guiding principles for groundfish fishery regulations 5 AAC 28.089 and BOF groundfish FMP 5 AAC 28.081).

Six of the seven state-water fisheries are subject to an annual Guideline Harvest Level (GHL) calculated as a percentage of federal fishery quotas.

Conclusion:

No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
1.2 Management measures shall take into account the whole stock unit over its entire area of stock distribution.

1.2.1 The area through which the species migrates during its life cycle shall be considered by the management system.

1.2.2 The biological unity and other biological characteristics of the stock shall be considered within the management system

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

1.2.4 Previously agreed management measures established and applied in the same region shall be taken into account by management.

Summarised evidence:

Pacific cod is distributed widely over the EBS as well as in the AI area and the GOA. They are not considered to be a migratory species. The GOA and BSAI Pacific cod stocks are considered to be different stocks and are managed as two different units.

NMFS, through the Alaska Fisheries Science Centre[6] (AFSC), in Seattle, and the Kodiak Fisheries Research Centre[7] (KFRC), generate the scientific information and analysis necessary for the conservation, management, and utilization of the region's groundfish resources. The state of Alaska also conducts assessments in state waters. With this information, the NPFMC and NMFS produce annual Stock Assessment & Fishery Evaluation (SAFE) reports for each cod stock under federal jurisdiction in the BSAI[8] [9] and GoA[10].

For both the BSAI and the GOA Pacific cod stocks the management organizations collect and share the necessary information on removals and mortality (including natural mortality) of the target stock, as well data on bycatch and discards.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
1.3 Where trans-boundary, straddling or highly migratory fish stocks and high seas fish

[6] https://www.afsc.noaa.gov/default.htm
[7] https://www.afsc.noaa.gov/kodiak/kodiakLab_HOME.php
[8] https://www.afsc.noaa.gov/REFM/Docs/2016/EBSpcod.pdf
[9] https://www.afsc.noaa.gov/REFM/Docs/2016/aipcod.pdf
[10] https://www.afsc.noaa.gov/REFM/Docs/2016/GOApcod.pdf

stocks are exploited by two or more States, the Applicant Management Organizations concerned shall cooperate and take part in formal fishery commission or arrangements that have been appointed to ensure effective conservation and management of the stock/s in question.

1.3.1 Conservation and management measures established for such stock within the jurisdiction of the relevant States for shared, straddling, high seas and highly migratory stocks, shall be compatible. Compatibility shall be achieved in a manner consistent with the rights, competences and interests of the States concerned.

Summarised evidence:
The stocks are not considered to be transboundary stocks.[11]

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment.

Supporting clause:
1.4 Organizations within the Management System cooperate with neighbouring coastal states with respect to common and shared fishery resources for their conservation and for the conservation of the environment.

1.4.1 A state member/participant of a sub-regional or regional fisheries management organization are/may be present in the area in question. These 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/arrangement.

1.4.2 States seeking to take 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

Summarised evidence:
The stocks are not considered to be shared resources exploited by two or more States[11].

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment.

Supporting clause:
1.5 The fishery's management system shall actively foster cooperation between States with regard to:

- **Information gathering and exchange**
- **Fisheries research**
- **Fisheries management**
- **Fisheries Development**

Summarised evidence:
The stocks are not considered to be shared resources exploited by two or more States[11].

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment.

Supporting clause:
1.6 States 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 countries to provide financial

[11] http://www.alaskaseafood.org/wp-content/uploads/2016/03/Form-11-FAOCod-Full-Assessment-Report-FINAL_April_2013.pdf

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 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.

Summarised evidence:
Specific costs incurred during the management, research and enforcement of the groundfish stocks in the BSAI and GoA are reported in the BSAI[12] and GoA[13] Groundfish FMPs (see section 6.2.1 of the 2017 BSAI and GoA FMPs). Generally, funding is through Congressional appropriations.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
1.7 Procedures shall be in place to keep the efficacy of current conservation and management measures and their possible interactions under continuous review to revise or abolish them in the light of new information.

- **Review procedures shall be established within the management system.**
- **A mechanism for revision of management measures shall exist.**

Summarised evidence:
The Pacific cod fisheries are managed under the NPFMC's BSAI and GoA Groundfish FMPs. The FMPs state that the Council will:

- Maintain a continuing review of the fisheries managed under this FMP, and all critical components of the FMP will be reviewed periodically;
- Annually review the objectives in the management policy statement;
- Conduct a complete review of EFH once every 5 years, and in between will solicit proposals on Habitat Areas of Particular Concern and/or conservation and enhancement measures to minimize potential adverse effects from fishing.

The NPFMC have a "Call for Proposals"[14] process where stakeholders and the interested public can request review or revision of existing management measures. The BOF also provides opportunity for input through public notification and their website[15] of upcoming meetings and opportunities to input into the management process.

MSFCMA is periodically revised and reauthorized (i.e. Sustainable Fisheries Act[16] added 3 standards to MSFCMA).

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
1.8 The management arrangements and decision making processes for the fishery shall be organized in a transparent manner.

- **Management arrangements**
- **Decision-making**

[12] https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
[13] https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
[14] https://www.npfmc.org/?s=call+for+proposal
[15] http://www.adfg.alaska.gov/index.cfm?adfg=process.comments
[16] http://www.nmfs.noaa.gov/sfa/laws_policies/msa/sfa.html

Summarised evidence:

The NPFMC, NMFS [17] and ADFG websites provide considerable and, generally, easily accessible information, including management plans, meeting information, minutes, records of decisions.

The NPFMC and the BOF encourage stakeholder participation. The NPFMC meetings can take place in different venues in Alaska and the BOF meets in communities throughout coastal Alaska. Anyone may submit regulatory proposals, which are given due consideration by both the NPFMC and the BOF. Rules impose transparency so that all Board and Council members discussions are open to the public.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
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.

Summarised evidence:
This clause is not applicable as the Alaska flatfish fisheries occur within the US EEZ.

Conclusion:
No evidence of significant change was reported or identified since the 4th surveillance assessment. A high level of conformity continues.

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

Fundamental Clause 2.

Management organizations shall participate in coastal area management institutional frameworks, decision-making processes and activities related to the fishery and its users, in support of sustainable and integrated resource use, and conflict avoidance.

No. supporting clauses	16
Applicable supporting clauses	15
Non-applicable supporting clauses	1
Overall level of conformity	High
Non-conformance	0

Summary of Changes and Evidence of continuous compliance.

Supporting clause:

2.1 An appropriate policy, legal and institutional framework shall be adopted in order to

[17] http://www.nmfs.noaa.gov

achieve sustainable and integrated use of living marine resources, taking into account the fragility of coastal ecosystems, the finite nature of their natural resources and the needs of coastal communities.

2.1.1 States shall develop, as appropriate, institutional and legal frameworks in order to determine the possible uses of coastal resources and to govern access to them taking into account the rights of coastal fishing communities and their customary practices to the extent compatible with sustainable development.

2.1.2 In setting policies for the management of coastal areas, States shall take due account of the risks and uncertainties involved.

Summarised evidence:
In managing the Pacific cod fisheries, the NMFS, in connection with the NPFMC and ADFG, participate in coastal area management-related issues through processes established by the National Environmental Policy Act (NEPA)[18]. NEPA requires that all federal agencies' funding or permitting decisions be made with full consideration of the impact to the natural and human environment. An environmental review process is required that includes a risk evaluation and evaluation of alternatives including a, "no action" alternative. All of the NPFMC proposed regulations and the FMPs include NEPA considerations[19].

The management organizations within Alaska and their management processes take into account the rights of coastal fishing communities and their customary practices to the extent compatible with sustainable development[20] [21].

The NPFMC system was designed so that fisheries management decisions were made at the regional level to allow input from affected stakeholders. NPFMC meetings are open, and public testimony is taken on issues prior to deliberations and final decisions. Public comments are also taken at all Advisory Panel and Scientific and Statistical Committee meetings.

The BOF main role is to conserve and develop the fishery resources of the state. The BOF is charged with making allocative decisions, and ADFG is responsible for management based on those decisions. The BOF meets four to six times per year in communities around the state to consider proposed changes to state fisheries regulations. The board uses the biological and socio-economic information provided by ADFG and public comment, as well as guidance from the Alaska Department of Public Safety and Alaska Department of Law when creating regulations

The Community Development Quota (CDQ) Program[22] was created by the NPFMC in 1992 to provide western Alaska communities an opportunity to participate in the BSAI fisheries that had been foreclosed to them because of the high capital investment needed to enter the fishery. The purpose of the CDQ Program is (i) to provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the Bering Sea and Aleutian Islands Management Area; (ii) to support economic development in western Alaska; (iii) to alleviate poverty and provide economic and social benefits for residents of western Alaska; and (iv) to achieve sustainable and diversified local economies in western Alaska. The program involves eligible communities who have formed six regional organizations, referred to as CDQ groups. There are 65 communities within a fifty-mile radius of the Bering Sea coastline who participate in the program. The CDQ program allocates a percentage of the BSAI quotas to CDQ groups, including pollock, halibut, Pacific cod, crab and bycatch species. The program is reviewed every ten years[23].

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
2.2 Representatives of the fisheries sector and fishing communities shall be consulted in the decision-making processes involved in other activities related to coastal area management planning and development.

[18] https://www.epa.gov/nepa
[19] https://www.epa.gov/nepa/fishery-management-guidance-national-environmental-policy-act-reviews
[20] https://www.npfmc.org/summary-reports/
[21] https://www.npfmc.org/wp-content/PDFdocuments/resources/MSA40Booklet.pdf
[22] https://alaskafisheries.noaa.gov/fisheries/cdq
[23] https://alaskafisheries.noaa.gov/fisheries/cdq-review

Summarised evidence:
As indicated in 2.1 above, all stakeholders are provided with the opportunity to input into the decision-making processes through the NPFMC and BOF processes.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
2.3 Fisheries practices that avoid conflict among fishers and other users of the coastal area shall be adopted.

2.3.1 Procedures and mechanisms shall be established at the appropriate administrative level to settle conflicts which arise within the fisheries sector and between fisheries resource users and other users of the coastal area.

Summarised evidence:

In Pacific cod fisheries, conflict is avoided by allocation to different users. Allocations are made for the trawl, pot, hook-and-line, and jig participants in the federal and state fisheries.

The NPFMC and BOF help to minimize conflict by providing regular opportunity to have concerns and issues raised and presented by stakeholders, information and evidence reviewed and management options considered and decisions taken, in an open manner.

The NEPA process is intended to resolve potential conflicts among users before project approvals are given. Conflict resolution mechanisms include both administrative (through governmental agencies) and legal (through courts of law) procedures. However, in most cases project approvals are withheld until substantive conflicts are resolved.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
2.4 States 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.

