



**ALASKA RESPONSIBLE FISHERY MANAGEMENT CERTIFICATION
SURVEILLANCE REPORT**

For The
Alaska Pollock Commercial Fisheries

Standard Owner
Alaska Seafood Marketing Institute
Client
Alaska Pollock Fishery Client Group

Assessors: Ivan Mateo, Lead Assessor
William Brodie, Assessor
Deirdre Hoare, Assessor
Sam Dignan, Assessor

Report Code: AK/POL/001.4/2015
Published Date: 29th January 2016

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



GlobalTRUST
DELIVERING CERTAINTY



Contents

Glossary.....	1
I. Summary and Recommendations.....	2
II. Assessment Team Details	3
1. Introduction	4
1.1. Recommendation of the Assessment Team	5
2. Fishery Applicant Details	5
3. Unit of Certification	6
4. Surveillance Meetings.....	7
5. Assessment Outcome Summary	8
6. Conformity Statement	11
A. The Fisheries Management System.....	13
Fundamental 1.....	13
Fundamental 2.....	15
Fundamental 3.....	17
B. Science and Stock Assessment Activities.....	18
Fundamental 4.....	18
Fundamental 5.....	21
C. The Precautionary Approach	24
Fundamental 6.....	24
Fundamental 7.....	27
D. Management Measures	28
Fundamental 8.....	28
Fundamental 9.....	31
Fundamental 10.....	34
E. Implementation, Monitoring and Control	35
Fundamental 11.....	35
Fundamental 12.....	37
F. Serious Impacts of the Fishery on the Ecosystem	39
Fundamental 13.....	39
8. Performance specific to agreed corrective action plans.....	43
9. Unclosed, new non conformances and new corrective action plans	43
10. Future Surveillance Actions	43
11. Client signed acceptance of the action plan	43
12. Recommendation and Determination	43
13. References	44
Appendix 1	47

Glossary

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

I. Summary and Recommendations

This report is on behalf of the Alaska Fishery Client Group, for the Alaska pollock, *Gadus chalcogrammus*, (formerly *Theragra chalcogramma*) commercial fisheries according to the Alaska Based Responsible Fisheries Management (RFM) Certification Program. The application was made in April 2010. Assessment commenced in April 2010 with assessment validation before proceeding to full assessment and final certification determination in December 2011.

This report is the **4th Surveillance Report (ref: AK/POL/001.4/2015)** for the Alaska pollock federal and state commercial fisheries following Certification against the Alaska RFM Program, awarded the 6th December 2011. The objective of the Surveillance Report is to monitor for any changes/updates (after 12 months) in the management regime, regulations and their implementation since the previous assessment (in this case, second surveillance audit in 2013) and to determine whether these changes (if any) and current practices, remain consistent with the overall confidence rating scorings of the fishery allocated during initial certification. In addition to this, any areas reported as “items for surveillance” or corrective action plans in the previous assessment are reassessed and a new conclusion on consistency of these items with the Conformance Criteria is given accordingly. No non-conformances were identified since certification was granted.

The certification covers the Alaska pollock, *Gadus chalcogrammus*, (formerly *Theragra chalcogramma*) commercial fisheries employing pelagic trawl 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 (ADFG) & Board of Fisheries (BOF)] management.

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

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

The main Key outcomes have been summarized in Section 5 “[Assessment Outcome Summary](#)”.

II. Assessment Team Details

Lead Assessor

Ivan Mateo (full time employee at SAI Global)

Address: Providence, Rhode Island, USA.

Tel/skype: ralfe501

Email: ivan.mateo@saiglobal.com

Assessor:

Name: Bill Brodie

Address: Newfoundland, Canada.

Tel/skype: bill.brodie2

Email: brodie_william@hotmail.com

Assessor

Name: Deirdre Hoare

Address: Dublin, Ireland.

Tel/skype: deirdre_hoare

Email: deirdrehoare@gmail.com

Assessor:

Name: Sam Dignan

Address: SAI Global, Dundalk, Ireland.

Tel/Skype: samdignan

Email: samuel.dignan@saiglobal.com

Program Administrator

Name: Jean Ragg

Address: SAI Global, Dundalk, Ireland.

Email: jean.ragg@saiglobal.com

1. Introduction

This Surveillance Report documents the 4th Surveillance Assessment (2015) of the Alaska pollock commercial federal and state fisheries originally certified on December 6th, 2011, and presents the recommendation of the Assessment Team for continued FAO-Based RFM Certification.

Unit of Certification

The Alaska pollock (or walleye pollock), *Gadus chalcogrammus*, (formerly *Theragra chalcogramma*) commercial fisheries employing pelagic trawl 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 (ADFG) & Board of Fisheries (BOF)] management, underwent their 4th surveillance assessment against the requirements of the FAO-Based RFM Conformance Criteria Version 1.2 Fundamental clauses.

This 4th Surveillance Report documents the assessment result for the continued certification of commercially exploited Alaska pollock fisheries to the Alaska- RFM Certification Program. This is a voluntary program that has been supported by ASMI who wish to provide an independent, third-party certification that can be used to verify that these fisheries are responsibly managed.

The assessment was conducted according to the Global Trust procedures for Alaska RFM Certification using the fundamental clauses of the Alaska RFM Conformance Criteria Version 1.2 (Sept 2011) 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); including:

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

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

A summary of the site meetings is presented in Section 5. Assessors included both externally contracted fishery experts and Global Trust internal staff (Appendix 1).

1.1. Recommendation of the Assessment Team

Following this 4th Surveillance Assessment, in 2015, the assessment team recommends that continued Certification under the Alaska Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fishery, the Alaska pollock, *Gadus chalcogrammus*, (formerly *Theragra chalcogramma*) commercial fisheries employing pelagic trawl 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 (ADFG) & Board of Fisheries (BOF)] management.

2. Fishery Applicant Details

Applicant Contact Information			
Organization/ Company Name:	Alaska Pollock Fishery Client Group Pacific Seafood Processors Association, At-sea Processors Association and the Alaska Groundfish Data Bank	Date:	January 2016
Correspondence Address:	Pacific Seafood Processors Association Head Office Suite 205		
Street :	1900 West Emerson Place		
City :	Seattle		
State:	WA 98119		
Country:	USA		
Phone:	206.281.1667	E-mail Address:	glennr.pspa@gmail.com
Key Management Contact Information			
Full Name:	(Last) Reed	(First)	Glenn
Position:	President		
Correspondence Address:	Pacific Seafood Processors Association Head Office		
Street :	1900 West Emerson Place		
City :	Seattle		
State:	WA 98119		
Country:	USA		
Phone:	206.281.1667	E-mail Address:	pspafish@gmail.com
Nominated Deputy:	As Above		
Deputy Phone:	As Above	Deputy E-mail Address:	dennisj.phelan@gmail.com

3. Unit of Certification

<i>Unit of Certification</i>			
U.S. ALASKA POLLOCK COMMERCIAL FISHERIES			
Fish Species (Common & Scientific Name)	Geographical Location of Fishery	Gear Type	Principal Management Authority
Alaska (Walleye) pollock <i>Gadus chalcogrammus</i> , (formerly <i>Theragra chalcogramma</i>)	Gulf of Alaska And Bering Sea & Aleutian Islands	Pelagic trawl, And Other gears (bottom trawl, jig, longline, pot) from other non-directed pollock fisheries legally landing pollock	National Marine Fisheries Service (NMFS) North Pacific Fishery Management Council (NPFMC) Alaska Department of Fish and Game (ADFG) & Board of Fisheries (BOF)

4. Surveillance Meetings

Date	Organization	Relevant Meetings attended, topics discussed
Dec. 7-11, 2015	North Pacific Fishery Management Council Meetings, Hilton Hotel, Anchorage, Alaska.	<p>A) Scientific and Statistical Committee: Dec 7-9</p> <ul style="list-style-type: none"> • Ecosystem Report Cards • BSAI, GOA SAFE presentations • BSAI, GOA GF Plan Team Minutes • Joint GF Plan Team Minutes <p>B) Advisory Panel: Dec 7-10</p> <ul style="list-style-type: none"> • BSAI, GOA Specifications • Halibut Management Framework • GOA Trawl Bycatch Management Work plan • GOA Salmon PSC <p>C) NPFM Council: Dec 9-11</p> <ul style="list-style-type: none"> • BSAI, GOA Specifications • GOA Salmon PSC Limits • Halibut PSC

5. Assessment Outcome Summary

Fundamental Clauses Summaries

Clause 1: Structured and legally mandated management system

Evidence adequacy rating: High

The Alaska pollock commercial fisheries are managed by the North Pacific Fishery Management Council (NPFMC) and the NOAA's National Marine Fisheries Service (NMFS) in the federal waters (3-200 nm); and by the Alaska Department for Fish and Game (ADFG) and the Board of Fisheries (BOF) in the state waters (0-3 nm). In federal waters, Alaska pollock fisheries are managed under the NPFMC's Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) Groundfish Fishery Management Plans (FMPs) written and amended subject to the Magnuson Stevens Act (MSA). The state pollock fishery in Prince William Sound is managed using a Guideline Harvest Level (GHL) set as a percentage of the GOA federal ABC. The US Coast Guard (USCG), the NMFS Office of Law Enforcement (OLE) and the Alaska Wildlife Troopers (AWT) and/or deputized ADFG staff, enforce fisheries regulations in federal and state waters respectively.

Clause 2: Coastal area management frameworks

Evidence adequacy rating: High

The NMFS and the NPFMC participate in coastal area management-related institutional frameworks through the federal National Environmental Policy Act (NEPA) processes. These include decision-making processes and activities relevant to fishery resources and users in support of sustainable and integrated use of living marine resources and avoidance of conflict among users. The NEPA processes provide public information and opportunity for public involvement that are robust and inclusive at both the state and federal levels. With regards to conflict avoidance and resolution between different fisheries, the North Pacific Fishery Management Council (NPFMC) and the Board of Fisheries (BOF) tend to avoid conflict by actively involving stakeholders in the process leading up to decision making. Both entities provide a great deal of information on their websites, including agenda of meetings, discussion papers, and records of decisions. The Council and the BOF actively encourages stakeholder participation, and all their deliberations are conducted in open, public sessions. Effectively, these meetings provide forums for avoidance of potential fisheries conflicts.

Clause 3: Management objectives and plan

Evidence adequacy rating: High

The Magnuson Stevens Fishery Conservation and Management Act (MSA) is the primary domestic legislation governing the management of the nation's marine fisheries. Under the MSA, the NPFMC is authorized to prepare and submit to the Secretary of Commerce for approval, disapproval or partial approval, a Fishery Management Plan (FMP) and any necessary amendments, for each fishery under its authority that requires conservation and management. These include Groundfish FMPs for the Gulf of Alaska and the Bering Sea & Aleutian Islands which incorporate the pollock fisheries in those regions. Both FMPs present long-term management objectives for the Alaska pollock fishery and were updated in 2014. In state waters (0-3 nm), the Prince William Sound (PWS) pollock fishery is managed by ADFG and the BOF using "5 AAC 28.263. Prince William Sound Pollock Pelagic Trawl Management Plan" which sets the regulations for the directed state pollock fishery.

Clause 4: Fishery data**Evidence adequacy rating: High**

The NMFS and the ADFG collect fishery data and conduct fishery independent surveys to assess the pollock fishery and ecosystems in GOA and BSAI areas. GOA and BSAI SAFE documents provide complete descriptions of data types and years collected. Records of catch and effort are firstly recorded through the e-landing (electronic fish tickets) catch recording system and secondly, collected by vessel captains in voluntary and required logbooks. Fishery independent data are collected in regular surveys of both the GOA and BSAI regions and additional fishery dependent data are collected by the observer program present in both regions. A summer acoustic trawl survey is carried out annually, alternating between the GOA and EBS areas. Bottom trawl surveys are carried out yearly in the EBS and biennially in the GOA and AI. Other sources of data (such as vessel-of-opportunity, crab, and international surveys) are also considered during the stock assessment process. The Prince William Sound pollock stock is estimated by ADFG bottom trawl surveys in summer and hydroacoustic surveys in winter (when possible).

Clause 5: Stock assessment**Evidence adequacy rating: High**

Guided by MSA standards, and other legal requirements, the NMFS has a well-established institutional framework for research developed within the AFSC. Scientists at the AFSC conduct research and stock assessments on pollock in Alaska each year, producing annual Stock Assessment and Fishery Evaluation (SAFE) reports for the federally managed EBS, GOA, Aleutian Islands and Bogoslof pollock stocks. ADFG also conducts scientific research and surveys on its state-managed Pollock fisheries. These SAFE reports summarize the best-available science, including the fishery dependent and independent data, document stock status, significant trends or changes in the resource, marine ecosystems, and fishery over time, assess the relative success of existing state and Federal fishery management programs, and produce recommendations for annual quotas and other fishery management measures. The annual stock assessments are peer reviewed by experts and recommendations are made annually to improve the assessments.

