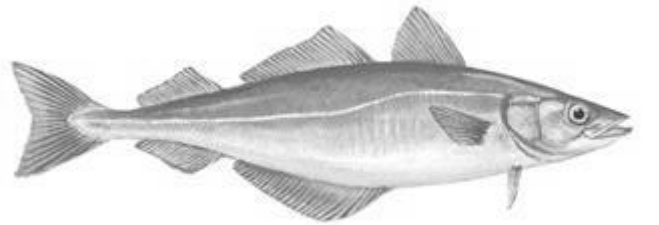
MSC SUSTAINABLE FISHERIES CERTIFICATION

On-Site Surveillance Visit – Report for Russian Sea of Okhotsk Midwater Trawl Walleye Pollock



4th Surveillance stage

November 2017

Certificate Code	F-ACO-0058
Prepared For:	Russian Pollock Catchers Association
Prepared By:	**Acoura Marine**
Authors:	Andrew I.L. Payne, David W. Japp, Robert O'Boyle

Assessment Data Sheet

Fishery name	Russian Sea of Okhotsk Midwater Trawl Walleye Pollock Fishery		
Species and Stock	Walleye pollock (*Theragra chalcogramma*)		
Date certified	27/09/2013	Date of expiry	23/09/2018
Surveillance level and type	Normal surveillance – On-site		
Date of surveillance audit	Week beginning 2 October 2016		
Surveillance stage (tick one)	4th Surveillance	✓	
Surveillance team	Lead assessor: Andrew Payne (TL & P3) Assessor(s): Robert O'Boyle (P1) David Japp (P2)		
CAB name	Acoura Marine		
CAB contact details	Address	6 Redheughs Rigg Edinburgh EH12 9DQ United Kingdom	
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Contents

1 Introduction

1.1 Scope of Surveillance

This report outlines the findings of the 4th Annual Surveillance of the Russian Sea of Okhotsk Midwater Trawl Walleye Pollock Fishery. The scope of the certified fishery and therefore of this surveillance is specified in the Unit of Certification set out below:

Species:	Walleye pollock / Alaska pollock (*Theragra chalcogramma*)
Stock	Sea of Okhotsk Pollock
Geographic Area:	Russian EEZ waters of Sea of Okhotsk
Method of Capture:	Midwater pelagic trawl
Client (group):	The Russian Pollock Catchers Association (PCA)

1.2 Aims of the Surveillance

The purpose of the annual Surveillance Report is fourfold:

1. to establish and report on whether or not there have been any material changes to the circumstances and practices affecting the original complying assessment of the fishery;
2. to monitor the progress made to improve those practices that have been scored as below "good practice" (a score of 80 or above) but above "minimum acceptable practice" (a score of 60 or above) – as captured in any "conditions" raised and described in the Public Report and in the corresponding Action Plan drawn up by the client;
3. to monitor any actions taken in response to any (non-binding) "recommendations" made in the Public Report;
4. to re-score any Performance Indicators (PIs) where practice or circumstances have materially changed during the intervening year, focusing on those PIs that form the basis of any "conditions" raised.

Note: The primary focus of this surveillance audit is assessing changes made in the previous year. For a complete picture, this report should be read in conjunction with the Public Certification Report for this fishery assessment which can be found at

https://fisheries.msc.org/en/fisheries/russia-sea-of-okhotsk-pollock/@@assessments

and in the previous three surveillances.

1.3 Certificate Holder Details

Certificate holder: Russian Pollock Catchers Association
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Vladivostok 690990
Russia

Contact Name: Mr Alexey Buglak, PCA Executive Director
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Web: www.pollock.ru

1.4 General Background about the Fishery

Most of this section is reproduced in brief (and in some places updated) from the original certification report, to facilitate the understanding of the subsequent sections 2 and 3. The walleye (or Alaska or

Russian) pollock (*Theragra chalcogramma*) is a gadoid that is distributed in the Northwest Pacific from the NW Bering and Chukchi seas down the coast of the Kamchatka Peninsula into the Seas of Okhotsk and Japan and in the Northeastern Pacific from California north through the Gulf of Alaska and out to the Aleutian Islands. Pollock fisheries across the species' entire area of distribution constitute the largest whitefish fisheries by volume in the world. The two main fisheries for the species are in the Sea of Okhotsk and the Bering Sea, the latter within both the US and the Russian Exclusive Economic Zones (EEZs). Pollock are considered to be mainly pelagic fish, schooling in midwater. They live down to 1000 m deep, but typically concentrate at depths of 100–300 m, and are found both offshore and nearshore.

1.4.1 Area under Evaluation

The Unit of Certification (UoC) fishery takes place only in the Sea of Okhotsk, where knowledge of stock structure and fishing activity is supported by good understanding of spawning and migratory patterns. There are several spawning "hotspots", the most important of which are on the west Kamchatka shelf in the northern Sea of Okhotsk and in Shelikhov Bay; other smaller spawning areas are also known. Spawning fish and hence the fishery concentrate on the shelf and in shallow waters between 50 and 250 m deep. Sea of Okhotsk pollock live throughout the northern part of the Sea, and there are four Russian fishery management subzones, the Northern Sea of Okhotsk (subzone 05.1), sometimes described as the western part of the Sea, plus western Kamchatka (05.2) and Kamchatka–Kuril (05.4), which together constitute the areas defined as the eastern part of the Sea; the eastern Sakhalin (05.3) subzone is not part of the certification.

1.4.2 Fishery Ownership and Organizational Structure

Eligible fishers in the UoC fishery in 2017 include 31 pollock fishing organizations represented by the client group, the Pollock Catchers Association (PCA), based in Vladivostok. That number has decreased from the total of 45 organizations listed during the site visit for the original certification as a consequence of mergers and rationalization within the fishery. Association membership currently (i.e. in 2017) accounts for 80% of the total quota share for pollock in the Sea of Okhotsk (773 395 t out of a total Sea of Okhotsk quota of 966 700 t in 2017) and 74% of the total quota for pollock in the whole Russian Far East (the PCA share is 1 358 758 t out of a total TAC for the Russian Far East of 1 837 020 t – see Table 1 for the breakdown by area). The industrial trawl fishery (defined here as being on a large scale with full utilization of the raw material inclusive of direct human consumption) for pollock in the Sea of Okhotsk is carried out by a fairly stable number of vessels of large and medium tonnage, most of which are 20–30 years old. They catch the fish, process it on board into frozen whole and gutted product, rendering the non-edible by-catch and fish processing waste into meal and oil, and produce some canned fish and unfinished medical fish oil, then store the production on board until the vessel docks or the material can be transshipped at sea to reefer vessels and brought ashore. At-sea frozen product is also reprocessed by onshore processors, but such product falls under traceability audits so is not a necessary consideration for this surveillance.

Table 1. Alaska pollock TAC in the Sea of Okhotsk, and PCA quota and company shares for 2017

Area	TAC (t)	PCA quota (t)	PCA share
Northern Sea of Okhotsk Subzone	348 000	302 653	87%
West Kamchatka Subzone	348 000	277 151	80%
Kamchatka-Kuril Subzone	270 700	193 590	72%
Sea of Okhotsk total	966 700	773 395	80%
Russian Far East total	1 837 020	1 358 758	74%

1.4.3 History of the Fishery

The pollock fishery in the Sea of Okhotsk has existed for some 55 years. Starting in about 1962, it developed rapidly and, within a decade, annually exceeded one million metric tonnes. Initially, the main fishing grounds were off western Kamchatka, and fish were caught by both local and Japanese fishers.

The annual catch in 1974/75 reached almost 1.3 million tonnes, but it then decreased in accord with a rigidly applied quota system, the introduction of a 200-mile economic zone and the cessation of the fishery in the Sea of Japan. In 1984, the pollock fishery in the northeastern Sea of Okhotsk started to develop. Total annual catches in the Sea of Okhotsk varied between 450 000 and 950 000 t, but with a foreign fishery starting up in the central area in 1991, it again exceeded one million tonnes. However, in 1992/93, the Russian fishery was restrained as part of the recommended TAC was reserved for foreign fleets. That unregulated foreign fishery (including fleets from Poland, China, the Republic of Korea and Japan) in the central area was stopped in 1995 after bilateral agreements between Russia and the other countries were entered into in exchange for other pollock quota allocations within the Russian economic zone. Overall, however, as a consequence of the extensive fleet deployments in the northern Sea of Okhotsk, annual catches burgeoned to 1.6–1.7 million tonnes, and peaked at 2.0 million tonnes in 1996. Then, however, the annual catch there started to decline, and by 2002, had dropped by some two-thirds, a level maintained for several years before rising again modestly to the present level of just less than one million tonnes.

2 Surveillance Process

2.1 Findings of the original assessment

Table 2: Allocation of weighted scores at Sub-criteria, Criteria and Principle levels at certification

Prin-ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Score
One	1	Outcome	0.5	1.1.1	Stock status	90
				1.1.2	Reference points	80
				1.1.3	Stock rebuilding	
		Management	0.5	1.2.1	Harvest strategy	70
				1.2.2	Harvest control rules & tools	80
				1.2.3	Information & monitoring	75
				1.2.4	Assessment of stock status	75
Two	1	Retained species	0.2	2.1.1	Outcome	80
				2.1.2	Management	85
				2.1.3	Information	80
		Bycatch species	0.2	2.2.1	Outcome	80
				2.2.2	Management	85
				2.2.3	Information	75
		ETP species	0.2	2.3.1	Outcome	80
				2.3.2	Management	80
				2.3.3	Information	70
		Habitats	0.2	2.4.1	Outcome	80
				2.4.2	Management	85
				2.4.3	Information	85
		Ecosystem	0.2	2.5.1	Outcome	85
				2.5.2	Management	80
				2.5.3	Information	75
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	90
				3.1.2	Consultation, roles & responsibilities	95
				3.1.3	Long term objectives	100
				3.1.4	Incentives for sustainable fishing	80
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	85
				3.2.2	Decision making processes	75
				3.2.3	Compliance & enforcement	85
				3.2.4	Research plan	80
				3.2.5	Management performance evaluation	70

Sourced from original assessment

The final weighted principle scores at certification were P1 (80.0), P2 (80.3) and P3 (84.4), but during surveillance audit 2, PI 2.5.3 was rescored at 80, with Condition 6 met, and during surveillance audit 3, PI 1.2.4 was rescored at 90 and PIs 2.2.3 and 3.2.2 at 80, so meeting Conditions 3, 4 and 7, respectively. By the time of this 4th surveillance audit, therefore, the three Principle scores had already been raised to 81.9 (P1 – erroneously stated in the surveillance report as 80.8), 81.0 (P2) and 85.0 (P3).

At the time of the original scoring (see Table 2 above), eight conditions of certification were raised, and maintenance of the MSC certificate was made contingent on the Russian Sea of Okhotsk Midwater Trawl Walleye Pollock Fishery moving to comply with these conditions within the time-scales set at the time the certificate was issued. No recommendations were made as a consequence of the original certification evaluations, and none have been raised formally since.

2.2 Surveillance Activity

2.2.1 Surveillance team details

The on-site surveillance visit was carried out by Dr Payne (for P3), who was also team leader, and Messrs Japp (P2) and O'Boyle (P1). The first two were part of the audit teams for the three previous surveillances of the fishery, although Dr Payne was responsible on those occasions for P1 as well as being team leader. Moreover, Dr Payne (for P3), Mr Japp (for P2) and Mr O'Boyle (for P1) were the members of the original assessment team for the fishery, which was carried out on behalf of Intertek Moody Marine, subsequently Intertek Fisheries Certification, now part of Acoura (Marine).

2.2.2 Date and location of surveillance audit

Week commencing 2 October 2017 in Vladivostok and Petropavlovsk-Kamchatsky (hereafter, P-K), Russia.

2.2.3 Stakeholder consultation and meetings

The surveillance team made themselves available for consultation (electronic or face to face) and input from stakeholders during the whole week they were in Vladivostok or P-K. One fishing vessel was visited, in P-K. In all, 53 stakeholder organisations and individuals having relevant interest in the assessment were identified by Acoura in advance and contacted directly prior to the audit. The interest of others not appearing on the available list of stakeholders was solicited through postings on the MSC website. Ultimately, just two, the Worldwide Fund for Nature (WWF) Russia Branch, and the At-sea Processors Association (APA, US) elected to speak to the team while they were in Russia, both providing written statements (Appendix 2). One representative of WWF Russia met the team in Vladivostok, and three representatives of APA engaged in a Skype call while the team was in P-K.

Two scientific and advisory organizations, TINRO (twice) and KamchatNIRO, were visited and consulted at length: both had already provided extensive professional written input to the process, in English, and made useful formal presentations to the team. Also, two key organizations involved in the Russian fisheries management system that the team had not consulted between the original certification visit and the third surveillance audit in 2016 again made themselves available during the site visit to P-K, the FSB (the Coastguard) and the Centre for Fishery Monitoring and Control (CFMC), which falls under the national Federal Fisheries Agency (FFA; the main fisheries management body in Russia, the successor to the State Committee for Fisheries). The FFA regulates and controls the fisheries and *inter alia* acts as an inspectorate, with responsibility for licensing and control).

Meetings in Vladivostok and P-K other than those just with the client or with stakeholders whose spoken English was good (e.g. the author of the review of the Russian Fishery Management System document; see Condition 8) were attended also by interpreters independently contracted by Acoura. Their input and effort was valued, as was the provision more than a week before the team's arrival of extensive background and supporting information already translated into English. Some new material was also delivered to the team during the visit and, on request, after the visit, most also translated into English.

2.2.4 Consultations

In all, nine stakeholder organizations and individuals representing them having relevant interest in the assessment were consulted during this surveillance audit. On all occasions, those being interviewed were asked up front whether they had any issue with having either the client or the interpreter present. All replied in the negative.

2 October 2017, 09:30 local time. Meeting at the Client's office in Vladivostok, the Client represented by Executive Director Alexey Buglak, with Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle, plus interpreter Darya Pershina.

2 October 2017, 11:00 local time. Meeting at TINRO Centre, Vladivostok, with TINRO Centre scientists and advisors and the Client. Igor Melnikov (Deputy Director TINRO), Vladimir Leonov, Evgeny

Ovsyannikov, Alexander Zolotov and Anatoly Smirnov (all Scientists, TINRO, some specifically associated with the scientific observer team), PCA Executive Director Alexey Buglak (representing the Client), Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle, and interpreter Dariya Pershina.

2 October 2017, 17:00 local time. Meeting at Hyundai Hotel, Vladivostok, between Konstantin Zgurovsky (Senior advisor on the Sustainable Fishery Programme to WWF Russia) and Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle.

3 October 2017, 15:00 local time. Meeting at the Kamchatka office of the Fishery Monitoring System (CFMC) with their representatives and the Client. Dmitry Nedobozhkin and Vitaly Pomazkin (Deputy Directors), Oksana Guseva and Anton Rostlyi (technical leads for monitoring the Russian pollock fishery and for the implementation of the electronic logbook system, respectively), PCA Executive Director Alexey Buglak (representing the Client), Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle, plus interpreter Nataliya Karaziya.

3 October 2017. 17:30 local time. Skype meeting conducted from the Avacha Hotel, P-K, with representatives of At-sea Processors Association (APA, US). T. Kevin Stokes (consultant) in New Zealand, Austin Estabrooks (APA) and Ruth Christiansen (United Catcher Boats, Alaska), both in Alaska, Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle.

4 October 2017, 09:30 local time. Meeting at KamchatNiro Office with KamchatNIRO scientists and advisors and the Client. Oleg Ilyin (Head of Stock Assessment Laboratory, KamchatNIRO), Alexander Varkentin (Head of Marine Resources Group, KamchatNIRO), Nina Shpigalskaya (Director, KamchatNIRO) and Arina Shurygina (KamchatNiro translator), PCA Executive Director Alexey Buglak (representing the Client), Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle, and interpreter Nataliya Karaziya.

4 October 2017, 15:30 local time. Meeting at the Avacha Hotel with local P-K representatives of the FSB (Coastguard) and the Client. Yuriy Tumanov, Igor Kiselev and Stanislav Dashevskiy (FSB Kamchatka), PCA Executive Director Alexey Buglak (representing the Client), Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle, and interpreter Nataliya Karaziya.

5 October 2017, 10:00 local time. Meeting on board pollock trawler BMRT "Seroglazka" with officers and company (Kolkhoz im. Lenina) representatives and the Client. Evgeniy Sadovnikov (captain), Elena Kolch (Company technologist-engineer) Boris Vyalykh (Company Commercial Fishing Service Head) and Ivan Kuzmin (Vessel Factory Manager), PCA Executive Director Alexey Buglak (representing the Client), Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle, and interpreter Nataliya Karaziya.

6 October 2017, 10:00 local time. Meeting at TINRO Centre, Vladivostok, with TINRO Centre scientists and advisors. Igor Melnikov (Deputy Director TINRO), Evgeniy Ovsyannikov, Vladimir Kulik, Victor Nadtochy, Elena Dulepova and Anatoly Smirnov (all Scientists, TINRO), Oleg Katyugin (Department of International Cooperation, TINRO), Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle, and interpreter Dariya Pershina.

6 October 2017, 18:30 local time, Meeting at the office of the Client, PCA. German Zverev (Chairman, PCA), Alexey Buglak (Vice-Chairman and Executive Director, PCA), Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle.

9 October 2017, 10:00 local time. Meeting at Hyundai Hotel, Vladivostok, with Vladimir I. Radchenko of the North Pacific Anadromous Fish Commission (NPAFC), Vancouver, Canada, the contracted independent expert who provided an independent expert overview of the performance of the Russian Fishery Management System, particularly referring to Russian pollock. Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle.

9 October 2017, 13:30 local time. Meeting at his office with the Client, represented by Executive Director Alexey Buglak, Acoura surveillance team members Andrew I. L. Payne, David W. Japp and Robert O'Boyle.

The team also noted (and reviewed) the mainly English language website developed and kept live by the PCA: www.russianpollock.com. Pertinent archive and new material was uploaded to the site before, during and just after the site visit.

Documents referred to

See Section 6.

2.3 Surveillance Standards

2.3.1 MSC Standards, Requirements and Guidance used

This surveillance audit was carried out according to the MSC Fisheries Certification Requirements FAM 2.1, v1.3 following FCR 2.0 process.

2.3.2 Confirmation that destructive fishing practices or controversial unilateral exemptions have not been introduced

No indication was given or suggested during the surveillance audit to suggest that either of these practices is in evidence for this fishery.

3 Updated Fishery Background

The fishery and the people involved in researching, managing and controlling it are largely unchanged, other than in terms of rationalization of the participating organizations, since certification.

3.1 Changes in the management system

The management system for the Russian (walleye) pollock fishery remains as it was during the original assessment and at the previous three annual surveillances; there have been no significant changes since the fishery was assessed. Licensing, control and inspection of all product is under the jurisdiction of the FFA (Federal Fisheries Agency of the Russian Ministry of Agriculture, which trains and contracts scientific and technical staff) and the FSB (the Coastguard, which trains and employs military personnel for the purpose of fisheries control and surveillance), each with their own inspection capability and direction, with independent scientific observations of fishing activities collated under the direction of TINRO, Vladivostok, and implemented through its own and sister (e.g. KamchatNIRO) scientific organizations' trained and contracted staff. Mentioned elsewhere in this report, an Observer Working Group comprising scientists, administrators and stakeholders, including representatives independent of the fishery, has developed in the Russian Far East with a view to increasing the capacity and penetration of the independent scientific observer system in line with the results of an analysis of need in the pollock fishery prepared even before the first surveillance; rigorous training of new observers takes place annually to address natural attrition of personnel. As noted in the report of the third surveillance, little increase in the trained observer corps was evident in 2016, although the quantity and quality of data collected burgeoned. In 2017, more observers did join the group, and again the quantity and quality of data collected rose. The data the observers collect underpin to a large extent the crucial stock assessment information as well, in 2017, as contributing a large amount of data of ecosystem (mainly seabirds and marine mammals, including ETP species) interest. With another round of scientific observer capacity development now planned, however, the hope is that capacity will increase again, towards if not meeting the planned 22–24 observers deemed appropriate for the catch level and distribution of Pollock and information on associated parts of the ecosystem, through a rigorous scientific analysis presented to an earlier surveillance team (Smirnov *et al*. 2014).

The *modus operandi* for determining the annual level of TAC is the same as determined during the original assessment, with all catch and effort and scientific survey data being made available and subjected to rigorous scientific analysis by KamchatNIRO and TINRO before the output is evaluated under the auspices of VNIRO in Moscow (VNIRO takes the lead on this overview analysis for all Russian fisheries). The advice and input of academics and experts on many scientific disciplines other than direct fisheries science, particularly of ecosystem components, is solicited in that overarching evaluation, which is conducted annually before the TAC is announced.

3.2 Changes in relevant regulations

There have been no notable changes to any regulations governing the fishery since the original assessment was carried out. Development of the new national electronic logbook system is proceeding well, however, and this fishery is at the forefront of Russian fisheries trialling it before it is formally initiated through regulation. Currently, the target date for implementation is 1 January 2018, although most participants in the fishery expect that date to slip somewhat in order to ensure a seamless transition. In any event, the current logbook system will run on in tandem with the electronic system for some time after formal implementation. In the team's opinion, what is being designed and projected is as good as any existing in world fisheries to date. Nevertheless, what is changing from a technical perspective (and will ultimately affect the regulations associated with the fishery) is that Russian authorities are actively phasing out the Argos Vessel Monitoring System (VMS) in favour of the internationally accepted alternative Inmarsat system. Simultaneously, they are developing their own "Gonets" satellite tracking system, which they expect in time to replace the other systems on all Russian vessels.

3.3 Changes to personnel involved in science, management or industry

Those involved in scientific research and advice and in national and international management of the fishery are the same as they were at certification. Further, since certification and indeed since the period

of assessment, there have been no notable changes in fleet structure other than some rationalization within the companies forming part of the PCA (but with the individual PCA staff members remaining the same), and the operational methods remain exactly as they were during the site visit of the original certification team. The same statement applies to an absence of substantive change since the previous surveillances in autumn of 2014, 2015 and 2016. However, the overall number of vessels fishing for walleye pollock (midwater trawlers, coastal vessels and Danish seiners) has changed over time as a consequence of natural rationalization and availability of quota within the industry; the total dropped from slightly over 200 between 2010 and 2012 to 160–180 for 2013 and 2014, rose slightly again in 2015, but was then 172 vessels in 2016 and 179 vessels in 2017. The team notes too that the Russian government is actively promoting the building of new fishing vessels to replace ageing capacity (in the UoC fishery and elsewhere in the country), so supporting the onshore development of the Russian shipbuilding industry.

3.4 Changes to the scientific basis of information

This subsection is rather more extensive than others because it was necessary at the final surveillance to evaluate the overall developments and the rationale behind them since the original certification to ensure that all avenues of science behind sustainable management (stock assessment and ecosystem) had been explored, as anticipated in the first certification report. There was also a need to review the developments critically with a view possibly to moving on to re-certification well before the current certification expires in September 2018.