2.4.1 The public shall be kept aware on the need for the protection and management of coastal resources and the participation in the management process by those affected.

Summarised evidence:
The NPFMC and BOF provide a wealth of information on their websites, including regulations related to the fisheries. For more remote areas, radio updates are provided, e.g. notice of fishery closure. The agencies public meetings and process ensure awareness and input into the decisions for conservation and management measures and the outcomes.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:

2.5 The economic, social and cultural value of coastal resources shall be assessed in order to assist decision-making on their allocation and use.

Summarised evidence:

As indicated under 2.1.1 above the CDQ program provides an example of how the management system takes account of the allocation and use of coastal resources with respect to their economic, social and cultural value.

Conclusion:
No evidence of significant change was reported or identified since the 4th surveillance assessment. A high level of conformity continues.

Supporting clause:
2.6 In accordance with capacities, measures shall be taken to establish or promote systems research and monitoring of the coastal environment as part of the coastal management process using physical, chemical, biological, economic, social, legal and institutional aspects.

2.6.1 States shall promote multi-disciplinary research in support and improvement of coastal area management, in particular on its environmental, biological, economic, social, legal and institutional aspects.

Summarised evidence:
A considerable amount of monitoring of the coastal environment in Alaska is performed by multiple federal and state agencies, e.g. NMFS, ADFG, US Forest Service[24], US. Fish and Wildlife Service (USFWS)[25], and the as well as many institutions of higher learning, e.g. the University of Alaska Institute of Marine Science[26].

Economic and social parameters are assessed by the staff of the NPFMC, NMFS and ADFG either during the NEPA review of plan amendments or during their on-going studies and evaluations.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
2.7 In the case of activities that may have an adverse transboundary environmental effect on coastal areas, States shall:
- **a) provide timely information and if possible, prior notification to potentially affected States.**
- **b) consult with those States as early as possible.**

Summarised evidence:
This supporting clause was not considered to be applicable at the initial assessment of the fisheries[11]

However, it is noted that the risk of oil pollution[27] and polluted water from coastal mining tailings[28] [29] are examples of potential transboundary environmental effects on the coastal area. Coordination and development of memoranda of cooperation and a Pacific States / British Columbia Task Force to deal with oil and other pollution incidents are examples of facilitating pollution preparedness, prevention and response.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
2.8 States shall cooperate at the sub-regional and regional level in order to improve coastal area management.

[24] https://www.fs.fed.us
[25] https://www.fws.gov
[26] http://www.uaf.edu/cfos/research/institute-of-marine-scien/
[27] https://alaskafisheries.noaa.gov/sites/default/files/oilspillfactsheet1114.pdf
[28] http://www.fpir.noaa.gov/Library/HCD/EFH%20Non-fishing%20NW-SW%202003.pdf
[29] https://alaskafisheries.noaa.gov/sites/default/files/impactstoefh112011.pdf

Summarised evidence:
The Alaskan Pacific cod fishery is managed by federal (NPFMC / NMFS) and state agencies (ADFG / BOF). There is regular and routine cooperation with respect to management and related research between the agencies.

A joint protocol[30] is in place between the NPFMC and ADFG which provides the intent to provide long term cooperative, compatible management systems that maintain the sustainability of the fisheries resources in federal and state waters.

Both agencies are also involved in the NEPA process as indicated in 2.1 above.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
2.9 States shall establish mechanisms for cooperation and coordination among national authorities involved in planning, development, conservation and management of coastal areas.

Summarised evidence:
Alaska has established mechanisms (e.g. NEPA process) for cooperation and coordination among national authorities involved in planning, development, conservation and management of coastal areas. See 2.1 above. Furthermore, The Alaska National Interest Lands Conservation Act[31] (ANILCA) directs federal agencies to consult and coordinate with the state of Alaska.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
2.10 States shall ensure that the authority or authorities representing the fisheries sector in the coastal management process have the appropriate technical capacities and financial resources.

Summarised evidence:
The technical capacities of the federal and state agencies involved in the management of Alaska Pacific cod fisheries are significant, among others they can boast, internationally recognized scientists, seasoned fishery managers and policy makers and highly professional and trained enforcement officers.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
2.11 States and fisheries management organizations and arrangements shall regulate fishing in such a way as to avoid the risk of conflict among fishers using different vessels, gear and fishing methods.

The BSAI and GoA Pacific cod fisheries use trawl, longline, pot, and jig fishing gear. Trawling for cod is not allowed in state waters. No reports of gear conflict with other vessels or gear types targeting other species was provided for this audit.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

[30] https://www.npfmc.org/wp-content/PDFdocuments/meetings/JointProtocol1209.pdf
[31] http://dnr.alaska.gov/commis/opmp/anilca/

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

Fundamental Clause 3.

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

No. supporting clauses	6
Applicable supporting clauses	6
Non-applicable supporting clauses	0
Overall level of conformity	High
Non-conformance	0

Summary of Changes and Evidence of continuous compliance.

Supporting clause:

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

Summarised evidence
Under the MSFCMA, the NPFMC is required to prepare and submit a FMP to the secretary of Commerce for approval for each fishery under its authority that is considered to require conservation and management. In so doing, the FMPs have to be consistent with ten national standards for fishery conservation and management (16 USC § 1851).

The NPFMC has in place groundfish FMPs in the BSAI and GoA that include the Pacific cod fisheries. Within these FMPs there are nine management and policy objectives, that are reviewed annually.

In combination, the requirement for FMPs to be consistent with the national standards and the adoption of their management and policy objectives, the Pacific cod fishery clearly has long-term management objectives.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:

3.2 Management measures shall provide inter alia that:

3.2.1 Excess fishing capacity shall be avoided and exploitation of the stocks remains 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 habitats and ecosystems shall be conserved and endangered

species shall be protected.

3.2.5 Depleted stocks shall be allowed to recover or, where appropriate, shall be actively restored.

Summarised evidence

Managing fishing capacity

In transition from a foreign to an American fishery in the 1980s, the NPFMC initiated a Comprehensive Rationalization Program in 1992 with the aim of maintaining the health of the marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources. In the following years several Amendments to the FMPs were approved limiting the number of participants and the types of groundfish harvest activities and a moratorium on new harvesting vessels entering the groundfish fisheries was implemented, thereby reducing the possibility of significant increases in the number of large-capacity harvesting vessels

In 1995, the NPFMC adopted the Alaska Licence Limitation Program[32] (LLP). The intent of the program has been to use fishing track record to rationalise the Alaska groundfish and crab fleets by limiting the number, size and specific operation of vessels as well as eliminating latent licences.

Economic conditions

As a result, and in combination with good management practices and generally favorable environmental conditions, the Alaskan Pacifc cod fishery has largely remained economically stable since the 1990s[33] and fostered responsible fishing[34]. The longer term economic future of the fishery is also under consideration with respect to adaptation to climate change[35].

The interest of subsistence, small-scale and artisanal fisheries

The interest of subsistence, small-scale and artisanal fisheries are explicitly taken into account within the FMPs, e.g. the CDQ program.

The ADFG management of subsistence fisheries includes coordination with the Federal Subsistence Board[36] and Office of Subsistence Management[37], which also manages subsistence uses by rural residents on federal lands and applicable waters under Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA).

Species protection

The Endangered Species Act[38] (ESA) provides for the conservation and protection of threatened and endangered species and their ecosystems. A species is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. Two federal agencies, the NMFS and the USFWS, are responsible for maintaining lists of species that meet the definition of threatened or endangered under the ESA. NMFS is responsible for maintaining the endangered species list for marine species and managing those species once they are listed.

The ESA requires that management agencies identify and protect critical habitat for all endangered species (Section 7a.4 of the Act).

ADFG is responsible for determining and maintaining a list of endangered species in Alaska under AS 16.20.190[39]. Commissioners of ADFG and Natural Resources must take measures to preserve the natural habitat of fish and wildlife species that are recognized as threatened with extinction.

Depleted stock recovery

Two status determinations are made annually for each stock or stock complex[40]: overfishing status, which describes whether catch is too high; and, overfished status, which describes whether biomass is

[32] https://alaskafisheries.noaa.gov/fisheries/llp

[33] http://ebooks.alaskaseafood.org/ASMI_Seafood_Impacts_Dec2015/pubData/source/ASMI%20Alaska%20Seafood%20Impacts%20Final%20Dec2015%20-%20low%20res.pdf

[34] https://www.afsc.noaa.gov/Education/factsheets/10_Wpoll_FS.pdf

[35] https://www.afsc.noaa.gov/quarterly/jas2012/divrptsREFM5.htm

[36] https://www.doi.gov/subsistence/board

[37] https://www.doi.gov/subsistence

[38] http://www.nmfs.noaa.gov/pr/laws/esa/

[39] http://www.touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter20/Section190.htm

[40] https://alaskafisheries.noaa.gov/sites/default/files/pseis0604-app_f1.pdf

too low.

An Over Fishing Limit (OFL) is set at the end of the preceding calendar year on the basis of the most recent stock assessment. For each stock, a determination of status with respect to overfishing is made in-season as the fisheries are monitored to prevent exceeding the TAC.

In the event that overfishing is determined to have occurred, an in-season action, an FMP amendment, a regulatory amendment or a combination of these actions will be implemented to end such overfishing immediately.

A stock or stock complex is determined to be overfished if it falls below the minimum stock size threshold (MSST). According to the National Standard Guidelines definition, the MSST equals whichever of the following is greater: One-half the Maximum Sustainable Yield (MSY) stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years, if the stock or stock complex were exploited at the Maximum Fishing Mortality Threshold (MFMT) (also called the "OFL control rule"). This is the level of mortality that is considered to jeopardise the ability of the stock or stock complex to produce MSY on a continuing basis.

Within two years of such time as a stock or stock complex is determined to be overfished, an FMP amendment or regulations will be designed and implemented to rebuild the stock or stock complex to the MSY level within a time period specified at Section 304(e)(4) of the MSFCMA. If a stock is determined to be in an overfished condition, a rebuilding plan would be developed and implemented for the stock, including the determination of an F_{OFL} and F_{MSY} that will rebuild the stock within an appropriate time frame.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

6.2 Science and Stock Assessment Activities (B)

Fundamental Clause 4.

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

No. Supporting clauses	**14**
Supporting clauses applicable	**11**
Supporting clauses not applicable	**3**
Overall level of conformity	**HIGH**
Non Conformances	**0**

Summary of Changes and Evidence of continuous compliance.

4.1. (Incl. 4.1.1., 4.1.2.) Reliable and accurate data required for assessing the status of fisheries and ecosystems - including data on retained catch of fish, bycatch, discards and waste shall be collected.
All fishery removals and mortality of P. cod are considered in the assessment and management of the stock. Reliable and accurate data are provided annually to assess the status of P. cod fisheries and ecosystems. These data include information on retained catch, discards and by-catch, and catches in the

Alaskan state-managed fisheries (inside 3 n. mi.), including sport, recreational, subsistence, research, and bait fisheries.