Clause 6: Biological reference points and harvest control rule**Evidence adequacy rating: High**

The ASFC SAFE reports consist of three volumes: a volume containing stock assessments, a volume containing economic analysis, and a volume describing ecosystem considerations. The stock assessment volume contains a chapter or sub-chapter for each stock or stock complex in the “target species” category, and a summary chapter prepared by the Groundfish Plan Team. Each chapter contains estimates of all annual harvest specifications except TAC, all reference points needed to compute such estimates, and all information needed to make annual status determinations with respect to “overfishing” and “overfished.” The NPFMC harvest control system is a complex and multi-faceted suite of management measures to address issues related to sustainability, legislative mandates, and quality of information. The tier system specifies the maximum permissible Allowable Biological Catch (ABC) and of the Overfishing Level (OFL) for each stock in the complex (usually individual species but sometimes species groups). 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. The EBS pollock stock in Alaska is categorized as tier 1a while the GOA pollock and AI stocks are categorized as tier 3.

Clause 7: Precautionary approach**Evidence adequacy rating: High**

There are three core components to the application of the precautionary approach in Alaskan groundfish fisheries. Firstly, the FMP for each management area sets out an Optimum Yield (OY) for the groundfish complex as a whole, which includes pollock along with the majority of targeted groundfish species. The

second component is the tier system, which assigns each groundfish stock to a tier according to the level of scientific understanding, data available and uncertainty associated with the fishery. Each tier has an associated set of management guidelines, particularly in relation to calculating the level of catch permitted. The more data-deficient a stock, the higher the tier's number, and the more conservatively catch limits are set. At present the GOA and AI pollock fisheries are assigned to tier 3 and the EBS pollock fishery to tier 1. The third component is the Annual Catch Limit (ACL), Overfishing Limit (OFL), Acceptable Biological Catch (ABC) and Total Allowable Catch (TAC) system. ACL is the level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures. OFL is the limit reference point of annual catch after which overfishing is determined to be occurring. For Alaska groundfish stocks, OFL is equal to the expected catch that would occur at the rate (or proxy thereof) which is estimated to provide the maximum sustainable yield (F_{MSY}). ABC is a recommended level of annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. TAC is the annual catch target for a stock or stock complex, derived from the ABC by considering social and economic factors and management uncertainty (i.e., uncertainty in the ability of managers to constrain catch so the ACL is not exceeded, and uncertainty in quantifying the true catch amount).

Clause 8: Management measures

Evidence adequacy rating: High

The Magnuson Stevens Act is the federal legislation that defines how fisheries off the United States EEZ are to be managed. From this legislation and NPFMC objectives, the management system for the Alaska groundfish fisheries has developed into a complex suite of measures comprised of harvest controls—e.g., OY, TAC, ABC, OFL, ACL—effort controls (limited access, licenses, cooperatives), time and/or area closures (habitat protected areas, marine reserves), by-catch controls (PSC limits, Maximum Retainable Allowances (MRA), gear modifications, retention and utilization requirements), observers, monitoring and enforcement programs, social and economic protections, and rules responding to other constraints (e.g., regulations to protect Steller sea lions (SSL)). The NPFMC harvest control system is complex and multi-faceted in order to address issues related to sustainability, legislative mandates, and quality of information.

Clause 9: Management measures to produce maximum sustainable levels

Evidence adequacy rating: High

The NPFMC harvest control system is complex and multi-faceted in order to address issues related to sustainability, legislative mandates, and quality of information. The rigorous process in place for over 30 years ensures that annual quotas are set at conservative, sustainable levels for all managed groundfish stocks. Model projections indicate that the pollock stocks in Alaska is neither overfished nor approaching an overfished condition. The Maximum Sustainable Yield (MSY), defined in the BSAI and GOA groundfish FMPs, is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions, fishery technological characteristics (e.g., gear selectivity), and distribution of catch among fleets. The MSY allows defining the reference points used to manage the groundfish fisheries such that $TAC \leq ABC < OFL$.

Clause 10: Appropriate standards of fisher's competence

Evidence adequacy rating: 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 along with their qualifications.

Clause 11: Effective legal and administrative framework**Evidence adequacy rating: High**

The Alaska pollock fishery fleet 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). State regulations are enforced by the Alaska Wildlife Troopers (AWT).

Clause 12: Framework for sanctions**Evidence adequacy rating: 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.

Clause 13: Impacts of the fishery on the ecosystem**Evidence adequacy rating: High**

The NPFMC, NOAA/NMFS, and other institutions interested in the North Pacific conduct assessments and research on environmental factors affecting pollock and associated species and their habitats. Findings and conclusions are published in SAFE documents, annual Ecosystem Considerations documents, and other research reports. The SAFE documents for BSAI and GOA pollock summarize ecosystem considerations for the stocks. They include sections for **1)** Ecosystem effects on the stock; and **2)** Effects of the pollock fishery on the ecosystem. SAFE reports also describe results of first-order trophic interactions for pollock from the ECOPATH model, an ecosystem modelling software package. Ecosystem modelling is used to provide an indication of the role of pollock within the food web, and broader ecosystem variables such as climate are reported upon annually in a region-encompassing ecosystem considerations analysis. Two significant ecosystem concerns in relation to the pollock fishery are its possible indirect effects on Steller sea lions, and the quantity of salmon bycatch. Both of these issues are addressed directly in the SAFE assessments, and management measures by State and Federal management agencies are in place to attempt and minimize their severity. Biomass of other pollock predators appears to be stable or increasing in recent years. Habitat interactions of this fishery are not considered significant.

6. Conformity Statement

The Assessment Team recommends that continued certification under the Alaska Responsible Fisheries Management Program is granted to the Alaska pollock, *Gadus chalcogrammus*, (formerly *Theragra chalcogramma*) commercial fisheries employing pelagic trawl 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 (ADFG) & Board of Fisheries (BOF)] management.

A. The Fisheries Management System

Fundamental 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
Supporting clauses applicable	9
Supporting clauses not applicable	8
Overall level of conformity	HIGH
Non Conformances	0

Summarized evidence:

The structure and function of the management system governing the pollock fisheries in Alaska.

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

The primary layer of governance for the Alaska Pollock fisheries is dictated by the Magnuson Stevens Act (MSA). The MSA, as amended last on January 12th 2007, sets out ten national standards for fishery conservation and management (16 U.S.C. § 1851), with which all Fishery Management Plans (FMP) must be consistent. Under the MSA, the NPFMC is authorized to prepare and submit to the Secretary of Commerce for approval, disapproval or partial approval, an FMP and any necessary amendments, for each fishery under its authority that requires conservation and management actions, i.e. the annual setting of OFL/ABC/TAC/ACL.

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

The federal Fishery Management Plans (FMPs), more specifically, 1) the GOA Groundfish FMP, and 2) the BSAI Groundfish FMP govern the management of the pollock federal fisheries. In federal waters (3-200 nm), the Alaska Pollock fisheries are managed by the NPFMC and the NMFS Alaska Region. The state pollock fishery in Prince William Sound is managed using a Guideline Harvest Level (GHL) set as a percentage of the GOA federal ABC. In addition, NMFS Alaska Regional Office conducts biological studies, stock survey and stock assessment reports. Current management measures consider the whole stocks biological units (i.e. structure and composition contributing to its resilience over their entire area of distribution, the area through which the species migrate during their life cycle and other biological characteristics of the stock).

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

NOAA and the Federal Agency for Fisheries of the Russian Federation signed a Joint Statement on Enhanced Fisheries Cooperation (April 29, 2013).¹ This document identifies three major areas of future cooperation: 1) combating global Illegal Unreported and Unregulated (IUU) fishing; 2) collaborating on science and management of Arctic Ocean living marine resources; and 3) advancing conservation efforts in the Ross Sea region of Antarctica.

The “Donut Hole” convention agreement established responsibility for the conservation, management,

¹ Joint statement NOAA and the Federal Agency of Fisheries of the Russian Federation
http://www.nmfs.noaa.gov/ia/slider_stories/2013/04/statement_signed.pdf

and optimum utilization of pollock resources in the high seas area of the Bering Sea².

The stocks of pollock within Alaska's Eastern Bering Sea occur largely within the Alaska EEZ, but there is some apparent migration of pollock to the northwest which can result in varying amounts of Eastern Bering Sea shelf pollock found in the Cape Navarin area of Russia³.

1.7. Review and Revision of conservation and management measures

C3 Council motion, September, 10, 2015

The purpose of motion C9 Bering Sea Canyons – NPFMC 2014 was to determine whether and how the Council should recommend amendment of the BSAI Groundfish and Crab FMPs to protect known, significant concentrations of deep-sea corals in the Pribilof Canyon and the adjacent slope from fishing impacts under the appropriate authorities of the MSA. A sea slope and canyons survey was carried out and a report produced. The Council reviewed the scientific evidence and found that it does not suggest there is a risk to the deep-sea corals present under current management. In order to provide continued monitoring of the current coral communities in the Bering Sea canyons and slope, the Council also requests that AFSC report in the Ecosystem SAFE chapter: 1. Changes in coral frequency, composition and distribution in the trawl survey; 2. Changes in trawl and fixed gear effort in areas of model predicted coral abundance⁴.

C4 Bering Sea Salmon Bycatch Final Motion November 4, 2015

In June 2014, the Council initiated an analysis of Chinook and chum salmon bycatch measures in the Bering Sea pollock fishery (C-5 Bering Sea Salmon Bycatch Council motion – June 7, 2014). In 2015 the Council selected its preferred alternatives for Chinook and chum salmon bycatch measures in the Bering Sea pollock fishery⁵.

1.8. Transparent management arrangements and decision making

The NPFMC submits their recommendations/plans to the NMFS for review, approval, and implementation. NMFS makes recommendations available for public review and comment (partly by publication) before taking final action by issuing legally binding Federal regulations⁶.

1.9. Compliance with international conservation and management measures

The US Coast Guard (USCG) is responsible for enforcing these FMPs at sea, in conjunction with NMFS enforcement ashore. Also, the USCG enforce laws to protect marine mammals and endangered species, international fisheries agreements (i.e. UN High Seas Driftnet Moratorium in the North Pacific), and foreign encroachment⁷.

² Agreement between the government of the USA and the Government of the Union of Soviet Socialist Republics on Mutual Fisheries Relations http://www.nmfs.noaa.gov/ia/bilateral/docs/US-Russia_ICC_IA_Book.pdf

³ AFSC 2013. Assessment of the walleye Pollock stock in the Eastern Bering sea: <http://www.afsc.noaa.gov/REFM/Docs/2013/EBSpollock.pdf>

⁴ NPFMC Bering Sea Canyons: <http://www.npfmc.org/bering-sea-canyons/>

⁵ NPFMC Bering Sea Chinook Salmon: [Bycatch http://www.npfmc.org/salmon-bycatch-overview/bering-sea-chinook-salmon-bycatch/](http://www.npfmc.org/salmon-bycatch-overview/bering-sea-chinook-salmon-bycatch/)

⁶ North Pacific Fisheries Management Council website. Accessed 2015: <http://www.npfmc.org/>

⁷ USCG. 2015. USCG District 17 Homepage: <http://www.uscg.mil/d17/>

Fundamental 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
Supporting clauses applicable	15
Supporting clauses not applicable	1
Overall level of conformity	HIGH
Non Conformances	0

Summarized evidence

2.1. Appropriate policy, legal and institutional framework adopted to achieve sustainable and integrated use of living marine resources.

The NMFS and the NPFMC participate in coastal area management-related institutional frameworks through the federal National Environmental Policy Act (NEPA) processes, a socio-economic and biological/environmental impact assessment of various proposed scenarios, before the path of action is decided. This occurs whenever resources under their management may be affected by other developments and each time they create, renew or amend regulations. The NEPA processes provide public information and opportunity for public involvement that are robust and inclusive at both the state and federal levels. Fisheries are relevant to the NEPA process in two ways. First, each significant NPFMC fisheries package must go through the NEPA review process. Second, any project that could impact fisheries (i.e., oil and gas, mining, coastal construction projects, etc.) that is either on federal lands, in federal waters, receives federal funds or requires a federal permit, must go through the NEPA process. In this manner, both fisheries and non-fisheries projects that have a potential to impact fisheries have a built in process by which concerns of the NPFMC, NMFS, state agencies, industry, other stakeholders or the public can be accounted for.

The NEPA process consists of an evaluation of the environmental effects of a federal undertaking including its alternatives. There are three levels of analysis: categorical exclusion determination; preparation of an environmental assessment/finding of no significant impact (EA/FONSI); and preparation of an environmental impact statement (EIS).