3.4.1 Scientific Observer Programme

The original certification in 2013 described in some detail the observer programme, the source of the biological compositional and other data for the fishery. The duties of the scientific observers do not include compliance monitoring, but they do involve a wide array of sampling and observation activities intended to enhance scientific understanding of the stock and the fishery. Observer duties recently also included a mandate to collect data on ETP species (and to make other seabird and mammal observations at sea). During the period covered by the surveillance audits, the programme has clearly been enhanced. The fishery is well targeted, and the majority (~95%) of the catch is pollock (Smirnov *et al*. 2014). The annual operational characteristics of the fishery have not changed significantly over the years and are governed by the time of appearance of commercial aggregations in each fishing subzone. Major pollock aggregations appear in the Kamchatka–Kuril subzone from January through early February where the main fleet is first deployed in the fishing season; therefore, most observers are initially deployed on board vessels engaged in fishing in that specific area. Thereafter and throughout March, the fleets move to northern areas – the West Kamchatka subzone and the area near the mouth of Shelikhov Bay – so the scientific observers then focus their monitoring of the fishery there. The target pollock fishery in the Kamchatka subzone is permitted until 31 March only and the fleet then moves to the northern Sea of Okhotsk subzone during the first 10-day period of April where one of the largest pollock spawning grounds is found and, accordingly, scientific observers then monitor the fishery there. Hence, biological and catch data are collected throughout the entire fishing season in the areas of the densest pre-spawning pollock aggregations and/or greatest fishing activity. Therefore, because of the spatial and temporal nature of the fishery and fleet operations associated closely with the aggregations of pollock, optimal use of available scientific observer capacity is achieved to obtain quality biological data (including by-catch and ETP observations) and other fishing activities. Since 2007, the number of observers engaged in the fishery by TINRO, KamchatNIRO, MagadanNIRO and VNIRO has ranged from 10 to 21 (Table 3). In 2017, the number of observers was 18 and the PCA is committed to supporting an increase in this number to perhaps 24 in 2018. Smirnov *et al*. (2014) note that whereas the Russian system of catch monitoring does not have large numbers of observers, the quality of the scientific information being collected is high: observers are devoted solely to scientific observation and are often highly skilled scientists.

As part of efforts to improve sampling efficiency, Smirnov *et al*. (2017) undertook an analysis of the spatial extent of the observer coverage to confirm that deployments have comprehensively sampled the main areas of the fishery throughout the fishing season. This analysis indicated that observers covered the core part of the fishery's distribution during 2017 (Figure 1). Spatial coverage was considerably better in terms of observing where most of the fishery was mainly operating in 2017 than in 2016, at 74% in the northern Sea of Okhotsk subzone (23% in 2016), 86% in the West Kamchatka subzone (31% in 2016) and 93% in the Kamchatka–Kuril subzone (90% in 2016).

Table 3. Number of scientific observers engaged in Sea of Okhotsk pollock fisheries by Russian research institutes; data from the PCA

Year	TINRO	KamchatNIRO	MagadanNIRO	VNIRO	Total
2007	14	3	2	2	21
2008	7	3	2	3	15
2009	3	3	2	2	10
2010	7	3	2	2	14
2011	8	3	3	1	15
2012	6	3	2	1	12
2013	5	3	3	2	13
2014	5	3	3	3	14
2015*	4	5	2	1	12
2016	8	4	2	0	14
2017	12	5	1	0	18

* In 2015, 3 extra observers from KamchatNIRO and the Pacific Institute of Geography, Russian Academy of Science, monitored the fishery and collected information on seabirds and marine mammal by-catch and interactions with the fishery. In 2016, the 8 TINRO observers, and in 2017 the 12 TINRO observers and one of the observers from KamchatNIRO also made dedicated seabird and marine mammal observations during their directed pollock trawling observation trips. Finally, during the whole period covered here, KamchatNIRO also deployed observers annually to the Danish seine fishery for pollock and to the herring fishery in which pollock can be taken as a by-catch (neither of these being part of the UoC fishery), but those observers are not reflected in the third column here.

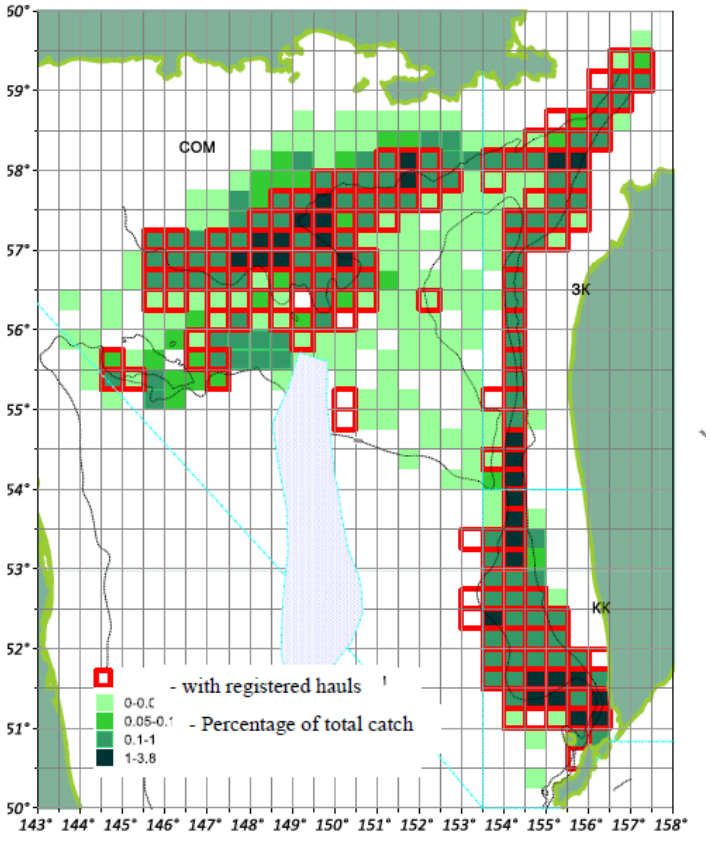


Figure 1. Percentage of total catch in 30×15 minute squares with registered hauls during January–April 2017; after Smirnov *et al*. (2017)

Much of the scientific observer coverage has focused on the larger (large and average size) midwater trawlers that dominate the fishery (Table 4). During the years 2006–2017, observer coverage of the total number of hauls in the fishery has ranged from 2.2 to 6.1%, and it was 5.6% in 2017 Season A (first three months of the year, the time of year when the bulk of annual pollock catches are made).

Table 4. Distribution of scientific observer sampling coverage by vessel size during the period 2006–2017; data from PCA

Year	Large and average size midwater trawlers (UoC fishery)				Medium-sized Danish seiners			
	No. of scientific observers	No. of hauls	No. of hauls observed	% of hauls observed	No. of scientific observers	No. of hauls	No. of hauls observed	% of hauls observed
2006	13	16035	570	3.6	2	6907	129	1.9
2007	11	12246	595	4.9	1	5235	57	1.1
2008	11	13568	440	3.2	1	7058	73	1.0
2009	12	15607	349	2.2	2	6187	47	0.8
2010	12	15171	929	6.1	2	8581	35	0.4
2011	14	15515	622	4.0	1	5175	95	1.8
2012	11	15016	462	3.1	1	5740	55	1.0
2013	12	13483	521	3.9	1	3573	62	1.7
2014	13	13879	642	4.6	1	2948	111	3.7
2015	10	14225	659	4,6	2	4512	38	0.8
2016	12	18841	789	4.2	2	2367	66	3.2
2017	16	18051	1004	5.6	2	2312	47	2.0

For at-sea compliance monitoring (which is totally separate from scientific observer coverage), at-sea inspection activities carried out by the Coastguard (formerly known as the GMI) doubled from 1088 in 2008 to 2133 in 2017 (Table 5). Increases in the detected cases of non-compliance in some years is considered to be related mainly to the occasional introduction of new measures for regulation. The average level of non-compliance between 2008 and 2017 was just 1.9%. In 2017, it should be noted, Coastguard inspectors detected a seemingly high 46 cases of non-compliance, but of these, 15 transgressions related to new rules for VMS equipment (i.e. the securing of units to control potential interference in signal transmissions) that entered into force on 1 January 2017, when many vessels were already at sea.

Table 5. At-sea inspection activities by the Coastguard or other-named fishery compliance organization since 2006; data from FSB East Arctic Coastguard Department

Parameter / year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017*
Number of vessels boarded / inspections	1088	1334	1406	1629	1578	1630	1452	1666	1833	2133
Change from previous year	+43%	+22%	+5%	+16%	–3%	+3%	–11%	+15%	+10%	+16%
Number of violations	37	33	24	10	23	13	28	34	25	46
Change from previous year	–14%	–11%	–28%	–41%	+230%	–0,56%	+215%	+21%	–26.5%	+184%
Annual level of non-compliance (violations / inspections)	3.4%	2.5%	1.7%	0,6%	1.5%	0.8%	1.9%	2.0%	2.1%	2.2%

* Season A only, at time of writing

As reported at the first surveillance audit and commented upon extensively in audits since then, Smirnov *et al*. (2014) undertook an analysis of scientific observer coverage levels of the Sea of Okhotsk pollock fishery aimed at performance evaluation of the existing monitoring system and in order to determine the number of observers required for effective monitoring of both target (pollock) and non-target species. It is useful to review this analysis here. The haul-by-haul observer dataset since 2010 was expressed as the number of non-target species individuals and undersized pollock (<35 cm) per one-hour haul (TDPUE). This represents the most variable component of the dataset, so conclusions drawn from that analysis would appropriately address monitoring requirements of non-target species and juveniles, but would generally overstate those for the target species at commercial size, i.e. pollock. The analysis of the variance in the TDPUE by vessel, subzone and trip indicated that, to meet the EU Data Collection sampling standard of CV = 25%, 46 trips would be needed to be observed annually which, if one observer was assumed per trip, equates to 46 observers. However, Smirnov *et al*. (2014)

noted that if every observer had an opportunity to move from one vessel to another during a change of subzone at least once, the target number of observers would be reduced to 20–22. During this fourth surveillance audit, TINRO remarked that this analysis indicated that observer coverage was already more than adequate to address monitoring of the target species but likely needed to be enhanced slightly to address that of non-target species and juvenile pollock.

As a consequence of the overall analysis of the observer number requirement and training needs by Smirnov and his colleagues at TINRO in 2014, as well as a perceived need to both plan observer deployments and develop a code of conduct for observers aboard trawlers, an Observer Working Group (OWG) was formally established. Its activities have been described in some detail in earlier audits. Succinctly, though, the OWG has coordinated the training of new observers and facilitated the allocation of observers to vessels throughout the fishing seasons. Since the third surveillance audit, TINRO convened two meetings of the OWG. In December 2016, the OWG discussed the strategy of observation and monitoring for season A (January–March) of 2017, and at the meeting in May 2017, the OWG reviewed a report of at-sea observer performance (both sets of minutes are available at www.russianpollock.com).

The stock assessment (see section below) has been modified such that the observation uncertainty in each input dataset, including in catch at age, is now explicitly estimated. As previously, this uncertainty is taken into account in the short- and long-term projections of the HCR (see section below).

3.4.2 Harvest Control Rules

There have been no changes to the Sea of Okhotsk (SOO) pollock harvest strategy and harvest control rule (HCR) since certification of the fishery in 2013, although it is of note that its legislative basis was re-affirmed by FFA Executive Order 104 dated 6 February 2015 (amended 4 April 2016), which earlier was defined in FFA Executive Order 88 dated 10 February 2011. As the order cannot easily be referenced and the issue is central to management, we here provide a brief summary translated into English of what it aims for and how it achieves its aims.

Order 104 sets out the procedure for TAC planning and approval, determines the requirements for TAC underpinning information, establishes the level of forecast information support, specifies TAC revision procedures, distributes areas of responsibility and aquatic living resources zones between institutes, and specifies the mechanism for submission of material. It defines the approaches to TAC determination, which is performed in accordance with the principles of precautionary and ecosystem-based approaches, including relative to maximum sustainable yield (MSY) estimates, and targets the sustainable development of national fisheries. TAC forecasting is a multistage process that includes, notably, information on target and limit reference points for management in terms of spawning (or fishable) stock biomass and rate of fishing mortality, as well as justifying and formalizing stock management strategies in the form of HCRs.

The Order states that one of the key TAC determination stages is the design of the HCR, acknowledging that an HCR is a formal expression of a stock management strategy that determines, *inter alia*, a TAC. HCR parameters are necessarily consistent with the provisions of precautionary and ecosystem-based management within the current understanding of MSY, i.e. maximum average long-term catch and its corresponding values (B_{MSY} and F_{MSY}). The HCR is identified as using two pairs of biological reference points, limit and target for B and F, with a specified relationship between the pairs of limit and target reference points. Limit reference points define boundaries of the allowable (biologically safe) area of management for a stock, and target reference points allow for assessment of the current stock status in respect to long-term forecasts. As new information becomes available and accumulates, management reference points and, accordingly, HCRs have to be revisited at least once every five years. Irrespective of the HCR version selected, TAC justification has to incorporate a stage of biological reference point determination that includes a description of assessment methods and analysis of the results.

The HCR uses the probabilities of events undesirable for the stock and fishery (i.e. the risks) to advise a TAC. Biological risks are evaluated as the likelihood of a decrease in predicted spawning (or fishable) stock biomass being below its corresponding limit reference point and the likelihood that predicted fishing mortality will exceed its corresponding limit reference point. If any biological risks exceed the prescribed range or if predicted spawning (fishable) stock biomass steadily declines relative to a

biological biomass-based reference point, alternative management options aimed at stock recovery with account for current interests of the fishery have to be examined and tested as a matter of priority.

Varkentin and Ilyin (2017) emphasise that annual assessments inform the two-year projections of the HCR and are the basis of the TAC. Since 2008, science advice, TACs and catch have all been in close agreement, indicating that the elements of the strategy continue to work well together (Table 6). For 2017, the HCR provided TAC advice of 1078 kt, but Varkentin and Ilyin (2016) recommended maintaining the TAC at its 2016 value of 967 kt, a value that was endorsed by VNIRO at the annual (late 2016) national review of the assessment and ultimately established. The two-year projections undertaken as per the HCR indicate that there is negligible risk of fishing mortality exceeding F_{LIM} or SSB falling below B_{LIM} during the projection period at TAC_{2017} = 967 kt and a 2018 TAC at or below current levels (Figure 2).

Table 6. Science advice (2-year projections†), TACs and catch (all in thousand tonnes) of pollock in the Sea of Okhotsk

Year	2-year projection	TAC	Catch	Catch percentage of TAC
2008	670	**658**	642	97,5%
2009	1016	821	795	96,8%
2010	1021	1010	990	98,0%
2011	920	920	901	97,9%
2012	862	862	844	97,9%
2013	840	840	832	99,0%
2014	821	821	815	99,3%
2015	789	904	883	97,6%
2016	967	967	943	97,5%
2017	1078	967	861*	89,1%
2018	1078	967	-	-

* Season A of 2017only (at time of writing)
† The HCR was only introduced in 2012, so the "2-year projections" before that year are not HCR-based, nor 2-year

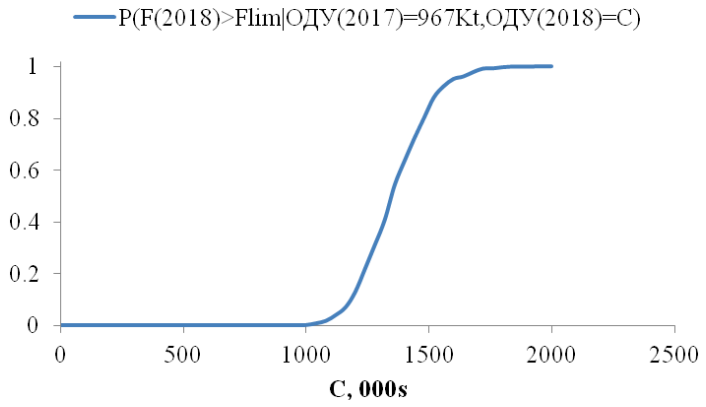


Figure 2. Probability of $F>F_{LIM}$ at TAC_{2017} = 967 kt and TAC_{2018} = C; after Varkentin and Ilyin (2017)

The results of the most recent (2017) stock assessment (Varkentin and Ilyin 2017) provide evidence of the effectiveness of the HCR thus far. The fully recruited fishing mortality (F) was above the target rate ($F_{TR} = F_{MSY}$) in 2009 and was reduced to below the target by 2014 (Figure 3). Since then, fishing mortality has been maintained at or below F_{TR}. Moreover, during the years 2009–2017, spawning stock biomass (SSB) did not fall below target ($B_{TR} = B_{MSY}$) and is projected to remain at the target until at least 2020. Varkentin and Ilyin (2017) reiterate the fact that the HCR is periodically revised and improved if necessary.

In 2014, to confirm the long-term behaviour of the HCR, 10-year projections were added to the annual TAC advisory process (Varkentin and Ilyin 2017). In these, Monte Carlo simulations evaluate the probability of F and SSB being within management targets and limits over the long term. The projections rely on the same stock conditions and uncertainties as used in short-term projections and indicate that as long as the HCR is observed, there is a 95% probability that SSB will be maintained above both B_{LIM} and B_{TR} (Figure 4).

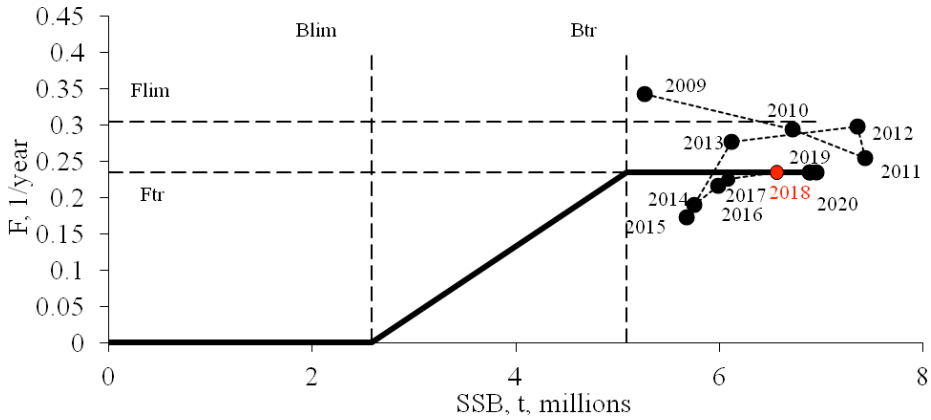


Figure 3. Trend of Sea of Okhotsk pollock fishing mortality (F) and spawning stock biomass (SSB, Mt) during the period 2009–2020; after Varkentin and Ilyin (2017)

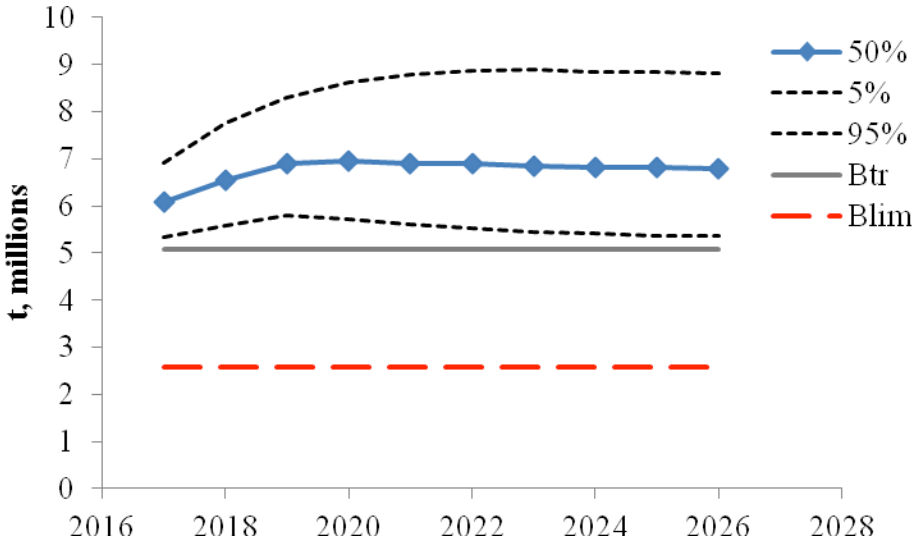


Figure 4. Sea of Okhotsk SSB estimated in long-term (10-year) projections under the assumptions of the short-term projections and as per the HCR; after Varkentin and Ilyin (2017)

These projections are considered tests of the HCR to indicate its performance under the assessed stock conditions and uncertainties. During the site visit, it was questioned whether or not the pollock HCR had been challenged assuming a depleted stock in order to determine stock recovery times from below B_{TR} to B_{TR}. It was indicated that this had not happened, but that if the 10-year projections indicated that the HCR was not sufficiently precautionary, it definitely would be updated. Given the current healthy state of Sea of Okhotsk pollock, evidence is not available of this potential response. However, by way of demonstrating the responsiveness of management to the precautionary approach, the West Kamchatka Shelf Greenland halibut stock uses a HCR similar to that applied to Sea of Okhotsk pollock, and for that stock, it was recently determined that whereas fishing mortality was at F_{TR}, SSB was declining (TINRO 2017). Therefore, the HCR for Greenland halibut was deemed not suitably precautionary and needing change. A simulation study was undertaken that indicated that the F/SSB relationship between B_{LIM} and B_{TR} needed to be altered to ensure robust achievement of management targets. This also had the effect of reducing the variability in long-term catch; no changes were made to reference points. The modified HCR for Greenland halibut was formally adopted and implemented to set the 2018 TAC, providing robust evidence that the Russian management system responds to changes in the HCR as and when needed.

During the site visit, the basis and use of the subzone allocations arose. Subzone allocations within the TAC are not hard limits but rather are used to distribute the overall TAC, and hence the catch, across the stock's distributional range; the sum of the catch across all subzones cannot exceed the overall

TAC. During the site visit, it was confirmed by TINRO that these allocations are based upon the historical distribution of the catch but annually checked against the biomass distribution indicated by TINRO surveys, and a change made to the allocation if deemed appropriate. This check on catch distributions was introduced in 2014.

3.4.3 Stock Status, Reference Points and Stock Assessment

There have been no changes in the fishing mortality and SSB reference points since the last surveillance audit. Varkentin and Ilyin (2017) emphasize that reference points are reviewed every five years and state specifically that a review in December 2016 indicated that no change was required.

The same authors summarize current stock status as consistent with that determined in 2016. As noted above, fishing mortality was above F_{LIM} in 2009, but has steadily declined since then and is now (in 2017) below $F_{TR} = F_{MSY}$. This reduction in F, combined with good 2011 and 2013–2015 year classes entering the stock and fishery allowed SSB to increase well above $B_{TR} = B_{MSY}$, with 95% probability. Overall, stock status has improved since its determination in 2016.