Reporting of commercial catch from both state and federally managed fisheries is done through the Catch Accounting System (CAS), a multi-agency (NMFS, IPHC and ADF&G) system that centrally collates landings data from shore based processing and landings operations as well as retained catch observations from individual vessels. The CAS system also provides a centralized data platform for the collation of catch (landings and discards) data from the extensive observer program. Catch and effort are recorded through the e-landing (electronic fish tickets) system and also collected by vessel captains in logbooks. Landings are verified by shore-based observers, and estimates of discards in the P. cod fisheries are compiled from fishing logbooks and at-sea observer data. Catch reports for P. cod in the BSAI[41] and GOA[42] Regions for 2016 can be found on the NMFS Alaskan fisheries website. Additional details on the catch reporting and estimation processes are readily available[43], and more information on commercial P. cod catches can be found in the 3 P. cod SAFE documents from 2016[44, 45, 46]. Removals from the sport fishery are relatively minor for P. cod but have been increasing in recent years in GOA. Total removals from activities other than the directed fishery were estimated to be at an average level of about 8900 t in EBS in 2013-15, almost all of which was taken as bait for the crab fishery. The average for GOA in 2013-15 was about 360 t, approximately half of which was from the sport fishery, and less than 50 t on average was estimated for the AI area for the same period.

4.2. An observer scheme designed to collect accurate data for research and support compliance with applicable fishery management measures shall be established.
An extensive industry-funded on-board observer program exists in Alaskan waters to cover various fisheries, including P. cod. Amendments to the program were introduced in 2013 to increase the statistical reliability of data collected by the program, address cost inequality among fishery participants, and expand observer coverage to previously unobserved fisheries (e.g. some vessels less than 60 feet). In addition to observer coverage, electronic monitoring is being introduced by NPFMC, and at-sea work has proceeded under this initiative in 2015 and 2016. Vessels under 40 feet LOA are excluded from observer coverage at present, but this fleet segment took less than 0.5% of the P. cod catch in the three stock areas combined during 2013-15. Data from the observer program are used extensively in the stock assessments, and details on the amended program are published and available on the NMFA website[47]. Extensive information on the sampling program carried out by the observers, including collection of biological data on P. cod, is extensive and available in NMFS/AFSC publications.[48]

4.3. (Incl. 4.3.1.) Sufficient knowledge of social, economic and institutional factors relevant to the fishery in question shall be developed through data gathering, analysis and research.
Data on P. cod collected from surveys and fisheries are analysed and presented in peer reviewed meetings and/or in primary literature, following rigorous scientific protocols. Data are widely available on NMFS and ADF&G websites and results of analyses are disseminated in a timely fashion through numerous methods, including scientific publications, at various publically-attended meetings, and as information on the various websites, in order to contribute to fisheries conservation and management. Confidentiality of commercial fishery information is fully respected where necessary, such as in the analysis of CPUE data involving a small number of vessels or fishers.

4.4. States shall stimulate the research required to support national policies related to fish as food.
State and national policies regarding seafood are guided by the Alaska Seafood Marketing Institute (ASMI), U.S. Food and Drug Administration (FDA), U.S. Department of Agriculture (USDA), and the U.S. National Institute of Health (NIH). ASMI[49] is the state agency primarily responsible for increasing the economic value of Alaskan seafood through marketing programs, quality assurance, industry training and sustainability certification. ASMI's role includes conducting or contracting for scientific research to develop and discover health, dietetic, or other uses of seafood harvested and processed in the state.

[41] https://alaskafisheries.noaa.gov/sites/default/files/reports/car110_bsai_with_cdq2016.pdf
[42] https://alaskafisheries.noaa.gov/sites/default/files/reports/car110_goa2016.pdf
[43] Cahalan et al. 2014. https://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-286.pdf
[44] Thompson. 2016. https://www.afsc.noaa.gov/REFM/Docs/2016/EBSpcod.pdf
[45] Barbeaux et al. 2016. https://www.afsc.noaa.gov/REFM/Docs/2016/GOApcod.pdf
[46] Thompson and Palsson. 2016. https://www.afsc.noaa.gov/REFM/Docs/2016/aipcod.pdf
[47] Faunce. 2013. http://www.afsc.noaa.gov/Quarterly/jfm2013/JFM2013-Feature.pdf
[48] http://www.afsc.noaa.gov/FMA/Manual_pages/MANUAL_pdfs/manual2015.pdf
[49] **Error! Hyperlink reference not valid.**http://www.alaskaseafood.org

Through the University of Alaska Fairbanks, the state of Alaska also operates the Kodiak Seafood and Marine Science Center (KSMSC)[50] , which directs efforts in several fields, including seafood processing technology, and seafood quality and safety. KSMSC staff work closely with the fishing industry to convey research results and provide educational opportunities that help seafood workers improve efficiency and the quality of their products.

4.5. States shall ensure that the economic, social, marketing and institutional aspects of fisheries are adequately researched and that comparable data are generated for ongoing monitoring, analysis and policy formulation.
Economic and social data are collected and analysed by various organisations, such as NMFS, NPFMC, and ADF&G. An extensive report from NMFS/AFSC is produced each year providing data and analysis on a number of socioeconomic factors in Alaskan fisheries such as P. cod, including catch volumes and values, numbers of vessels, employment, and marketing[51]. These data, along with analyses conducted by/for NPFMC and ADF&G, are adequate for ongoing monitoring, analysis and policy formulation for the P. cod fisheries. Agencies such as NPFMC are required to consider the impact of their rules (e.g. Fishery Management Plans[52], Fishing Regulations) on small entities (fisher communities) and to evaluate alternatives that would accomplish the objectives of the rules without unduly burdening small entities when the rules impose a significant economic impact on them. This NPFMC approach explicitly recognizes the need to balance competing uses of resources and different social and economic goals for sustainable management.

4.6. States shall investigate and document traditional fisheries knowledge and technologies, in particular those applied to small scale fisheries, in order to assess their application to sustainable fisheries conservation, management and development.
All available P. cod data from small and large scale fisheries, including personal use and subsistence, are considered in the stock assessment and management processes. Data from both federal and state-managed fisheries are included in the SAFE documents.

4.7, 4.8 States conducting scientific research activities in waters under the jurisdiction of another State shall ensure that their vessels comply with the laws and regulations of that State and international law.
Scientific research carried out in the waters of USA and Canada, the only 2 countries involved in the science and management of this resource, is compliant with all relevant laws and regulations of those jurisdictions. Data from the annual setline survey (targeting P. halibut) conducted by IPHC, using commercial vessels from USA and Canada, have been considered as indices of P. cod abundance. In 2015 the survey encompassed both nearshore and offshore waters of southern Oregon, Washington, British Columbia, southeast Alaska, the central and western Gulf of Alaska, Aleutian Islands, and the Bering Sea continental shelf[53]. Thus only the waters under jurisdiction of USA and Canada were surveyed. Survey activities were compliant with all laws and regulations of those countries, registered commercial halibut vessels were chartered, and all catches in the survey were recorded and reported. None of the other surveys used for P. cod assessments cross any international boundaries and there is no research on the Alaskan P. cod stocks conducted on the high seas.

Supporting clauses 4.9 – 4.11. As there are no developing countries involved in the P. cod fisheries, and the fisheries are well established, these clauses are not relevant.

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

[50] http://www.uaf.edu/sfos/about-us/locations/kodiak/about-ksmsc/
[51] Fissel, et al. 2016. http://www.afsc.noaa.gov/refm/docs/2016/economic.pdf
[52] http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
[53] Henry et al. 2016. http://www.iphc.int/publications/rara/2016/IPHC-2016-RARA-26-R-2016RARAfullversion.pdf

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.

No. Supporting clauses	**11**
Supporting clauses applicable	**11**
Supporting clauses not applicable	**0**
Overall level of conformity	**HIGH**
Non Conformances	**0**

Summary of Changes and Evidence of continuous compliance.

5.1. (Incl. 5.1.1) States shall ensure that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science. The research shall be disseminated accordingly. States shall also ensure the availability of research facilities and provide appropriate training, staffing and institution building to conduct the research, taking into account the special needs of developing countries.
There is a well-established process in place to peer review all appropriate research, stock assessment and management of the P. cod resource in Alaska. This includes review and production of annual SAFE documents, as well as research and assessment of P. cod by ADF&G in state-managed waters. NMFS has a well-established institutional framework for research developed within the Alaska Fisheries Science Center (AFSC), and operates several labs and Divisions dedicated to fisheries monitoring, analysis, assessment and conservation.

As outlined in the NPFMC FMPs[54], scientists from the AFSC, ADF&G, other agencies, and universities prepare a Stock Assessment and Fishery Evaluation (SAFE) report annually. The SAFE report consists of three volumes: a volume containing stock assessments, one containing economic analysis, and one describing ecosystem considerations. Chapters of the assessment volume deal with each stock assessment and are referenced in Fundamental 4 above. The SAFE report is scientifically based, considers all available research on P. cod, and provides information to NPFMC for determining annual harvest specifications, documenting significant trends or changes in the stocks, marine ecosystem, and fisheries. This document is reviewed first by the NPFMC Groundfish Plan Team, then by the Scientific and Statistical Committee (SSC) and Advisory Panel, and finally by the full Council. Upon review and acceptance by the SSC, the SAFE report and any associated SSC comments constitute the best scientific information available for purposes of the Magnuson-Stevens Act. NPFMC actively encourages stakeholder participation, and all Council deliberations are conducted in open, public sessions.

In 2016, NMFS requested the Center for Independent Experts (CIE)[55] to conduct a peer review of the agency's stock assessments of EBS and AI P. cod. The CIE is a group that provides independent peer reviews of NMFS science nationwide, including reviews of stock assessments for fish and marine mammals. The 2016 CIE Review of assessments of P. cod stocks in the Eastern Bering Sea (EBS) and Aleutian Islands (AI) was conducted by Robin Cook, Jean-Jacques Maguire, and Neil Klaer, and each member of the Panel wrote his own independent report[56] .

ADF&G has two employees who are members of the NPFMC's Scientific and Statistical Committee (SSC). ADF&G scientists conduct research associated with sampling commercial fishery catches, conducting trawl surveys, estimation of catch, and analysis of fishery-dependent data, and collect biological and economic data as basis for the setting of P. cod management objectives. ADF&G manages the smaller-scale parallel and state water P. cod fisheries by determining the Guideline Harvest Level (GHL) and monitoring catches to ensure the GHL is not exceeded in any area. For example, the guideline harvest

[54] http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
[55] https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/index
[56] CIE reviews. https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/cie-review-2016

level (GHL) for the Aleutian Islands District state-waters P. cod season in 2015 was set at 3% of the estimated ABC of P. cod for the federal BSAI Area[57].