2.2./2.3./2.4. 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. Conflict avoidance and dissemination of management measures

The state is a cooperating agency in the NEPA process for federal actions, giving the State of Alaska a seat at the table for federal actions. This includes decision-making processes and activities relevant to the fishery resource and its users in support of sustainable and integrated use of living marine resources and avoidance of conflict among users.

Overall, the NEPA process, existing agencies and processes (e.g. ADFG, the Alaska Department of Environmental Conservation, the Department of Natural Resources (DNR), US Fish and Wildlife Service, the Alaska National Interest Lands Conservation Act, the DNR’s Office of Project Management and Permitting and Bureau of Ocean Energy Management), and the existing intimate and routine cooperation between federal and state agencies managing Alaska’s coastal resources (living and non- living) is capable of planning and managing coastal developments in a transparent, organized and sustainable way, that minimizes

environmental issues while taking into account the socio-economic aspects, needs and interests of the various stakeholders of the coastal zone.

The NPFMC system was designed so that fisheries management decisions were made at the regional level to allow input from affected stakeholders assuring that the rights of coastal communities and their historic access to the fishery is included in the decision process. Council meetings are open, and public testimony - both written and oral - is taken on each and every issue prior to deliberations and final decisions. Public comments are also taken at all Advisory Panel and Scientific and Statistical Committee meetings. Each Council decision is made by recorded vote in public forum after public comment. Final decisions then go to NMFS for a second review, public comment, and final approval. Decisions must conform to the MSA, the NEPA, Endangered Species Act, Marine Mammal Protection Act, and other applicable law including several executive orders. The Council meets five times each year, usually in February, April, June, October and December, with three of the meetings held in Anchorage, one in a fishing community in Alaska and one either in Portland or Seattle. Most Council meetings take seven days, with the AP and SSC usually following the same agenda and meeting two days earlier.

The Alaska BOF and the NPFMC have signed a joint protocol agreement to help coordinate compatible and sustainable management of fisheries within each organization's jurisdiction. A committee was formed, the Joint Protocol Committee, which includes three members from each group. The entire board and council meet jointly once a year to consider proposals, committee recommendations, the analyses, and other topics of mutual concern. The joint meeting is typically held in Anchorage in February, depending upon council and board meeting schedules.

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.

The Community Development Quota (CDQ) Program began in December of 1992 with the goal of promoting fisheries related economic development in western Alaska. The CDQ Program allocates a percentage of all BSAI quotas for groundfish, prohibited species, halibut and crab to eligible communities. The Program allocates 10% of the Pollock complex (yellowfin sole, northern rock sole, arrowtooth flounder, Greenland turbot, and flathead sole) BSAI TAC to eligible communities. The purpose of the program is to (i) provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the BSAI 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. There are 65 communities within a fifty-mile radius of the BS coastline who participate in the program. It was latest granted perpetuity status during the 1996 reauthorization of the MSA.

2.6. /2.7. Research and monitoring of the coastal environment

The coastal zone is monitored as part of the coastal management process using physical, chemical, biological, economic and social parameters. Involvement include federal and state agencies and programs including the U.S. Forest Service, U.S. Fish and Wildlife Service, NMFS Pacific Marine Environmental Lab (PMEL), the Alaska Department of Environmental Conservation (DEC) Division of Water, ADFG Habitat Division, the AFSC's "Ecosystem Monitoring and Assessment Program", The NMFS' Habitat Conservation Division (HCD) and their Essential Fish Habitats (EFH) monitoring and protection program, the U.S. Coast Guard, the NMFS Alaska Regional Office's Restricted Access Management Program (RAM), the Alaska National Interest Lands Conservation Act (ANILCA) federal agencies cooperation directive, and the Department of Natural Resources (DNR) Office of Project Management and Permitting (OPMP) coordinating the review of large scale projects in the state of Alaska.

Fundamental 3

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

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

Summarized evidence:

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

Under the MSA, the NPFMC is authorized to prepare and submit to the Secretary of Commerce for approval, disapproval or partial approval, a Fishery Management Plan (FMP) and any necessary amendments, for each fishery under its authority that requires conservation and management.

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

The GOA⁸ and BSAI⁹ Groundfish FMPs, under which Pollock in the federal waters of Alaska is managed, define nine management and policy objectives that are reviewed annually. These are:

- 1) Prevent Overfishing,
- 2) Promote Sustainable Fisheries and Communities,
- 3) Preserve Food Webs,
- 4) Manage Incidental Catch and Reduce Bycatch and Waste,
- 5) Avoid Impacts to Seabirds and Marine Mammals,
- 6) Reduce and Avoid Impacts to Habitat,
- 7) Promote Equitable and Efficient Use of Fishery Resources,
- 8) Increase Alaska Native Consultation,
- 9) Improve Data Quality, Monitoring and Enforcement.

The national standards and management objectives defined in GOA and BSAI FMPs provide adequate evidence to demonstrate the existence of long-term objectives clearly stated in management plans. Management measures detailed in the two Groundfish FMPs include quotas, allocated by region and by gear type; permit requirements, seasonal restrictions and closures, geographical restrictions and closed areas, gear restrictions, prohibited species requirements, retention and utilization requirements, recordkeeping and reporting requirements, and observer requirements¹⁰.

Prince William Sound FMP

In state waters (0-3 nm), the Prince William Sound (PWS) pollock fishery is managed by ADFG and the BOF; "5 AAC 28.263. The *Prince William Sound Pollock Pelagic Trawl Management Plan*" sets the regulation for the directed state pollock fishery¹¹.

⁸ Fishery Management Plan for Groundfish of the Gulf of Alaska. August 2015. NPFMC: <http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmppdf>

⁹ Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands. August 2015. NPFMC <http://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmppdf>

¹⁰ State Management: 5 AAC 28.089 Guiding Principles for groundfish fishery regulations <http://www.touchngo.com/iglcnt/akstats/aac/title05/chapter028/section089.htm>

¹¹ State Management: 5 AAC 28.263. The Prince William Sound Pollock Pelagic Trawl Management Plan <http://www.touchngo.com/iglcnt/akstats/aac/title05/chapter028/section263.htm>

B. Science and Stock Assessment Activities

Fundamental 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	9
Supporting clauses not applicable	5
Overall level of conformity	HIGH
Non Conformances	0

Summarized evidence:

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.

The NMFS and the ADFG collect fishery data and conduct fishery independent surveys to assess the pollock fishery and ecosystems in GOA and BSAI areas. GOA and BSAI SAFE documents provide complete descriptions of data types and time series of the data collected and used in the four annual age-based assessments^{12,13,14,15} used to determine stock status and harvest recommendations for EBS, GOA, AI, and Bogoslof pollock.

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 ADFG) 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 pollock fisheries are compiled from fishing logbooks and at-sea observer data. Catch reports for pollock in the BSAI¹⁶ and GOA¹⁷ Regions for 2015 can be found on the NMFS Alaskan fisheries website.

Fishery independent data are collected in regular surveys of both the GOA and BSAI regions. A summer acoustic trawl survey is carried out annually, alternating between the GOA and EBS areas. Bottom trawl surveys are carried out annually in the EBS and in alternating years in the GOA and AI. The Resource Assessment and Conservation Division (RACE) of the AFSC is responsible for surveys in the federally managed fisheries (3-200 nm) while the ADFG undertake coastal surveys and collect data from state managed fisheries (0-3 nm). The size and age compositions are available from the fisheries and surveys. The overall data collection program is among the most extensive in the world. Other sources of data (such as vessel-of-opportunity, crab, and international surveys) are also considered during the stock

¹² Ianelli, et. al., (2015). <http://www.afsc.noaa.gov/REFM/Docs/2015/EBSpollock.pdf>

¹³ Dorn, et. al., (2015). <http://www.afsc.noaa.gov/REFM/Docs/2015/GOApollock.pdf>

¹⁴ Barbeaux, S., J. Ianelli, and W. Palsson. (2015). <http://www.afsc.noaa.gov/REFM/Docs/2015/AIpollock.pdf>

¹⁵ Ianelli, et. al., (2015). <http://www.afsc.noaa.gov/REFM/Docs/2015/BOGpollock.pdf>

¹⁶ Bering Sea Aleutian Islands Catch Report:

https://alaskafisheries.noaa.gov/sites/default/files/reports/car110_bsai_with_cdq2015.pdf

¹⁷ Gulf of Alaska Catch Report. NMFS 2015:

https://alaskafisheries.noaa.gov/sites/default/files/reports/car111_season_goa2015.pdf

assessment process. The Prince William Sound pollock stock is estimated by ADFG bottom trawl surveys in summer and hydroacoustic surveys in winter (when possible).

The various fishery independent surveys are used in the stock assessments of Alaskan pollock. The surveys provide indices of abundance, including length and age composition data, as well as other biological information. For GOA, trawl surveys have been conducted by NMFS/AFSC. The survey is conducted from chartered commercial bottom trawlers using standardized high-opening bottom trawls rigged with roller gear. Acoustic surveys to assess the biomass of pollock in the Shelikof Strait area have been conducted annually since 1981 (except 1982 and 1999). A new survey time series was added to the GOA pollock assessment in 2015, namely a summer acoustic survey conducted in 2013 and 2015. ADFG has conducted bottom trawl surveys of nearshore areas of the Gulf of Alaska since 1987. Survey methods and results for GOA pollock for the most recent surveys are summarized in the 2015 SAFE report (Dorn *et. al* 2015)¹⁸. For EBS, the primary survey indices are the EBS NMFS trawl survey, the biannual acoustic trawl survey¹⁹ conducted by scientists from the Midwater Assessment and Conservation Engineering (MACE) Program of AFSC, and acoustic surveys by vessels of opportunity. Survey methods and results for EBS pollock for the most recent surveys are summarized in the 2015 SAFE report for (Ianelli *et. al.*, 2015)²⁰. Bogoslof pollock assessment uses acoustic-trawl survey data, while the main index in the AI assessment is a trawl survey.

The Fisheries Monitoring and Analysis Division (FMA) of the NMFS monitor groundfish fishing activities in the US EEZ. FMA is responsible for the biological sampling of commercial fishery catches, estimation of catch and bycatch mortality, and analysis of fishery-dependent survey data. The Division is responsible for training and oversight of at-sea observers who collect catch data onboard fishing vessels and at onshore processing plants. Data and analysis are provided to the Sustainable Fisheries Division of the Alaska Regional Office for the monitoring of quota uptake and for stock assessment, ecosystem investigations and research programs.

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

Beginning in 2013, Amendment 86 to the FMP of the BSAI and Amendment 76 to the FMP of the GOA established the new North Pacific Groundfish and Halibut Observer Program (NPGOP). All vessels fishing for groundfish in federal waters are required to carry observers, at their own expense, for at least a portion of their fishing time. These changes were intended 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. Observer coverage in the EBS Pollock fishery has been at 100% (often with 2 observers per vessel) for the past several years.

Data gathered in the NPGOP cover all biological information from commercial fisheries, including catch weights (landings and discards), catch demographics (species composition, length, sex and age) and interactions with species such as sharks, rays, seabirds, marine mammals and other species with limited or no commercial value. Observers were also assigned to monitor deliveries of pollock to obtain a count of the number of salmon caught as bycatch and to obtain genetic samples from these fish. As well as providing data for stock assessment and other scientific purposes, the observer program is also used extensively in- and post-season management. Daily reports are electronically transmitted via the CAS system. This 'real-time' data is used as the basis to trigger area as well as fisheries closures e.g. if maximum catch allocations of target or Prohibited Species are caught. Financing of the NPGOP is based on cost recovery where individual vessel operators must pay the daily observer costs as a condition of license. Annual reports²¹ from the Observer Program contain detailed information on fees and budgets,

¹⁸ <http://www.afsc.noaa.gov/REFM/Docs/2015/GOApollock.pdf>

¹⁹ Honkalehto, T., and McCarthy, A. (2015). <http://www.afsc.noaa.gov/Publications/ProcRpt/PR2015-07.pdf>

²⁰ <http://www.afsc.noaa.gov/REFM/Docs/2015/EBSpolllock.pdf>

²¹ NMFS (National Marine Fisheries Service). 2015. North Pacific Groundfish and Halibut Observer Program 2014 Annual Report. National Oceanic and Atmospheric Administration, 709 West 9th Street. Juneau, Alaska 99802.

<https://alaskafisheries.noaa.gov/fisheries/observer-program-reports>

deployment performance, enforcement, and outreach. NMFS envisions that future reporting will expand key performance metrics to improve understanding of the Observer Program performance. NMFS has already noted progress on incorporating variances associated with catch estimates, and will continue to report as work progresses.