In terms of ***stock structure, distribution and productivity***, genetic research results presented at the December 2016 scientific council, but still awaiting publication, confirm the current stock structure. The annual reports to the Acoura team during surveillance audits have shown that seasonal movements of pollock are strongly influenced by meteorological and ice conditions as well as by prevailing oceanographic conditions, notably sea surface temperature (SST) in the Sea of Okhotsk. For instance, the build-up of ice cover in the Sea of Okhotsk during the period December 2016 – January 2017 was consistent with the long-term pattern; it changed abruptly in February when ice-cover growth suddenly stopped and the process of ice break-up by wind and waves prevailed. Consequently, because of the domination of relatively warm conditions in February and particularly March, the 2016/2017 winter season in the Sea of Okhotsk was characterized by low ice coverage (Varkentin and Ilyin 2017). Also, sea temperatures that were lower than normal dominated off West Kamchatka in January, and increased sea temperatures were recorded during February and March. TINRO undertook a catch rate (CPUE) standardization using a GLM (Generalized Linear Model) of data from 38 vessels operating in the target pollock fishery during the period January–April, with SST and ice concentrations as factors. This index was used in the 2017 assessment. During the site visit, TINRO stated that pollock recruitment in the Sea of Okhotsk seemed to be linked to predation on ichthyoplanktonic stages of pollock by large plankton, but there has been no formal analysis to prove this. There have been no more studies of sources of natural mortality other than those reported during the first certification.

The suite of ***stock abundance*** indices used in the 2017 assessment (Varkentin and Ilyin 2017) was the same as that used in 2016 (Varkentin and Ilyin 2016), but with two important changes. As recommended by Sharov (2016), the TINRO trawl survey was included in the 2017 assessment as a numbers-at-age (2–20 years) index. The large vessel fishing effort index, used since the 2010 assessment, was replaced by a large vessel catch rate (CPUE) index based upon a GLM analysis of the catch per ship-day data of 38 vessels operating in the target pollock fishery during the months January–April, with sea surface temperature and ice coverage included as co-variates (Varkentin and Ilyin 2017). This is intended to take account of recent changes in environmental conditions in the Sea of Okhotsk that may be influencing fishery catch rates.

During the site visit, it was clarified that the TINRO trawl survey is conducted according to a stratified random design, the statistical properties of which are well understood. At the original certification, it was noted that the survey catch rate data were being adjusted using a voluminosity adjustment (VA) for the abundance of pollock occurring above the trawl during a set based upon echo-sounder traces. TINRO stated at the time that typically no VA is required in depths of 0–200 m. However, in deeper water, the VA can be as much as twice (during the day) and three times (during the night) the set's catch if it were to account for uncaught fish above the trawl. A statistical analysis of trawl survey data (Kulik and Gerasimov 2017) concluded that the survey index trend without the adjustment was more consistent with the stock biomass trend estimated by the 2017 assessment (Figure 5) – the model did not fit the high VA-adjusted survey biomass indices in the latter part of the time-series, suggesting limited influence of these years of data in the assessment.

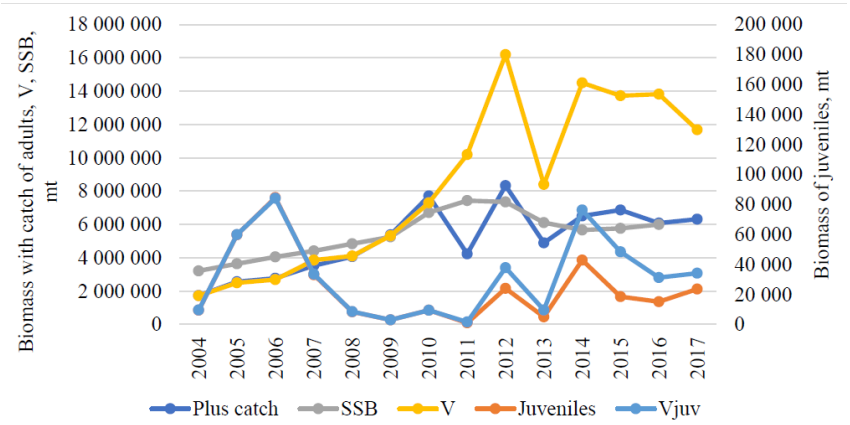


Figure 5. Trends in TINRO trawl survey biomass during the years 2004–2017; dark blue line, SSB excluding VA; yellow line, SSB including VA; grey line, SSB from the 2017 stock assessment; orange line, juvenile abundance excluding VA; light blue line, juvenile abundance including VA; after Kulik and Gerasimov (2017)

Sharov (2016) reviewed the 2015 ***stock assessment*** model (Varkentin and Ilyin 2015), the same model used from 2009 to 2014. He concluded that the assessment characterized the major sources of uncertainty, such as that caused by measurement errors in input data as well as in the model approximation of population dynamics and in the natural variability of the northern Sea of Okhotsk ecosystem. The methods used for uncertainty characterization were deemed similar to those used by stock assessment teams throughout the world. On that basis, the assessment team closed Condition 3 (on assessment uncertainty) during its third audit. Sharov (2016), however, made eight pertinent recommendations to improve the assessment model. The full response to these recommendations is provided in Appendix 1 of Varkentin and Ilyin (2017). For instance, he recommended that the TINRO trawl survey index be disaggregated by age, and this modification was introduced in the subsequent 2016 assessment. Further, sensitivity analyses of a number of stock dynamic processes were recommended, and these will be undertaken in 2019, and it was suggested that the HCR could be enhanced to include the estimation of $Pr(SSB<B_{MSY})$. The latter is addressed through the 10-year projections associated with the HCR. Sharov (2016) also recommended that uncertainty in the SSB and F reference points be estimated, and this task will be undertaken in the next review of reference points. Two of the other recommendations of Sharov (2016) (data weighting in the objective function and separate estimation of trawl and Danish fleet selectivity at age) were either not considered feasible at the time or already undertaken. The last two recommendations are in the assessment software and are for future consideration. Overall, it is this surveillance team's opinion that KamchatNIRO considered and responded appropriately and fully to the recommendations of Sharov (2016).

The 2017 stock assessment model (Varkentin and Ilyin 2017) was the same as that used in 2016 except that the GLM CPUE index noted above replaced the large vessel fishing effort index. Model diagnostics (residuals) did not indicate serious issues with model fit, although there has been a tendency for recent assessments to under-forecast stock biomass, which Varkentin and Ilyin (2017) rightly interpreted as being precautionary. Notwithstanding that fact, the 2017 assessment is generally consistent with status determination by the previous ones.

Two alternative models have been explored since the third surveillance audit. Ilyin *et al*. (2016) describe a state-space model that uses the same suite of input data and stock dynamics assumptions as Varkentin and Ilyin (2016), but includes process as well as observation error. Overall, the model indicates good agreement of stock and fishery indicators with the 2017 stock assessment model since the mid-1980s, but greater levels of biomass prior to that period. There is less uncertainty in stock dynamics since 1998 when a number of survey indices entered the model. This model has significant potential for future stock assessments of the Sea of Okhotsk pollock stock. Scientists from VNIRO also presented a TISVPA model (Vasilyev, 2005) of the stock to a session of the Pollock and Cod Scientific and Consultative Council (SCC) on 13 October 2016. It was recommended by that group that the model be applied to the same simulated dataset as that used to test the current model (see below), but this has not yet been undertaken. During the site visit, however, it was indicated that the current model will be used for the foreseeable future.

In terms of peer review, Varkentin and Ilyin (2017) describe the annual process of the Sea of Okhotsk pollock stock assessment, which has not changed from that in previous years. Since the third

surveillance audit, testing of the current model was undertaken by the Working Group on Mathematical Modeling Methods (WGM) under the Federal Fisheries Agency, which consists of leading Russian specialists in this discipline. A prepared set of input data for an age-structured stock and fishery, as per the approach adopted by ICES, was analysed by the SCAA model and found to assess faithfully the dynamics of the "true" stock.

3.5 Harmonisation

No fisheries identified for harmonisation purposes.

3.6 Any developments or changes within the fishery which impact traceability or the ability to segregate between fish from the Unit of Certification (UoC) and fish from outside the UoC (non-certified fish), including any changes in the UoC which could impact traceability how such changes have been addressed by management or traceability systems)

The team expended considerable effort again this year with the FSB (the Coastguard) evaluating their controls on catches and landings, transshipments and vessel movements. The fishery operating as it always has done and the fleet alternating seasonally and regularly between the UoC fishery and other fisheries outside the Sea of Okhotsk as it always did, meant that the team found no evidence of developments or changes to the national system or the fishery that might impact traceability or management's ability to segregate between fish sourced from different areas. Controls on all vessel movements and on fish products were at least as rigorous as they had been at certification, so the conclusion of this surveillance team is that traceability of product is as good now as it was at the first certification visit five years ago. Succinctly, the Coastguard runs a robust system of control of this fishery (and other national fisheries) in Russian and nearby international waters, and the team's opinion is that the data on certified and non-certified fish product emanating from the fishery are watertight in terms of source and traceability.

3.7 TAC and catch data

Table 7: TAC and catch data for the Sea of Okhotsk walleye pollock fishery

Total TAC for most recent and current fishing years (2016 and 2017):	**966 700 t (both years)**
Unit of Assessment share of the total TAC established for the fishery in most recent completed fishing year (2016)	**889 054 t**
Unit of Certification share of the total TAC established for the fishery in most recent completed fishing year (2016):	**782 551 t**
Total greenweight catch taken by the client group in the Unit of Certification fishery in the two most recent calendar years (2015 + 2016):	**681 179 (2015)** **716 120 (2016)**

Sources: TAC and quota – Ministry of Agriculture and FFA; catch statistics – Fishery Monitoring System database

3.8 Summary of Assessment Conditions

Table 8: Summary of Assessment Conditions following this audit

Condition number	Performance indicator (PI)	Status	PI original score	PI revised score (after this surveillance)
1	P1.2.1 Harvest Strategy	Closed at 4th SA	70	95
2	P1.2.3: Information/monitoring harvest strategy	Closed at 4th SA	75	80
3	P1.2.4: Assessment of stock status	Closed at 3rd SA	90	N/A
4	P2.2.3: Information/monitoring by-catch	Closed at 3rd SA	80	N/A
5	P2.3.3: Information/monitoring ETP species	Closed at 4th SA	70	80
6	P2.5.3: Information/monitoring ecosystem	Closed at 2nd SA	80	N/A
7	P3.2.2: Decision-making processes	Closed at 3rd SA	80	N/A
8	P3.2.5: Monitoring and management performance evaluation	Closed at 4th SA	70	80

4 Results

4.4 Condition 1

Performance Indicator(s) & Score(s)	Insert relevant PI number(s)	Insert relevant scoring issue/ scoring guidepost text	Score
	1.2.1	**Harvest Strategy: There is a robust and precautionary harvest strategy in place**	**70**
Condition	As the harvest strategy is newly implemented, there is no evidence to demonstrate that it is achieving its objectives. The harvest strategy is to undergo testing to explore its robustness to management and assessment uncertainties. The client must annually provide evidence during the certificate validity period of the results of annual monitoring that demonstrate that the harvest strategy is achieving its objectives as reflected in the target and limit reference points.		
Milestones	**Milestones** **First Surveillance** The client must provide detailed written evidence of the annual monitoring in order to demonstrate that the harvest strategy is working satisfactorily and is achieving the exploitation levels required in relation to the established reference points. The milestone associated with the first surveillance audit has been defined as a means to monitor progress; meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 70 **Second Surveillance** The client must provide detailed written evidence of the annual monitoring in order to demonstrate that the harvest strategy is working satisfactorily and is achieving the exploitation levels required in relation to the established reference points. The milestone associated with the second surveillance audit has been defined as a means to monitor progress; meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 70 **Third Surveillance** The client must provide detailed written evidence of the annual monitoring in order to demonstrate that the harvest strategy is working satisfactorily and is achieving the exploitation levels required in relation to the established reference points. The milestone associated with the third surveillance audit has been defined as a means to monitor progress; meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 70 **Fourth Surveillance** By the fourth surveillance audit, the client must provide written evidence in the form of a report that demonstrates that the harvest strategy has undergone testing to explore robustness to management and assessment uncertainties. Provided the actions defined in the milestones and the deliverables in the client action plan are met, the PI is expected to be re-scored at 80 or higher, demonstrating that the second scoring issue of SG80 has been met.		
Client action plan	**Client Action Plan** It is accepted that some elements of the harvest control rules that form the harvest strategy are new. Monitoring of the fishery is already in place to ensure that the harvest strategy is achieving its objectives. At each annual audit, the PCA will commission and provide detailed evidence of the annual monitoring in order to demonstrate that the strategy is working		

	satisfactorily and is achieving the exploitation levels required in relation to the established reference points. During the fourth year of the certification PCA will commission an independent evaluation of the strategy using a Management Strategy Evaluation or another appropriate evaluation method in order to demonstrate that the harvest strategy is achieving its objectives. **Deliverables** **First, Second, Third Surveillances** At each annual audit PCA will provide detailed evidence of the annual monitoring in order to demonstrate that the strategy is working satisfactorily and is achieving the exploitation levels required in relation to the established reference points. **Fourth Surveillance** By the fourth annual audit, the PCA will present a report that will demonstrate that the fishery is fully compliant with the second scoring issue in SG80 and achieve a minimum score of 80 for this PI. PI 1.2.1 Scoring Issue (80b): 'The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives. By the fourth annual audit the evidence of the monitoring of the fishery presented at each annual audit will have demonstrated that the fishery is compliant with the first element of SG 100 and should achieve a score of 85 for this performance indicator. PI 1.2.1 Scoring Issue (100a): The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points.
Progress on Condition through years 1–4	***Year 1*** To meet its obligations, the PCA commissioned KamchatNIRO to analyse two key aspects of the harvest strategy now implemented for the fishery in the Sea of Okhotsk, the primary area of fishing by the entire fleet: 1) the efficiency of the harvesting strategy for pollock, and 2) uncertainty and risk considerations related to the fishing strategy and TAC determination. That report (see the 1st Surveillance Audit report for reference detail) was provided to the team, and it was the team's opinion that the work provided at least as much as would be expected at the first surveillance stage of the certification. Any robust evaluation of a harvesting strategy would require several years of data and performance to be collected and the initial analysis did not have access to sufficient quality information. A significant portion of the paper analysed in detail the results of monitoring the fishery between 2012 and 2014, an important stepping stone for the analysis, but short of proving the principle objective of demonstrating the robustness of the harvesting strategy (including the realization of the target and limit reference points); that must come later. It was noted too that stock assessment uncertainty *per se* was covered more fully under Condition 3. The paper presented to the team did provide useful information to evaluate how this condition was being met (for the years 2012–2014): • an analysis of the fishery in the Sea of Okhotsk using data from scientific observers and fishing statistics; • size and age composition of pollock caught by different gears in the area; • annual stock status indicators; • stock assessments and forecasts, and comparison of predicted and realized catches with TACs; • an initial harvest strategy evaluation; • identification of the main types and sources of uncertainty in the stock

assessments;
- methodologies for incorporating uncertainties in future assessments and TACs.

Remedial actions

None then.

Changes to condition

No change to the condition or the score was suggested at the first surveillance, and the condition remained as it was.

Updated status

It was deemed that further work needed to be carried through and developed during the subsequent surveillance periods. In particular, the client was reminded that there was a need to show through robust analysis by the fourth and final surveillance audit that the selected harvest strategy really was achieving its objective of working satisfactorily based on target and limit reference points. It was felt that after some more years of harvesting and with the planned increased observer coverage to strengthen the estimates of juvenile mortality, the data available should be adequate to carry out such an analysis.

Year 2

To meet its obligations for the 2nd surveillance, the PCA again commissioned KamchatNIRO to analyse two key aspects of the harvest strategy implemented for the fishery in the Sea of Okhotsk, the primary area of fishing by the entire fleet: 1) the efficiency of the harvesting strategy for pollock, and 2) uncertainty and risk considerations related to the fishing strategy and TAC determination. The report provided to the team (see the second surveillance audit for reference detail) revealed that the data and analyses provided exactly what was expected of the report at the second surveillance stage of the certification. It covered all the information collected post-certification and covered the assessment itself and its testing, and carefully evaluated the reference points.

After a series of relatively average or slightly weaker year classes, the 2011-year class was deemed to be strong, and the 2013 and 2014 year classes likely to be relatively medium-strength to strong, giving rise to expectations that the stock would grow strongly from 2016 on (in 2014, the spawning stock biomass (SSB) of pollock in the Sea of Okhotsk was some 5.4 Mt, and by early 2016, it was predicted to be 5.5 Mt). Target reference points were based on maximum sustainable yield (MSY) and limit reference points above levels at which spawning might be impacted negatively. The then value of B_{lim} was calculated at 2.583 Mt, slightly below that calculated at certification (2.632 Mt).

Three forms of uncertainty were taken into consideration: measurement error associated with possibly unrepresentative levels of sampling, model uncertainty in terms of fishery dynamics, and uncertainty in terms of natural variation in stock parametrization. In the opinion of the surveillance team, the first two of these were already being taken into account adequately in the model parameter and stock condition estimates and reference points through the bootstrap method employed, and the third form was considered when evaluating the efficiency of the various controls during the modelling process. In terms of risk, predictive modelling showed that if levels of exploitation remained within the range recommended by the harvest control rule, there was a 95% probability that the stock would remain within safe limits and close to the target reference point for SSB.

The team noted then that, in terms of the first form of uncertainty, there were stated concerns among some stakeholders that the level of juvenile mortality was not being evaluated adequately, largely because the number of trawls of the UoC fishery being officially observed by the independent scientific

observation team was relatively low. Even with the planned small increase in that observer coverage from then on, the stakeholder concerns would remain. The idea was therefore mooted by at least one stakeholder that, at the very least, observations from the FSB inspectors and the GMI should be taken into account in the analysis, but it is the team's understanding that, although there is and was coverage by those inspectors, the information being collected was not of sufficient scientific rigour to allow it to be incorporated into the analysis. The same stakeholder suggested that other forms of control could be instituted, e.g. camera systems or advanced acoustic systems that can differentiate between juvenile and adult fish, or further sorting grids in the net opening (there is already one form of sorting grid in place, the efficacy of which some seagoing personnel question anyway).

While the surveillance team understood fully the source of the concern about juvenile pollock mortality, even with the move-on rule then being applied, it did not agree with the stakeholder contention that observer sampling levels had to be enhanced to such a level that the percentage of trawls observed would burgeon dramatically (few MSC-certified fisheries have that form of coverage), nor that investment in on-board camera systems or some of the rapidly improving acoustic devices could totally mitigate the concerns being raised annually. Hence, the surveillance team then only suggested that some of the new devices (acoustic and camera) be tested at sea with a view to them possibly being instituted in future.

Overall, though, given that the stock appeared in all respects to be being managed through the harvest strategy towards a slightly higher level of sustainable exploitation than currently (by taking less than the calculated replacement yield) and that the regular reporting on this aspect was at the very least adequate, it was the team's opinion that the fishery and client were on schedule to meet this Condition before recertification started in 2017. Efforts to improve data collection associated with evaluating juvenile pollock mortality did need to be increased, but the rigour which the KamchatNIRO evaluation brings to the table is deemed adequate for the task in hand in terms of this Condition.

Year 3

As during the previous two years of the certification, PCA commissioned the Kamchatka Research Institute of Fishery and Oceanography (KamchatNIRO) to report on the annual monitoring of the Sea of Okhotsk pollock fishery in order to demonstrate that the harvest strategy was working satisfactorily and achieving the exploitation levels required in relation to the established reference points. The report it produced (Varkentin and Ilyin 2016) again (1) analysed the efficiency of the pollock fishing strategy in place and (2) considered uncertainties in the pollock stock assessment and TAC calculation for the northern Sea of Okhotsk. Specifically, the report:

- analysed key results associated with pollock fishery monitoring activities in the area (in the subzones North Sea of Okhotsk, West Kamchatka, and Kamchatka-Kuril) in 2016 relative to historical data;
- evaluated the data on the annual dynamics of key biological indicators (size and age distribution in the catches taken using various fishing gears) of pollock as well as in catch per unit effort;
- analysed stock status indicators of pollock on a year-on-year basis;
- provided pollock stock status assessments for the area in in 2015, giving predicted stock and TAC estimates for 2016/2017, and where possible compared the predicted estimates with real data, performing retrospective analysis;
- assessed the efficiency of the pollock fishing strategy in the UoC fishery area;
- identified key types and sources of uncertainty in the pollock stock assessments and TAC calculation;
- described the methods and provided key results of uncertainty incorporation

currently used in pollock stock assessments and TAC determination.

To summarize, model-based estimations showed that SSB is stable slightly above the target reference point for spawning biomass B_{tr}, the level at which stock productivity needed to be sustained. Based on bootstrap analyses, it was concluded that the level of uncertainty of the estimates was satisfactory. Indeed, there was confidence ($p > 95\%$) that the stock was at a level notably above both B_{lim} and B_{tr}. Retrospective analysis revealed gratifying stability of the model-based estimates for northern Sea of Okhotsk pollock data, and overall, the diagnostic results showed that the stock assessment was both adequate and met high international standards of credibility.

According to model-based estimates, pollock total stock biomass in the area at the start of 2015 was 9.22 Mt and SSB was 6.13 Mt, well above the values calculated in 2015, but concomitant with expectations of a now-growing stock.

In the team's opinion, the reference points used for the harvest control rule (HCR) are consistent with and meet existing international practice. Specifically, target values are based on maximum sustainable yield (MSY) and the limit reference point B_{lim} is above the level at which there would be a perceptible risk of impaired reproductive capacity. Further, stock recovery has been observed historically from that level. Notwithstanding this conclusion, it appears that the current reference points may be revised during TAC work carried out during 2017 for the 2018 season.

The stock assessment forecast for SSB at the start of 2017 was 6.54 Mt tons, indicative of a recovered stock. In accord with the HCR in use, the recommended fishing mortality coefficient (*F*) for 2017 would then be 0.235, suggesting a pollock TAC in the area for 2017 of 1 084 100 (16.6% of SSB). However, KamchatNIRO scientists recommended maintaining the 2017 TAC at its 2016 value of 960 000 t, and that suggestion was endorsed by VNIRO after the assessment was subjected to its annual central, including ecological, critical evaluation.

As stated in previous years, the stock assessment model in use includes three forms of uncertainty: measurement error associated with possibly unrepresentative levels of sampling, model uncertainty in terms of fishery dynamics, and uncertainty in terms of natural variation in stock parametrization. The first two are recognized when evaluating uncertainties in model parameter estimates, stock condition and management reference points according to the bootstrap method, and the third when evaluating the efficiency of the fishery control method based on imitation modeling.

In the process of TAC planning, the effectiveness of the selected fishery controls is analysed through a risk analysis. The probability of there being undesirable consequences for the stock, i.e. an overfishing risk in terms of recruitment and stock growth when implementing the strategy, is within the recommended level of 10%. The results of stock dynamics modelling for a 10-year period revealed that, at the levels of harvesting suggested by the HCR, the pollock stock in the northern Sea of Okhotsk would not exceed biologically safe limits and would remain in the vicinity of the target reference point B_{tr} with 95% probability. Despite the historical 2004 and 2008 year classes being weak, the HCR confidently allows the stock to be maintained at a high level of productivity for the immediate future, understandingly so given the relative strength of the more recent (and now being fished) year classes.