Appropriate research is conducted into all aspects of fisheries by NMFS, ADF&G, and researchers from universities and other agencies. Data gaps and research priorities are published in the annual SAFE documents, and biology, ecology, stock assessment, and environmental science are all covered there. Economic analyses and social science are conducted by NMFS/AFSC (Fissel et al. 2016), and ADF&G. All results of research are available to the public in understandable fashion, and thus the best scientific evidence is made readily available as a contribution to fisheries conservation and management. Research facilities and appropriate training are provided at a number of locations in Alaska, including the University of Alaska and the University of Alaska Fairbanks Kodiak Seafood and Marine Science Center.

The Bering Sea Project, a partnership between the North Pacific Research Board (NPRB) and the National Science Foundation, is studying the Bering Sea ecosystem from atmospheric forcing and physical oceanography to humans and communities, as well as socio-economic impacts of a changing marine ecosystem. Scientists and researchers from a number of agencies and universities are involved. Ecosystem modelling, sound data management, and education and outreach activities are included in the program. An example of this research is the publication by Farley et al. (2014) on P. cod biology and climate states in the EBS. An integrated GOA Ecosystem project, funded by the NPRB, is examining recruitment processes of major groundfish species.

5.2. (Incl. 5.2.1.) The state of the stocks under management jurisdiction, including the impacts of ecosystem changes resulting from fishing pressure, pollution or habitat alteration shall be monitored.
The NMFS, ADF&G, and University of Alaska[58] all have established research programs to monitor the state of the P. cod stocks and effects of fishing, pollution, habitat alteration and climate change. Clause 5.1 above documents the assessment procedures used to evaluate impacts of fishing on the P. cod stocks. NPFMC receives comprehensive presentations on the status of Alaska's marine ecosystems (Gulf of Alaska and Bering Sea) at its SSC and Advisory Panel meetings[59], as part of its annual management process for Alaskan groundfish including P. cod. These are prepared and presented by NMFS scientists, and contain report cards which look at a wide range of environmental and ecosystem variables, such as physical and environmental trends, zooplankton biomass, predator and forage species biomass, and seabird and marine mammal data.

The NPRB has developed two special projects that seek to understand the integrated ecosystems of the BSAI[60] and GOA[61]. For example, in the Gulf of Alaska Integrated Ecosystem Research Program, more than 40 scientists from 11 institutions are taking part in the $17.6 million GOA ecosystem study that looks at the physical and biological mechanisms that determine the survival of juvenile groundfish in the eastern and western Gulf of Alaska. NOAA identifies essential fish habitats (EFH) for managed species and conserves habitats from adverse effects on those habitats. NMFS and NPFMC must describe and identify EFH in fishery management plans (FMPs), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH[62] .

5.3(include 5.4). Management organizations shall cooperate with relevant international organizations to encourage research in order to ensure optimum utilization of fishery resources.
The only two nations involved in the P .cod fishery in the eastern North Pacific are Canada and the USA. This is also the only relevant transboundary issue for P .cod. The resources in each nation's waters are managed separately, and each nation conducts surveys that occur in adjacent geographical areas, as well as a halibut-directed survey conducted by IPHC that covers areas in the EEZs of both countries, and is used in P. cod stock assessments. There is cooperation on various aspects of research, stock assessment, and management of P. cod between the fisheries agencies (e.g. DFO and NMFS) of Canada and USA, including involvement of scientists in the stock assessments. There have been occasional cooperative research projects with other nations, mostly occurring prior to the 1990's (for an example, see Brown 1986).

[57] http://www.ADF&G.alaska.gov/FedAidPDFs/FMR14-58.pdf
[58] https://www.uaf.edu/sfos/research/fisheries/
[59] Zador (ed.). 2015. https://www.afsc.noaa.gov/REFM/Docs/2015/ecosystem.pdf
[60] http://www.nprb.org/bering-sea-project
[61] http://www.nprb.org/gulf-of-alaska-project
[62] http://www.npfmc.org/habitat-protections/essential-fish-habitat-efh/

5.5. (Incl. 5.5.1. and 5.5.2.) Data generated by research shall be analysed and the results of such analyses published in a way that ensures confidentiality is respected, where appropriate.
Scientific data from various sources are analysed and presented in peer reviewed meetings and/or in primary literature, following scientific protocols. Results of these analyses are disseminated widely in a timely fashion through numerous methods, including scientific publications, as information on websites of various agencies, and at public meetings, in order to contribute to P. cod fisheries conservation and management. Confidentially is required by Alaska Statute 16.05.815 Confidential Nature of Certain Reports and Records, and data is redacted in reports when necessary. The nature of the confidentiality is sometimes determined by the number of individuals or entities contained in the dataset.

5.6. Studies shall be promoted which provide an understanding of the costs, benefits and effects of alternative management options designed to rationalize fishing, in particular, options relating to excess fishing capacity and excessive levels of fishing effort.
5.7. In the evaluation of alternative conservation and management measures, their cost-effectiveness and social impact shall be considered.
Mechanisms have been established to reduce capacity to levels commensurate with sustainable use of the P. cod resource in Alaska. These include harvest control rules on the catch and effort management side, a licence limitation program, and reduction of the number of vessels through industry-based initiatives. Fishing fleet capacity is regularly monitored, and results published in annual SAFE reports (e.g. Fissel et al. 2016). Authorizations to fish are controlled by NMFS and ADF&G authorities, under various tightly controlled regulations (see Fundamental 8 for more detailed information on the regulations).

NPFMC is required to consider the impact of their rules (e.g. Fishery Management Plans[63], Fishing Regulations) on small entities (fisher communities) and to evaluate alternatives that would accomplish the objectives of the rules without unduly burdening small entities when the rules impose a significant economic impact on them. This NPFMC approach explicitly recognizes the need to balance competing uses of resources and different social and economic goals for sustainable management.

As noted in Clause 2.5 above, the Western Alaska Community Development Quota (CDQ) Program[64] was created by the NPFMC in 1992 to provide western Alaska communities an opportunity to participate in the BSAI fisheries that had been foreclosed to them because of the high capital investment needed to enter the fishery. The CDQ Program allocates a percentage of all Bering Sea and Aleutian Islands quotas for groundfish, prohibited species, halibut, and crab to eligible communities.

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continue.

6.3 The Precautionary Approach (C)

Fundamental Clause 6.

The current state of the stock shall be defined in relation to reference points or relevant proxies or verifiable substitutes allowing for effective management objectives and targets. Remedial actions shall be available and taken where reference point or other suitable proxies are approached or exceeded.

No. Supporting clauses	**5**

[63] http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
[64] NPFMC Community Development Quota Program http://www.npfmc.org/community-development-program/

Supporting clauses applicable	**5**
Supporting clauses not applicable	**0**
Overall level of conformity	**HIGH**
Non Conformances	**0**

Summary of Changes and Evidence of continuous compliance.

6.1. (Incl. 6.1.1., 6.1.2., 6.1.3., 6.1.4., 6.1.5.) States shall determine for the stock both safe targets for management (Target Reference Points) and limits for exploitation (Limit Reference Points), and, at the same time, the action to be taken if they are exceeded.

National Standard 1 of the MSFCMA requires that conservation and fisheries management measures prevent overfishing while achieving optimal yield for each fishery on a continuing basis. The status of US fish stocks is determined by 2 metrics. The first is the relationship between the actual exploitation level and the overfishing level (OFL). If the exploitation level (or fishing mortality) exceeds the FOFL, the stock is considered to be subject to overfishing. The second is the relationship between the stock size and the minimum stock size threshold (MSST). If the stock size is below the MSST it is considered to be overfished. A stock is considered to be approaching an overfished condition when it is projected that there is >50% chance that the biomass of the stock or stock complex will decline below the MSST within 2 years.

Target reference points for biomass and fishing mortality (harvest rate) have been developed for the P. cod stocks based on sound scientific analyses. Exploitation levels for the individual management areas in GOA are established separately (by apportionment) to ensure that localized overfishing of P. cod does not occur.The BSAI and GOA groundfish fishery management plans[65] have pre-defined harvest control rules that define a series of target and limit reference points for P. cod and other groundfish covered by these plans. Each SAFE report describes the current fishing mortality rate, stock biomass relative to the target and limit reference points. Both management plans specify the Overfishing Limits (OFL) and the Fishing mortality rate (FOFL) used to set OFL, Acceptable Biological Catch (ABC) and the fishing mortality rate (FABC) used to set ABC, the determination of each being dependent on the knowledge base for each stock. The overall objectives of the management plans are to prevent overfishing and to optimize the yield form the fishery through the promotion of conservative harvest levels while considering differing levels of uncertainty. Another limit reference point used in managing groundfish in the BSAI and GOA is the optimum yield (OY). The sum of the TACs of all groundfish species (except Pacific halibut) is required to fall within a given range. The range for BSAI is 1.4 to 2.0 million t; the range for GOA is 116 to 800 thousand t. In practice, only the upper OY limit in the BSAI Region has been a factor in altering harvests.

The management plan classifies each stock based on a tier system (Tiers 1-6) with Tier 1 having the greatest level of information on stock status and fishing mortality relative to MSY considerations. In the NPFMC tier system, the EBS and GOA P. cod stocks are currently managed under Tier 3a, indicating that biomass is above B40%. P. cod in the AI region is managed under Tier 5. The NPFMC harvest control rule is biomass-based, and fishing mortality is constant when biomass is above the B40% target, declining linearly down to a threshold value when biomass drops below the target, consistent with the precautionary approach. Below B20%, the MSST limit, FOFL is set to zero and there is no directed fishing permitted. The rule used to determine the Acceptable Biological Catch (ABC) is applied in exactly the same manner, i.e. based on a harvest control rule triggered by targets and limits, and below the MSST limit, maxFABC is set to zero.

Each SAFE report describes the current fishing mortality rate, stock biomass relative to the target and limit reference points. Management plans specify the Overfishing Limits (OFL) and the Fishing mortality rate (FOFL) used to set OFL, Acceptable Biological Catch (ABC) and the fishing mortality rate (FABC) used to set ABC, the determination of each being dependent on the knowledge base for each stock. The 2016 SAFE documents for EBS and GOA P.cod (Thompson 2016; Barbeaux et al. 2016) determined the current stock sizes compared to the various reference points. Based on these values, and comparing the 2015 catch to the 2015 OFL, by definition, these P. cod stocks are not being subjected to overfishing, are not currently overfished, and are not approaching an overfished condition. The recommended ABC

65 NPFMC Fisheries Management Plans http://www.npfmc.org/fishery-management-plans/

values for these stocks for 2016 were based on the Tier 3a criteria (FOFL = F35%, and FABC < F40%). In the 2016 SAFE for P. cod in AI (Thompson and Palsson 2016), the authors recommend that the ABC be set using the Tier 5 criteria, and estimated that current stock biomass is about 2.8 times the OFL. The recommended ABC levels for P. cod for 2016 EBS, GOA, and AI stocks are 239, 88 and 21.5 (all values in thousand mt). Therefore, these three P. cod stock components are substantially above the MSST values that would trigger the management action outlined in the HCR, and the ABCs for GOA and EBS are set based on the stock being above B40%.