NMFS and the NPFMC have developed an Electronic Monitoring (EM) Strategic Plan to integrate video monitoring into the Observer Program to improve data collection. The NMFS Policy on Electronic Monitoring Technologies and Fishery Dependent Data Collection provides guidance on the adoption of electronic technology solutions in fishery-dependent data collection programs. Electronic technologies include the use of vessel monitoring systems (VMS), electronic logbooks, video cameras for electronic monitoring (EM), and other technologies that provide EM and electronic reporting (ER). The policy also includes guidance on the funding for electronic technology use in fishery-dependent data collection programs. At-sea work has proceeded under this initiative in 2014 and 2015.

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.

4.4. States shall stimulate the research required to support national policies related to fish as food.

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.

Regarding socio-economic data collection, economic analyses are required to varying degrees under the Regulatory Flexibility Act (RFA), the MSA, the NEPA, the Endangered Species Act, and other applicable laws. AFSC's Economic and Social Sciences Research Program (in the REFM Division) produces an annual Economic Status Report²² of the Groundfish fisheries in Alaska. This comprehensive report provides estimates of total groundfish catch, groundfish discards and discard rates, prohibited species catch (PSC) and PSC rates, values of catch and resulting food products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, and employment on at-sea processors. The report contains a wide range of analyses and comments on the performance of a range of indices for different sectors of the North Pacific fisheries, including Alaskan pollock, and relates changes in value, price, and quantity, across species, product and gear types, to changes in the market.

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.

Various technologies are employed in the pollock fisheries to reduce by-catch and discards and to minimize bottom contact. Data from the smaller scale near-shore state-managed fisheries are included in the stock assessments. The 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 actions²³. The Committee is to advise the Council on how to provide opportunities for better understanding and participation from Alaska Native and rural communities; to provide feedback on community impacts sections of specific analyses, if requested; and to provide recommendations regarding which proposed Council actions need a specific outreach plan and prioritize multiple actions when necessary. Priorities of the Committee included salmon PSC reduction in EBS and GOA.

²² Fissel, et. al., (2015). <http://www.afsc.noaa.gov/refm/docs/2015/economic.pdf>

²³ NPFMC. Rural Outreach Committee. Accessed. (2015) <http://www.npfmc.org/committees/rural-outreach-committee/>

Fundamental 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	10
Supporting clauses not applicable	1
Overall level of conformity	HIGH
Non Conformances	0

Summarized Evidence:

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.

Guided by MSA standards, and other legal requirements, the NMFS has a well-established institutional framework for research developed within the Alaska Fisheries Science Center (AFSC), which operates several laboratories and Divisions. The Auke Bay Laboratories conducts scientific research on fish stocks, fish habitats, and the chemistry of marine environments. The National Marine Mammal Laboratory conducts research on marine mammals, with particular attention to issues related to marine mammals off the north Pacific coasts including Alaska.

The Fisheries Monitoring and Analysis Division (FMA) monitors groundfish fishing activities in the US EEZ off Alaska and conducts research associated with sampling commercial fishery catches, estimation of catch and bycatch mortality, and analysis of fishery-dependent data. The Resource Assessment and Engineering Division (RACE) conducts fishery surveys to measure the distribution and abundance of approximately 40 commercially important fish and crab stocks. The Resource Ecology and Fisheries Management Division (REFM) collects data to support management of Northeast Pacific and eastern Bering Sea fish and crab resources, including Pollock. REFM also produces of an annual Economic Status Report, referred to under clause 4.5 above.

The state of Alaska has conducted bottom trawl surveys in near-shore areas of GOA since 1987. Data from these surveys, and research on its state-waters pollock fishery in Prince William Sound (PWS) are used in the assessment of the GOA Pollock stock.

The North Pacific Research Board (NPRB)²⁴ was created in 1997 to conduct research activities relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean with a priority on cooperative research efforts designed to address pressing fishery management or marine ecosystem information needs. The NPRB has developed two Integrated Ecosystem Research Programs relevant to the GOA and BSAI²⁵. These are extensive multi-year projects involving tens of millions of dollars and scientists from a number of institutions, and are described more fully in Section E (13) below.

²⁴ North Pacific Research Board <http://www.nprb.org/>

²⁵ NPRB) - Bering Sea Project <http://www.nprb.org/bering-sea-project>

The Pollock Conservation Cooperative Research Center²⁶ at the School of Fisheries and Ocean Sciences in University of Alaska Fairbanks was established in 2000 to improve knowledge about the North Pacific Ocean and Bering Sea through research and education, focusing on the commercial fisheries of the Bering Sea and Aleutian Islands. The Center receives extensive funding from the pollock fishing industry in Alaska, and provides: (1) grants to faculty and research stipends to graduate students for research on pollock, other groundfish species, the fisheries for these species, and on marine mammals; (2) funding for marine education, technical training, and equipment; and (3) funding for research in the area of marine resource economics.

Formed in 1998, the North Pacific Fisheries Research Foundation (NPFRF) was established by participants of the Bering Sea groundfish trawl fishery to fund, direct, and otherwise oversee applied scientific research regarding the fisheries and fishery resources of the North Pacific, in the interest of the commercial fishing industry. They have done recent work on salmon excluder devices for the Pollock trawl fisheries²⁷.

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.

Peer reviewed stock assessments are done annually and used as the scientific basis to set catch quotas. Scientists also evaluate how fish stocks and user groups might be affected by fishery management actions. The assessments take into account uncertainty and evaluate stock status relative to reference points in a probabilistic way. The *Stock Assessment and Fishery Evaluation* (SAFE) reports (see Section 4 above for details and references to the 2015 pollock SAFE documents) are compiled annually by the BSAI and GOA Groundfish Plan teams, which are appointed by the Council. The sections are authored by AFSC and State of Alaska scientists and the assessments first undergo internal peer review. The assessments as well as the plan team recommendations are then subsequently reviewed by the SSC who make the final OFL and ABC recommendations to the NPFMC. The SSC may modify the recommendations from the Plan Team based upon additional considerations. The Council sets TACs at or below the ABC recommendations of the SSC. The SAFE reports also include a volume assessing the Economic Status of the Groundfish Fisheries off Alaska as well as a volume on Ecosystem Considerations. The SAFE report provides information on the historical catch trend, estimates of the maximum sustainable yield of the groundfish complex as well as its component species groups, assessments on the stock condition of individual species groups; assessments of the impacts on the ecosystem of harvesting the groundfish complex at the current levels given the assessed condition of stocks, including consideration of rebuilding depressed stocks; and alternative harvest strategies and related effects on the component species groups.

The AFSC periodically requests a more comprehensive review of groundfish stock assessments by the Center of Independent Experts (CIE). These reviews are intended to lay a broader groundwork for improving the stock assessments outside the annual assessment cycle. The Gulf of Alaska pollock assessment was reviewed by three external reviewers from the CIE during July 17-20, 2012, and their reports are available on a NMFS website²⁸. Subsequent stock assessments of GOA pollock have addressed many of the recommendations contained in this CIE review.

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

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

The United States and Russian Federation maintain the bilateral Intergovernmental Consultative Committee (ICC) fisheries forum pursuant to the US-Soviet Comprehensive Fisheries Agreement, signed on

²⁶ Pollock Conservation Cooperative Research Center <https://www.uaf.edu/sfos/research/major-research-programs/pccrc/>

²⁷ North Pacific Fisheries Research Foundation (NPFRF) <http://www.npfrf.org/>

²⁸ NMFS CIE Peer Reviews Gulf of Alaska Pollock <https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/cie-review-2012>

May 31, 1988. These meetings have resulted in US vessels doing acoustical surveys with Russian Federation scientists in the Federation's zone of the Bering Sea (near Cape Navarin), where a small portion of U.S. pollock moves into²⁹.

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.

Data collected by scientists from the many surveys and pollock fisheries are analysed and presented in peer reviewed meetings and/or in primary literature, following rigorous scientific protocols. Results of these analyses are disseminated in a timely fashion through numerous methods, including scientific publications, and as information on NMFS, ADFG, and NPFMC websites, in order to contribute to fisheries conservation and management. Confidentiality of individuals or individual vessels (e.g. in the analysis of fishery CPUE data) is fully respected where necessary.

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.

Since its introduction in 1998, the American Fisheries Act (AFA) has governed the operation of the Alaskan pollock fisheries. The AFA affected the pollock industry through capacity reduction, increased efficiency, regulatory bycatch reduction, a higher portion of utilized fish, and higher valued products. NMFS has numerous reports³⁰ on the performance of the pollock vessels operating under AFA.

The Western Alaska Community Development Quota (CDQ) Program³¹ 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. The purpose of the CDQ Program is to (i) provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the Bering Sea and Aleutian Islands Management Area; (ii) support economic development in western Alaska; (iii) alleviate poverty and provide economic and social benefits for residents of western Alaska; and (iv) achieve sustainable and diversified local economies in western Alaska. The current allocation is 10 % of the pollock TAC.

²⁹ AFSC PROCESSED REPORT 2015-07 Results of the Acoustic-Trawl Survey of Walleye Pollock (*Gadus chalcogrammus*) on the U.S. and Russian Bering Sea Shelf in June - August 2014 (DY1407): <http://www.afsc.noaa.gov/Publications/ProcRpt/PR2015-07.pdf>

³⁰ American Fisheries Act- Pollock <https://alaskafisheries.noaa.gov/fisheries/AFA-pollock>

³¹ NPFMC Community Development Quota Program <http://www.npfmc.org/community-development-program/>

C. The Precautionary Approach

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

Summarized Evidence:

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 MSA 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. The BSAI and GOA groundfish fishery management plans³² have pre-defined harvest control rules that define a series of target and limit reference points for pollock 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 (F_{OFL}) used to set OFL, Acceptable Biological Catch (ABC) and the fishing mortality rate (F_{ABC}) 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 from the fishery through the promotion of conservative harvest levels while considering differing levels of uncertainty.

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. For Tier 1 stocks, reliable estimates are available of B and B_{MSY} , and a reliable probability density function is available for F_{MSY} . For Tier 3 stocks, the spawner-recruit relationship is uncertain, so that MSY cannot be estimated with confidence. Hence, a surrogate based on $F_{40\%}$ is used, following findings in the scientific literature in the 1990s. For Tier 3 stocks, the MSY proxy level is defined as $B_{35\%}$. Stocks in tiers 1-3 are further categorized (a) (b) or (c) based on the relationship between B and B_{MSY} (or proxy), with (a) indicating a stock where biomass is above B_{MSY} (or proxy), (b) indicating a stock where biomass is below B_{MSY} but above $(0.05 \times B_{MSY})$, and (c) indicating a stock where biomass is below $(0.05 \times B_{MSY})$. The category assigned to a stock determines the method used to calculate ABC and OFL.

³² North Pacific Fisheries Management Council Fisheries Management Plans <http://www.npfmc.org/fishery-management-plans/>

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 mt; the range for GOA is 116 to 800 thousand mt. In practice, only the upper OY limit in the BSAI has been a factor in altering harvests.

EBS Pollock is a tier 1 stock and therefore the reference points are based on MSY, although recommendations are also made based on tier 3 calculations. The following table is from the 2015 SAFE³³ for EBS pollock:

Quantity	<i>As estimated or specified last year for:</i>		<i>As estimated or recommended this year for:</i>	
	2015	2016	2016	2017
<i>M</i> (natural mortality rate, ages 3+)	0.3	0.3	0.3	0.3
Tier	1a	1a	1a	1a
Projected total (age 3+) biomass (t)	9,203,000 t	11,000,000 t	11,300,000 t	11,000,000 t
Projected female spawning biomass (t)	2,850,000 t	2,950,000 t	3,540,000 t	3,500,000 t
<i>B₀</i>	5,162,000 t	5,162,000 t	5,676,000 t	5,676,000 t
<i>B_{MSY}</i>	1,948,000 t	1,948,000 t	1,984,000 t	1,984,000 t
<i>F_{OFL}</i>	0.587	0.587	0.514	0.514
<i>maxF_{ABC}</i>	0.512	0.512	0.401	0.401
<i>F_{ABC}</i>	0.24	0.25	0.27	0.26
OFL (t)	3,330,000 t	3,490,000 t	3,910,000 t	3,540,000 t
maxABC (t)	2,900,000 t	3,040,000 t	3,050,000 t	2,760,000 t
ABC (t)	1,637,000 t	1,554,000 t	2,090,000 t	2,019,000 t
Status	2013	2014	2014	2015
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 estimated catches assuming 1,350,000 t used in place of maximum permissible ABC for 2016 and 2017.

The stock’s female spawning biomass is estimated to be at almost 80% above the BMSY level, there is no overfishing occurring and the stock is not overfished. To add stability in catch rates and effort, an ABC for 2016 based on the Tier 3 values (2,090,000 t) was recommended by the SAFE authors, which is well below the maximum permissible (Tier 1a) value of 3,050,000 t. The Tier 1a overfishing level (OFL) is estimated to be 3,910,000 t. These values³⁴ were adopted by NPFMC in its Dec. 2015 meeting, and the TAC was set at 1,340,000 t, a slight increase from the 2015 TAC of 1,310,000 t.