Condition 3 (see below) required that the Sea of Okhotsk stock assessment model be subjected to rigorous external review by an independent international expert in 2016. For more information on this aspect, refer to Condition 3 below.

The review team noted that the annual milestones for this condition were being met by delivering a regular comprehensive analysis in written form of how the annual monitoring underpinned and supported the understanding that the HCR was working effectively. The KamchatNIRO document provided this year (which

	is available in full in its original language on the KamchatNIRO website and in extended summary on the PCA website) is now the third annual report aimed at meeting the overall objective, and like the previous two (reported at SA1 and SA2), clearly shows the efficacy of the HCR in matching exploitation levels against well-calculated target reference points. The stock is seemingly strong, yielding good year classes and still on an upward trajectory, to the extent that the calculated and initially recommended TAC for 2017 has been revised downwards by management and decision-making evaluators (seemingly for economic and marketing reasons) to stay at the same level as for 2016. In other words, some potential TAC will be left next year to remain "in the bank". The harvest strategy ensuring stock sustainability is therefore deemed to be working well. To close the Condition at the fourth surveillance next year, it is expected, however, that written evidence will be provided to demonstrate that the harvest strategy has undergone testing to explore robustness to management and assessment uncertainties. A small concern does arise, though. VNIRO is currently evaluating a slightly different means of calculating the annual TAC from the established model and harvest strategy, methodology that does not garner support from the scientific community responsible for the assessment (KamchatNIRO) and others. Therefore, it is crucial for the stock and general belief that it is being managed sustainably that the methodology underlying the proposed centralized Russian (VNIRO) adaption of the model and TAC-setting be carefully considered by all involved in the work and that clear and unanimous decisions on the methods of calculating future management targets such as TAC be tabled early in 2017 at the latest. ***Year 4*** The milestone of the fourth surveillance audit was for the client to provide written evidence in the form of a report that demonstrates that the harvest strategy has undergone testing to explore robustness to management and assessment uncertainties. The report by Varkentin and Ilyin (2017) provides this proof, supplemented by the findings of the site visit. The testing of the harvest strategy and associated HCR consists of two elements, both of which indicate its robust performance under the assessed starting stock conditions and uncertainties. The two-year projections undertaken as per the HCR evaluate the risk of fishing mortality increasing above F_{LIM} and SSB dropping below B_{LIM} during the projection period over a range of assumed TACs. Greater uncertainty in assessed stock conditions results in higher risk at lower TACs. Ten-year projections, undertaken since the original certification, confirm the robustness of the harvest strategy to assessed stock conditions and uncertainties over the longer term. In these, Monte Carlo simulations evaluate the probability of F and SSB being within management targets and limits over the long term. The projections rely on the same assumptions as used in the short-term projections and indicate that as long as the HCR is observed, there is 95% probability that SSB will be maintained above both B_{LIM} and B_{TR}. Thus far, the HCR has not been tested to determine its performance assuming an initially depleted stock in order to determine stock recovery times to B_{TR}. TINRO stated that where the 10-year projection indicates that the HCR is not sufficiently precautionary, it would be updated. Evidence of this institutional response is available for the West Kamchatka Shelf Greenland halibut stock, which uses a HCR similar to that of SOO Pollock. It was determined that whereas fishing mortality was at F_{TR}, SSB was declining. Therefore, the HCR was deemed not suitably precautionary and needed to be changed. A simulation study was undertaken that indicated that the slope of the F/SSB relationship between B_{LIM} and B_{TR} needed to be changed to ensure robust achievement of management targets. This action also had the effect of reducing the variability in long-term catch. No changes were made to the reference points. The modified HCR was adopted and implemented to set the 2018 TAC

	for Greenland halibut. This provides evidence that the management system being applied in Russian fisheries responds to changes in the HCR as needed. Evidence that the harvest strategy is achieving its objectives is provided in the F/SSB phase plot. Fully recruited fishing mortality (F) was above the target rate (F_{TR} = F_{MSY}) in 2009 and was reduced to below the target by 2014. Since then, the fishing mortality has been maintained at or below F_{TR}. During the period 2009–2017, spawning stock biomass (SSB) did not drop below the target (B_{TR} = B_{MSY}) and is projected to remain at that target until at least 2020. Evidence that the elements of the harvest strategy continue to work together was provided in a comparison of science advice, TAC and catch since 2012; all have been in close agreement. In 2017, the HCR yielded a TAC of 1 078 kt, but KamchatNIRO, supported by the fishery itself, mainly for marketing reasons, proposed maintaining the 2017 TAC at its 2016 value of 967 kt. The latter value was endorsed by the Russian central agency VNIRO after the assessment had been subjected to its annual national review. The above actions meet the requirements of Condition 1.
Status of condition	Closed - With the additional years of Sea of Okhotsk pollock stock status information and modelling since the original certification, the ongoing testing undertaken through the short- and long-term harvest projections under assessed stock status and uncertainties, and evidence of sound institutional response to the need to modify an HCR when required, the assessment team concludes that, although the harvest strategy may not have been fully tested, evidence exists that it is achieving its objectives. Succinctly, the risks of adverse consequences to the stock arising for the implementation of the current harvest control rule are minimal. All SIs are met at SG80 and with the first and third SIs of SG100 also being met, the PI can be rescored at 95.

4.5 Condition 2

Performance Indicator(s) & Score(s)	**Insert relevant PI number(s)**	**Insert relevant scoring issue/ scoring guidepost text**	**Score**
	1.2.3	**Information / monitoring: Relevant information is collected to support the harvest strategy**	**75**
Condition	By the fourth surveillance audit, provide a written report evaluating the monitoring programme for the fishery (e.g. analysis of the accuracy and at-sea observer coverage of both the ichthyoplankton / trawl survey and fishery removals) that demonstrates that stock abundance and fishery removals are regularly monitored at a level of accuracy and at-sea observer coverage consistent with the harvest control rule.		
Milestones	**Milestones** **First surveillance** At the first surveillance audit, the client must provide a written report to demonstrate coverage, consistency and accuracy of the records of landings, of survey activities and analysis that these are consistent with the harvest strategy and monitored with sufficient frequency to support the harvest control rule. If this report highlights issues that need to be addressed, a plan must be developed by the second surveillance audit to describe what actions will be taken to address these shortcomings. If the first surveillance audit deliverable demonstrates that stock abundance and fishery removals are regularly monitored at a level of accuracy and at-sea observer coverage consistent with the harvest control rule, the PI would be rescored at 80 or higher. If the deliverable report highlights issues that need to		

	be addressed, then meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 75 **Second surveillance** At the second surveillance audit, the client must provide a written report that outlines an implementation plan to address shortcomings in the monitoring programme identified in the first surveillance audit. This report would demonstrate how each issue is to be addressed by the fourth surveillance audit. The milestone associated with the second surveillance audit has been defined as a means to monitor progress; meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 75 **Third surveillance** By the third surveillance audit, the client must provide a written report describing completed actions to address issues raised in the first surveillance audit. The milestone associated with the third surveillance audit has been defined as a means to monitor progress; meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 75 **Fourth Surveillance** By the fourth surveillance audit, the client must provide a written report that demonstrates that stock abundance and fishery removals are regularly monitored at a level of accuracy and at-sea observer coverage consistent with the harvest control rule. Provided the actions defined in the milestones and the deliverables in the client action plan are met, the PI would be re-scored at 80 or higher by the fourth surveillance audit.
Client action plan	At the first surveillance audit, the PCA will commission and provide a written monitoring report to demonstrate coverage, consistency and accuracy of the records of landings, of survey activities and analysis that these are consistent with the harvest strategy and monitored with sufficient frequency to support the harvest control rule. This will include monitoring of the developing seine-net fishery on the West Kamchatka Shelf. If this report highlights issues that need to be addressed, a plan will be developed that will address these. The analytical report will be prepared by the working group including representatives of the Federal Fishery Agency, fishery research institutes (such as VNIRO, TINRO, KamchatNIRO, and any others with necessary scientific expertise), FSB Coast Guard, and PCA. The Client is committed to engaging expertise and consultancy from internationally recognized experts. This report will be reviewed by the surveillance team at the second audit. **Deliverables** Four written monitoring reports will be provided. As a result, the fishery will achieve a minimum score of 80 for this performance indicator by the fourth surveillance. **First surveillance** The first report, detailed above, at the first surveillance audit is expected to partially achieve the second scoring issue of SG80 and fully achieve the third scoring issue. **Second surveillance** At the second surveillance audit, the client will provide a written report that will outline an implementation plan to address shortcomings in the monitoring programme identified at the first surveillance audit. The report will be prepared

	by the working group specified above, and recommend changes to the monitoring and at-sea observer programmes, if necessary, and suggest a timeline for such changes to be implemented in the management process. **Third surveillance** By the third surveillance audit, the PCA will provide a written evaluation report of actions taken to address issues raised in the first surveillance. **Fourth surveillance** By the fourth surveillance audit, the PCA will provide a written evaluation report on how all issues associated with the monitoring of the fishery and surveys have been addressed.
Progress on Condition through years 1–4	***Year 1*** To attempt to meet its obligations, the PCA commissioned TINRO and KamchatNIRO to prepare a comprehensive report entitled "Pollock stock and fishery monitoring in the Sea of Okhotsk in 2013" (see surveillance report for reference detail). It demonstrated the coverage, consistency and accuracy of the records of landings and of survey activities and results, and analysed how consistent they were within the harvest strategy. However, the frequency of monitoring was deemed then as likely insufficient to support the harvest control rule, an issue mentioned by the WWF and others. For instance, the issue of catch and discarding rates of juvenile pollock was regularly being raised given the then construed low levels of observer coverage in the fishery, despite protestations by the fishery that the move-on rule minimized both. FFA GMI observers monitored all catches, but independent (scientific) observer coverage clearly needed to be enhanced swiftly, particularly to strengthen the estimates of the proportion of juvenile pollock in the catches. Future versions of the report also needed to elaborate more fully on the methodology used to estimate total mortality based on processed weights, including information on the conversion factors used for product to green weight calculation and the raising factors being applied to the estimates of bins and bin weights of pollock. As a consequence of a comprehensive review of an initial version of that report by scientists, the FFA, the FSB, government officials and fishing company representatives in October 2013, PCA commissioned from TINRO a report on how to develop a fully comprehensive and acceptable observer system to monitor the pollock fishery in the Sea of Okhotsk, including a rigorous statistical analysis of the number of observers required for the fishery (again, see the surveillance report for reference detail) and a provisional analysis of the fishery's impact on the ecosystem (reference detail also provided in the surveillance report). The first report detailed in a robust statistical manner how the observer system needed to be developed sufficiently for the target level of accuracy and observer coverage concomitant with the harvest control rule to be followed. The two reports together demonstrated that at-sea trained scientific observer coverage was rising year on year but that coverage still needed to increase modestly (the WWF also considered that such independent observer coverage should increase). Plans were obviously then in place for that corps of scientific observers to be expanded. Expert review of the report and proposals by scientific organizations country-wide as well as the WWF and the Sustainable Fisheries Partnership (SFP) resulted in the understanding that a working group on the observer programme needed to be established formally under the initial lead of the FFA. A group met for the first time in August 2014, in Moscow, and was expected to meet again soon thereafter, when the whole proposal for enhancing the observer scheme by bringing in more trained observers (and information on how they would be trained) would be advanced and hopefully swiftly implemented. Establishment and formalizing of that observer working group was considered to be a key

	requirement without which this condition would struggle to be met, at least, but not only, in the eyes of some critics of the certification. The surveillance team was satisfied that the requirements for meeting the milestone set for the first surveillance had been satisfied, and noted that the process leading to meeting the second and third surveillance milestones in terms of developing the monitoring system was already under way. However, no amendment of the scoring was possible at that stage, because the development plan for the scientific observer system had not yet been implemented, nor had a working group on the observer system been formally constituted, despite most of the requirements of an enhanced scientific observer system having been tabled and discussed at length. **Remedial actions** Institute and formalize the required Observer Working Group, and specify their terms of reference. **Changes to condition** No change to the condition or the score was suggested at that surveillance, and the condition remained as it was. **Updated status** In terms of this condition, the UoC fishery was well past the status it would have been expected to be at by the first surveillance audit, and provided the working group of experts on the observer system was formally constituted and continued to meet and to implement its plans meaningfully, was impressively working towards meeting this condition by the fourth surveillance. ***Year 2*** There was no written report provided in English, but the team was satisfied from the Russian language material presented (from the [minutes of the] working group established since certification) and actions clearly taken and listed for the team that the client was addressing this Condition in a manner that should hopefully allow the Condition to be closed off by the fourth surveillance. Largely from the original TINRO report on monitoring levels provided at the first surveillance audit (see the surveillance report of that surveillance for reference detail) and taking cognizance of several issues raised by the surveillance team in 2014, two main thrusts of improvement were required to fulfil the Condition in principle if not in full by producing a written report. The first was to enhance the number of scientific observers trained and able to participate in the fishery; planning for this was definitely in place with a view to at least an extra 5–6 observers becoming active in the fishery in 2016 and another 5–6 the following year (bringing the total scientific observer component to the required 22–25 recommended by the first TINRO report). The team realized that it would be impossible to train more than six trainees per year within the current trained staff corps of TINRO, so the team was satisfied that enhancement of the trained scientific group could take place in two annual stages. Using local educational establishments, training (anticipated to be 90 h of intense study) would result in diplomas being awarded. The team noted too that protocols, instructions and keys were being developed by TINRO, responding both to suggestions made during the first surveillance and to proposals and ideas generated by members of the officially constituted working group, mentioned beneath. The second requirement was for a working group on Sea of Okhotsk pollock monitoring to be established, including representatives of the TINRO monitoring group, WWF Russia, the Far East Technical Fisheries University and the PCA (the client). This working group had been established and was looking at: • developing and implementing actions aimed at further improving monitoring of the fishery by scientific observers;

- developing and managing training resources;
- updating protocols and instructions for observers carrying out the monitoring;
- developing proposals to enhance observer functions, rights and status on board fishing vessels;
- arranging cooperation with other fishery management agencies.

The minutes of the 1st meeting (4 September) were seen, and so was the 80-page draft observer manual developed by TINRO. The latter took cognizance too of the need for observers where possible also to record observations on seabirds and marine mammals (i.e. P2 issues), as outlined by scientists at the Kamchatka Institute of Geography. A second meeting of the working group had also been held shortly before the site visit, focusing on educational detail.

There were still a number of stakeholder concerns. These revolved around accurate assessment of juvenile mortality, for which stakeholders believed that better technology might be the solution, and the fact that they did not believe that appropriately reviewed and if necessary amended conversion factors were being applied to the fishery extractions to accurately determine green (live) weight of the pollock being caught. The team was not convinced that the technological improvements (cameras and acoustics) suggested would be a cost-effective and accurate means of improving confidence in understanding juvenile mortality so suggested that the situation continue to be monitored but that the move-on rule be rigorously applied and enforced. However, responding to the concerns about the condition factors being applied, the team asked the PCA to Commission a short report from TINRO outlining the methods and modus operandi of condition factor (also referred to as yield coefficient) calculation and application in the fishery. This was supplied later in 2015, and from discussions held, it was determined that acceptable methodology was being applied to calculate them, that the current values were applied from June 2014, and that they would be reviewed again in 2017, in a rigorous manner. The team accepted this (and the regularity of review) as international best practice, so was confident that the live weight extraction values for pollock used in fishery management were as accurate as needed.

Overall, the team was satisfied with delivery against this Condition. However, it was deemed necessary for the minutes of the working group's meetings to be at least summarized (not translated in full) into English immediately, for team and MSC records. The team was also pleased to learn that the intention was for the working group to be maintained as a permanent body of NGOs (e.g. WWF), state research institutions (e.g. TINRO) and educationists (the Far East Fisheries Technical University) to evaluate any further issues or shortcomings that might arise in the monitoring (scientific observer) programme in future.

The client seemed to be on track for meeting this Condition by the fourth surveillance audit, but producing the final report evaluating the programme of monitoring of survey efficacy as well as fishery removals and associated observations (the latter is what was being done then) will be challenging.

Remedial actions

Urgently provide a translated summary of observer working group agenda and meetings, for proper and complete record purposes.

Changes to Condition

No change to the Condition or the score was suggested at that surveillance, and the Condition remained as it was.

Updated status

Training of new observers to supplement the existing corps of trained staff was taking place and the working group of experts on scientific observers in the pollock fishery in the Sea of Okhotsk had been formally constituted by TINRO order 87 of 7 July 2015, with clear and acceptable goals (terms of reference).

Therefore, provided the observer coverage increased during 2016 and that the working group continued to meet and implement its plans meaningfully, this Condition was considered to be on track to be met by the fourth surveillance audit.

Year 3

During late 2015 and in 2016, the Client and TINRO collaborated in implementing the improvement programme for fishery monitoring by scientific observers developed initially by TINRO and reviewed by the working group (which comprised fishery science agencies, industry and stakeholders such as WWF Russia and the Far East Fisheries Technical University). According to the action plan and training course methodology at the second audit, a 90-h training course was given by TINRO and the University for 14 trainees. On satisfactory completion, all trainees received an official diploma of competency in at-sea observation for the pollock fishery from the University.

The results of the previous year's monitoring programme are detailed in Smirnov *et al*. (2016). In season A of 2016 (the first three months of the year), four of the newly trained observers accompanied by experienced TINRO observers were deployed to the fleet fishing pollock in the Sea of Okhotsk. Observers started in pairs of one new trainee and one established one, then, after 3-4 weeks of practical training, the new trainees were deployed on different vessels in order to increase observation coverage overall. Their tasks included:

- studying the distributions of spawning and post-spawning pollock aggregations, to determine the onset of mass spawning and the spawning grounds in the Sea of Okhotsk in winter-spring 2016;
- observing spawning aggregations, specifically recording catch per hour, per haul and per ship-day;
- collecting material on the seasonal and depth distributions of pollock length and age classes and the maturity states;
- estimating pollock by-catch size in key operating areas of the fleet;
- qualitatively and quantitatively assessing the by-catch of other fish species;
- recording the by-catch and (if observed) mortality of marine mammals and seabirds interacting with the fishing gear;
- collecting and analysing all available information on vessel activities on the fishing grounds.

All the hauls observed were typically on large concentrations of pollock, and all analyses followed the standard techniques documented and used by TINRO Centre. At least 200 pollock were measured from each haul and the resulting length distribution for each was applied to the total catch of that haul. Biological analysis was carried out on at least 25 pollock collected from each haul. The standard Guide for Macroplankton Sample Sorting and Taxonomic Group Determination was used to identify prey, and Pollock scales were collected according to the established Pravdin method for age identification. All data (catch and effort data, for pollock and herring, by-catch, marine mammals and seabirds) were captured electronically for subsequent analysis. Trawling duration during the observer trips varied from 1 to 9 h depending on catch volume, so all catch data were recorded in the form of catch per hour trawled. "Ichthyologist" software and MS Excel were used for primary processing of the material collected, and Excel and Surfer v 8.0 for plotting of graphs and charts/spatial catch distributions, respectively. All material collected was transferred to the database at the Regional Data Centre managed by TINRO.

Besides TINRO, other fishery research institutes also deployed observers to monitor the pollock fishery in season A of 2016. KamchatNIRO deployed four, two on pelagic trawlers and two on vessels engaged in the Danish seine fishery for pollock. MagadanNIRO deployed another two observers. Overall, therefore, observations of fishing operations and collection of material on catch size, biological parameters of pollock, qualitative and quantitative composition of by-

	catches were made by 13 scientific observers (i.e. 13 trawlers were observed, 10.2% of the fleet operating). The 2016 season ended, as recommended by TINRO, 10 days earlier than usual, on 31 March, by which time scientific observers had processed 306 hauls in the North Sea of Okhotsk, 120 hauls in West Kamchatka and 363 hauls in the Kamchatka-Kuril subzone, a total of 789 hauls (4.2% of all hauls made by the fleet). That corresponds to 19.7% more hauls, but a slightly lower percentage of those made annually in the same seasons of 2014 and 2015, because fleet activity was greater in 2016 than in the previous two years. Further, and in addition to observations on midwater trawlers, observations in the West Kamchatka and Kamchatka-Kuril subzones were also made on Danish seiners (during March 2016, 43 and 33 hauls from the two subzones, respectively, covering 3.2% of all fishing operations). In terms of the spatial distribution of at-sea observer coverage in season A of 2016 in the UoC fishing area, 23% of the North Sea of Okhotsk subzone, 31% of the West Kamchatka subzone and 90% of the Kuril-Kamchatka subzone was covered by observers on individual vessels, because much of the fleet was operating in close proximity, associated with the dense aggregations of pollock. Taking this level of observer coverage relative to whole fleet activity would equate to observations at least in the vicinity of much of the fleet of more than 13 000 hauls of the nearly 19 000 hauls made by the fleet in the same three months of the fishing season (~70% coverage). Coverage of overall fleet activity was therefore good, even if relatively sparse in terms of the number of hauls actually observed (396 out of 6950 hauls made in the North Sea of Okhotsk [4.4%], 120 out of 3292 hauls in West Kamchatka, and 363 out of 8499 hauls in Kuril-Kamchatka). In summary: • In season A of 2016, the number of scientific observers increased by one (+8.3%) relative to the same season of 2015. • A total of 13 observers collected data on 13 trawlers, i.e. 10,2% of large and medium size midwater trawlers were involved in the monitoring and observation programme in 2016. • The level of monitoring and observation increased by 19.7% year on year: 789 hauls observed in 2016 compared with 659 in 2015. • Fleet activity in 2016 grew too, so total observer coverage of the fleet showed a slight reduction from 4.6% in 2014 and 2015 to 4.2% in 2016. • The UoC pollock fishery is characterized by a high degree of fishing effort concentration; spatial observation coverage reveals that observers were collecting data on vessels in the areas and periods of the greatest fishing effort, meaning that areal coverage of the fishery approximated 70% of the total fishing area that season. • For 2017, the client will be supporting the training and deployment of an additional eight observers to raise the total number of scientific observers operating to 15 or 16. The team concluded that the report commissioned from and produced by TINRO on the effectiveness and representativeness of the observer system in place and planned is impressive in its analyses. The team note that more observers (specially trained and also university-qualified and committed) were made available for the year, but with some previous years' observers now no longer available, the overall number deployed only rose slightly, much less than anticipated at the second surveillance. An increase in the number of observations is evident, but it is still down on observation numbers six years ago, and even in 2017, there will be fewer observers than the 22–25 statistically calculated as needed for the fishery in the TINRO report at the first surveillance. All requisite observations were made, including on target species (including biology and juvenile), by-catch (main and incidental), and ETP species, which is what the objective of this condition was. The size of the fleet increased slightly in 2016, meaning that, although more observer trips were made and the number

	of observations on each trip burgeoned, proportional haul coverage overall did not increase. Obviating this failing somewhat is the fact that spatial observer coverage does reflect fishing activity (at least 70% of fleet hauls made were in areas where the fleet was actually operating at the time, with many vessels fishing in close proximity to the vessel with an observer on board). However, the team is surprised that the Observer Working Group which commenced its work so effectively and inclusively (of NGOs and academics) in 2015, found no reason to meet in 2016 to evaluate developments and necessary growth in the scheme. All the team could find was a plan to increase the number of TINRO observers being trained for the 2017 season (while KamchatNIRO and MagadanNIRO levels of involvement in observations of 2017 will apparently remain the same). Raising the number of observers further in 2017 is challenging but definitely needed. ***Year 4*** The milestone of the fourth surveillance audit was that the surveillance team was to be provided with a written evaluation report on how all issues associated with the monitoring of the fishery and surveys had been addressed. Smirnov *et al*. (2017) provide this report, and their written work was supplemented by the findings of the site visit. A summarised version of the main findings of the Smirnov *et al*. (2017) report, highlighting observer performance in terms of both pollock dynamics and ecosystem information, is presented by PCA (2017), a report that has been uploaded to the www.russianpollock.com website. The over-riding issues with the fishery relate to observer coverage. The seasonal cycle of pollock and fleet movement around the Sea of Okhotsk has been similar for a number of years, with virtually the whole fleet fishing on aggregations starting in the southern Kamchatka–Kuril subzone in January and progressing through to the northern subzones up to April. This whole-fleet movement allows biological and catch data to be collected throughout a fishing season with a limited number of scientific observers. Since 2007, the number of observers engaged in the fishery has ranged from 10 to 21. In 2017, the number of observers was increased (from the 2016 value) to 18 and there is in place a commitment to increasing this to as much as 24 by 2018. The observers are devoted to scientific observation and are often highly skilled scientists. An analysis of the spatial coverage of the fishery conducted in 2017 indicated that the core areas were well sampled with coverage greater in 2017 than in 2016. Observer coverage of the total number of hauls made by the fleet has ranged from 2.2 to 6.1%, on the higher side of this range in 2017, at 5.6% (1004 hauls observed; overall, 10% of fishing vessels operating that year had a scientific observer on board, and 90% of the total catch volume was observed by having an observer active in the main operating vicinity of the fleet). When observations by the fishery compliance inspectors are included, the overall coverage rises to 13.9–23.1%, well in line with that in other (MSC-certified and other) jurisdictions. An analysis of optimal observer coverage rates for the fishery made soon after first certification (Smirnov *et al*. 2014) indicated that 46 trips needed to be observed to address both target (more than adequately) and non-target species requirements, a figure that could be reduced to 20–22 through optimal observer deployment management (allowing observers to move between vessels when the whole fleet moved operational areas through the season). The Observer Working Group (OWG) of interested stakeholders was established, the activities of which were described in the 2nd and 3rd audits. The OWG has coordinated the training of new observers and facilitated the allocation of observers to vessels throughout the fishing seasons. Since the 3rd surveillance audit, there were two meetings of the OWG. In December 2016, the OWG discussed the strategy of observation and monitoring for season A (up to end March) in 2017 and at the meeting of May 2017, the OWG reviewed the reports of the at-sea observer performance (minutes of both meetings are published at www.russianpollock.com).