The following table is from the 2016 SAFE for EBS P. cod (Thompson 2016). The same type of table is also presented for the GOA and AI stocks in those 2016 SAFE documents.

Quantity	As estimated or *specified last* year for:		As estimated or *recommended this* year for:	
	2016	2017	2017*	2018*
M (natural mortality rate)	0.34	0.34	0.36	0.36
Tier	3a	3a	3a	3a
Projected total (age 0+) biomass (t)	1,830,000	1,780,000	1,260,000	1,110,000
Projected female spawning biomass (t)	466,000	530,000	327,000	340,000
$B_{100\%}$	806,000	806,000	620,000	620,000
$B_{40\%}$	323,000	323,000	248,000	248,000
$B_{35\%}$	282,000	282,000	217,000	217,000
F_{OFL}	0.35	0.35	0.38	0.38
$maxF_{ABC}$	0.30	0.30	0.31	0.31
F_{ABC}	0.22	0.22	0.31	0.31
OFL (t)	390,000	412,000	284,000	302,000
maxABC (t)	332,000	329,000	239,000	255,000
ABC (t)	255,000	255,000	239,000	255,000
Status	As determined *last* year for:		As determined *this* year for:	
	2014	2015	2015	2016
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 255,000 t, 203,000 t, and 212,000 t in 2016, 2017, and 2018, respectively.

For the 8 Alaskan state fisheries for P. cod, there are no specific overfishing definitions or reference points, but it is important to note that the federal fisheries are not allocated the full ABC for the stocks, and a portion is allocated to state fisheries. These state fisheries appear to be well managed, and in recent years have taken catches of P. cod below the overall state-set GHL levels.

Extensive oceanographic monitoring is carried out in conjunction with the various surveys in Alaskan waters, as described in Clause 4. Monitoring of the Pacific Decadal Oscillation (PDO) regimes, a standard indicator of productivity in the north Pacific, is conducted, along with analyses of its potential impacts on productivity of North Pacific stocks, including P. cod. In addition, comprehensive Ecosystem Reports for BSAI and GOA are presented to NPFMC annually (e.g. Zador (ed). 2015), which look at numerous elements of the Alaskan Ecosystems (see Clause 5.2 for more details).

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

Fundamental Clause 7.

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

No. Supporting clauses	**6**
Supporting clauses applicable	**6**
Supporting clauses not applicable	**0**
Overall level of conformity	**HIGH**
Non Conformances	**0**

Summary of Changes and Evidence of continuous compliance.

7.1. (Incl. 7.1.1., 7.1.2) The precautionary approach shall be applied widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment.

Precautionary approach-based reference points are used in the management of the P. cod stocks, as described extensively in Clause 6. The scientific information and stock assessments available (as described in Clauses 4 and 5) are at a consistently high level, and provide the necessary basis for conservation and management decisions. Scientific advice for management of the stocks is presented for different harvest levels (e.g. Thompson 2016), which explains the risk of biomass levels being below the adopted reference points. State-managed P. cod resources are managed with GHLs, and make use of adjacent federal-based reference points and precautionary approaches where possible.

The scientific information available for these P. cod resources is of a very high standard, and includes long time series of catch and fishery data, as well as fishery independent data. The annual NMFS/NPFMC stock assessments are of excellent quality, are reviewed at multiple levels (e.g. NPFMC's SSC and Advisory Panel), and are externally reviewed on a regular basis (e.g. CIE). Details of the data and assessment are in Clauses 4 and 5. Where data gaps have been identified, the NMFS/AFSC has ongoing research programs capable of addressing these needs. Organizations such as NPRB allow scientists from a number of disciplines and agencies to work collaboratively on a variety of fishery related studies in Alaskan waters, including some on P. cod. Research is conducted by ADF&G on the state-managed P. cod resources.

7.2. (Incl. 7.2.1., 7.2.2., 7.2.3,7.3.) For new and exploratory fisheries, procedures shall be in place for promptly applying precautionary management measures, including catch or effort limits.

Virtually all current fisheries for P. cod, including trawl, longline and pot gear, are well established and have existed for many years, and thus there is little or no exploratory fishing. Catch and/or effort limits exist for all fleet sectors, and entry into the commercial fishery is limited. Any new fisheries/entrants to the fishery are subject to the existing conservation and management measures, which are extensive. New measures governing gear types or operations are subject to a long public advisory process within NPFMC and NMFS and often involve periods of experimental fishing before being implemented.

There are pre-agreed NPFMC harvest control rules in place to ensure overfishing does not occur on the P. cod stocks, as noted in Clause 6. In addition the NPFMC FMPs contain the following specific clause: "In the event that a stock or stock complex is determined to be approaching a condition of being overfished, an in-season action, an FMP amendment, a regulatory amendment or a combination of these actions will be implemented to prevent overfishing from occurring[66]". The FMPs also note that information and data relating to stock status may become available to NPFMC during the course of a fishing year which could necessitate in-season adjustments to a fishery. Certain changes warrant swift action by NMFS to protect the resource from biological harm by instituting gear modifications or adjustments through closures or restrictions. Other changes warrant action to provide greater fishing opportunities for the industry by instituting time or area adjustments through openings or extension of a season beyond a scheduled closure. Other in-season actions may be necessary for interim fishery closures to reduce prohibited species (e.g. halibut) bycatch rates and the probability of premature attainment of PSC limits.

[66] http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Section 679.25 of the Federal Fishing Regulations for Fisheries of the Exclusive Economic Zone off Alaska deals with NMFS in-season adjustments. These adjustments include closure, extension, or opening of a season in all or part of a management area; modification of the allowable gear to be used in all or part of a management area; adjustment of TAC, MRA, and PSC limits; and interim closures of statistical areas, or portions thereof, to directed fishing for specified groundfish species. Any in-season adjustment taken must be based on a determination that such adjustments are necessary to prevent one of a number of conditions from occurring, including overfishing of any species or stock of fish or shellfish[67].

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

6.4 Management Measures (D)

Fundamental Clause 8.

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

No. Supporting clauses	**10**
Supporting clauses applicable	**10**
Supporting clauses not applicable	**0**
Overall level of conformity	**HIGH**
Non Conformances	**0**

Summary of Changes and Evidence of continuous compliance.

Management measures:
8.1. (Incl 8.1.1) Conservation and management measures shall be designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of optimum utilization, and be based on verifiable and objective scientific and/or traditional sources. In the evaluation of alternative conservation and management measures, their cost-effectiveness and social impact shall be considered.
The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) is the primary domestic legislation governing management of the USA marine fisheries. The act establishes MSY as the basis for fishery management and requires that: the fishing mortality rate does not jeopardize the capacity of a stock or stock complex to produce MSY; the abundance of an overfished stock or stock complex be rebuilt to a level that is capable of producing MSY; and OY not exceed MSY. NPFMC FMPs for GOA and BSAI Regions present long-term management objectives for the Alaska P. cod fishery. These include sections that describe a Summary of Management Measures and Management and Policy Objectives. The MSFCMA sets out ten national standards for fishery conservation and management, with which all fishery management plans must be consistent. Under the direction of the NPFMC, the GOA and BSAI FMPs define nine management and policy objectives that are reviewed annually, and include preventing overfishing, promoting sustainable fisheries and communities, and promoting equitable and efficient use of fishery resources. The approach used by NPFMC for P. cod includes the best scientific advice available, and decisions are based on a precautionary approach which includes harvest control rules (outlined in previous clauses).
In state waters (0-3 nm), eight P. cod state fisheries are managed by the ADF&G and the Alaska BOF. Each area supports two distinct Pacific cod fisheries: a) the first fishery is managed concurrent to the

[67] https://alaskafisheries.noaa.gov/sites/default/files/part679_all.pdf

federal BSAI or GOA fishery and is referred to as the parallel fishery; b) the second fishery in each area is referred to as the state-waters (or state-managed) fishery. A parallel groundfish fishery occurs where the State allows the federal species total allowable catch (TAC) to be harvested in State waters. The parallel fishery is managed by the state adopting most of the NMFS rules and management actions, including seasons, and catch in this fishery is counted towards federal quotas. The second fishery in each area is referred to as the state-waters (or state-managed) fishery. The state-waters fishery is managed independently of the federal/parallel fishery by the ADF&G under guidelines developed by the BOF. Seven of the eight state-water fisheries are subject to an annual Guideline Harvest Level (GHL) calculated as a percentage of federal fishery quotas, while the eighth has a Guideline Harvest Range. Although there is not a full suite of reference points for these resources, the state fisheries appear to be well managed, with recent catches often being less than the specified GHLs.

NPFMC uses a multi-tier precautionary approach, which includes Optimal Yield (OY) and MSY reference points. By definition, the optimum yield reference point is the amount of fish which: a) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; b) is prescribed as such on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor; and c) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the MSY in such fishery. OY is given as a range for the groundfish complexes in the BSAI and the GOA, and the sum of the TACs of all groundfish species (except P. halibut) is required to fall within the range. The range for BSAI is 1.4 to 2.0 million mt[68] while the range for GOA is 116 to 800 thousand mt[69] . To prevent overfishing, NPFMC management objectives include the following measures specific to Optimum Yield: 1) Adopt conservative harvest levels for multi-species and single species fisheries and specify optimum yield; 2) continue to use the 2 million mt optimum yield cap for the BSAI groundfish fisheries; and 3) provide for adaptive management by continuing to specify optimum yield as a range.

NPFMC acknowledges in its FMPs for Alaskan groundfish that its management approach recognizes the need to balance many competing uses of marine resources and different social and economic goals for sustainable fishery management, including protection of the long-term health of the resource and the optimization of yield. Their annual FMPs include a substantial section on the economic and socioeconomic characteristics of the fisheries and communities in Alaska (Fissel et al 2016). Harvest levels for each groundfish species or species group that are set by the Council for a new fishing year are based on the best biological, ecological, and socioeconomic information available, and follow a rigorous and public peer-reviewed process.

Annual analyses are carried out on the costs, benefits, and economic value of P. cod fisheries in Alaska (Fissel et al. 2016). Measures (described further in clause 8.3) have been taken to rationalize effort, eliminate derby-style fisheries, improve retention and utilization, and reduce bycatch. NPFMC FMPs and NMFS regulations list all legal gears for catching P. cod, including hook and line, pot, jig, and trawl. No destructive methods such as dynamite or poison are permitted, nor is there any evidence that such methods are being used illegally.