For AI pollock, The 2015 SAFE document³⁵ estimates the stock size in 2016 to be slightly above the B35% ref. point. The stock was determined to have no overfishing occurring, and to not be overfished. Under tier 3b, the recommended ABC for 2016 was 32, 227 t, the value adopted by NPFMC. The 2016 TAC was set at 19,000 t, which is well above the current catch level (< 1000 t in 2015). For Bogoslof pollock, a tier 5 assessment³⁶ indicated that there was no overfishing occurring through 2014, and the recommended 2016 ABC of 23, 850 t was adopted by NPFMC. The 2016 TAC was set at 500 t, in line with recent catches in this stock.

³³ <http://www.afsc.noaa.gov/REFM/Docs/2015/EBSpollock.pdf>

³⁴ Pollock OFL, ABC, TAC 2015 <http://www.npfmc.org/wp-content/PDFdocuments/SPECS/BSAIGOAspecsLONG1215.pdf>

³⁵ <http://www.afsc.noaa.gov/REFM/Docs/2015/AIpollock.pdf>

³⁶ <http://www.afsc.noaa.gov/REFM/Docs/2015/BOGpollock.pdf>

For GOA pollock, the assessment indicated that the stock was slightly above the B40% ref point, placing the stock in tier 3a. The stock is not overfished, and overfishing is not occurring. The SAFE author’s 2016 ABC recommendation for pollock in the Gulf of Alaska west of 140° W long. (W/C/WYK regions) is 254,310 t, which is an increase of 33% from the 2015 ABC (see table below, from 2015 SAFE³⁷).

Quantity/Status	As estimated or specified <i>last year for</i>		As estimated or specified <i>this year for</i>	
	2015	2016	2016	2017
<i>M</i> (natural mortality rate)	0.3	0.3	0.3	0.3
Tier	3b	3a	3a	3a
Projected total (age 3+) biomass (t)	1,883,920	1,927,010	1,937,900	1,543,100
Female spawning biomass (t)				
Projected				
Upper 95% confidence interval	406,382	432,820	411,386	454,646
Point estimate	309,869	330,497	321,626	357,193
Lower 95% confidence interval	236,081	253,194	240,967	277,694
<i>B</i> _{100%}	779,000	779,000	750,000	750,000
<i>B</i> _{40%}	312,000	312,000	300,000	300,000
<i>B</i> _{35%}	273,000	273,000	262,000	262,000
<i>F</i> _{OFL}	0.28	0.28	0.29	0.29
<i>maxF</i> _{ABC}	0.24	0.24	0.25	0.25
<i>F</i> _{ABC}	0.20	0.22	0.23	0.25
OFL (t)	256,545	321,067	322,858	289,937
maxABC (t)	222,774	272,165	278,385	250,544
ABC (t)	191,309	250,824	254,310	250,544
Status	As determined <i>last</i> year for		As determined <i>this</i> year for	
	2013	2014	2014	2015
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No

For pollock in southeast Alaska (Southeast Outside region), the ABC recommendation (tier 5) for 2016 was 9,920 t, which is a decrease from the 2015 level of 12, 265 t. No overfishing is occurring in this stock component.

For both stock components in the GOA, the NPFMC adopted the recommended ABCs³⁸. The 2016 TAC for the W/C/WYK area was set at 247,952 t, while the SE outside TAC was set at 9,920 t.

The state of Alaska manages the PWS Pollock, and the GHl is based on 2.5% of the federal pollock ABC.

³⁷ <http://www.afsc.noaa.gov/REFM/Docs/2015/GOApollock.pdf>

³⁸ <http://www.npfmc.org/wp-content/PDFdocuments/SPECS/BSAIGOAspectsLONG1215.pdf>

Fundamental 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

Summarized Evidence:

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

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

The MSA, as amended, sets out ten national standards for fishery conservation and management, with national standard 1 of the MSA requiring that conservation and fisheries management measures prevent overfishing while achieving optimal yield for each fishery on a continuing basis. The BSAI and GOA Groundfish FMPs³⁹ are clearly consistent with MSA requirements in applying the Precautionary Approach (PA) to fisheries. The FAO Guidelines for the PA advocate a comprehensive management process that includes data collection, monitoring, research, enforcement, and review, prior identification of desirable (target) and undesirable (limit) outcomes, and measures in place to avoid and correct undesirable outcomes, the action to be taken when specified deviations from operational targets are observed and an effective management plan. Lastly, the FAO guidelines advocate that the absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species as well as non-target species and their environment. The overall management for pollock in Alaska is comprehensive, the available scientific data and analyses are substantial, and as detailed in the previous sections of this report, all the elements as specified above in the FAO guidelines for the PA are present.

³⁹ <http://www.npfmc.org/fishery-management-plans/>

D. Management Measures

Fundamental 8

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

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

Summarized evidence:

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.

National Standard 1 of the MSA requires that conservation and fisheries management measures prevent overfishing while achieving optimal yield on a continuing basis. As noted in previous sections, the NMFS and NPFMC follow a multi-faceted PA (OFL, ABC, TAC, OY) to manage the federal pollock fisheries, based on targets, limits, and pre-defined HCRs, as well as overall ecosystem considerations (e.g. the OY limits). The objectives are spelled out clearly in modern FMPs for BSAI and GOA Regions, and both FMPs contain long-term management objectives for the Alaska pollock fishery.

Management measures in the FMPs include (i) permit and participation, (ii) authorized gear, (iii) time and area, and catch restrictions, (iv) measures that allow flexible management authority, (v) designate monitoring and reporting requirements for the fisheries, and (vi) describe the schedule and procedures for review of the FMP or FMP component. There is a rigorous peer-reviewed scientific process, which accounts for uncertainty, upon which the annual management (ABC) advice and TAC is based. The state pollock fishery in Prince William Sound is managed by ADFG and BOF using a Guideline Harvest Level (GHL) set as a percentage of the GOA federal ABC, and regulations are spelled out in an FMP.

Based on the 2015 stock assessments, none of the pollock stocks in Alaskan federal or state waters are overfished, or are undergoing overfishing. There are regulations to protect Steller sea lions (SSL) and to avoid seabirds and corals, by-catches of all species are carefully managed and fisheries are closely monitored by extensive observer coverage, dockside checks, and Federal and State enforcement agencies. No destructive fishing practices are employed, and the only gear allowed to direct for pollock in Alaskan waters (Federal and State) is the pelagic trawl, which has minimal impact on seabed habitats.

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.

Organisations and individuals involved in the fishery and management process have been identified. The Alaska pollock management process has many stakeholders, including Alaska pollock license holders,

processors, fishermen's organizations, the states of Alaska, Washington, and Oregon, CDQ groups, and environmental groups. Roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. The NPFMC process is the primary means for soliciting stakeholder information important to the Alaska pollock fisheries, and this is fully transparent and open to the public. Proposals for management measures may come from the public, state and federal agencies, advisory groups, or Council members. Fishing industry stakeholders work extensively with fishery scientists, managers, and other industry members on various initiatives to ensure sustainability of the Pollock fisheries. Cooperative fishing for pollock began under the AFA in 1999. The NPFMC's CDQ Program and Rural Outreach Committee also ensure community participation in fishery management actions.

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.

The BSAI and GOA FMPs define specific management measures to avoid excess fishing capacity and maintain stocks that are economically viable for the fishing communities and industry to harvest and process. As noted above in Section 4.5, AFSC's Economic and Social Sciences Research produces an annual Economic Status Report⁴⁰ of the Groundfish fisheries in Alaska, which includes estimates of catches, values of catch and resulting food products, and the number and sizes of vessels that participate in the groundfish fisheries off Alaska. There are substantial effort controls and records of all fishing operations in the Alaskan fisheries through mechanisms such as the NPFMC Licence Limitation Program, and the Restricted Access Management Program administered by NMFS Alaska Regional Office. The Alaska Commercial Fisheries Entry Commission (CFEC) issues state waters permits and vessel licenses to qualified individuals.

8.4. (Incl 8.4.1., 8.4.2.) 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.

There have been numerous regulations, as well as technological developments, aimed at reducing waste and discards in the pollock fisheries. These include various measures to address fish size, discards, and closed seasons and areas. Specific examples include the split of the BS TAC into A and B seasons to allow harvest of roe-bearing pollock at appropriate times and thereby reduce wastage, and the development of Chinook and chum salmon excluder devices for trawl gear to reduce these by-catches, and closures of large areas to protect numerous species. The doors used in the pelagic trawls used in the pollock fisheries in Alaska have negligible bottom contact, and although the net does contact the seabed, benthic or bottom species by-catch is generally quite low. Discard rates are also low in the pollock fisheries. Further information on by-catch is found in Section F below.

Information on bycatch and Prohibited Species Catch (PSC) in Alaskan fisheries can be found on the NMFS website. Amendment 91 is described there as "an innovative approach to managing Chinook salmon bycatch in the BSAI pollock fishery that combines a limit on the amount of Chinook salmon that may be caught incidentally with incentive plan agreements and performance standard. The program was designed to minimize bycatch to the extent practicable in all years, and prevent bycatch from reaching the limit in most years, while providing the pollock fleet with the flexibility to harvest the total allowable catch". NMFS implemented this program for the 2011 BSAI pollock fishery. In 2015 NPFMC passed a number of salmon bycatch reduction measures for implementation in 2016-2017. This included incorporation of chum salmon avoidance into Amendment 91 Incentive Plan Agreements, requires salmon excluder devices, establishes penalties for vessels that consistently have high bycatch relative to the fleet, adjusts seasonal allocations, and lowers the hard cap and performance standard by 25% in years of low Chinook abundance. In the EBS, Chinook salmon bycatch in 2015 was 54% of the 2003-2015 mean value consistent with the magnitude of bycatch since the implementation of Amendment 91 in 2011. Ianelli and Stram (2014) provide estimates of the bycatch impact on Chinook salmon runs to the coastal west Alaska region and found that the peak

⁴⁰ Fissel, et. al., (2015). <http://www.afsc.noaa.gov/refm/docs/2015/economic.pdf>

bycatch levels exceeded 7% of the total run return. Since 2011, the impact has been estimated to be <2%.

Regarding the endangered Steller sea lions (SSL), the NPFMC has acted in a precautionary manner to place protections around rookeries and haulouts and close areas where fishing may impact SSL prey. Over 210,000 km² (54%) of critical sea lion habitat is closed to the pollock fishery, with further restrictions on the proportion of annual pollock TAC which can be removed from the BSAI Steller sea lion Conservation Area.

Fundamental 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

Summarized evidence:

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 MSA 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 pollock 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 rebuilding if stocks are overfished. None of the pollock stocks in Alaska are classified as overfished or undergoing overfishing, and are not in a depleted state. Only pelagic trawls are used in the fishery and no destructive fishing practices are allowed which would adversely impact habitat. The Environmental Impact Statement on Essential Fish Habitat (EFH) in 2005 provided estimates of impact of the pelagic trawl gear used in the BSAI pollock fishery, which indicated that the fishery was highly unlikely to result in serious or irreversible harm to habitat structure. This was confirmed in the review of the EFH done in 2010.

With regard to other resources taken in the Pollock fishery, considerable work has been done on studying the effects on Chinook salmon in the EBS, as there are concerns with the status of Chinook in many rivers. There have been scientific sampling and genetic analyses of the Chinook salmon taken in the pollock fisheries in the GOA to determine their origins. For areas which comprised 84% of the GOA chinook bycatch in 2013, the proportions of reporting groups were determined to be as follows: British Columbia (43%), U.S. West Coast (42%), coastal Southeast Alaska (11%), Northwest GOA (3%), and others (< 1%)⁴¹. In 2011, the National Marine Fisheries Service implemented a hard cap on Chinook salmon bycatch in the EBS pollock fishery, which was a significant step towards controlling and ultimately reducing bycatch. The NPFMC developed incentive plan agreements to keep bycatch lower than the BSAI Chinook cap level, and these agreements include explicit incentives and penalties for the pollock fleet to avoid Chinook salmon in all conditions. Additional information on by-catch of various species is contained in Section F below.

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 pollock stocks, interests of indigenous people and local fishing communities in Alaska are recognized. The Western Alaska

⁴¹ Guyon, et. al., (2015). <https://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-291.pdf>

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. Also, as noted in Section 4.6 above, 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 also 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.

The pelagic trawl fisheries for pollock account for very low bycatches of most species, including marine mammals⁴² and seabirds. As well, for the pollock fisheries, discarding is extremely low. From the observer report for the 2014 fishery⁴³, Table 4.3 shows that for the 1.14 million tons of pollock caught in the BSAI by catcher and catcher processor vessel in 2014, only 4,130 t of total discards was recorded, which is < 0.4%.