	The stock assessment has been modified such that the observation uncertainty in each input dataset is now explicitly estimated. This uncertainty is taken into account in the short- and long-term projections of the HCR. In the original certification, it was noted that some of the data of the TINRO stratified random trawl survey were being adjusted using a voluminosity adjustment (VA) for the abundance of pollock occurring above the trawl during a fishing haul, based on echo-sounder traces. A statistical analysis was undertaken that concluded that the survey index trend without the adjustment was more consistent with the stock-biomass trend estimated by the most recent (2017) assessment. The model did not fit the high VA-adjusted survey biomass indices in the latter part of the time-series, suggesting limited influence of these years of data in the assessment. The above actions fulfil the requirements to meet Condition 2.
Status of condition	Closed - With the additional work on fishery and survey monitoring since certification in 2013, the assessment team concludes that stock abundance and fishery removals are regularly monitored at a level of accuracy consistent with the HCR. Moreover, the current level of fishery coverage by observers, including the number of hauls processed by them, delivers sufficient scientific information to be able to evaluate the overall dynamics of the pollock fishery, its biological characteristics and the quantitative and qualitative composition of by-catch, and to monitor fishery effects on key components of the ecosystem with sufficient frequency to support the HCR. The coverage is also of high quality in terms of fishery removals over and above the information gathered on target (pollock) catch. The two SIs at SG60 continue to be met. All three SIs of SG80 are now met and the PI now scores 80 overall.

4.6 Condition 3

Closed

4.7 Condition 4

Closed

4.8 Condition 5

	Insert relevant PI number(s)	**Insert relevant scoring issue/ scoring guidepost text**	**Score**
Performance Indicator(s) & Score(s)	**2.3.3**	**Information / monitoring Relevant information is collected to support the management of fishery impacts on ETP species, including: - information for the development of the management strategy; - information to assess the effectiveness of the management strategy; and - information to determine the outcome status of ETP species.**	**70**
Condition	By the fourth surveillance, the client will demonstrate that sufficient data are available to allow fishery-related mortality and the impact of fishing to be estimated quantitatively for ETP species. Particularly, the client needs to initiate studies on the diet and foraging behaviour of Steller sea lions in the Sea of Okhotsk to determine feeding rates on pollock, to be completed by the end of year 3 of certification, and to record observations of sea mammal and seabird		

	interactions with trawls to determine if there are any mortalities of sea mammals and seabirds in pollock trawls, to be completed by the end of year 3 of certification.
Milestones	**Milestones** **First Surveillance** By the first annual surveillance audit, the client must: 1) Commission work to collate all of the existing research data on the diet and foraging behaviour of Steller sea lions; 2} Initiate annual reporting of the interactions between the fishery and seabirds, including seabird mortalities. These reports are intended to provide a benchmark to assess progress towards full compliance with the second scoring issue of SG80. The surveillance team will review and confirm whether the information the client provides is likely to fulfil their expectations for meeting this condition. Meeting this milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 70 **Second Surveillance** The client must provide a written report on the commissioned Steller sea lion work and the annual report of interactions between the fishery and seabirds including seabird mortalities. The report is to be prepared in collaboration with the working group specified under Condition 2. The surveillance team will review and confirm whether the information the client provides is likely to fulfil their expectations for meeting this condition. Meeting this milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 70 **Third Surveillance** The client must provide a written report on the commissioned Steller sea lion work and the annual report of interactions between the fishery and seabirds including marine mammal and seabird mortalities. The surveillance team will review and confirm whether the information the client provides is likely to fulfil their expectations for meeting this condition. **Interim score**: 70 **Fourth Surveillance** By the 4th surveillance the client must demonstrate that sufficient data are available to allow fishery-related mortality and the impact of fishing to be quantitatively estimated for ETP species
Client action plan	The assessment report recognises that the monitoring of interactions with Steller sea lions and cetaceans is adequate. This level of monitoring of interactions in the fishery will continue and a monitoring report provided at each annual audit. PCA will commission work to collate all of the existing research data on the diet and foraging behaviour of Steller Sea lions. The findings of this activity can be reported at the first surveillance. If a requirement for further research is identified in relation to feeding rates on pollock and other interactions with the fishery, PCA will explore the possibility of relevant funding for an appropriate research project to be started during the period of certification. To monitor and report information on interactions between the fishery and seabirds and to record any resultant seabird mortality will be added to the brief of all on-board observer teams. Their observations will be reported at each annual surveillance. PCA note the comments of the assessment team in relation to monitoring bird strikes and will fully appraise the on-board observers of these issues and the importance of accurate recording of all interactions with the fishing gear.

	Deliverables **First, Second and Third Surveillances** Annual reports detailed above, on the two separate issues, will be provided at each surveillance. These reports will provide a benchmark to assess progress towards full compliance with the second scoring issue of SG80. Any requirements for change will thus be identified and acted on through an iterative process with the audit team. PI 2.3.3 ETP Information/monitoring SI (80b): Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species. The fishery is expected to be fully compliant with SG80 and achieve a minimum score of 80 by the fourth annual surveillance audit.
Progress on Condition through Years 1–4	***Year 1*** A report on published and archive material on the diet and foraging behaviour of Steller sea lions was commissioned from the acknowledged and internationally respected Russian expert based in Kamchatka (Burkanov; see Burkanov and Usatov reference in the surveillance report) and presented to the team. Much of the material was available already to the original certification team, but it was useful to have it all provided in a single report, in English. This aspect of the milestone for the first surveillance was deemed as met. Interactions with seabirds, ETP as well as other species, were deemed by the consulted local experts to be minimal, a conclusion not entirely shared by some NGOs nor by all members of the current surveillance team. Apparently, no (or at least very few) seabird mortalities have been recorded to date. Notwithstanding, a dedicated observer form for seabirds had been devised and released by TINRO under the instruction of the Client, to collect better data on the subject, and identification guides for seabirds provided. Further, Artyukhin had been engaged contractually and plans put in place for a dedicated seabird survey by the Kamchatka branch of the Pacific Institute of Geography to assess the direct impact of the fishery on seabirds by conducting an independent study of bird interactions with the certified pollock fleet during the main 2015 fishing season for pollock in the Sea of Okhotsk. Experts trained in seabird identification would participate additional to the normal observers. At the same time, dedicated effort would be made to collect more observer data on Steller sea lion diet in the area, an issue prioritized in the Burkanov and Usatov overview study. That work was expected to have some focus on Chinook salmon and steelhead trout whose seasonal distributions were thought possibly, from anecdotal information, to overlap slightly with the Sea of Okhotsk pollock fishery (although the surveillance team note that the UoC fishery is offshore and that few members of the PCA deploy Danish seines inshore). **Remedial actions** None **Changes to condition** No change to the condition or the score was suggested at that surveillance, and the condition remained as it was. **Updated status** What was required next in terms of Steller sea lion diet was for the archive information and any new data collected during the new dedicated research programme to be analysed robustly to determine the real feeding rate of Steller sea lions on pollock in the Sea of Okhotsk, specifically but not only during the regular pollock fishing season there. That work needed to be completed adequately during the remaining period of certification, and interim reports on the findings needed to be presented at each surveillance. The same time-period

and need for presentation of knowledge applied to the data being collected on seabird interactions with the gear and especially any potential mortality. Overall, the plans for dedicated surveying of ETP species already in place showed that the Client and the fishery were serious about meeting this condition in good time and fully.

Year 2

The Condition relates to ETP species, which in this case refers entirely to the (seabird) short-tailed albatross and the (marine mammal) Steller sea lion, and not to fish. At least one stakeholder believed that steelhead trout and Chinook salmon are caught seasonally in the Sea of Okhotsk, but data collected throughout the year and covering all areas of fishing activity by the UoC fleet, as well as interviews with seagoing personnel and scientific observers during certification and at the first and second surveillances fail to support this contention. In terms of marine mammals and seabirds, the client correctly commissioned two local, but internationally highly respected, experts at the Pacific Institute of Geography in Kamchatka to fulfil the necessary deliverables. For the second surveillance, two reports were produced, one providing an outline of the sea lion work commissioned and the second a report on interactions between seabirds (especially their mortality) and the fishery. The two experts produced separate reports for the second surveillance (seabirds – Artyukhin; marine mammals – Burkanov and colleagues; reference detail is available in the surveillance report) based largely on the results of an at-sea survey during commercial fishing operations made by themselves and a few of their fully trained assistants in the winter 2015 main fishing season in the northern Sea of Okhotsk, where fishing was concentrated then. Although both were well planned and executed, like all surveys of such nature, the data documented were sparse, seasonally and geographically constrained and covered a very small percentage of the total hauls made by the UoC fishery even in that year.

In terms of seabirds, Artyukhin had recorded no ETP species while he and his colleagues were aboard, but he did identify a number of seabird/fishery interactions, including mortalities, for other [non-ETP] species in the area during winter. It was a good piece of work, and it was noted that auks and procellariids (mainly fulmars) constituted more than half the avian fauna around the vessels, whose waste and discarded small fish attracted them in sometimes fairly large numbers; albatrosses (only the occasional Laysan albatross was seen) and storm petrels were rare. Seabird/gear interactions were dominated by wire strikes (mainly by fulmars and a few gulls), more so during towing than during deployment and recovery, but only a few resulted in the death of the bird. Light “pollution”, i.e. where vessel lights attract seabirds during the hours of darkness, was a contributing factor to the interactions, but it is always difficult to quantify the relative effects of seabird/wire strikes at night and by day from the small amount of data that are available. The report did provide some useful suggestions for mitigating direct seabird impact during fishing operations and much of the information was taken up in the draft observer manual for observers produced in partial fulfilment of Condition 2. The team noted the response of a stakeholder regarding the relatively limited extent of the survey, i.e. that although the report was comprehensive, it was nevertheless a small subsample of the fleet, limited in time and space. It was also noted that, although the mortality of ETP species was zero (for short-tailed and Laysan albatross), there was mortality of other seabirds, showing that trawl warps, deck lights and overside cables presented significant hazards for seabirds around the fleet.

Regarding marine mammals, Burkanov and his colleagues, in another well-considered and valuable report, recorded 11 species during the same fishing season and in the same area as surveyed by Artyukhin for seabirds. The three rare (ETP) species were the dominant Steller sea lion and the extremely rare fin and North Pacific right whales. The other eight species, two species of seal, several species of whale and one species of porpoise, were common sights, so

	gave rise to no concern. Only four of the 11 species seemingly interacted with the fishing vessels, with two of these (Steller sea lion, the most common marine mammal encountered, and the occasional minke whale) noticeably approaching the vessels to feed, and the other two species (both species of seal whose populations are not under threat) remaining indifferent to fishing operations. During the survey, only a single by-catch of a marine mammal was observed, a ribbon seal that entered the trawl and drowned. Consequently, from the data collected in 2015, the fishery was deemed not to pose a massive threat to any marine mammal species, and certainly not to the ETP species, i.e. Steller sea lion. Again, a protocol for marine mammal observation was included in the observer manual prepared for Condition 2 fulfilment. Also, suggestions were made in the report for developing more effective means of widespread observation of marine mammal interaction with gear and vessels. Anecdotal information given in the report (e.g. 20 sea lions caught in a single trawl) could not be compared with real data, and the surveillance team, in interviews with seagoing staff, failed to find credibility in the statement. One failure of the 2015 surveys was the observation log for marine mammals and seabirds developed and distributed to a sample of the fishing vessels. There were few returns, and none were useful. The report on marine mammals also failed to produce any further detailed analysis of foraging/dietary studies on Steller sea lions other than a few generic comments. At the first surveillance, there was a report, however, and Burkanov and his colleagues were encouraged to update that with new data for the next surveillance, along probably with analysis of scat data that could be collected in 2015/early 2016, both near and away from current fishing operations. A stakeholder's contention, based on statements in the Burkanov report, that 57 trained observers need to be deployed in a massive effort to accompany 30% of the UoC fishery trawls annually, is not achievable, nor in the opinion of the surveillance team, necessary. So many trained observers are not available, and the cost of conducting such research is prohibitive; this certification is based on pollock, not ETP species, so it is necessary only to collect information around the year and geographically spread out to ensure that better understanding is gained on ETP species/pollock trophic interactions. That is why the team believed that concentrated analysis of scat data would be a more appropriate means of generating the required data than a totally unachievable massive survey and research programme based on a huge number of trained observers being deployed solely for ETP observations throughout the year. To meet this Condition. it was not deemed necessary by the surveillance team to repeat the whole seagoing survey in 2016, but a repeat survey in 2017 (with reporting in time for the fourth audit) was suggested could strengthen the possibility of this Condition being met on time in 2017. Further such a repeat survey should be able to expand the spatial and temporal information base on particularly seabird interactions and could provide an opportunity to test mitigation options in collaboration with the research team led by Artyukhin. Although the seabird mortality was associated with non-ETP species, it was suggested that it would be prudent not only to look again at impacts on ETP seabird species (in particular short-tailed albatross) but also to investigate the impact on the numerous other species for which mortality was reported. If this were to be done with a statistically robust methodology, it would strengthen the status of the overall seabird impact estimates. **Remedial actions** None **Changes to Condition** No change to the Condition or the score was suggested at that surveillance, and the Condition remained as it was. **Updated status**

Given the impressive amount of work conducted since the first surveillance, the client was deemed to be on track to meet this Condition on time, especially in terms of seabirds and the potential mortality associated with the fishery, However, apparent omissions were the production of a plan to produce an up-to-date detailed analysis of the foraging/diet of Steller sea lions and testing of mitigation options to minimize seabird mortality. These omissions ought to be addressed in the coming year, if plans are made in time.

Year 3

The assessment team noted again the extensive at-sea survey of seabirds and marine mammals (accidental by-catch and mortality) conducted in 2015 and had no problems with it not being repeated in 2016. Protocols for seabird and marine mammal observations had been derived from that work and put in place for the scientific observers in 2016. Each observer now examines all hauls for sea mammal by-catch (or obtained the information from the crew), and made dedicated observations of seabird interaction with the gear, whenever possible. The dictate is that the latter need to be made on at least 30% of trawling operations during daylight. All observers also carry a handbook identifier for 22 species of seabird and about 40 marine mammals inhabiting the Sea of Okhotsk. Observers were also instructed to pay special attention to ETP species (i.e. Steller sea lion and short-tailed albatross).

According to reports, eight TINRO observers carefully examined 425 trawling operations for seabird interactions and marine mammal by-catch. The observers reported four cases involving the mortality of six birds (all seagulls and northern fulmars); all were caught in the trawl wings (see below).

Date	Coordinates	Species	Status
31.12.2015	51 26 N 155 01 E	2 fulmars, 1 silver gull	Dead, in the trawl wings
06.01.2016	55 47 N 148 19 E	1 fulmar	Dead
08.01 2016	55 40 N 147 53 E	1 gull	Dead
12.02.2016	51 17 N 156 09 E	1 fulmar	Dead

These results corroborate the results from the dedicated seabird by-catch survey conducted a year earlier (12 dead birds noted in 513 hauls by three observers).

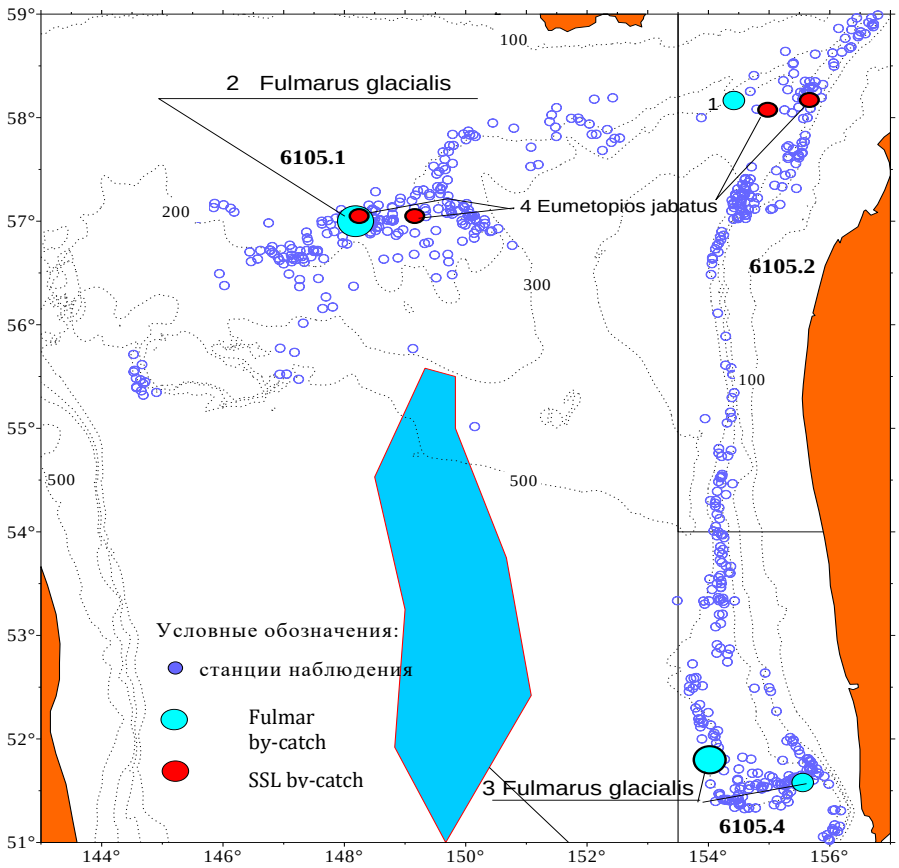
Some new scientific evidence on the short-tailed albatross in the Sea of Okhotsk was provided to the assessment team (Glushenko *et al*. 2015; in Russian). Succinctly, deduced from monitoring the species in the Sea of Okhotsk in 2014, nine birds were recorded in different parts of the sea. Clearly this ETP species is present in the Sea, but the lack of observations made either during the dedicated seabird survey or by scientific observers since indicates that it is a rare sighting and that it does not often, if at all, approach fishing vessels.

No marine mammal by-catch was registered by scientific observers during fishing season A of 2016. However, one Steller sea lion died as a consequence of having been caught accidentally in a net on 20 April (after the Russian pollock fishing season A had closed) while the vessel was fishing for herring in Shelikhov Bay in the northern part of the Sea of Okhotsk (client action plan p. 18 refers).