8.2. (Incl 8.2.1.) States shall seek to identify domestic parties having a legitimate interest in the use and management of the fishery.

NPFMC established a Rural Outreach Committee in 2009 to improve outreach and communications with rural communities and Alaska Native entities and develop a method for systematic documentation of Alaska Native and community participation in the development of fishery management actions. Initial priorities of the Committee included salmon PSC reduction[70].

The Western Alaska Community Development Quota (CDQ)[71] Program was created by NPFMC in 1992 to provide western Alaska communities an opportunity to participate in the BSAI fisheries that had been foreclosed to them because of the high capital investment needed to enter the fishery. The CDQ Program allocates a percentage of all BSAI quotas for groundfish, prohibited species, halibut, and crab to eligible communities. The main purpose of the CDQ Program is to provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the BSAI Management Area. There are

[68] http://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
[69] http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

[70] http://www.npfmc.org/committees/rural-outreach-committee/
[71] http://www.npfmc.org/community-development-program/

approximately 65 communities within 50 miles of the Bering Sea coastline who participate in the program.

Advisory Committees (AC) are local "grass roots" citizen groups intended to provide a local voice for the collection and expression of public opinions and recommendations on matters relating to the management of fish and wildlife resources in Alaska. ADF&G staff regularly attends the AC meetings in their respective geographic areas to provide information to the public and hear local opinions on fisheries related activities. Approximately 80% to 85% of the 84 ACs in Alaska are "active", meaning they regularly meet, write proposals, comment and attend BOF meetings. Regulations governing the ACs are found in the Alaska Administrative Code (AAC) Title 5, Chapters 96 – 97[72].

8.3. (Incl 8.3.1). Fleet capacity operating in the fishery shall be measured. States shall maintain, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations and a record of all authorizations to fish allowed by them.
Fishing fleet capacity is regularly monitored, and results published in annual SAFE reports (Fissel et al. 2016). Authorizations to fish are controlled by NMFS and ADF&G authorities, under various tightly controlled regulations.

Mechanisms have been established to reduce capacity to levels commensurate with sustainable use of the P. cod resource in Alaska. These include harvest control rules on the catch and effort management side, a license limitation program, and reduction of the number of vessels through industry-based initiatives. The industry-based measures have been taken to rationalize effort, eliminate derby-style fisheries, improve retention and utilization and reduce bycatch, and include the formation of the Bering Sea/Aleutian Islands non-Pollock Trawl Catcher-Processor Groundfish Cooperatives Program (also known as Amendment 80). This program was implemented in 2008 for certain groundfish catcher/processors in the Bering Sea/Aleutian Islands (BSAI) and provides an allocation of six groundfish species including P. cod. As well, the freezer longline fleet in the BSAI Region formed a voluntary cooperative (the Freezer Longline Conservation Cooperative or FLCC) in 2010, in an attempt to maximize the value of their allocation of P. cod. The number of active vessels in this fleet was stable between 2003 and 2009 at an average of approximately 39 vessels, but after the formation of the FLCC, only approximately 29-30 vessels continued to fish in 2011-2014. However the number of fishing days utilized increased, as the race for fish was eliminated (Fissel et al. 2015).

8.4 (incl. 8.4.1, 8.4.2, 8.4.3). States and relevant groups from the fishing industry shall encourage the development and implementation of technologies and operational methods that reduce waste and discards of the target species. These measures shall be applied appropriately.
A summary of the NPFMC management measures that govern the GOA and BSAI groundfish fisheries are contained in the FMPs (e.g. see Table ES- 2 in the GOA FMP[73]). The full suite of NMFS fishery regulations for Alaskan waters can be found on the NMFS website[74]. These regulations cover all aspects of fishing, including seasons, gear limitations, and numerous area closures. There are specific rules laid out for P. cod, permitting the use of trawl gear in certain areas only, as well as regulations on seabird avoidance for vessels fishing with hook-and-line gear. The gear regulations also contain details on mesh sizes permitted, biodegradable panels in pot gears, types of hook and line gear allowed, etc. The use of bottom contact gear is prohibited in the Gulf of Alaska Coral and Alaska Seamount Habitat Protection Areas year-round. Fishing with trawl vessels is not permitted year-round in the Crab and Halibut Protection Zone and the Pribilof Island Habitat Conservation Area. As well, a number of closure zones for trawl gears are described in the NPFMC FMPs for GOA and BSAI.

NMFS has a National Bycatch Reduction Strategy[75], which is intended to guide efforts to reduce bycatch and bycatch mortality. Key areas of focus include monitoring and estimating the rates of bycatch and bycatch mortality to understand the level of impact and the nature of the interaction; research to improve estimates of bycatch rates, better understand the impacts of bycatch on species interactions and community dynamics, modify fishing gear, and develop mitigation tools to minimize bycatch and its impacts; and developing and implementing domestic management measures and promoting the adoption and implementation of international measures to address bycatch and its impacts.

[72] http://www.boards.ADF&G.state.ak.us/bbs/what/prps.php
[73] http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
[74] https://alaskafisheries.noaa.gov/fisheries-679regs
[75] http://npfmc.legistar.com/gateway.aspx?M=F&ID=a6ea1d59-1038-4f85-89ce-29f3dddafa11.pdf

Regulations regarding vessel and gear markings in the P. cod fishery are established in NMFS regulations, as prescribed in the annual management measures published in the Federal Register[76]. Regarding marking of hook-and-line, longline pot, and pot-and-line gear they state:
(1) All hook-and-line, longline pot, and pot-and line marker buoys carried on board or used by any vessel regulated under this part shall be marked with the vessel's Federal fisheries permit number or ADF&G vessel registration number; (2) Markings shall be in characters at least 4 inches (10.16 cm) in height and 0.5 inch (1.27 cm) in width in a contrasting color visible above the water line and shall be maintained so the markings are clearly visible.

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

Fundamental Clause 9.

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

No. Supporting clauses	**11**
Supporting clauses applicable	**8**
Supporting clauses not applicable	**3**
Overall level of conformity	**HIGH**
Non Conformances	**0**

Summary of Changes and Evidence of continuous compliance.

9.1. Measures shall be introduced to identify and protect depleted resources and those resources threatened with depletion, and to facilitate the sustained recovery of such stocks. Also, efforts shall be made to ensure that resources and habitats critical to the well-being of such resources which have been adversely affected by fishing or other human activities are restored.
As noted in previous sections, the MSFCMA requires that conservation and fisheries management measures prevent overfishing while achieving optimal yield on a continuing basis. NMFS and NPFMC follow a multi-faceted PA (OFL, ABC, TAC, OY) to manage the federal P. cod fisheries, based on targets, limits, and pre-defined HCRs, as well as overall ecosystem considerations. Management measures are in place to ensure sustainability, and to allow timely rebuilding if stocks are overfished. None of the P. cod stocks considered in this report are classified as overfished or undergoing overfishing, and are not in a depleted state. Groundfish trawls and longlines are the main gears used in the fisheries and no destructive fishing practices are allowed, or have been reported, which would adversely impact habitat.

The Environmental Impact Statement on Essential Fish Habitat (EFH) conducted in 2005[77] (and reviewed in 2010) indicated that fishing has long-term effects on benthic habitat features off Alaska and acknowledges that considerable scientific uncertainty remains regarding the consequences of such habitat changes for the sustained productivity of managed species. However, this EIS also concluded "that the effects on EFH are minimal because the analysis finds no indication that continued fishing activities at the current rate and intensity would alter the capacity of EFH to support healthy populations of managed species over the long term". The analysis concludes that no NPFMC managed fishing activities have more than minimal and temporary adverse effects on EFH, which is the regulatory standard requiring action to minimize adverse effects under the Magnuson-Stevens Act. These findings suggested that no additional actions were required to minimize the adverse effects of fishing on EFH pursuant to the Magnuson-Stevens Act and the EFH

[76] https://alaskafisheries.noaa.gov/sites/default/files/679b24.pdf
[77] EIS 2005 Summary, conclusions https://alaskafisheries.noaa.gov/sites/default/files/0405efh_eis_Chapter_4.5.pdf

regulations. It was noted that the analysis has many limitations, and the effects of fishing on EFH for some managed species are unknown.

9.2. 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.
Through extensive consultation processes and direct involvement in the management of the P. cod stocks, interests of indigenous people and local fishing communities in Alaska are recognized. The Western Alaska Community Development Quota (CDQ) Program was created by NPFMC in 1992 to provide western Alaska communities an opportunity to participate in the BSAI fisheries that had been foreclosed to them because of the high capital investment needed to enter the fishery. It has been described fully in previous sections of this report. Also, NPFMC has established a Rural Outreach Committee to improve outreach and communications with rural communities and Alaska Native entities and develop a method for systematic documentation of Alaska Native and community participation in the development of fishery management actions. Management actions taken to reduce salmon by-catches in a number of fisheries also explicitly acknowledge the importance of the salmon resources to the individuals and communities reliant on them.

9.3. States and relevant groups from the fishing industry shall encourage the development and implementation of technologies and operational methods that reduce discards of the target and non-target species catch. The use of fishing gear and practices that lead to the discarding of catch shall be discouraged and the use of fishing gear and practices that increase survival rates of escaping fish shall be promoted.
NMFS has a National Bycatch Reduction Strategy, which is intended to guide efforts to reduce bycatch and bycatch mortality, and one key area of focus is on modification of fishing gear. The groundfish trawl industry in Alaska deploys halibut excluder devices in their gear, reducing the by-catch of halibut, which is treated as a prohibited species catch (PSC) and managed with strict limits. Exempted Fishing Permits (EFPs) have been granted by NMFS to some trawler fleets in Alaskan waters in 2016 to allow halibut deck sorting experiments, with the aim of reducing halibut mortality on fish required under PSC limits to be returned to the sea[78]. Vessels fishing longline gear in Alaskan waters are required by NMFS regulation[79] to take measures to avoid seabird bycatch, such as the use of streamer lines and the use of baited hooks that sink as soon as they are put in the water. NMFS regulations also contain specific measures and programs (e.g. § 679.27[80]) aimed at P. cod to improve retention and utilization, such as preventing "bleeding" of codends and shaking of fish from longline gear.

9.4. Technologies, materials and operational methods shall be applied to minimize the loss of fishing gear and the ghost fishing effects of lost or abandoned fishing gear.
Substantial use of longline and pot gear in some of the P. cod fisheries reduces the impact on bottom habitats and bycatch of many bottom dwelling species. Also, longline is typically not associated with as much ghost fishing as some other fishing gears, such as gillnets and some types of traps[81]. Otter trawling is prohibited in many sensitive areas in BSAI and GOA Regions. Clauses in Fundamental 12 below contain more information on the main bycatch species taken in the P. cod fisheries. NMFS regulations requires that each pot used to fish for groundfish in Alaska be equipped with a biodegradable panel at least 18 inches (45.72 cm) in length and sewn up with untreated cotton thread. These pot regulations also contain requirements on the dimensions of tunnel openings.