The NPFMC measures for Chinook and chum salmon bycatch reduction passed in 2015 for implementation in 2016 require, among other actions, the use of salmon excluder devices. A number of studies, e.g. those conducted under the North Pacific Fisheries Research Foundation⁴⁴, have been carried out on trawl-mounted devices to exclude chum and chinook salmon in the pollock fisheries in GOA and BSAI.

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.

No fixed gears (e.g. gillnets) are permitted, by regulation, in the federal and state pollock fisheries in Alaska. Thus there is no ghost fishing from these forms of fishing gear in the pollock fisheries. As well, there is minimal gear loss in pelagic trawl fisheries, given that the lack of bottom contact from trawl doors greatly reduces snagging and subsequent loss of trawls on the seabed.

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.

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

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.

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

⁴² Allen, B. M., and R. P. Angliss. 2014. Alaska marine mammal stock assessments. NOAA Technical Memorandum NMFS-AFSC-301, 313 p. <http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-301.pdf>

⁴³ AFSC. 2015. Observer Program Reports. Annual Deployment Plans and Reports. <https://alaskafisheries.noaa.gov/fisheries/observer-program-reports>

⁴⁴ North Pacific Fisheries Research Foundation – Salmon Excluder EFP 11-01 Final Report June 2013 http://www.npfrf.org/uploads/2/3/4/2/23426280/salmon_excluder_efp_11-01_final_report-1.pdf

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.

As noted earlier, there is minimal by-catch and discarding in the pollock fisheries. Use of salmon excluder devices is generally thought not to negatively impact the selectivity of the trawls toward pollock, and are designed not to impede escaping pollock or salmon. As reported by Gauvin, 2013⁴⁵, salmon excluder designs have evolved considerably since experimental trials in the Bering Sea pollock fishery started in the fall of 2003. Design changes have been influenced by a suite of exempted fishing permit (EFP) tests and by feedback from fishermen using the various designs over the years since the EFPs started. NPFMC has incorporated the use of excluder devices into their management measures. Developmental work is ongoing on these salmon excluder devices for both chum and chinook.

⁴⁵ Ibid.

Fundamental 10

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

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

Summarized evidence:

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

The North Pacific Fishing Vessel Owners association (NPFVO)⁴⁶ 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 Center⁴⁷.

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, & Watch keeping). 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)⁴⁸ 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. MSA), to seafood marketing. The 2013 summit was hosted in Anchorage, Alaska, from December 10th to the 12th. The next Summit is due to be held on the 27-29th 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 industry⁴⁹.

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, Alaska⁵⁰.

⁴⁶The North Pacific Fishing Vessel Owners association <http://www.npfvoa.org/>

⁴⁷ Alaska's Institute of Technology <http://www.avtec.edu/amtc-cost.aspx>

⁴⁸ University of Alaska Sea Grant Marine Advisory Program (MAP) <http://seagrants.uaf.edu/map/fisheries/>

⁴⁹ Alaska Young Fishermen's Summit: <https://seagrants.uaf.edu/map/workshops/2013/ayfs/>,
<https://seagrants.uaf.edu/map/workshops/2016/ayfs/>

⁵⁰ Fishery Industrial Technology Center <http://www.uaf.edu/sfos/about-us/locations/kodiak/about-ksmsc/>

E. Implementation, Monitoring and Control

Fundamental 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	6
Supporting clauses applicable	3
Supporting clauses not applicable	3
Overall level of conformity	HIGH
Non Conformances	0

Summarized evidence:

11.1. Enforcement agencies and framework:

Effective mechanisms are established for fisheries monitoring, surveillance, control and enforcement measures including, an observer program (although it is designed for biological data collection rather than enforcement), inspection schemes such as US Coast Guard (USCG)⁵¹ boardings, dockside landing inspections and vessel monitoring systems, to ensure compliance with the conservation and management measures for the Alaska Pollock fisheries.

The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE)⁵² enforce federal fisheries laws and regulations, especially 50CFR679. OLE Special Agents and Enforcement Officers conduct complex criminal and civil investigations, board vessels fishing at sea, inspect fish processing plants, review sales of wildlife products on the internet and conduct patrols on land, in the air and at sea. NOAA Agents and Officers can assess civil penalties directly to the violator in the form of Summary Settlements (SS) or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation (GCEL). GCEL can then assess a civil penalty in the form of a Notice of Permit Sanctions (NOPs) or Notice of Violation and Assessment (NOVAs), or they can refer the case to the U.S. Attorney's Office for criminal proceedings.

On January 8, 2002, an emergency interim rule (67 FR 956) was issued by NMFS to implement Steller sea lion protection measures. All vessels using pot, hook-and-line or trawl gear in the directed fisheries for pollock, Pacific cod or Atka mackerel are required [Section 679.7(a)(18)] to have an operable VMS on board. This requirement is necessary to monitor fishing restrictions in Steller sea lion protection and forage areas. The Alaska Department of Public Safety, Division of Alaska Wildlife Troopers is responsible for protecting fishery resources within 3 miles of shore, including the PWS state-managed pollock fishery.⁵³

11.2./11.4. Fishing permit requirements:

No foreign fleet is allowed to fish in the Alaska's EEZ. Every fishing vessel targeting pollock in Alaska is required to have a federal permit. The permit programs are managed by the Restricted Access Management (RAM) federal division.

⁵¹ US Coast Guard: <http://www.uscg.mil/>

⁵² NOAA Office of Law Enforcement <http://www.nmfs.noaa.gov/ole/index.html>

⁵³ Alaska Wildlife Troopers <http://dps.alaska.gov/AWT/marine.aspx>

The pollock fisheries of Alaska under assessment here are harvested exclusively within the Alaska EEZ only. Those fisheries are not part of any international agreement or part of a framework of sub-regional or regional fisheries management organizations or arrangements. Pollock fisheries in international waters abutting the GOA or BSAI EEZ occur in north-western British Columbia and in Russian waters across the Bering Sea Convention Line. Those fisheries are regulated by their own Governments.

11.3 Boardings and Violations

Pollock fisheries in the Gulf of Alaska and Bering Sea are primarily targeted by trawl vessels, although there are some other gears that legally land pollock. The active fleet size of vessels targeting these species is approximately 107 vessels each year in the BSAI, and 91 in the GOA and the Coast Guard attempts to board a percentage of these vessels annually.⁵⁴ This fleet has a VMS requirement, which makes them relatively easy to track. The Coast Guard boarded 747 fishing vessels with 26 violations detected, providing a detected violation rate of 4%⁵⁵.

Cases of significance 2015:

- NOAA General Counsel settled with American Seafoods Company for flow scale tampering on three of their Pollock catcher/processor vessels. An employee of U.S. Seafoods on the F/V Alliance was charged with two counts of observer harassment for conduct that had the effect of interfering with observers' work performance.
- IUU Fishing: A NOVA was issued for \$100,000 to the corporate owner of the Russian-flagged fishing vessel, Admiral Kolchak. The vessel was about 1,100 yards inside the maritime boundary line when it was detected by the U.S. Coast Guard. While the Coast Guard was unable to interdict and seize the vessel, the on-scene helicopter crew developed a case package clearly showing illegal fishing²⁰.
- AK1305173; F/V Leslie Lee - Owner and operator were charged under the Magnuson-Stevens Act for exceeding the maximum retainable amount of Pollock. A \$22,964.23 NOVA was issued⁵⁶.

⁵⁴ NOAA Office of Law Enforcement Annual Report Fiscal year 2015:

http://www.nmfs.noaa.gov/ole/docs/2015/ole_fy2015_annual_report.pdf

⁵⁵ USCG 2015 report <http://www.npfmc.org/committees/enforcement-committee/>

⁵⁶ NOAA Office of the General Counsel, Enforcement Section Enforcement Actions January 1, 2015, through June 30, 2015

http://www.gc.noaa.gov/documents/2015/Internet_Posting_for_September_2015_09022015.pdf

Fundamental 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
Supporting clauses applicable	2
Supporting clauses not applicable	2
Overall level of conformity	HIGH
Non Conformances	0

Summarized evidence:

12.1/12.2 Enforcement policies and regulations, state and federal:

In Alaska waters, enforcement policy section 50CFR600.740 states⁵⁷:

The Magnuson-Stevens Act provides four basic enforcement remedies for violations, in ascending order of severity, as follows: (1) Issuance of a citation (a type of warning), usually at the scene of the offense (see 15 CFR part 904, subpart E). (2) Assessment by the Administrator of a civil money penalty. (3) For certain violations, judicial forfeiture action against the vessel and its catch. (4) Criminal prosecution of the owner or operator for some offenses. It shall be the policy of NMFS to enforce vigorously and equitably the provisions of the MSA by utilizing that form or combination of authorized remedies best suited in a particular case to this end⁵⁸.

Processing a case under one remedial form usually means that other remedies are inappropriate in that case. However, further investigation or later review may indicate the case to be either more or less serious than initially considered, or may otherwise reveal that the penalty first pursued is inadequate to serve the purposes of the MSA. Under such circumstances, the Agency may pursue other remedies either in lieu of or in addition to the action originally taken. Forfeiture of the illegal catch does not fall within this general rule and is considered in most cases as only the initial step in remedying a violation by removing the ill-gotten gains of the offense.

If a fishing vessel for which a permit has been issued under the MSA is used in the commission of an offense prohibited by section 307 of the MSA, NOAA may impose permit sanctions, whether or not civil or criminal action has been undertaken against the vessel or its owner or operator. In some cases, the MSA requires permit sanctions following the assessment of a civil penalty or the imposition of a criminal fine. In sum, the MSA treats sanctions against the fishing vessel permit to be the carrying out of a purpose separate from that accomplished by civil and criminal penalties against the vessel or its owner or operator.

The “Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions” issued by NOAA Office of the General Counsel – Enforcement and Litigation on March 16, 2011. In that Policy, the NOAA General Counsel’s Office committed to periodic review of the Penalty Policy to consider revisions or modifications as appropriate. The July 2014 revised version of the Penalty Policy is a result of that review. The purpose of the 2014 Policy is to ensure that: (1) civil administrative penalties and permit sanctions are assessed in accordance with the laws that NOAA enforces in a fair and consistent manner; (2) penalties and

⁵⁷ 50CFR600.740 Enforcement policy NOAA. Update of NOAA Fisheries Enforcement Programs and Operations. Accessed 2015. http://www.nmfs.noaa.gov/sfa/reg_svcs/Councils/ccc_2011/Tab%20L%20-%20Enforcement%20Issues/Enforcement%20Issues.pdf

⁵⁸ The Alaska State Legislature. Accessed 2015 <http://www.legis.state.ak.us/basis/aac.asp#TitleTable>

permit sanctions are appropriate for the gravity of the violation; (3) penalties and permit sanctions are sufficient to deter both individual violators and the regulated community as a whole from committing violations; (4) economic incentives for noncompliance are eliminated; and (5) compliance is expeditiously achieved and maintained to protect natural resources. Under this Policy, NOAA expects to improve consistency at a national level, provide greater predictability for the regulated community and the public, improve transparency in enforcement, and more effectively protect natural resources. For significant violations, the NOAA attorney may recommend charges under NOAA's civil administrative process (see 15 C.F.R. Part 904), through issuance of a Notice of Violation and Assessment of a penalty (NOVA), Notice of Permit Sanction (NOPS), Notice of Intent to Deny Permit (NIDP), or some combination thereof. Alternatively, the NOAA attorney may recommend that there is a violation of a criminal provision that is sufficiently significant to warrant referral to a U.S. Attorney's office for criminal prosecution^{59,60}.

⁵⁹ NOAA Office of the General Counsel – Enforcement Section Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions: http://www.gc.noaa.gov/documents/Penalty%20Policy_FINAL_07012014_combo.pdf

⁶⁰ NOAA Penalty Policy and Schedules. Accessed 2015. <http://www.gc.noaa.gov/enforce-office3.html>

F. Serious Impacts of the Fishery on the Ecosystem

Fundamental 13

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

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

Summarized evidence:

13.1. Research and Institutional capacity for environmental impact assessment

Tens of millions of dollars on research essential to NPFMC management has occurred over the past decade to understand the Bering Sea and Gulf of Alaska ecosystems and how these systems play a dynamic role in pollock stock status. Major research projects like the Bering Sea Integrated Ecosystem Research Program (BSIERP) and the GOA Integrated Ecosystem Research Program (GOAIERP) have provided and are providing, among many others, significant insight into these major North Pacific Integrated Ecosystem Research Plans and research findings that are presented annually at the North Pacific Science Symposium.