Meeting Condition 5 also requires at least indicative studies to be made on the diet and foraging behaviour of Steller sea lions in the Sea of Okhotsk to determine their feeding rates on pollock. Scat analysis was suggested by the assessment team as one means of doing this. However, finding a suitable scientist to do this by the fourth certification (as required) is proving challenging. For instance, Burkanov's suggestion of a three-year half million US$ programme is unrealistic, so the client is actively seeking other short-term but high scientific

	value options in discussions with other local and international experts on marine mammals and Steller sea lions in particular. The client also drew the attention of the assessment team to a scientific paper dating from 2006 (Waite and Burkanov 2006) that analysed scats of more than 1700 Steller sea lions from 2000 to 2003 – several areas, mainly inshore but also some offshore foraging. The team was aware of this publication and considered it valuable, but insufficient to meet the requirements of Condition 5. In that work, pollock was a common prey item of the sea lions, but not to the extent that its dominance in the ecosystem might have predicted. Overall, the team was satisfied that the variously commissioned work was on target to meet this Condition at the fourth surveillance audit. For instance, the comprehensive reports based on at-sea surveys on both Steller sea lions (and other sea mammals) and seabirds presented in 2015 along with the new scientific observer data presented were very revealing in terms of interactions and mortalities, but insufficient in terms of Steller sea lion diet (foraging). Therefore, dedicated literature searches on the subject of sea lion diet and specifically targeted data collection at sea and possibly on land (scats) in early 2017 must be commissioned as a matter of urgency. Trained observers checking at least two trawls per day for seabird and marine mammal interaction with commercial fishing operations is a good use of the observer scheme and should continue, hopefully with even more observations and observers at sea in 2017. That aspect of the basis of this condition seems to be on track, so it would be a pity were fulfilment of this Condition to be deemed a failure as a consequence of insufficient up-to-date data being collected on sea-lion dependence on pollock prey. ***Year 4*** Following on from the surveys on marine mammals and seabirds conducted in 2015 by scientists from the Kamchatka office of the Pacific Institute of Geography, Russian Academy of Science (Artyukhin 2015, Burkanov *et al*. 2015) and comments on the topic in previous surveillances, PCA commissioned research from KamchatNIRO to assess the direct and indirect impacts of the midwater trawl fishery for pollock in the Sea of Okhotsk on Steller sea lions (SSL) in the area. The key objective of the research was to estimate the direct (accidental by-catch and death of animals in fishing gear, etc.) and indirect (capture of pollock as a potential food resource) impacts of the fishery on SSL populations. The survey aimed to review and analyse all available scientific literature on the diet of SSL in different seasons and the role in it of pollock specifically, to estimate the total food requirement (and pollock proportion) of SSLs in the area, and to provide detail on the current status of the SSL population to understand its dynamics in the Sea of Okhotsk. With that information and the analytical results, the aim was to evaluate the effect of the pollock fishery on SSL food resources and to determine if any relationship exists between pollock stock size and availability and the status of the SSL population. For the survey, a clear instruction was produced for observers on collection of mammal marine information in fisheries in Russian Far East waters. That instruction was used by all TINRO and KamchatNIRO observers who worked on the Sea of Okhotsk midwater trawl pollock fishery during 2017. Therefore, in addition to the information originally collected during 2014/2015, a new set of dedicated observations were available on the distribution, abundance and behaviour of SSLs and other marine mammals in pollock trawling areas were available for the period January–April 2017. From the data now available and produced in Kornev *et al*. (2017), it is estimated that the annual consumption of food by SSLs in the Sea of Okhotsk is about 141 000 t of which some 36 400–71 100 t is pollock. The role of pollock in the diet of SSLs in the Sea of Okhotsk increases in winter and spring, likely as a consequence of the dense aggregations of the fish then. Apart from pollock,

	herring are an important food resource for SSLs. The biomass of pollock in the north Sea of Okhotsk is currently estimated to be above the long-term average, at some 9.79 million tonnes. Given that the total pollock catch by the UoC fishery is just over 960 000 t, i.e. ~9.8% of biomass, there would seem to be little basis for saying that the fishery is having a detrimental effect on the food resource of SSLs. According to recent stock assessments, the stock is being fished sustainably and consistent with management objectives. Moreover, many observations made by observers and others have noted that SSLs are one of the few species actually benefitting from the fishing activity by feeding primarily on fish processing waste and fish falling from the fishing gear, at least in winter and spring when the fishery is active in the area (mentioned in more detail below). According to the recent estimates too, SSL mortality attributable to their accidental capture by the fishing gear accounts annually for just 0.4% of their current total number. However accurate that figure might be, and some believe it is overestimated, such a level of indirect effects of the fishery on the SSL population is virtually insignificant. According to data from the surveys performed during the pollock fishing season in 2017 on board the fishing vessel BATM *Baklanovo*, marine mammals were registered in its immediate vicinity 203 times, and they included 1306 individuals belonging to 11 species. The most frequently occurring and abundant species in pollock and herring fishing areas was the SSL (46.8% of the total number of encounters and 48.5% of the total number of individuals); other than SSLs, the others were northern fur seal (13.3%), spotted seal (8.9%), minke whale (8.4%), ribbon seal (7.9%), Dall's porpoise (6.9%) and North Pacific right whale (2.5%). Sperm whales, killer whales (orcas), ringed seals and finback whales all accounted for fewer than 1% of sightings. Three of the marine mammal species, SSLs, finback whales and North Pacific right whales, are listed as rare in the Red Book of Russian species. The other species are common and their abundance and stock condition raises no concern. The spatial and temporal distribution of marine mammals was noted as extremely uneven and directly related to the ship's route and duration of its stay in a particular area. Of the 11 species encountered in pollock fishing areas, 4 marine mammal species interacted with fishing vessels, but just two, SSLs and minke whales, showed marked interest in fishing activities. When encountering a fishing vessel either lying to or moving, those species clearly approached, followed it during trawling, fed on fish falling from the trawl or on fish offal, or stayed close to the vessel for some time. Spotted and ribbon seals, however, were clearly indifferent to a vessel's fishing activities, although fleet operation close to the ice did affect them because their breeding period on and around the ice shelf (birth and mating) peaks in spring. Information on accidental by-catch and mortality of marine mammals and seabirds was collected by all observers working on the UoC fleet in 2017, with TINRO observers specifically observing 20% of trawls for seabird and marine mammal interaction. From January to April 2017, scientific observers made 1140 observations on seabird and marine mammal by-catch and mortality during trawling operations in the Sea of Okhotsk (out of a total of 18 051 trawls in total, i.e. 8%). Mortalities and captures during Season A of 2017 are displayed in the Figure below.



In all, the observers recorded 6 dead fulmars (not an ETP species) in trawl catches and four SSLs were captured and released back to sea, as required by the fishing rules. One SSL was definitely alive on being returned to sea. No short-tailed albatrosses were recorded.

To conclude, monitoring/observation results and modelling of their effects on marine mammals and seabirds, specifically ETP species, have confirmed that the targeted midwater trawl fishery for pollock in the Sea of Okhotsk is not having a significant adverse impact on marine mammals and birds, whether recorded as just accidental by-catch or mortality.

For Condition 5 to be fulfilled and in order to score the fishery at 80 the following SIs must be addressed:

1. Information is sufficient to determine whether the fishery may be a threat to the protection and the recovery of the ETP species, and if so, to measure trends and support a full strategy to manage impacts.

2. Sufficient data are available to allow fishery-related mortality and the impact of fishing to be estimated quantitatively for ETP species.

On assessment it was the second SI that resulted in the score of 70, so the key part of the condition was to increase data availability to determine whether mortality of the two ETP species was being impacted by the fishery.

Clearly, it has now been shown that, first, the interactions between the ETP species and the fishery are now adequately understood, and second, that sufficient data are now clearly available to allow fishery-related mortality and the impact of fishing to be estimated quantitatively for ETP species. Further, measures are in place to record and monitor interactions between the fishing operation and ETP species. Also, the observers now record interactions as a routine part of their sampling protocol, and there is heightened awareness by the client, vessel operators, scientists and data collectors regarding the

	importance of by-catch and other ETP species related to the fishery. There is a comprehensive list of supporting information on interactions of ETP species with the fishery, but also related to the ecosystem as a whole, including: 1. Results of pollock fishery monitoring activity performed by observers in the Sea of Okhosk during January 01 – April 09, 2017 2. Client action plan progress report - 4rd Surveillance Audit, September 2017 3. Marine Mammals of the Sea of Okhotsk and Kuril Islands (Abundance and Trophic Connections) - Kuzin A. E. (TINRO) 4. Macrobenthos of the Sea of Okhotsk - Nadtochiy V. A., Kolpakov N. V. (TINRO) 5. A selection and analysis of materials on year-to-year biomass variability and spatial distribution of non-target fish and cephalopod mollusc species in the Sea of Okhotsk Kulik V. V., Gerasimov N. N. (TINRO) 6. Brief description of components of the pelagic system of the Sea of Okhotsk in 2010–2017. TINRO 7. Results of the pollock fishery in the season "A" in 2016 (in Russian) 8. Characteristics of the Okhotsk ecosystem of the sea V. I. Radchenko North Pacific Anadromous Fish Commission (NAPAF, Vancouver) 9. Assessment of pollock fishery direct (accidental by-catch and death of animals in fishing gear) and indirect (capture of pollock as potential feeding source) impacts on Steller sea lions in the northern part of the Sea of Okhotsk. Kornev S. I. *et al*. FSBRI, KamchatNIRO. 10. On one of the possible approaches to optimizing the HCR in the case of a cohort model using the example of black halibut in the Sea of Okhotsk speaker V. V. Kulik, FGBNU (TINRO) (ppt presentation) 11. Changes of Marine Trophic Index in the waters of the coast of Russia in the Region 17 V. V. Kulik (draft in process of publication) 12. Changes of catch-based trophic level in the waters of the coast of Russia in the Region 17 V. V. Kulik (draft in process of publication) 13. ETSO in the north and east parts of the Sea of Okhotsk. V. V. Kulik (draft in process of publication) 14. A study of pollock trawling fishery impact on the ecosystem of the Sea of Okhotsk. Prepared by V. V. Kulik FSBRI, TINRO Some of the references above are cited in the References section later, others are cited in other surveillance reports. However, they are listed here because they are crucial in evaluating whether this Condition has been met. Succinctly, the team is satisfied that this Condition can be closed and that all SG80 SIs are met in full. However, as the management measures have on recently being implemented it cannot be said that the information is sufficiently quantitative at this point in time or that it is adequate to support a comprehensive strategy to manage impacts of the fishery on ETP species, or that it is accurate and verifiable. i.e. at present, SG100 is not met. However, as the fishery progresses under MSC accreditation it is possible that SIs at SG100 will increasingly meet the standard as quantitative information improves through the measures now in place. Overall score 80.
Status of condition	This condition may be closed as it has been met satisfactorily, to target date, at Surveillance 4.

4.9 Condition 6

Closed

4.10 Condition 7

Closed

4.11 Condition 8

	Insert relevant PI number(s)	Insert relevant scoring issue/ scoring guidepost text	Score
Performance Indicator(s) & Score(s)	**3.2.5**	**Monitoring and management performance evaluation** There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system	**70**
Condition	By the third surveillance audit, the client fishery will provide evidence to show that it has in place mechanisms to evaluate key parts of the management system other than the scientific assessment and is subject to occasional external review.		
Milestones	**First Surveillance** At the first annual surveillance audit, the client must provide a written interim progress report on establishing an external review of the management system, including a terms of references. The milestone associated with the first surveillance audit has been defined as a means to monitor progress; meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 70 **Second Surveillance** By the second surveillance audit, the client must have identified potential external reviewers and the key parts of the management system that will be reviewed. The milestone associated with the second surveillance has been defined as a means to monitor progress; meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 70 **Third Surveillance** By the third surveillance audit, the client will provide a written report of the proposed review mechanism and the confirmed external reviewers. The milestone associated with the third surveillance has been defined as a means to monitor progress; meeting the milestone would likely not result in a change in score at this surveillance audit. **Interim score**: 70 **Fourth Surveillance** By the fourth surveillance audit, the client will provide a report of the external review of the management system and that occasional external review will continue, the results of which will be made available to stakeholders. Provided the actions defined in the milestones and the deliverables in the client action plan are met, the PI would be re-scored at 80 or higher at the fourth surveillance.		
Client action plan	By the second surveillance audit PCA will identify and report to the audit team potential external reviewers for the management system and the key parts of the management system proposed subject to external review. Subject to audit team comment, PCA will provide a report of the proposed review mechanism (year 3) and commission an external audit of the key parts of the management		

	system during the third year and provide a report of this external evaluation by the fourth surveillance. **Deliverables** **First Surveillance** The PCA will provide a written progress report of completed tasks, remaining tasks and deliverable timeline for the second surveillance deliverable. **Second Surveillance** By the second surveillance audit PCA will identify and report to the audit team potential external reviewers for the management system and the key parts of the management system proposed subject to external review. **Third Surveillance** Subject to audit team comment, the PCA will provide a report of the proposed review mechanism (year 3) and commission an external audit of the key parts of the management system during this third-year surveillance. **Fourth Surveillance** The PCA will provide a report of this external evaluation by the fourth surveillance audit.
Progress on Condition through Years 1–4	***Year 1*** The Client informed the main Russian scientific and management bodies of its plan to meet this Condition, discussed its ideas with those bodies, and produced an acceptable (highly comprehensive) Terms of Reference to meet the Condition, using some indicators from the FAO's Code of Conduct for Responsible Fisheries as the basis for determining management effectiveness. It intended to have such a review carried out by the time of the fourth surveillance, which meets the Condition (by the third surveillance, the expectation is to provide a report on the review mechanism and to have credible reviewer(s) signed up). The Client also correctly pointed out that such a review did not necessarily need to be international; it may be national but external to the fishery. The team pointed out, however, that the credibility of such reviews of the management systems of other certified fisheries has been enhanced by ensuring the independence of the review through internationalizing it; the Client was receptive to such an argument. **Remedial actions** None **Changes to condition** No change to the condition or the score was suggested at that surveillance, and the condition remained as it was. **Updated status** Everything was on track to meet this Condition as stipulated. ***Year 2*** What was being asked for under this Condition was essentially similar (though covering a different subject) to what was being proposed for Condition 3. In this case, however, the requirement was for the surveillance team to see that a mechanism was in place to evaluate the key parts of the management system other than the standard elements of scientific and stock assessment practice. Terms of reference were drafted at the first surveillance, and these were then honed (evidence was seen of this) to make them absolutely clear as to what was being proposed to meet the Condition. Further, although there had been some discussions about the names of potential reviewers and the Client had apparently contacted some of them, the team was not shown a list of available

	names under consideration (the eventually selected reviewer should be Russian-speaking, but ideally totally separate from the fishery and, as stated the previous year, internationally based even if Russian-born). It was deemed inappropriate for the audit team to select potential reviewers, but some names had been identified by the surveillance team and others during various discussions over the previous 12 months. The Client asked for guidance as to whether a slightly different option would be appropriate, namely to contract a Russian-based expert for the review itself and then to have that review internationally peer-reviewed. This would be an option if a single Russian-speaking international reviewer to do the whole job could be found, but in the opinion of the team conducting the second surveillance, would not be the preferred option. **Remedial actions** None. **Changes to Condition** No change to the Condition or the score was suggested at that surveillance, and the Condition remained as it was. **Updated status** Everything was currently on track to meet this Condition as stipulated. Finalized terms of reference should be shown to the surveillance team in 2016, along with the name(s) and CVs of the selected reviewer; in terms of meeting the Condition as written, seeing the actual review was not deemed essential at the third surveillance, but clear progress towards that end by the same time in 2016 would be advisable. ***Year 3*** The assessment noted that the client had already developed, and the previous assessment team had approved, the ToRs for the review to meet the requirements of Condition 8. The client had contacted Dr Vladimir Radchenko of the North Pacific Anadromous Fisheries Commission (NPAFC) in Vancouver, who has the requisite experience in fishery management system review, including in-depth knowledge of Russian fisheries management through extensive involvement (but not involving Russian pollock) over many years before taking up his post at NPAFC. His CV reveals his candidacy for the work as ideal, and he is able to produce the review early in 2017, as required by the Condition. The team was content with the nomination and agreed with the timeline being proposed. Theoretically, the Condition as described in the final certification report could be signed off at this audit, because ToRs have been agreed and a candidate named whose CV (Report 8.1) would make him acceptable to the committee. However, the team noted that the milestones set for the Condition in the final certification report (as well as the Client Action Plan) did not follow that rather simplistic rationale, so to sign the Condition off without actually seeing and accepting the content of the review would rather defeat the object of the Condition as originally set. For this year's 2016 surveillance audit, therefore, the client agreed with the team and confirmed that he believed that Condition fulfilment would only be possible at the fourth audit, having received and reviewed the report being commissioned from the candidate now. ***Year 4*** Having previously agreed specific Terms of Reference and the name of an independent candidate to perform an external review of the current Russian fisheries management system, a report was commissioned from and delivered by Vladimir Radchenko, the Executive Director of the North Pacific Anadromous Fish Commission, based in Vancouver, Canada. Mr Radchenko worked some

years ago within the Russian FFA (Federal Fisheries Agency) management system and before that at a scientific level within the Russian marine research corps, but is now totally independent of the Russian research, advisory and management systems, though is well aware of how it has developed to international standards. He is also in process of completing a PhD thesis on aspects of the Russian fisheries system, focusing specifically on his main research interest of the ecosystem and its management.

The review Radchenko has provided focuses on key items of the Russian fisheries management system:

- the main elements of its Regulatory and Legal Framework
- the effectiveness of the current fisheries monitoring and control system
- the performance, effectiveness and transparency over the past few decades of Fisheries Management Measures and Controls
- the scientific basis of fishery regulation
- Russian fishery statistics
- Transboundary Fish Stock management.

The conclusions in the report (Radchenko 2017, available in English at www.russianpollock.com, as required by the Condition), are that fisheries management and advice in Russia is robust by international standards, effective and increasingly transparent to the outside world. The system is based on a strong "vertical" top–down alignment of regulation of fishery operating procedures. The FFA, the main regulating agency for fisheries in Russia, is a stand-alone entity with extensive powers in the fields of fishery management, supporting scientific research and monitoring and cooperating in the international arena. The Russian fisheries enforcement system, operated through the Coastguard (FSB), is very strong (with its own fleet [several cutters deployed in the UoC fishery area] and control personnel) and performs a monitoring, control and surveillance function in all fisheries, protecting Russian as well as international aquatic living resources. There has not been IUU fishing in the UoC area since the 1990s. Russian fisheries and marine environmental science underpinning management and control has by international standards an impressive and extensive knowledge-base about fish and associated ecosystem resources, built up over many years of surveys and dedicated research. *Inter alia*, it evaluates the impacts of anthropogenic and environmental factors on target stocks and ecosystems to forecast their dynamics.

The commissioned report also emphasizes recent positive changes to Russian fisheries management, such as the new mechanism for long-term quota allocation and the imminent implementation of an electronic logbook system, currently being trialed, which will achieve effective real-time data management. However, like several NGOs have recommended previously, Radchenko does suggest that improvements to the catch statistics system through development of better catch weight and volume estimation methods would enhance international acceptance of the system even more. Along with many others worldwide, he also advocates swifter progress towards establishing a system of ecosystem-based fisheries management, though accepting that such a goal is not a trivial one to attain, even in the relatively long term.

Separately and fortuitously in terms of timing, Radchenko mentions that a group of largely US-based scientists (Melnychuk *et al*. 2016) recently published an article entitled "*Fisheries management impacts on target species status*" in which they characterized the fisheries management systems of 28 major fishing nations. The authors of that paper calculate a Fisheries Management Index that integrates research, management, enforcement and socioeconomics based on how independent international experts ranked the management systems. The Russian fisheries management system is ranked fourth after those of the US, Iceland, and Norway, just above the generally lauded ones of New Zealand and South Africa.

	Like the surveillance team, therefore, Radchenko (2017) and the cited article authors have concluded that the Russian fisheries management system is by world standards an effective and also gratifyingly reasonably transparent one, and production of this report in English meets the requirements of Condition 8 (so it can be closed). It is anticipated that occasional independent external reviews of the Russian fisheries management system will be made in future, to meet the aim of the original Condition. Scoring criterion 3.2.5 can be rescored to 80, but not to 100 because although the internal review is both regular and robust, the external review is robust but not regular.
Status of condition	This condition may be closed as it has been met fully and as originally specified (SG80: The fishery has in place mechanisms to evaluate key parts of the management system and is subject to regular internal and occasional external review), to revised target date, at Surveillance 4.

5 Conclusion

5.4 Summary of findings

During the fourth surveillance audit of 2017, the final four Conditions applying to the fishery were signed off, meaning that certification is confirmed unconditionally for the final year of MSC certification. The team noted too that, even for Conditions already signed off earlier in the process, continued efforts to improve rigour and performance across the board have been maintained, so the fishery can now proceed to a recertification exercise. To that end, up-to-date evidence was collected on and off site to support due consideration over the coming months. However, with all eight Conditions on the fishery as first certified now signed off, P1 now has a revised score of 85.6, P2 a revised score of 81.7, and P3 a revised score of 86.1.

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Appendix 1 – Re-scoring evaluation tables (if necessary)

Condition 1				
1.2.1	Harvest Strategy: There is a robust and precautionary harvest strategy in place	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points. The harvest strategy is likely to work based on prior experience or plausible argument. Monitoring is in place that is expected to determine whether the harvest strategy is working.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points. The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points. The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels. The harvest strategy is periodically reviewed and improved as necessary.

Scoring Comments

A harvest strategy consists of a harvest control rule (HCR) informed by monitoring and assessment, which elicit a defined management response. The strategy for Sea of Okhotsk pollock contains all these elements and is similar to strategies developed for other stocks elsewhere in the world. It can be expected to achieve management objectives reflected in the target and limit reference points. During the site visit, considerable time was devoted to describing how the elements of the strategy work together towards achieving the objectives. In particular, the two-year projection process highlighted how uncertainty in the assessment is used to inform future TAC decisions. It was also noted that during the two-year process, updates are possible based upon new assessment results. Thus, the first SI of SG60 and SG80 are met.

As noted above, the harvest strategy has all the elements of harvest strategies developed elsewhere and based upon this prior experience, is likely to work. However, the strategy is new, having been used for the first time in December 2010 to inform TAC decisions in 2012 and thus it is too early to state whether or not it is achieving its objectives. It has not undergone any testing, such as in a Management Strategy Evaluation (MSE), in which the robustness of achievement of objectives is evaluated taking into account the uncertainties in management, monitoring and assessment. Notwithstanding this, monitoring is in place (i.e. Synthesis assessment model) that provides the necessary platform for future determination of key population indicators and associated uncertainties. Therefore, the second SI of SG60 is met but not that of SG80.

Monitoring is in place (i.e. Synthesis assessment model) which provides biomass and fishing mortality indicators which, when points of the HCR are measured against the reference, allows determination of whether or not the strategy is working. The third SI of SG60 is met.

Fourth surveillance supplementary comment: The harvest strategy is responsive to the state of the stock through both short- and long-term projections which evaluate the

achievement of objectives under assessed uncertainties. It is designed to achieve these objectives as reflected in target and limit reference points. The first SI of SG100 is met.

Evidence that the harvest strategy is achieving its objectives is provided in the F/SSB phase plot. Fishing mortality was above the target rate ($F_{TR} = F_{MSY}$) in 2009 and was reduced to below the target by 2014. Since then, the fishing mortality has been maintained at or below F_{TR}. During the years 2009–2017, spawning stock biomass did not fall below the target ($B_{TR} = B_{MSY}$), and it is projected to remain at the target until at least 2020. The testing of the harvest strategy and associated HCR is composed of two elements, both of which indicate its robust performance under the assessed starting stock conditions and uncertainties. The two-year projections undertaken as per the HCR indicate the risk of fishing mortality increasing above F_{LIM} and SSB decreasing below B_{LIM} during the projection period over a range of assumed TACs. Greater uncertainty in assessed stock conditions results in higher risk for the same TAC and has the effect of reducing the TAC. Ten-year projections have been added since the original certification, confirming the robustness of the harvest strategy to assessed stock conditions and uncertainties over the longer term. These indicate that as long as the HCR is observed, there is 95% probability that SSB will be maintained above both B_{LIM} and B_{TR}. Thus far, the HCR has not been tested to determine its performance assuming a depleted stock in order to judge stock recovery times to B_{TR}. TINRO stated that if the 10-year projection indicates that the HCR is not sufficiently precautionary, it would be updated. Evidence of this institutional response was available for the West Kamchatka Shelf Greenland halibut stock, which uses a HCR similar to that of Sea of Okhotsk pollock. The HCR was deemed not suitably precautionary and needed to be changed, was modified based on simulation analysis, and was implemented to set the 2018 TAC. This provides evidence that the management system responds to changes in the HCR as needed. While the harvest strategy has not been fully tested (e.g. through MSE), the testing that is being conducted and the evidence from the stock assessments indicates that it is achieving its objectives. The second SI of SG80 is met.