9.5. There shall be a requirement that fishing gear, methods and practices where practicable, are sufficiently selective as to minimize waste, discards, and catch of non-target species - both fish and non-fish species and impacts on associated or dependent species.
As noted in Fundamental 8, there are a number of measures implemented in the P. cod fishery to minimize non-utilized catches. These include utilization of maximum retainable amounts (MRA) to limit bycatch, deployment of halibut excluder devices in groundfish trawl gear, use of streamers on longline gear to reduce seabird bycatch, deck sorting to improve survival of live fish returned to the sea, and work on hook selectivity and efficiency. These measures are typically implemented following scientific studies and periods of closely regulated experimental fishing to test their effectiveness.
9.6 The intent of fishing selectivity and fishing impacts related regulations shall not be circumvented by

[78] https://alaskafisheries.noaa.gov/sites/default/files/efp2016-01-050616permit.pdf
[79] https://alaskafisheries.noaa.gov/sites/default/files/679b24.pdf.
[80] https://alaskafisheries.noaa.gov/fisheries-679regs
[81] https://marinedebris.noaa.gov/sites/default/files/publications-files/Ghostfishing_DFG.pdf

technical devices and information on new developments and requirements shall be made available to all fishers.
There is no evidence to suggest that regulations on fishing gear selectivity and impacts are being circumvented via usage of technical devices. Information on gear regulations, including amendments or modifications, as well as information on gear technology is readily available to fishers and the general public through the websites of management agencies such as NPFMC, NOAA/NMFS, and IPHC, and through various meetings, mailouts, etc. Fishing gear is regulated and monitored through these agencies, and data on compliance is recorded and published.

9.7 International cooperation shall be encouraged with respect to research programs for fishing gear selectivity and fishing methods and strategies, dissemination of the results of such research programs and the transfer of technology.
The Alaskan P. cod fisheries are not international, as they are prosecuted solely by USA vessels. There is cooperation on science and management of the adjacent P. cod stock in Canadian (BC) waters. Results of research on Alaskan P. cod are widely available and disseminated through websites of NPFMC and NMFS, as well as at public meetings.

9.8 States 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 behaviour of target and non-target species in relation to such fishing gear as an aid for management decisions and with a view to minimizing non utilized catches.
NPFMC has considered a number of measures to reduce by-catch, wastage, and PSC in Alaskan trawl fisheries. These are intended to " increase the ability of the groundfish trawl sector to avoid PSC species and utilize available amounts of PSC more efficiently by allowing groundfish trawl vessels to fish more slowly, strategically, and cooperatively, both amongst the vessels themselves and with shore-based processors", and to " reduce bycatch and regulatory discards by groundfish trawl vessels"[82]. Any measures introduced are usually implemented only after scientific study and regulated periods of experimental fishing on a trial basis. Many of the studies and subsequent implementation have involved cooperative efforts between researchers at institutions in NMFS, ADF&G, DFO, IPHC, universities, and industry.

9.9 (incl. 9.9.1, 9.9.2) Policies shall be developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures, placed with due regard to the safety of navigation.
There is no evidence that artificial reefs/structures provide benefits to P. cod, thus this clause is not relevant.

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

Fundamental Clause 10.

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

[82] NPFMC GOA Trawl by-catch management
http://npfmc.legistar.com/gateway.aspx?M=F&ID=efc97cbc-744b-4738-92e6-b06b4e19ca05.pdf

No. Supporting clauses	**3**
Supporting clauses applicable	**3**
Supporting clauses not applicable	**0**
Overall level of conformity	**HIGH**
Non Conformances	**0**

Summary of Changes and Evidence of continuous compliance.

10.1./10.2./10.3. Education and training programmes.

The North Pacific Fishing Vessel Owners association (NPFVO)[83] provides a large and diverse training program that many of the professional crew members must pass. Training ranges from firefighting on a vessel, damage control, man-overboard, MARPOL, etc., and The Sitka-based Alaska Marine Safety Education Association alone has trained more than 10,000 fishermen in marine safety and survival through a Coast Guard-required class on emergency drills. The State of Alaska, Department of Labor & Workforce Development (ADLWD) includes AVTEC (formerly called Alaska Vocational Training & Education Center, now called Alaska's Institute of Technology). One of AVTEC's main divisions is the Alaska Maritime Training Center[84].

The goal of the Alaska Maritime Training Center is to promote safe marine operations by effectively preparing captains and crew members for employment in the Alaskan maritime industry. The Alaska Maritime Training Center is a United States Coast Guard (USCG) approved training facility located in Seward, Alaska, and offers USCG/STCW-compliant maritime training (STCW is the international Standards of Training, Certification, & Watchkeeping). In addition to the standard courses offered, customized training is available to meet the specific needs of maritime companies. Also, the University of Alaska Sea Grant Marine Advisory Program (MAP)[85] provides education and training in several sectors, including fisheries management, in the forms of seminars and workshops. MAP also conducts sessions of their Alaska Young Fishermen's Summit. Each Summit is an intense course in all aspects of Alaska fisheries, from fisheries management & regulation (e.g. MSFCMA), to seafood marketing. The 2016 summit was hosted in Anchorage, Alaska, in January 2016. The conference aimed at providing crucial training and networking opportunities for fishermen entering the business or wishing to take a leadership role in their industry[86].

In addition to this, MAP provides training and technical assistance to fishermen and seafood processors in Western Alaska. A number of training courses and workshops were developed in cooperation with local communities and CDQ groups. Additional education is provided by the Fishery Industrial Technology Center, in Kodiak, Alaska[87].

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

[83] The North Pacific Fishing Vessel Owners association http://www.npfvoa.org/

[84] Alaska's Institute of Technology http://www.avtec.edu/amtc-cost.aspx

[85] University of Alaska Sea Grant Marine Advisory Program (MAP) http://seagrant.uaf.edu/map/fisheries/

[86] Alaska Young Fishermen's Summit: https://seagrant.uaf.edu/map/workshops/2013/ayfs/, https://seagrant.uaf.edu/map/workshops/2016/ayfs/

[87] Fishery Industrial Technology Center http://www.uaf.edu/sfos/about-us/locations/kodiak/about-ksmsc/

6.5 Implementation, Monitoring and Control (E)

Fundamental Clause 11.

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

No. supporting clauses	3
Applicable supporting clauses	3
Non-applicable supporting clauses	0
Overall level of conformity	High
Non-conformance	0

Summary of Changes and Evidence of continuous compliance.

Supporting clause:

11.1 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.

Summarised evidence

The US Coast Guard (USCG)[88], NMFS Office of Law Enforcement (OLE)[89] and Alaska Wildlife Troopers (AWT) [90] (a Division of the Alaska Department of Public Safety) conduct at-sea and shore-based inspections.

At-sea, dockside monitoring, aerial surveillance and satellite vessel monitoring systems (VMS) are in operation[91] within the fisheries and developmental work is on-going with respect to additional electronic monitoring (EM) technologies[92].

The USCG serves as the primary agency for at-sea fisheries enforcement and coordinates their work with other federal and state agencies. The USCG presents their annual enforcement report at NPFMC meetings. No significant or systematic incidents with respect to the Pacifc cod fisheries were highlighted in the 2016 report (17th Coast Guard District Enforcement Report – B4 USCG Report, October 2016).

OLE enforcement officers conduct their own inspections of vessels, fish transport and processing facilities and work with the USCG and their state colleagues, through a Cooperative Enforcement Program (CEP)[93], that transfer funds to state and US territorial law enforcement agencies to support enforcement of federal laws and regulations. NOAA's Office of General Counsel for Enforcement and Litigation [94] is responsible for prosecuting offences.

The AWT are responsible for enforcing state fish and wildlife regulations. ADFG record landings, buying and production data on Departmental fish tickets or through a 'eLandings' system [95] (internet-based electronic filing). An individual, company, firm, or other organization that is a first purchaser, catcher-

[88] https://www.uscg.mil/d17/
[89] http://www.nmfs.noaa.gov/ole/
[90] http://dps.alaska.gov/AWT/
[91] https://www.npfmc.org/wp-content/PDFdocuments/membership/Enforcement/Enforcement_Precepts_1215.pdf
[92] https://www.npfmc.org/wp-content/PDFdocuments/conservation_issues/EM211.pdf
[93] http://www.nmfs.noaa.gov/ole/docs/2015/ole_fy2015_annual_report.pdf
[94] http://www.gc.noaa.gov/enforce-office.html
[95] http://www.adfg.alaska.gov/index.cfm?adfg=fishlicense.elandings

exporter, catcher-processor, or catcher-seller is required to be registered with the state and provide annual returns (Section 16.05.690[96] Record of Purchases) 5 AAC 39.130.[97]) is so doing, cross checks can be made against quota allocations.

Observers are used in the fisheries for scientific purposes[98] although in the North Pacific groundfish fisheries observers[99] are required to report violations of fisheries regulations that they witness[100]. Full and partial observer coverage categories are assigned to different fleet sectors.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
11.2 Fishing vessels shall not be allowed to operate on the resource in question without specific authorization.

Summarised evidence
Every fishing vessel targeting Pacific cod in Alaska is required to have a federal[101] or state permit.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
11.3 States involved in the fishery shall, in accordance with international law, within the framework of sub-regional or regional 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 their national jurisdiction.

11.3.1 States which are members of or participants in sub-regional or regional 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 which engage in activities which undermine the effectiveness of conservation and management measures established by such organizations or arrangements.

Summarised evidence

The Alaska Pacific cod fisheries operate within the Alaska EEZ only.

The US and Russian Federation maintain the ICC fisheries forum (see section 1.2). The ICC is responsible for furthering the objectives of the Comprehensive Fisheries Agreement. The objectives of the Agreement include cooperation to address illegal fishing on the high seas of the North Pacific and the Bering Sea.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
11.4 Flag States shall ensure that no fishing vessels entitled to fly their flag fish on the high seas or in waters under the 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.

[96] http://touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter05/Section690.htm
[97] https://www.adfg.alaska.gov/static/license/fishing/pdfs/5aac39.pdf
[98] https://www.afsc.noaa.gov/Quarterly/jas2010/jas10feature.pdf
[99] https://www.afsc.noaa.gov/FMA/
[100] http://www.alaskaseafood.org/wp-content/uploads/2016/03/FAO_Based-RFM-AK-Pollock-Assessment-and-Certification-Report-Public-Release_31st-Jan-2012.pdf
[101] https://alaskafisheries.noaa.gov/fisheries/AFA

Such vessels shall carry on board the Certificate of Registry and their authorization to fish.

11.4.1 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.