The North Pacific Research Board (NPRB) was created by Congress in 1997 to conduct research activities on or relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean with a priority on cooperative research efforts designed to address pressing fishery management or marine ecosystem information needs. While the NPRB has invested millions of dollars on obtaining this objective, they have also developed two special projects that seek to understand the integrated ecosystems of the BSAI and GOA. For the Gulf of Alaska Integrated Ecosystem Research Program, more than 40 scientists from 11 institutions are taking part in the \$17.6 million Gulf of Alaska ecosystem study that looks at the physical and biological mechanisms that determine the survival of juvenile groundfish in the eastern and western Gulf of Alaska⁶¹.

For the Bering Sea, a large multiyear ecosystem project is moving towards completion. It consists of two large projects that will be integrated. One funded by the National Science Foundation (NSF's BEST program is the Bering Ecosystem Study, a multi-year study (2007-2010)). The other funded by NPRB (BSIERP, is the Bering Sea Integrated Ecosystem Research Program (2008-2012)⁶²). The overlapping goals of these projects led to a partnership that brings together some \$52 million worth of ecosystem research over six years, including important contributions by NOAA and the US Fish & Wildlife Service. From 2007 to 2012, NPRB, NSF, and project partners are combining talented scientists and resources for three years of field research on the eastern Bering Sea Shelf, followed by two more years for analysis and reporting.

The NMFS and the NPFMC, and other institutions interested in the North Pacific conduct assessments

⁶¹ North Pacific Research Board Gulf of Alaska Project: <http://www.nprb.org/gulf-of-alaska-project>

⁶² North Pacific Research Board Bering Sea Project: <http://www.nprb.org/bering-sea-project>

and research on environmental factors on pollock and associated species and their habitats. Findings and conclusions are published in SAFE document, annual Ecosystem SAFE documents and other reports. SAFE documents for BSAI⁶³⁶⁴⁶⁵ and GOA⁶⁶ pollock summarize ecosystem considerations for the stocks.

13.2./13.3. Fishery Interaction with the ecosystem

The prevention of overfishing is clearly set out as the main guideline for management. Habitat degradation has been minimized in the pollock fishery by converting the industry to pelagic-gear only. Bycatch in the pollock fleet is closely monitored by the NMFS observer program and managed on that basis. Discard rates of many species have been reduced in this fishery and efforts to minimize bycatch continue.

Ecosystem effects on the pollock stock

Temperature: This temperature relationship, along with interactions with available food in early-life stages, appears to have important implications for pollock recruitment success (Coyle et al. 2011). Mueter et. al., (2011) found that warmer conditions tended to result in lower pollock recruitment in the EBS. This is consistent with the hypothesis that when sea temperatures on the eastern Bering Sea shelf are warm and the water column is highly stratified during summer, age-0 pollock appear to allocate more energy to growth than to lipid storage, leading to low energy density prior to winter. This then may result in increased over-winter mortality (Swartzman et. al., 2005, Winter et al. 2005)⁶⁷.

Prey of pollock

Pollock trophic interactions occur primarily in the pelagic pathway in the food web, which leads from Phytoplankton through various categories of zooplankton to planktivorous fish species such as capelin and sandlance, and the primary prey of pollock are euphausiids. Pollock also consume shrimp, which are more associated with the benthic pathway, and make up approximately 18% of age 2+ pollock diet. All ages of GOA pollock are primarily zooplanktivorous during the summer growing season. While there is an ontogenetic shift in diet from copepods to larger zooplankton (primarily euphausiids) and fish, cannibalism is not as prevalent in the Gulf of Alaska as in the Eastern Bering Sea, and fish consumption is low even for large pollock⁶⁸.

Predators of pollock

Aside from long-recognized decline in Steller sea lion abundance, the major predators of pollock in the Gulf of Alaska are stable to increasing, in some cases notably so since the 1980s. However, top-down control seems to have increased on age 3+ pollock in recent years, perhaps as predators have attempted to maintain constant pollock consumption during a period of declining abundance.

Pollock fishery effects on the ecosystem.

Bycatch is managed operationally by assessing bycatch species (see SAFE-reports), having bycatch caps (PSC and MRA), using data collected and validated by the observer program to account for total catches. Measures applied to minimize catch, waste and discards of non-target species are described in the Management Measures for the BSAI and GOA Groundfish Fisheries given in the FMPs.

Since the pollock fishery is primarily pelagic in nature, the bycatch of non-target species is small relative to the magnitude of the fishery. Jellyfish represent the largest component of the bycatch of non-target species and had averaged around 5-6 thousand tons per year but more than doubled in 2014 but has dropped in 2015. The data on non-target species shows a high degree of inter-annual variability, which reflects the spatial variability of the fishery and high observation error. This variability may reduce the ability to detect

⁶³ Eastern Bering Sea Pollock SAFE report: <http://www.afsc.noaa.gov/REFM/Docs/2015/EBSpollock.pdf>

⁶⁴ Assessment of walleye pollock in the Bogoslof Island Region: <http://www.afsc.noaa.gov/REFM/Docs/2015/BOGpollock.pdf>

⁶⁵ Assessment of the pollock stock in the Aleutian Island: <http://www.afsc.noaa.gov/REFM/Docs/2015/AIpollock.pdf>

⁶⁶ Assessment of the Walleye Pollock Stock in the Gulf of Alaska: <http://www.afsc.noaa.gov/REFM/Docs/2015/GOApollock.pdf>

⁶⁷ Eastern Bering Sea Pollock SAFE report: <http://www.afsc.noaa.gov/REFM/Docs/2015/EBSpollock.pdf>

⁶⁸ Assessment of the Walleye Pollock Stock in the Gulf of Alaska: <http://www.afsc.noaa.gov/REFM/Docs/2015/GOApollock.pdf>

significant trends for bycatch species. The catch of other target species in the pollock fishery represent less than 1% of the total pollock catch. Incidental catch of Pacific cod has increased since 1999 but remains below the 1997 levels. The incidental catch of flatfish was variable over time and has increased, particularly for yellowfin sole. Proportionately, the incidental catch has decreased since the overall levels of pollock catch have increased. In fact, the bycatch of pollock in *other* target fisheries is more than double the bycatch of target species in the pollock fishery.

A high number of non-Chinook salmon (nearly all made up of chum salmon) was observed in 2014 and 2015 (about 13% above the 2003-2013 average) after the low level observed in 2012. Chinook salmon bycatch in 2015 was 54% of the 2003-2015 mean value consistent with the magnitude of bycatch since the implementation of Amendment 91 in 2011. Ianelli and Stram (2014) provide estimates of the bycatch impact on Chinook salmon runs to the coastal west Alaska region and found that the peak bycatch levels exceeded 7% of the total run return. Since 2011, the impact has been estimated to be below 2%.

Since 1991, estimates of discarded pollock have ranged from a high of 9.1% of total pollock catch in 1992 to recent lows of around 0.6%. These low values reflect the implementation of the Council's Improved Retention /Improved Utilization program. In addition, several vessels have made gear modifications to avoid retention of smaller pollock. In all cases, the magnitude of discards counts as part of the total catch for management (to ensure the TAC is not exceeded) and within the assessment. Bycatch of pollock in other target fisheries is more than double the bycatch of other target species (e.g., Pacific cod) in the pollock fishery.

13.4. Pollution – MARPOL.

MARPOL 73/78 (the "International Convention for the Prevention of Pollution from Ships") is one of the most important treaties regulating pollution from ships. Six Annexes of the Convention cover the various sources of pollution from ships and provide an overarching framework for international objectives. In the U.S., the Convention is implemented through the Act to Prevent Pollution from Ships (APPS). Under the provisions of the Convention, the United States can take direct enforcement action under U.S. laws against foreign-flagged ships when pollution discharge incidents occur within U.S. jurisdiction. When incidents occur outside U.S. jurisdiction or jurisdiction cannot be determined, the United States refers cases to flag states, in accordance with MARPOL. These procedures require substantial coordination between the Coast Guard, the State Department, and other flag states, and the response rate from flag states has been poor. Different regulations apply to vessels, depending on the individual state^{69,70}.

13.5. Management responses to likely serious impacts on ecosystem Regulations/measures to minimize impacts.

Regulations are in place to address waste, discard, bycatch, and endangered species interactions in the pollock fisheries. Many trawl closures have been implemented to protect benthic habitat or reduce bycatch of prohibited species (i.e., salmon, crab, herring, and halibut). Some of the trawl closures are in effect year-round while others are seasonal. In general, year-round trawl closures have been implemented to protect vulnerable benthic habitat. Seasonal closures are used to reduce bycatch by closing areas where and when bycatch rates had historically been high⁷¹.

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

⁶⁹ Act to Prevent Pollution from Ships, 33 U.S.C. §§ 1901–1915. <https://www.law.cornell.edu/uscode/text/33/1901>

⁷⁰ U.S. Government Accountability Office, Washington, D.C. (2000). "Progress Made to Reduce Marine Pollution by Cruise Ships, but Important Issues Remain." Report to Congressional Requesters. Report No. RCED-00-48. <http://www.gao.gov/assets/230/228813.pdf>

⁷¹ NPFMC Ecosystem considerations 2015: <http://www.afsc.noaa.gov/REFM/Docs/2015/ecosystem.pdf>

or retrieving gear. Bycatch is recorded in detail and endangered species interactions with Steller sea lions and short-tailed albatross are tightly monitored and regulated. The current ESA biological opinion specifies that the expected take of Short tailed albatross (bycatch) in the longline fishery is four in any 2-year period. In the event that a fifth bird is bycaught, an ESA Section 7 consultation involving the U.S. Fish and Wildlife Service and the National Marine Fisheries Service must be initiated. This process can lead to additional regulatory action on the fishery. Reports for 2012 show that the bycatch rate for seabirds in fisheries is 40% below the 5-year average, with no short-tailed albatross catches. Also, NMFS uses Stellar sea lion protection measures (SSLPM) to ensure the groundfish fisheries off Alaska are not likely to jeopardize the continued existence of the western population of Steller sea lions or adversely modify their critical habitat. The management measures disperse fishing over time and area to protect against potential competition for important Steller sea lion prey species near rookeries and important haulouts.

The BSAI and GOA pollock stocks are not considered overfished. Furthermore serious impacts are regulated in the FMPs by identifying ecosystem components and non-target stocks that are vulnerable or important for food web functioning (prohibited and forage species).

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) mandates NOAA to identify habitats essential for managed species and conserve habitats from adverse effects on those habitats (NMFS 2010). These habitats are termed “Essential Fish Habitat” or EFH, and are defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (NMFS 2010).⁷²

13.6. Research on environment and social impacts of fishing gear.

Humans as part of the ecosystem is one of the indicators used in the ecosystem based approach to fisheries management in Alaska. Monitoring the numbers of fishing vessels provides general measures of fishing effort, the level of capitalization in the fisheries, and the potential magnitude of effects on industry stakeholders caused by management decisions.⁷³ The total number of vessels participating in federally-managed fisheries off Alaska has generally decreased since 1994, though participation has remained relatively stable in recent years. Vessels using hook and line or jig gear have accounted for most of the participating vessels from 1994 to 2014. 581 such vessels participated in 2014, down from a high of 1,225 two decades prior. The number of active trawl-gear vessels has decreased steadily from over 250 annually in the period from 1994 to 1999 to around 180 in each of the last 5 years. During this period, counts of pot-gear vessels peaked at 343 in 2000, decreasing in 2014 to 152.

⁷² NMFS Essential Fish Habitat Research Plan:

http://www.afsc.noaa.gov/HEPR/docs/Sigler_et_al_2012_Alaska_Essential_Fish_Habitat_Research_Plan.pdf

⁷³ NPFMC Ecosystem considerations 2015: <http://www.afsc.noaa.gov/REFM/Docs/2015/ecosystem.pdf>

8. Performance specific to agreed corrective action plans

Not Applicable. No non conformances are active for this fishery.

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

Not applicable, no new non conformances have been issued.

10. Future Surveillance Actions

Not applicable, next assessment will be a full re-assessment.

11. Client signed acceptance of the action plan

Not applicable.

12. Recommendation and Determination

Following this fourth surveillance assessment, finalized in January 2016, the assessment team recommends that continued Certification under the FAO-Based Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fishery, the Alaska pollock, *Gadus chalcogrammus*, (formerly *Theragra chalcogramma*) commercial fisheries employing pelagic trawl 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 (ADFG) & Board of Fisheries (BOF)] management.