The performance of the harvest strategy has not been fully evaluated through an exercise such as Management Strategy Evaluation. The second SI of SG100 is not met.

The components of the harvest strategy are reviewed and improved as necessary. After the original certification of the stock, long-term (10-year) projections were added to the strategy to ensure achievement of its objectives. Evidence from other stocks (i.e. West Kamchatka Shelf Greenland halibut) indicates that if the HCR is deemed not sufficiently precautionary, it is modified to ensure that it is. The third SI of SG100 is met.

Score

The three SIs are met at SG60. Only the first SI at SG80 is met. This PI therefore scores 70, requiring the following condition.

Fourth surveillance supplementary comment: All SIs are met at SG80 and with the first and third SIs of SG100 also being met, the PI can be rescored at 95.

Condition

Condition 1

As the harvest strategy is newly implemented, there is no evidence to demonstrate that it is achieving its objectives. The harvest strategy is to undergo testing to explore its robustness to management and assessment uncertainties. The client must annually provide evidence during the certificate validity period of the results of annual monitoring which demonstrate that the harvest strategy is achieving its objectives as reflected in the target and limit reference points.

By the fourth surveillance audit, the client must provide written evidence, in the form of a report, which demonstrates that the harvest strategy has undergone testing to explore robustness to management and assessment uncertainties. Provided the actions defined in the milestones and the deliverables in the client action plan are met, the PI is expected to be re-scored at 80 or higher, demonstrating that the second scoring issue of SG80 has been met.

Fourth surveillance supplementary comment: There is now evidence that the harvest strategy is achieving its objectives. It undergoes regular testing to explore its robustness to management and assessment uncertainties, including observation uncertainty. With the second SI of SG80 now met and the first and third SIs of SG100 also met, the Condition is rescored at 95 and the Condition closed.

Condition 2				
1.2.3	**Information / monitoring:** Relevant information is collected to support the harvest strategy	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy. Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy. Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule. There is good information on all other fishery removals from the stock.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available. All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.

Scoring Comments

The MSC FAM v2.1 requires evaluation of information needs from the harvest strategy by six groupings – stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other data (para 6.3.15). These groupings apply to different SIs, which is taken into account in the scoring below.

Stock structure

PCA (2010) provides a review of a long series of studies that have been conducted on stock structure by Russian and Japanese scientists since the 1970s. This work is summarized in section 4.1 and concludes that the current consensus on Northern Sea of Okhotsk pollock stock structure is a metapopulation composed of several spawning components. The spawning distributions and timings of each component are well described as are the seasonal migrations of each group around the Sea of Okhotsk. There is some debate as to the status of pollock in East Sakhalin but this component is not included in the Unit of Certification. Overall, there is a comprehensive range of information on Sea of Okhotsk pollock stock structure.

Stock productivity

A wide range of data is available on different features of the productivity of Sea of Okhotsk pollock, including information on age and growth processes and maturity and fecundity data. These data have been and are routinely collected on surveys and observed fishing trips. A synopsis of the number of observations made since 1996 is provided in section 4.2. No analysis has been conducted on the sufficiency of these data although overall, the number of observations is large. Regarding growth studies, during 1996–2003, a transition from scales to otoliths was made in age determination. During the site visit, it was reported by TINRO scientists that ageing comparisons were made between the scale and otolith readings with no problems indicated up to at least age 6. It was unclear what error rates occurred in the older ages. Notwithstanding this, while the stock assessment models ages 2–20, ages six and under generally represent >80% by numbers of the catch. Studies have been conducted on the stock's density-dependent processes,

focusing on the stock–recruitment relationship. As indicated in section 4.6, the Ricker stock–recruitment relationship used in the Synthesis model was considered too weak to allow estimation of analytically derived reference points. PCA follow-up (2010) reports that explorations of a relationship which includes the abundance of sea lions, percentage ice cover and the gross biomass of spring zooplankton, have been undertaken. This model improved the R^2 of the Ricker relationship from the 6.5% estimated in the December 2010 Synthesis model to about 74%. Thus far, TINRO considered these explorations too preliminary to include in the Synthesis model and stock projections. Estimates of natural mortality (M) are based on life history parameters, specifically the gonad index (WGSI) for females at maturity state IV. The annual indices for 1996 to the present are averaged and then used in the equation of Gunderson and Dygert (1988) to provide a long-term estimate of M. This estimate is taken to be representative of M for ages 6–8. The method of Blinov (1977) is then used to estimate the pattern of M across ages. Thus, estimates of M used in the stock assessment have a basis in the life history observations of Sea of Okhotsk pollock. Overall, this is sufficient information on Sea of Okhotsk pollock stock productivity.

Fleet composition

There are a number of sources of information on the composition of the Sea of Okhotsk fishing fleets. These include the FFA vessel licensing system, logbooks and FSB reporting requirements of at-sea activities, scientific observers and fishery inspectors. Further, the Vessel Monitoring System (VMS) provides accurate information on fishing location, which supplements that in the logbooks. Overall, this source of information is considered to be comprehensive.

Stock abundance

A suite of survey activities (described in section 4.2) are conducted in the Sea of Okhotsk each year, the primary one being the winter–spring ichthyoplankton/trawl survey. This 380 fixed-station survey has been conducted in a standardized fashion since 1972 and has covered the northern Sea of Okhotsk since 1984, providing the annual assessment with its main index of spawning biomass. This is a time-series of 26 years which is more than three times the generation time of pollock. A winter–spring acoustic survey has also been conducted since 1998. During the site visit, it was noted that this survey has been the focus of work to standardize its design and protocol and thus was used in the assessment. An ecosystem trawl survey has been conducted each autumn since 2000 (gap in 2004–2006) with the objective to monitor broader changes in the ecosystem – species abundance and diversity changes, physical and biological oceanographic conditions, etc. Although these data are not directly used in the pollock stock assessment, they are used to corroborate trends and better understand the dynamics of the pollock fishery in the broader context of the ecosystem. Finally, since 2001, a catch-rate index has been estimated for the large trawler fleet and used as an index of fishable biomass in the annual stock assessment. Overall, stock abundance is regularly monitored at a level of accuracy consistent with the HCR. What became apparent during the site visit and in PCA submissions (2010; 2011), is that correction factors are applied to the surveys to try and develop an absolute index of spawning biomass. It was unclear that the uncertainties in these data have been adequately described as well as the relative influence of these adjustments on the precision and accuracy of the index.

Fishery removals

Fishery removals are monitored by a suite of activities (see sections 4.2 and 6). Fishery inspectors (GMI) on transshipment vessels monitor 100% of what is equivalent to the landings while fishery logbooks, again 100% coverage, document these landings which are required to be reported daily to FSB. Scientific observers, Government Marine Inspectors and scientific fishing provide estimates of discarding which in combination with the landings provides estimates of the catch for the stock assessment. Scientific observer coverage on the large trawlers ranged from 2 to 6% during 2006–2010, while on the medium sized trawlers ranged from 0.4 to 2%. Coverage by GMI observers is higher (e.g. 14.3% in 2010). Together, at-sea coverage of large vessel hauls averaged about 20% during 2006–2010. Although these rates appear to be adequate, given the operation of the fishery, no analysis has been undertaken to indicate what percentage coverage would be required given the between- and within-vessel variability of the catch species and pollock size composition. During the site visit, while it was felt by TINRO that the coverage was sufficient, no analysis was provided to support this. It was reported during the site visit that discard rates, mostly of juvenile pollock, were currently low but had been an issue during 1990–1995, the period of USSR–Russian Federation transition.

Since 1996, discarding of juveniles has also occurred although estimates of these are made and included in the assessment (see section 4.2). Further, regulatory efforts have been made to limit juvenile discards and there is evidence that these have been effective (see section 4.7). There were also problems with illegal fishing when vessels were allowed to land pollock at non-Russian ports (e.g. in Korea), but legislation has been introduced stipulating that all catch must be landed in Russia.

Regarding other fisheries, the coastal Danish seine fishery on the West Kamchatka shelf, while small, has increased in intensity since 2005, with harvesting primarily occurring during there-spawning and spawning period. In 2011, it represented 8.8% of the total pollock catch in the northern Sea of Okhotsk. During the site visit, it was reported that sampling of this fishery has been expanded but it is too preliminary to be incorporated into the assessment. However, it was later clarified that monitoring of fishery removals and at-sea observer coverage is comparable to that of the directed pollock trawl fishery, with the information incorporated into the stock assessment. Given the small (8.8% of total pollock fishery catch in 2011) scale of this fishery, it is considered that fishery removals are well monitored and sampling is sufficient to characterize their age/size composition.

An issue raised during the site visit was the lack of weights at age for all years in the assessment. The current assessment uses one weight at age for all years. During the site visit, it was reported that this was due to mechanical problems with the at-sea scales which considerably reduced the amount of reliable data available to reliably determine weight–length relationships and thus the annual weights at age.

Other data

PCA (2010; 2011) describe a comprehensive array of information on the physical and biological oceanography and the ecosystem of the Sea of Okhotsk. These data are routinely collected on the surveys noted above and reported in such venues as PICES. These data are an important supplement to the pollock assessment information.

Synopsis

Information on stock structure, stock productivity and fleet composition is sufficient to support the harvest strategy and other data are also available. The first SI is scored at SG80. Stock abundance is monitored by at least one indicator on an annual basis (in fact four indicators are available – three survey and one CPUE) which is sufficient to support the HCR. What is not apparent is the statistical properties of the primary survey index (ichthyoplankton/trawl survey) which would inform the uncertainties in the assessment and hence the HCR. Fishery removals are monitored although it is not completely clear that the level of at-sea observer coverage of fishing activities is consistent with the HCR. The second SI is scored at SG60 but not at SG80.

There is good information on the emerging Danish seine fishery on the West Kamchatka shelf. Thus, the third SI of SG80 is met.

Fourth surveillance supplementary comment: Regarding observer coverage (monitoring), the fishery is highly targeted with ~95% of the catch being pollock. The seasonal cycle of pollock and fleet movement around the Sea of Okhotsk allows biological and catch data to be collected throughout the fishing season with a limited number of scientific observers. Since 2007, the number of observers engaged in the fishery has ranged from 10 to 21 and the PCA has committed to increasing this to as many as 24 in 2018. An analysis of the spatial coverage of the fishery conducted in 2017 indicated that the core areas were well sampled by observers, more than 90% of fishing activity taking place with at least one observer on one vessel in the core area. When GMI inspectors are included, overall coverage ranges from 13.9% to 23.1%, in line with that in other jurisdictions. An analysis of optimal observer coverage rates indicated that 20–22 observers would be needed to address both target and non-target species requirements. An Observer Working Group (OWG) has been established formally and it both coordinates the training of new observers and facilitates the allocation of observers to vessels throughout the fishing seasons. The stock assessment has been modified such that observation uncertainty in each input dataset is now explicitly estimated. This uncertainty is taken into account in the short and long-term projections of the harvest control rule. In the original certification, it was noted that some of the data of the TINRO stratified random trawl survey were being adjusted using a voluminosity adjustment (VA) for the abundance of pollock occurring above the trawl during a set/trawl based upon

echosounder traces. A statistical analysis of the trawl survey data concluded that the survey index trend without the adjustment was more consistent with the stock biomass trend estimated by the 2017 assessment. The model did not fit the high VA-adjusted survey biomass indices in the latter part of the time-series, suggesting limited influence of those years of data in the assessment. The second SI now meets SG80.

All information required by the harvest control rule is being monitored with high frequency and there is a good understanding of inherent uncertainties in the information and a growing awareness of the robustness of assessment and management to this uncertainty. Although sampling is sufficient to meet the needs of the harvest control rule, it cannot be said to be at a high degree of certainty, so the second SI does not meet SG100.

Score

The two SIs of SG60 are met as well as the first and third SI of SG80. This PI scores 70, thus requiring the following condition.

Fourth surveillance supplementary comment: All three SIs of SG80 are now met and the PI scores 80 overall.

Condition and Milestones

Condition 2

By the fourth surveillance audit, provide a written report evaluating the monitoring programme for the fishery (e.g. analysis of the accuracy and at-sea observer coverage of both the ichthyoplankton/trawl survey and fishery removals), which demonstrates that stock abundance and fishery removals are regularly monitored at a level of accuracy and at-sea observer coverage consistent with the harvest control rule.

By the fourth surveillance audit, the client must provide a written report which demonstrates that stock abundance and fishery removals are regularly monitored at a level of accuracy and at-sea observer coverage consistent with the harvest control rule. Provided the actions defined in the milestones and the deliverables in the client action plan are met, the PI would be re-scored at 80 or higher by the fourth surveillance audit.

Fourth surveillance supplementary comment: On-site discussions and analysis and a specific report demonstrating that monitoring of the fishery is at a level consistent with the harvest control rule have been evaluated by the surveillance team as meeting the requirements of this Condition. Therefore the PI is rescored at 80 (all SIs met at that level) and the Condition closed.

Condition 5				
2.3.3	***Information / monitoring*** Relevant information is collected to support the management of fishery	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a full strategy to manage impacts.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.

	impacts on ETP species, including: - information for the development of the management strategy; - information to assess the effectiveness of the management strategy; and - information to determine the outcome status of ETP species.	Information is adequate to support measures to manage the impacts on ETP species Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.

Scoring Comments

Steller sea lion

Steller sea lion (SSL) pup production and non-pups counts are monitored periodically in the protected areas. Observers are required to report on interactions with by-catch including seabirds and mammals, although these data currently report zero interactions. There have been numerous surveys to estimate abundance of marine mammals including SSLs. Information on SSLs is therefore substantial and considered sufficient to estimate the fishery-related mortality qualitatively. Observer reports accommodate mortality estimates (zero reported), but the low coverage gives poor confidence on the estimates of potential mortality of sea lions in pollock trawls. Because pollock vessels maintain a minimum of 30 nautical miles distance from rookeries, mortality in pollock trawls is unlikely (SG60 and SG80 met and none of SG100).

Cetaceans

Threatened cetacean species (predominantly large mammals) are not reported to interact with pollock trawls (SG100 met).

Albatross (short-tailed)

No mortalities of short-tailed albatrosses (STA) are reported for pollock trawls, although confidence in this quantitative data is low because of low observer coverage and the lack of any detailed mitigation strategy for seabirds to minimise potential impacts on albatrosses. Information is considered adequate to broadly understand the status of the STA but not explicitly of the direct impact of the fishery. STA breeding colonies are also located outside the Sea of Okhotsk. Abundance data are collected by non-Russian agencies and researchers. All SIs of SG60 are met and the first SI of SG80 is met.

SG60: Information is available on the populations of SSLs, STAs, sea otters and other mammals. There are surveys of colonies. Observer data report zero interactions; on this basis the information is sufficient for a qualitative assessment of status and direct fishery impacts and is adequate to support measures to manage the impacts on ETP species. All three scoring issues at SG60 are met.

SG80: As no species is threatened directly by the fishery (SSLs are assumed to be recovering and not impacted by the Sea of Okhotsk fishery), the information is considered to be sufficient. The data are, however, not considered sufficient to quantify the mortality of STAs in the fishery, so only the first SI is met for SG80 (for all identified ETP species).

Fourth surveillance supplementary comment: Since certification, scientific observer capability to record ETP and other marine mammal and seabird interactions with the fishery at sea has been strengthened, and is being strengthened further. The observers are now well trained and instructed on how and what to observe other than on the target pollock, and in the most recent fishing season, at least one-fifth of the time spent observing at sea was dedicated to marine mammal and seabird observations. A single dedicated marine mammal and a single dedicated seabird analysis was conducted in 2015 (covering inter alia the two ETP species of interest, Steller sea lions and short-tailed albatross), and a modelling analysis of those data, historical data on the same species and the results of 2017 observer data carried out to evaluate direct and indirect effects on all species of seabird and marine mammal recorded in the Sea of Okhotsk. No short-tailed albatrosses at all have been sighted interacting with pollock midwater trawls related to the UoC fishery, nor interactions with the gear recorded, and of the very few Steller sea lions captured during 2017, at least one was alive on being returned to the sea. The modelling exercise shows clearly that the fishery is not constraining populations of ETP and other mamma and bird species through limiting their food (in the case of sea lions, their food availability in Season A is actually enhanced), and the possible fishery-related mortality annually of a few sea lions is deemed insufficient to adversely influence their populations. It has now been shown that, first the interactions of ETP species with the fishery are now adequately understood, and second, that sufficient data are now clearly available to allow fishery-related mortality and the impact of fishing to be estimated quantitatively for ETP species. Further, measures are in place to record and monitor interactions between the fishing operation and ETP species, and observers record interactions as a routine part of their sampling protocol. Finally, there is heightened awareness of the client, vessel operators, scientists and data collectors regarding the importance of by-catch and other ETP species related to the fishery.

All SIs are deemed met at SG80.

Score

A score of 70 is awarded. The three SIs at SG60 and the first at SG80 are considered met, but the second SI at SG80 is considered not met.

Fourth surveillance supplementary comment: The three SIs at SG60 are still met. At SG80, the information available is sufficient to determine whether the fishery might be a threat to the protection and recovery of Steller sea lions and short-tailed albatross, and the information allows trends to be measured and supports a full strategy to manage impacts. For the second SI at SG80 there is now sufficient data (and confidence in these data) to allow fishery-related mortality and the impact of fishing to be estimated quantitatively for ETP species. The overall score is therefore adjusted to 80.

As the management measures have only recently being implemented it cannot be said that information is sufficiently quantitative at this point in time or that it is adequate to support a comprehensive strategy to manage impacts on ETP species or that it is accurate and verifiable. i.e. SG100 is not met. It is, however, possible that as the fishery progresses under MSC accreditation that SIs at SG100 may increasingly meet the standard as quantitative information improves through the measures now in place.

Overall score 80.

Condition

Condition 5

By the fourth surveillance audit the client will demonstrate that sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species. Particularly, the client needs to initiate studies on the diet and foraging behaviour of Steller sea lions in the SOO to determine feeding rates on pollock, to be completed by the end of year 3 of certification, and to record observations of sea mammal and seabird interactions with trawls to determine if there are any mortalities of sea mammals and seabirds in pollock trawls, to be completed by the end of year 3 of certification.

By the fourth audit the client should demonstrate that sufficient data are available to allow fishery-related mortality and the impact of fishing to be quantitatively estimated for ETP species, and the fishery is expected to be fully compliant with SG80 and achieve a minimum score of 80 by then.

Fourth surveillance supplementary comment: The fishery is now fully compliant with SG80 and the Condition may be closed.

Condition 8				
3.2.5	**Monitoring and management performance evaluation** There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system.	The fishery has in place mechanisms to evaluate some parts of the management system and is subject to occasional internal review.	The fishery has in place mechanisms to evaluate key parts of the management system and is subject to regular internal and occasional external review.	The fishery has in place mechanisms to evaluate all parts of the management system and is subject to regular internal and external review.

Scoring Comments

The fishery has in place mechanisms to evaluate (some of the) key parts of the management system and is subject to regular internal and occasional external review. The overall fishery management system is based on similar systems in place worldwide. It is seemingly effective in its operation, though is clearly still developing, and is impressive in that its development to international standards is not much more than a decade long. Many (organizations and people) are involved in the system, and several key people lead the main functions and organizations, and its general administrative and bureaucratic transparency throughout is obvious. It is obvious too that its development has been both proactive (to an urgent need) and reactive (to international developments and requirements), and is therefore most certainly under rigorous internal review, where “internal” here means federally within Russia and regionally in its far east. What is not so clear, however, is whether there is now, or indeed was ever much, external review of (some of the key aspects of) the management system. The term “external” is generally taken to mean external to the country, but guidance in FAM v2.1 (at 8.3.18) advises that “external review” means external to the fisheries management system, but not necessarily international. Certification requirement v1.2 also advises (CB4.11.1) that teams should interpret

"External review" at SG80 and 100 to mean external to the fisheries management system, but not necessarily international.

In terms of the advice and subsequent TAC within the management system (especially that related to the formal stock assessment process), Russian scientists are interacting with their US and other counterparts in PICES and through some bi-national agreements, but the formal external review seems to be that relating to the stock assessment and advisory process of many Russian fisheries convened by VNIRO in Moscow. Even at PICES, however, there is no formal review of the annual assessments (as happens at ICES), merely opportunity through a scientific forum for researchers to exchange scientific views on matters of mutual interest. Formal review of the management system itself, i.e. related to the processes outside of the scientific assessment, is not so obviously taking place, at least documentary evidence has not been found of it, but such review does seem to be the norm in fisheries management around the world. That the management system is well constructed is not questioned (documentary evidence shows it to be), only whether it is sufficiently being reviewed independent of possibly vested interests. One can believe that the management system is subject to some form of evaluation during the Moscow-based and other internal to Russia reviews, and also that it is regular enough for the fisheries in question. Further, given that at least some key parts of the management system are being evaluated sufficiently regularly, including external to the regional administrative arrangements, and that a partial score is allowed for this indicator because it has a single scoring issue under each SG and that the full SG 60 scoring issue is met, a partial score of 70 is awarded on the basis that the management system is indeed moving closely and irrevocably towards meeting the requirements of SG 80.

Fourth surveillance supplementary comment: The VNIRO-led and convened scientific management review system is definitely regular, robust and internal, and the client has now produced a clear external evaluation, both descriptive and constructively critical, of the external management system, including science but focusing also on legislation and control. This meets the requirement of SG80 and the review is anticipated to be repeated occasionally.

Score

The single scoring issue of SG60 is met and the single scoring issue of SG80 is partially met, so a score of 70 is awarded and the following condition set.

Fourth surveillance supplementary comment: The single scoring issue of SG80 is now fully met and the score can be readjusted to 80.

Condition

Condition 8

By the third surveillance audit, the client fishery will provide evidence to show that it has in place mechanisms to evaluate key parts of the management system other than the scientific assessment and is subject to occasional external review.

By the fourth surveillance audit, the client will provide a report of the external review of the management system and that occasional external review will continue, the results of which will be made available to stakeholders. Provided the actions defined in the milestones and the deliverables in the client action plan are met, the PI would be re-scored at 80 or higher at the fourth surveillance audit.

Fourth surveillance supplementary comment: The report has been provided, to clear terms of reference, by an acceptable candidate external to the system but Russian speaking. The evaluation has been uploaded to the English language website for all to see, and the Condition is deemed as having been met.

Appendix 2 - Stakeholder submissions (if any)

Comments received verbally during the Site Visit, confirmed in writing immediately thereafter

Comments from the WWF Russia Branch

The team met with Dr Konstantin Zgurovsky, representing WWF, during the site visit (see 2.2.4, third meeting) and responded to his verbal input in writing under the Acoura letterhead, as follows:

4 October 2017

(communicated by email)

Dr Konstantin Zgurovsky,
(copied to Drs Andrey Vinnikov, Sergey Korostelev and Sergey Rafanov)
Russian Sustainable Fisheries Programme
Worldwide Fund for Nature
Moscow and Petropavlovsk-Kamchatsky

Dear Dr Zgurovsky

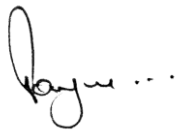
Thank you for sharing with us face-to-face in Vladivostok on 2 October 2017 your issues and concerns relating to the current MSC certification of the Russian (walleye) pollock fishery in the Sea of Okhotsk, for which we are currently conducting the fourth surveillance audit. The three Acoura representatives in the signature line at the end of this letter met with you in the Hyundai Hotel and have prepared this brief note in advance of your formally submitting your concerns under a WWF Russia letterhead for us to respond to formally as part of the 4th Surveillance Audit report.