Summarised evidence
The American Fisheries Act (AFA) 1998[102] ensures that vessel owners must demonstrate citizenship and relevant vessel registration documents.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

Fundamental Clause 12.

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

No. supporting clauses	4
Applicable supporting clauses	2
Non-applicable supporting clauses	2
Overall level of conformity	High
Non-conformance	0

Summary of Changes and Evidence of continuous compliance.

Supporting clause:
12.1 National laws of adequate severity shall be in place that provide for effective sanctions.

12.1.1 Sanctions shall be in force that affects authorization to fish and/or to serve as masters or officers of a fishing vessel, in the event of non-compliance with conservation and management measures.

Summarised evidence
The MSFCMA provides four options for penalizing violations. In ascending order of severity:

1) Issuance of a citation (a type of warning), usually at the scene of the offence (see 15 CFR part 904, subpart E).
2) Assessment by the Administrator of a civil money penalty.
3) For certain violations, judicial forfeiture action against the vessel and its catch.
4) Criminal prosecution of the owner or operator for some offences. It shall be the policy of NMFS to enforce vigorously and equitably the provisions of the MSFCMA by utilizing that form or combination of authorized remedies best suited in a particular case to this end.

[102] https://www.marad.dot.gov/wp-content/uploads/pdf/American_Fisheries_Act.pdf

OLE agents and officers can assess civil penalties directly to the violator in the form of a summary settlement or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation who can impose a sanction on the vessels permit or further refer the case to the U.S. Attorney's Office for criminal proceedings[103]. The low proportion of violations encountered during at-sea patrols of the Alaska fisheries demonstrates effective deterrence (Jun-Sep 2016: 403 boardings; 7 violations; 1.7% violation rate) (17th Coast Guard District Enforcement Report – B4 USCG Report, October 2016).

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Supporting clause:
12.2 Flag States shall take enforcement measures in respect of fishing vessels entitled to fly their flag which have been found by them to have contravened applicable conservation and management measures, including, where appropriate, making the contravention of such measures an offence under national legislation.

12.2.1 Sanctions applicable in respect of violations and illegal activities shall be adequate in severity to be effective in securing compliance and discouraging violations wherever they occur.

Summarised evidence
No foreign vessels fish with the US EEZ. USCG at-sea and aerial patrols monitor the situation.

Conclusion:
No evidence of significant change was reported or identified since the 3rd surveillance assessment. A high level of conformity continues.

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

6.6 Serious Impacts of the Fishery on the Ecosystem (F)

Fundamental Clause 13.

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

No. Supporting clauses	13
Supporting clauses applicable	13
Supporting clauses not applicable	0
Overall level of conformity	HIGH
Non Conformances	0

Summary of Changes and Evidence of continuous compliance.

[103] https://fisheries.msc.org/en/fisheries/alaska-pollock-bering-sea-and-aleutian-islands/@@assessments

Gulf of Alaska (GoA)

The assessment of impacts on target stocks and dependent species continues at least at the level as when originally certified. The GoA groundfish Management Plan was most recently updated in November 2016 (https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf). The Alaska Groundfish Programmatic Environmental Impact Assessment (as required under the National Environmental Protection Act) was reviewed in 2015 (https://alaskafisheries.noaa.gov/sites/default/files/sir-pseis1115.pdf). Conditions requiring a supplement to the 2004 PSEIS (if NMFS and the Council have made a substantial change in the proposed action (i.e., the management of the Federal groundfish fisheries) that is relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the management of the groundfish fisheries or their impacts) were considered not to be required. Also, at its February 2016 meeting, the NPFMC was provided a discussion paper in relation to the development of an Environmental Impact Statement (EIS) for the GOA Trawl Bycatch Management Program; summary information provided for the GOA ecosystem Zador (2015) indicated no substantial changes that would affect the status of the Pacific cod fisheries.

Observer levels in the North Pacific Groundfish and Halibut Observer Program (Observer Program; operated by NMFS) were at levels of 97.5% of the catcher/processor longline vessel catches, 99.9% of the catcher/processor trawl, 8.5% of catcher vessel longline, 15.5% of catcher vessel trawl and 20.7% of catcher vessel pot catches.

Potential impacts are identified and those with serious effects continue to be addressed, for example in 2015, NMFS issued regulations to reduce the maximum retainable amount of skates from 20% to 5% to slow the catch rate of skates in these fisheries (https://alaskafisheries.noaa.gov/sites/default/files/80fr80695.pdf). This has led to a reduction in by-catches of skates in GOA Pacific cod fisheries (A'mar and Palsson 2015).

The process of identifying and addressing potential impacts on endangered species continues. Mortality of seabirds has shown a decline since 2007 (Zador 2015) and cod fisheries are categorised as Category III – remote likelihood of, or no known interactions – in relation to marine mammals. Steller sea lion populations have increased in the GoA, notwithstanding which, NMFS has implemented regulations to further protect Steller sea lions, effective for the 2015 fishing season https://alaskafisheries.noaa.gov/node/3203.

The slotted excluders developed by the trawl industry have been improved upon and are now common on trawl vessels http://www.westcoast.fisheries.noaa.gov/stories/2016/04072016_foulweather_trawl_visit.html.
Individual vessels have been experimenting with new methods to deter birds such as lasers which may be more effective in certain weather conditions or using weighted lines to submerge baited hooks quicker. Individual vessels also continue to experiment with different hook types in order to reduce bycatch or improve release survival. A new vessel under construction is incorporating a moon hole that in addition to making conditions safer for crew and samplers, will allow better handling of cod, improve the consistency of the hauling operation and improve the quality of the release of bycatch (Client Report).

Research and management continues into habitat effects, both essential fish habitat (EFH https://alaskafisheries.noaa.gov/habitat/efh) and vulnerable coral and slope habitat, for which conservation areas are established (for example https://alaskafisheries.noaa.gov/sites/default/files/goashca.pdf). Four new research projects into fishery

and other anthropogenic impacts on habitat were begun in 2015.

Bering Sea and Aleutian Islands (BSAI)

The latest update of the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands was produced in March 2017 (https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf). The Alaska Groundfish Programmatic Environmental Impact Assessment (as required under the National Environmental Protection Act) was reviewed in 2015 (https://alaskafisheries.noaa.gov/sites/default/files/sir-pseis1115.pdf). Conditions requiring a supplement to the 2004 PSEIS (if NMFS and the Council have made a substantial change in the proposed action (i.e., the management of the Federal groundfish fisheries) that is relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the management of the groundfish fisheries or their impacts) were considered not to be required.

The assessment of impacts on target stocks and dependent species continues at least at the level as when originally certified. Information on the nature and amount of non-target species, endangered species (including marine mammals and seabirds) is collected by the North Pacific Groundfish and Halibut Observer Program operated by the NMFS. In 2015, 100% of the Pacific cod catches taken by motherships and catcher processors using longline, trawl, and pot; observer levels for catcher vessels were – longline 20.6%, trawl 60.0% and pots 23.6% of catches (NMFS 2016). The composition of bycatch remains similar in composition, and while total bycatch was slightly higher than in 2014, it remains less than half of the average catch over the period 2003 to 2013 (Thompson, 2015).

Potential impacts are identified and those with serious effects continue to be addressed. Recent initiatives include, in 2016, a final rule to implement Amendment 111 to the BSAI FMP that reduced Prohibited Species Catch limits for Pacific halibut in the BSAI groundfish fisheries by specific amounts in four groundfish sectors that results in an overall BSAI halibut PSC limit of 3,515 mt. This rule change is to minimise halibut bycatch in the BSAI groundfish fisheries to the extent practicable and to achieve, on a continuing basis, optimum yield from the BSAI groundfish fisheries (https://alaskafisheries.noaa.gov/sites/default/files/81fr24714.pdf).

The process of identifying and addressing potential impacts on endangered species also continues. Longline fishing for cod is the main contributor of seabird bycatch; this has declined since 2007 and the estimated bycatch in 2014 was the lowest in the time series (Zador ed. 2015).

Slotted excluders developed by the trawl industry have been improved upon and are now common on trawl vessels http://www.westcoast.fisheries.noaa.gov/stories/2016/04072016_foulweather_trawl_visit.html.
Individual vessels have been experimenting with new methods to deter birds such as lasers which may be more effective in certain weather conditions or using weighted lines to submerge baited hooks quicker. Individual vessels also continue to experiment with different hook types in order to reduce bycatch or improve release survival. A new vessel under construction is incorporating a moon hole that in addition to making conditions safer for crew and samplers, will allow better handling of cod, improve the consistency of the hauling operation and improve the quality of the release of bycatch. (Client report for assessment).

In terms of interactions with marine mammals, the Bering Sea longline fishery is classified as Category II (occasional interactions) and the trawl and pot fisheries as Category III (remote likelihood or no known

interaction) (http://www.nmfs.noaa.gov/pr/interactions/fisheries/2016_list_of_fisheries_lof.html). Also, in December 2014, NOAA implemented a 'final rule' for protection of Steller sea lions that primarily occur west of 144 degrees W longitude in Alaska (listed as endangered under the Endangered Species Act). For the primary prey species for Steller sea lions in the Aleutian Islands (Atka mackerel, Pacific cod and pollock) there are a combination of closed areas, harvest limits, and seasons. These are designed to disperse fishing efforts to maintain local population levels as a food source for the Steller sea lions while at the same time maintaining fishing opportunities and minimising economic impacts by removing some restrictions on fishing implemented in the 2010 Interim Final Rule and improving monitoring of vessels while maintaining such research as surveys of sea lions in the Aleutian Islands (https://alaskafisheries.noaa.gov/node/3203). The overall population of Steller sea lions continues to increase, although there are continued regional declines to the west of Samalga Pass and in the western Aleutian Islands.

Research and management continues into habitat effects, both essential fish habitat (EFH) and vulnerable coral and slope habitat, for which conservation areas are established (for example Pribilof Islands, Aleutian Islands and Bering Sea habitat conservation areas and Aleutian Islands coral habitat and Alaska seamount habitat protection areas - https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf). Seven new research projects into fishery and other anthropogenic impacts on habitat were begun in 2015, although many were related to other species or to the GoA. Relevant habitat research includes defining EFH for Alaska groundfish species, using species distribution modelling and bathymetry compilation for the Eastern Bering Sea slope.

Research continues into effects on biodiversity (as above) and community development, for example through Amendment 80 cooperatives (https://www.npfmc.org/amendment-80-cooperatives).

Changes to Supporting-Clause Confidence Ratings.

No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses.

Conformance: Full conformance continues.

7 REFERENCES

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APPENDICES

Appendix 1 Stakeholder submissions

No stakeholder comments were received during the annual surveillance activities.

ABOUT DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. We also provide certification services to customers across a wide range of industries. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping our customers make the world safer, smarter and greener.