13. References

Act to Prevent Pollution from Ships, 33 U.S.C. §§ 1901–1915.	https://www.law.cornell.edu/uscode/text/33/1901
Agreement between the government of the USA and the Government of the Union of Soviet Socialist Republics on Mutual Fisheries Relations	http://www.nmfs.noaa.gov/ia/bilateral/docs/US-Russia_ICC_IA_Book.pdf
Alaska's Institute of Technology	http://www.avtec.edu/amtc-cost.aspx
Alaska Young Fishermen's Summit	https://seagrant.uaf.edu/map/workshops/2013/ayfs/ https://seagrant.uaf.edu/map/workshops/2016/ayfs/
Alaska Wildlife Troopers	http://dps.alaska.gov/AWT/marine.aspx
The Alaska State Legislature. Accessed 2015	http://www.legis.state.ak.us/basis/aac.asp#TitleTable
Allen, B. M., and R. P. Angliss. 2014. Alaska marine mammal stock assessments. NOAA Technical Memorandum NMFS-AFSC-301, 313 p	http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-301.pdf
American Fisheries Act- Pollock	https://alaskafisheries.noaa.gov/fisheries/AFA-pollock
AFSC 2013. Assessment of the walleye Pollock stock in the Eastern Bering sea. Alaska Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Department of Commerce; 7600 Sand Point	http://www.afsc.noaa.gov/REFM/Docs/2013/EBSpollock.pdf
AFSC. 2015. Observer Program Reports. Annual Deployment Plans and Reports.	https://alaskafisheries.noaa.gov/fisheries/observer-program-reports
AFSC PROCESSED REPORT 2015-07 Results of the Acoustic-Trawl Survey of Walleye Pollock (<i>Gadus chalcogrammus</i>) on the U.S. and Russian Bering Sea Shelf in June - August 2014 (DY1407)	http://www.afsc.noaa.gov/Publications/ProcRpt/PR2015-07.pdf
Barbeaux, S., J. Ianelli, and W. Palsson. 2015. Assessment of the pollock stock in the Aleutian Islands. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Regions. NPFMC, 605 W 4th Ave, Suite 306 Anchorage, AK 99501. pp. 153-232.	http://www.afsc.noaa.gov/REFM/Docs/2015/AIpollock.pdf
Bering Sea Aleutian Islands Catch Report. NMFS. 2015	https://alaskafisheries.noaa.gov/sites/default/files/reports/car110_bsai_with_cdq2015.pdf
Dorn, M., K. Aydin, D. Jones, A. McCarthy, W. Palsson, and K. Spalinger. 2015. Assessment of the Walleye Pollock Stock in the Gulf of Alaska. Stock Assessment and Fishery Evaluation Reports for the Groundfish Resources of the Gulf of Alaska Regions. NPFMC, 605 W 4th Ave, Suite 306 Anchorage, AK 99501. pp. 49-172.	http://www.afsc.noaa.gov/REFM/Docs/2015/GOApollock.pdf
Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands. August 2015. North Pacific Fishery Management Council. 605 West 4th, Suite 306, Anchorage, Alaska 99501-2252.	http://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
Fishery Management Plan for Groundfish of the Gulf of Alaska. August 2015. North Pacific Fishery Management Council. 605 West 4th, Suite 306, Anchorage, Alaska 99501-2252.	http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmpp.pdf
http://www.uaf.edu/sfos/about-us/locations/kodiak/about-ksmsc/	http://www.uaf.edu/sfos/about-us/locations/kodiak/about-ksmsc/

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, C. Seung. 2015. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2014.	http://www.afsc.noaa.gov/refm/docs/2015/economic.pdf
Gulf of Alaska Catch Report. NMFS 2015	https://alaskafisheries.noaa.gov/sites/default/files/reports/car111_season_goa2015.pdf
Guyon, J. R., C. M. Guthrie III, A. R. Munro, J. Jasper, and W. D. Templin. 2015. Genetic stock composition analysis of the Chinook salmon bycatch in the Gulf of Alaska walleye pollock (<i>Gadus chalcogrammus</i>) trawl fisheries. 26 p. U.S. Dep. Commer., NOAA Tech.	https://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-291.pdf
Honkalehto, T., and A. McCarthy. 2015. Results of the acoustic-trawl survey of walleye pollock (<i>Gadus chalcogrammus</i>) on the U.S. and Russian Bering Sea Shelf in June - August 2014 (DY1407). AFSC Processed Rep. 2015-07, 63 p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115.	http://www.afsc.noaa.gov/Publications/ProcRpt/PR2015-07.pdf
Ianelli, J.N., S. J. Barbeaux, D. McKelvey and T. Honkalehto. 2015. Assessment of walleye pollock in the Bogoslof Island Region. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Regions. NPFMC, 605 W 4th Ave, Suite 306 Anchorage, AK 99501. pp. 233-250.	http://www.afsc.noaa.gov/REFM/Docs/2015/BOGpollock.pdf
Ianelli, J.N., T. Honkalehto, S. Barbeaux, and S. Kotwicki. 2015. Assessment of the walleye pollock stock in the Eastern Bering Sea. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Regions. NPFMC, 605 W 4th Ave, Suite 306 Anchorage, AK 99501. pp. 53-152.	http://www.afsc.noaa.gov/REFM/Docs/2015/EBSpollock.pdf
Joint statement NOAA and the Federal Agency of Fisheries of the Russian Federation	http://www.nmfs.noaa.gov/ia/slider_stories/2013/04/statement_signed.pdf
NOAA Office of Law Enforcement	http://www.nmfs.noaa.gov/ole/index.html
NOAA Office of Law Enforcement Annual Report Fiscal year 2015	http://www.nmfs.noaa.gov/ole/docs/2015/ole_fy2015_annual_report.pdf
NOAA Office of the General Counsel, Enforcement Section Enforcement Actions January 1, 2015, through June 30, 2015	http://www.gc.noaa.gov/documents/2015/Internet Posting for September 2015 09022015.pdf
NOAA Office of the General Counsel – Enforcement Section, Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions	http://www.gc.noaa.gov/documents/Penalty%20Policy_FINAL_07012014_combo.pdf
NOAA Penalty Policy and Schedules. Accessed 2015.	http://www.gc.noaa.gov/enforce-office3.html
50CFR600.740 Enforcement policy NOAA. Update of NOAA Fisheries Enforcement Programs and Operations. Accessed 2015	http://www.nmfs.noaa.gov/sfa/reg_svcs/Councils/ccc_2011/Tab%20-%20Enforcement%20Issues/Enforcement%20Issues.pdf
North Pacific Fisheries Management Council Fisheries Management Plans	http://www.npfmc.org/fishery-management-plans/
North Pacific Fisheries Management Council. Rural Outreach Committee. Accessed. 2015	http://www.npfmc.org/committees/rural-outreach-committee/
North Pacific Fisheries Management Council website. Accessed. 2015	http://www.npfmc.org/

NPFMC Bering Sea Canyons	http://www.npfmc.org/bering-sea-canyons/
NPFMC Bering Sea Chinook Salmon Bycatch	http://www.npfmc.org/salmon-bycatch-overview/bering-sea-chinook-salmon-bycatch/
NPFMC Community Development Quota Program	http://www.npfmc.org/community-development-program/
NPFMC Ecosystem considerations 2015	http://www.afsc.noaa.gov/REFM/Docs/2015/ecosystem.pdf
NPFMC - Pollock OFL, ABC, TAC 2015	http://www.npfmc.org/wp-content/PDFdocuments/SPECS/BSAIGOAspecsLONG1215.pdf
North Pacific Research Board (NPRB)	http://www.nprb.org/
North Pacific Research Board (NPRB) - Bering Sea Project	http://www.nprb.org/bering-sea-project
North Pacific Research Board Gulf of Alaska Project	http://www.nprb.org/gulf-of-alaska-project
North Pacific Fisheries Research Foundation (NPFRRF)	http://www.npfrf.org/
North Pacific Fisheries Research Foundation – Salmon Excluder EFP 11-01 Final Report June 2013	http://www.npfrf.org/uploads/2/3/4/2/23426280/salmon_excluder_efp_11-01_final_report-1.pdf
NMFS (National Marine Fisheries Service). 2015. North Pacific Groundfish and Halibut Observer Program 2014 Annual Report. National Oceanic and Atmospheric Administration, 709 West 9th Street. Juneau, Alaska 99802.	https://alaskafisheries.noaa.gov/fisheries/observer-program-reports
NMFS CIE Peer Reviews Gulf of Alaska Pollock	https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/cie-review-2012
NMFS Essential Fish Habitat Research Plan	http://www.afsc.noaa.gov/HEPR/docs/Sigler_et_al_2012_Alaska_Essential_Fish_Habitat_Research_Plan.pdf
The North Pacific Fishing Vessel Owners association	http://www.npfvoa.org/
Pollock Conservation Cooperative Research Center	https://www.uaf.edu/sfos/research/major-research-programs/pccrc/
State Management: 5 AAC 28.089 Guiding Principles for groundfish fishery regulations	http://www.touchngo.com/lglcntr/akstats/aac/title05/chapter028/section089.htm
State Management: 5 AAC 28.263. The Prince William Sound Pollock Pelagic Trawl Management Plan	http://www.touchngo.com/lglcntr/akstats/aac/title05/chapter028/section263.htm
USCG. 2015. USCG District 17 Homepage. United States Coast Guard. US COAST GUARD 2703 MARTIN LUTHER KING JR AVE SE WASHINGTON DC 20593-7000.	http://www.uscg.mil/d17/
USCG 2015 report	http://www.npfmc.org/committees/enforcement-committee/
University of Alaska Sea Grant Marine Advisory Program (MAP)	http://seagrant.uaf.edu/map/fisheries/
U.S. Government Accountability Office, Washington, D.C. (2000). "Progress Made to Reduce Marine Pollution by Cruise Ships, but Important Issues Remain." Report to Congressional Requesters.	http://www.gao.gov/assets/230/228813.pdf

Appendix 1

Assessment Team Details

Dr. Ivan Mateo, Lead Assessor

Dr. Ivan Mateo has over 15 years' experience working with natural resources population dynamic modeling. His specialization is in fish and crustacean population dynamics, stock assessment, evaluation of management strategies for exploited populations, bioenergetics, ecosystem-based assessment, and ecological statistical analysis. Dr. Mateo received a Ph.D. in Environmental Sciences with Fisheries specialization from the University of Rhode Island. He has studied population dynamics of economically important species as well as candidate species for endangered species listing from many different regions of the world such as the Caribbean, the Northeast US Coast, Gulf of California and Alaska. He has done research with NMFS Northeast Fisheries Science Center Ecosystem Based Fishery Management on bioenergetic modeling for Atlantic cod. He also has been working as environmental consultant in the Caribbean doing field work and looking at the effects of industrialization on essential fish habitats and for the Environmental Defence Fund developing population dynamics models for data poor stocks in the Gulf of California. Recently Dr. Mateo worked as National Research Council postdoc research associate at the NOAA National Marine Fisheries Services Ted Stevens Marine Research Institute on population dynamic modeling of Alaska sablefish.

William Brodie (Assessor)

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 of service 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 senior 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 ICES 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 a variety of Canadian and international ships, and he has over 200 publications in the scientific and technical literature, primarily on flatfish stock assessment. He has worked 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. Recently, Bill has served as an assessor on FAO-based Responsible Fisheries Management certification surveillance audits for Alaskan stocks including Pacific cod, halibut, and sablefish.

Deirdre Hoare (Assessor)

Deirdre Hoare has a BSc in Marine Science and an MSc in Marine Zoology from the National University of Ireland, Galway and a post graduate diploma in Statistics from Trinity College Dublin. Deirdre has worked directly in fisheries stock assessment as an observer on international projects in NAFO and Ireland. For 5 years she worked as a Fisheries Assessment Analyst and as a Scientific and Technical Officer for the Marine Institute in Ireland. This work involved fisheries research and stock assessment for ICES working groups. The work also involved coordination and management of a Fisher Self sampling program in the Irish Sea, with particular emphasis on spatial and temporal discard measurement tools. Currently Deirdre is working as an independent Fisheries Consultant. Her work currently involves evaluation and verification of fisheries management and sustainability against international standards. She also performs fish stock assessments, evaluate data and outlines the limitations.

Sam Dignan (Assessor)

Sam Dignan is a fisheries scientist who has previously worked with the Department of Environment, Food and Agriculture (DEFA), Isle of Man and Bangor University Fisheries and Conservation Science Group (Wales). He has a BSc in Biological and Chemical Sciences with Zoology from University College Cork, Ireland and an MSc in Marine Environmental Protection from Bangor University. He has experience conducting stock assessments including from survey design, implementation, data collection, stock assessment modelling and through to final analysis and report presentation. From 2013 to 2015 he was a member of the ICES working group on scallop stock assessment and has an understanding of a range of shellfish and finfish fishery stock assessment applications. He has worked on behalf of UK fisheries departments for the analysis of fishing activity, using Vessel Monitoring System (VMS) and logbook data, to spatially quantify fishing activity and fisheries-ecosystem interactions. Sam has also been involved in providing scientific data for client fisheries to the Marine Stewardship Council's (MSC) certification scheme and has been a central part in participating on behalf of the client fishery management responses to MSC audits. A native and active member of a small fishing community in the Southwest of Ireland, Sam has extensive experience of interacting directly with fishers and their representative organizations as well as members of scientific and government institutions.