You raised the issues listed beneath, in no order of priority.

1. WWF was content with their involvement in, discussions held, and various outputs of the formally constituted Observer Working Group and had participated in the two meetings held since the third Surveillance Audit in October 2016. What seemed to be missing, in WWF's opinion, was an established written protocol under which all observers would operate at sea during observer-attended fishing trips. Such an agreed and signed (by all parties – agency representative, observer, vessel captain) document, held by the observer deploying agencies, would ensure that the observer was free to conduct on board all activities mandated by the programme.
2. There is concern that accurate logging and recording of juvenile pollock catches and particularly discards is not taking place. WWF sees no formal validation of the observer reports. This issue is of particular concern when incoming year classes are strong and the likelihood of juvenile discarding is high
3. Allied to 2. above, WWF is not absolutely sure that the total catch removed from the sea (including damaged fish, for instance) is being recorded in the total catch database used for control and stock assessment purposes.
4. WWF is of the opinion that the deployment of a sorting grid inside the trawl net in addition to the large, square-mesh panels already in use would mitigate the bringing on board of less-wanted juvenile pollock and other small species.
5. WWF is not comfortable with the phasing out of the Argos fisheries monitoring system widely used in Russian fisheries, including that for pollock, in favour of an Inmarsat system and a developing Russian system known as Gonets. WWF is not sure that the new system will work as effectively as the current Argos system.

We submit this brief record of our discussions to you and await your formal written input for us to take up and respond to in our (4th Surveillance) evaluation of this fishery's performance against sustainable standards as set out by the Marine Stewardship Council.

Best regards



(Dr) Andrew I.L. Payne (team leader), David W. Japp and Robert O'Boyle

Surveillance team 4th SA, PCA Poll
Acoura

The team and Acoura then received the following letter from WWF Russia.

WWF-Russia

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October 6, 2017
To:
Dr Andrew I.L. Payne (team leader), David W. Japp and Robert O'Boyle - Surveillance team of Acoura for 4th Surveillance Audit, PCA Pollock

WWF comments on the 4th audit of MSC certified trawl fishery of pollock in the Sea of Okhotsk

Dear Dr Payne,

Thank you for the meetings with our representatives Dr K. Zgurovsky, S. Rafanov and Dr S. Korostelev in Vladivostok and Petropavlovsk-Kamchatsky. During four years of MSC certification of Russian pollock fishery in the Sea of Okhotsk, the Pollock Catchers Association (PCA) has improved its practices. At the same time there is still a number of unresolved issues in place. Representatives of WWF Russia expressed the following concerns and expectations:

1. WWF is seeking membership in the working group on observers at pollock fishery in order to improve effectiveness of observation.

WWF believes that the following steps need to be taken:

- The working group of observers should ensure its independence, including from the scientific institute (TINRO-Center);

- Observers should include not only scientific personnel, but also independent observers from other organizations, including environmental NGOs;
- The decisions of the working group and the results of the observers work should be public and have to be promptly posted on the Pollock Catchers Association (PCA) website;
- An observer on a fishing vessel should have a legal status, his/her actions and access to various operations on the fishing vessel should be ensured in writing in a document agreed upon and signed by all interested parties;
- The program for monitoring of compliance with the MSC standard should be unified for all observers regardless to their background. Implementation of this program should be evaluated by an independent expert commission.

2. In the absence of a direct measurement (weighing), the calculation of catch volume (weight) occurs only by the reverse recalculation of the production output. This method of calculation does not provide a data on the juvenile by-catch, which is necessary for stock assessment and defining Total Allowable Catch. WWF draws attention of the PCA to the fact that the data on the juvenile by-catch, as well as on possible discard of small-size, sub-standard fish, other by-catch species, are almost completely absent in observers' reports. There is no documented and public confirmation that the entire catch of pollock is used for processing, and the by-catch of juvenile pollock meets the Fisheries Rules and the discard of small-size pollock is completely stopped.

3. WWF expects the PCA’s active participation in the development, testing and implementation of the grating on a rigid frame inside the trawl bag in addition to the currently used soft grid to diminish considerably the by-catch of juvenile pollock and other species.

4. WWF requests the PCA to analyse the IUU-fishing incidents which involved PCA's members and were identified by the enforcement bodies at MSC certified fishing in the Sea of Okhotsk. The results of this analysis should be published on the PCA website for open access.

5. WWF has no evidence of the effectiveness of the new satellite monitoring system "Gonets" system (being introduced by Rosrybolovstvo, Federal Fisheries Agency of the Russian Federation) in comparison with "Argos". Therefore WWF suggests that an introduction of the "Gonets" instead of "Argos" may negatively affect the quality of monitoring of the pollock fishery in the Sea of Okhotsk.

Victoria Elias,
Programme Director

After consideration of the content of this formal written input, the surveillance team amended some of the draft report and responded on Acoura letterhead as follows:

14 November 2017

(communicated by email)

Ms Victoria Elias, Drs Andrey Vinnikov, Konstantin Zgurovsky,
Sergey Korostelev and Sergey Rafanov

Russian Sustainable Fisheries Programme

Worldwide Fund for Nature

Moscow and Petropavlovsk-Kamchatsky

Dear Colleagues

Thank you for sharing with us your issues and concerns relating to the current MSC certification of the Russian (walleye) pollock fishery in the Sea of Okhotsk. As you are aware, all three of the assessment team were in Russia during October 2017, conducting the fourth surveillance audit of the fishery for the CAB named in this letterhead. Input from committed stakeholders such as yourselves is critical to us getting the facts right about this fishery, so be assured that both your summary input and this response will form part of the report into the 4th surveillance audit. That report along with relevant documentation will be appearing on the MSC website shortly, after it has been thoroughly checked by all interested parties.

In response to your email, I would like to address each of the subjects you raise individually (annotated by paragraph number in your email), to let you know our thinking on them at the moment, including how we have addressed them, adequately we hope.

1. Membership of the working group on observers associated with the pollock fishery

According to information that the surveillance team has to hand and as reflected in the minutes of the working group uploaded to www.russianpollock.com, WWF Russia is already a member of the working group (WG) charged with improving Sea of Okhotsk pollock fishery monitoring; there is indeed a TINRO formal order on WG establishment. Why WWF is concerned about TINRO convening this WG is not clear to the surveillance team; TINRO is in our opinion best placed to convene the WG and anyway, who else would be able to put such a formal group together? Recommendations from the WG are implemented by management immediately, without change, and the group itself is able to adjust its *modus operandi* through discussion at the various meetings.

As the surveillance team sees it, monitoring is overseen by the appropriate research institutes, and the trained observers are often skilled scientists who are well prepared for their task through efficient training in fisheries, marine biology and safety. “Independent” observers other than the skilled corps currently operating would be difficult to find, and it should be remembered too that it is the same research institutes that are charged with analysing the crucial information the observers bring back to land. Also, as far as the team could deduce, no observer has

ever been refused permission while on board a vessel to collect the information that is covered by his or her formal operating manual.

Finally, observers are charged formally only with collecting the crucial information for stock assessment and optimal management of the fishery and the ecosystem in which it is prosecuted, not with meeting any MSC criteria. Their work is conducted independent of any extraneous fishery or economic interest and certainly without any necessity to meet MSC criteria for sustainable management of a fishery. If they find that a fishery is not being managed with such sustainability uppermost, the fishery will fail its certification or subsequent surveillance audits.

2. Calculation of catch volume (weight)

All information on catches, including juvenile pollock, has to be reported to the authorities, according to the Fishing Rules governing the fishery, with compliance enforced by the Coastguard (the team interviewed the Coastguard during its visit). Additionally, scientific observers collect catch size data, and can estimate exactly (verifying the statistics if necessary) how much juvenile pollock is being removed from the fishery, at least while they are on board a vessel. Information on the size composition of the catch is available in their reports on stock monitoring, and the surveillance team believes that the various research institutes handling the observer information have an accurate understanding of pollock catch size. Also, scientific surveys are undertaken after fishery removals have taken place, so research-based estimates of stock biomass and structure are independent of the fishery and well-timed.

The surveillance team is well aware that many (certified) fisheries suffer from some scepticism about the accuracy of incidental by-catch and juvenile target fish by-catch reports, but does not have a solution to how confidence in such estimates can be facilitated. Installing a dedicated weighing system in the processing line for by-catch would probably work but is difficult to monitor and economically expensive; however, the team is willing to discuss this issue further with the WWF in future if it is seen as a “game-changer” in the certification process.

3. PCA active participation in developing, testing and implementing a grating on a rigid frame (or similar exclusion device) inside the trawl bag to decrease the by-catch of juvenile pollock and other species

We took this issue up with the PCA (the subject has economic benefits as well as conservation ones), and they stressed that they would be happy to consider participation in any gear-improvement projects such as installing a rigid grating in the net to deter by-catch. However, the team is not that convinced that the system would be feasible given the difficulty of installation, nor that enhancements to the size mix of the fishery would result.

4. Analysis of IUU-fishing incidents that involve PCA members

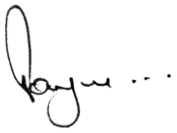
Having carefully interrogated the Coastguard during the visit to Petropavlovsk-Kamchatsky, the surveillance team is of the opinion that the Sea of Okhotsk pollock fishery is free of IUU. The team notes too that the Coastguard seeks open dialogue with industry about all regulations, and is confident that, if there was any inkling of IUU fishing in the pollock fishery, industry, who would be the first to suffer economically, would be quick to point out their concerns to the management authorities, including the Coastguard.

5. Gonets system vs Argos

The surveillance team has had several opportunities to visit and meet staff at the Kamchatka Centre for Fisheries Monitoring, which operates the VMS system operating in the pollock fishery. The agency is confident with the system being developed for the fishery and it is being widely trialed before formal implementation. Gonets is based on the national satellite system “Glonass”, and in the opinion of the team, will fully meet international standards for such systems. At this stage, the team does not share the belief of WWF that there is “no evidence of the effectiveness of the new satellite monitoring system “Gonets”; simply is there evidence that it is not effective?

The surveillance team reiterates its thanks to WWF for its meaningful suggestions for improving confidence in the belief that the fishery is being prosecuted sustainably, and specifically for its will to maintain membership of the observer working group that was initially established largely as a consequence of the suggestions of the WWF.

Best regards



(Dr) Andrew I.L. Payne (team leader), David Japp and Robert O’Boyle

Surveillance team 4th SA, PCA Pollock

Acoura

Comments received prior to Site Visit

Comments from the At-sea Processors Association, dated 28 September 2017

Comments from the At-sea Processors Association on MSC Final Surveillance and Reassessment of the Russian Sea of Okhotsk Mid-water Trawl Walleye Pollock Fishery

(To be read with File: MSC Template for Stakeholder Input v2.0 SOO S4RA comments)

Comments on the PCA Website

The PCA website has many blank pages and broken links. It is not possible to find key papers such as a review by Sharov (2016) of the way in which the stock assessment treats uncertainty. The review is critical to closing Condition 3 (see below under Conditions 1 and 3) and lack of availability makes it difficult to judge the appropriateness of closing Condition 3 at the third surveillance. The reference provided in the surveillance report report is: *Sharov, A. Analysis of the Sea of Okhotsk pollock stock assessment model and its effectiveness in addressing all major sources of uncertainty. Pollock Catchers Association, Vladivostok. 36 pp*.

The PCA website also does not include any information on stock assessment, annual stock status updates and how TACs are adjusted using the supposed Harvest Control Rule (HCR). We find this perplexing both in terms of transparency, but also because the surveillance reports do not make any of this clear, referring only for example in the third surveillance to: *The modus operandi for determining the annual level of TAC is the same as determined during the original assessment, with all catch and effort and scientific survey data being made available and subjected to rigorous scientific analysis by KamchatNIRO and TINRO before the output is evaluated under the auspices of VNIRO in Moscow (VNIRO takes the lead on this overview analysis for all Russian fisheries). The advice and input of some academics and experts on many scientific disciplines other than direct fisheries science, particularly of ecosystem components, is solicited in that overarching evaluation, which is conducted annually before the TAC is announced.*

There are no clear stock assessment outputs, however, that show updated assessments, and explicitly link the TACs to biomass and fishing mortality estimates as outlined in the HCR that was scored at SG80 in the 2013 PCR. These issues are considered further below in comments on the PCR.

Comments on Conditions

i. **Condition 1:** PI1.2.1: At the time of initial assessment, there had been no testing of a then new harvest strategy (HS). The PCR therefore set a condition with annual milestone requirements for information and intended rescoring by the fourth surveillance. At the third surveillance, all appears to be on target but the third surveillance Team commented that: *The requirement to meet this Condition is currently on target, but the Client should note that to close it at the fourth surveillance next year, additional written evidence will be required to demonstrate that the harvest strategy has undergone rigorous testing to explore its robustness to management and assessment uncertainties. Moreover, it is hoped that next year's report that also takes cognizance of the recommendations associated with the review commissioned under Condition 3 will also touch on the VNIRO evaluation of the means of TAC calculation.*

ii. From third surveillance reporting and considerations, it looks like this condition will get closed but will need scrutiny as it is complex. The guidance by the assessment team at the third surveillance notes also Condition 3 - this has been closed following a review by Alexei Sharov but it is unclear how extensive this is (see above) re PCA Website and difficulty in obtaining information.

iii. It is also of concern that the team views the Sharov paper (condition 3) as relevant to the way in which VNIRO will evaluate the means of TAC calculation – is this not already meant to be in place through use of a well-defined HCR?

iv. **Condition 2:** PI1.2.3: The condition relates to monitoring/observer improvements. At the third surveillance, progress was judged to be on target ("*just*") but the commentary mixes progress on stock (P1) and by-catch (including ETP) issues(P2). Issues need to be kept separate and clear with respect to conditions 2 and 4.

v. **Condition 3:** PI1.2.4: The condition requires a report by the third surveillance on how the stock assessment deals with uncertainty. This condition has been closed following the report by Sharov (2016). Please see our comments above about the availability of this report. Without access to the Sharov report and also stock assessment updates (see below) it is unclear how the third surveillance team concluded the condition should be closed.

vi. **Condition 4:** PI2.2.3 (Main By-catch species): The condition is about analysis of observer data. Closure was intended at the second surveillance but occurred at the third. There is a need to look in detail at the fourth surveillance to ensure appropriate continuing analysis/coverage.

vii. **Condition 7:** PI3.2.2: Re decision-making. As noted by the team, this is a difficult condition given language/translation needs. We are concerned at the reliance and potential double use of matters related to MCS performance evaluation and do wonder if there is not more information available (for translation) form any of the processes, for example, outlined in (http://fish.gov.ru/files/documents/otraslevaya_deyatelnost/sistema_VBR/Etapy_ustanovleniya_ODU.pdf).

Comments on 2013 PCR and Reassessment – PRINCIPLE 1

PI1.1.1 (and 1.2.4) This will need a complete update at reassessment. We can find no new stock assessments referenced in any surveillances to date, nor on the PCA website (at http://pollock.ru/en/pollock-sustainability/stock-status/stock-assessment.html). The site refers only to surveys which provide information to an unspecified assessment process. Without regular updates in the stock assessment, it is unclear how the HCR is being implemented and how status is being determined. We are surprised that the surveillances do not report updates to stock status and the basis for any TAC adjustments.

We can find this (http://russianpollock.com/stock/stock-assessment/) and (http://fish.gov.ru/files/documents/otraslevaya_deyatelnost/sistema_VBR/Etapy_ustanovleniya_ODU.pdf) but the links to assessment methods and TAC-setting processes are in Russian only and have no dates. Using Google Translate does not reveal anything not in the PCA submissions in 2011 and while we can identify processes we cannot find specific articulation of assessments or their use in TAC-setting (see also below). We recognise that we may be missing information in translation and would welcome clear information provision.

We have found this (https://link.springer.com/article/10.1134/S1063074014070062), which appears to be a 2013 paper by TINRO scientists which uses surveys only to estimate biomass in SOO and refers to this as stock assessment. Given this and no other clear stock assessment documents as such (that would reflect what was used to score PI1.2.4), we are left unsure as to what stock assessments have been taking place and how TAC updates have been made.

Some recent (July 2017) information is available through Fishsource (https://www.fishsource.org/stock_page/1820). If accurate, this seems to confirm a lack of recent analytical stock assessment with reliance only on surveys and with TINRO updating two-year forecasts on an unclear basis. It also suggests SSB has been at/below target (Bmsy proxy) for a decade or so; the PCR interpreted this as “at or around” the target but was arguably generous.

We think there is a need for clarification on the nature of stock assessments, updates, how these are used with the HCR, and transparency. All of these should be looked at closely at reassessment.

PI1.2.2 We cannot find source materials that confirm the HCR as outlined and scored in the PCR is defined in law, policy, management plan, etc, as opposed just to practice, or (see above) how stock assessment outputs are used within the HCR. The references in the PCR are to “PCA 2011b”, which is the 2011 English language submission from PCA for the initial assessment. The HCR schema presented there is as used in the PCR scoring tables but it refers only to a general scheme outlined in a paper by Babayan and not to any clearly mandated HCR. For reassessment, there is a need for clarification of the management status of the HCR. It is not clear that the HCR is in fact “in place” nor even that it is in practice being followed as outlined in the PCR.

Contact Information Make sure you submit your full contact details at the first phase you participate in within a specific assessment process. Subsequent participation will only require your name unless these details change.				
Contact Name	*First* Jim		*Last* Gilmore	
Title	Director of Public Affairs			
On behalf of (organisation, company, government agency, etc.) – *if applicable*				
Organisation	*Please enter the legal or registered name of your organisation or company.* At-sea Processors Association (APA)			
Department				
Position	*Please indicate your position or function within your organisation or company.* Director of Public Affairs			
Description	*Please provide a short description of your organisation.* APA is a seafood trade association comprised of six member companies that, among other, commercial fishing and seafood processing interests, operates U.S.-flag catcher/processor vessels in the Alaska pollock fishery. APA engages in a number of sustainability initiatives on behalf of the association's members, including serving as the fishery client in the Alaska pollock fishery, which was first certified in 2005.			
Mailing Address, Country	4039 21st Avenue W., Suite 400, Seattle, WA 98199			
Phone	**Tel**	+ 1 206 285 5139	**Mob**	+ 1 (206) 669-6396
Email	**jgilmore@atsea.org**		**Web**	www.atsea.org

Assessment Details	
Fishery	Russia Sea of Okhotsk pollock
CAB	Acoura

Assessment Stage* Clicking on the section numbers will bring you to the appropriate section for providing input to the respective assessment stage. It is only necessary to complete those sections corresponding to stages where you wish to comment.	
	Fishery announcement and stakeholder identification—go to section 1 Opportunity to indicate that you are a stakeholder and identify other stakeholders.
	Defining the assessment tree—go to ~~section 2~~ Opportunity to review and comment on the assessment tree in relation to the fishery if a modified tree is used.
	Information gathering and stakeholder meetings—go to section 3 Opportunity to engage with and provide information to the CAB about the specific details and impacts of the fishery.
	Public review of the draft assessment report—go to ~~section 4~~ Opportunity to review and comment on the draft report, including the CABs draft scoring of the fishery.

	Annual surveillance—go to section 5 Opportunity to provide information to the CAB about any changes in the fishery since certification and/or the achievements made towards conditions.

* Note, to register an objection following the publication of the Final Report and Determination, please see www.msc.org/get-certified/fisheries/assessment/objections

SECTION 1 • Return to Page 4

Assessment Stage	Fishery	Date	Name of Individual/Organisation Providing Comments
x ☐ Fishery announcement and stakeholder identification[1] Opportunity to indicate that you are a stakeholder and identify other stakeholders.	Russia Sea of Okhotsk pollock	9/29/17	Austin Estabrooks, At-sea Processors Assn. (APA) Glenn Reed, Pacific Seafood Processors Assn. (PSPA) Ruth Christiansen, United Catcher Boats (UCB)

Nature of Comment (select all that apply)		Additional Information/Detail Please attach additional pages if necessary.
e.g. ☒ ☐	I wish to indicate that I am a stakeholder in this fishery. Please keep me informed about each stage of the assessment process.	*Example: My company has been operating five charter boats for recreational fishing on this fish stock for 20 years, and I would like to be informed and involved as this MSC assessment progresses. In addition, we have kept detailed logs over the years of our client's' catches, including sizes, weights and fish caught per trip and would be happy to share these with the assessment team.* Please see section 3 for i) a request for a conference call during the on-site visit, and ii) an indication of concerns about the existing assessment and surveillances. At section 5, we also refer to section 3. The At-sea Processors Association is a seafood trade association with six member companies. Among other seafood harvesting and processing interests, all six companies operate U.S.-flag catcher/processor vessels in the Bering Sea/Aleutian Islands pollock fishery. APA serves as the client for the Alaska pollock certifications. Please include APA's Austin Estabrooks on CAB notices regarding Russian SOO pollock audit and reassessment announcements. Austin.Estabrooks@atsea.org. The Pacific Seafood Processors Association (PSPA) is a nine-member seafood
☐	I wish to suggest information or documents important for the assessment of this fishery *(you may either attach documents or provide references)*.	

[1] MSC Fisheries Certification Requirements, v2.0 section 7.8

xx ☐	I wish to suggest other individuals or organisations who should be considered stakeholders in the MSC assessment of this fishery *(please provide contact information)*.	trade association. Most PSPA member companies participate in a cost-sharing arrangement in maintaining the Alaska pollock certifications. PSPA is also the client for the Alaska salmon certification, the first major fishery certified under the MSC program. Please include PSPA's Glenn Reed on CAB notices regarding Russian SOO pollock audit and reassessment announcements. The United Catcher Boats (UCB) is a trade association comprised of vessel owners operating trawlers in various Bering Sea, Gulf of Alaska and U.S. West Coast groundfish fisheries. Most of the member companies/vessels participate in the Alaska pollock fishery. As with members of APA and PSPA, UCB members participate in a several MSC certified fisheries, including the Pacific whiting, Pacific cod, and Alaska flatfish fisheries. Please add UCB's Ruth Christensen on CAB notices regarding Russian SOO pollock audit and reassessment announcements. Ruth.Christiansen78@gmail.com.
☐	Other (please specify)	

• **SECTION 3** • Return to Page 4

Assessment Stage		Fishery	Date	Name of Individual/Organisation Providing Comments
☐	Information gathering and stakeholder meetings[2] Opportunity to engage with and provide information to the CAB about the specific details and impacts of the fishery.	Russia Sea of Okhotsk pollock	9/29/17	Jim Gilmore/Austin Estabrooks, APA Glenn Reed, PSPA Ruth Christiansen, UCB

Nature of Comment (select all that apply)		Additional Information/Detail Please attach additional pages if necessary.
☐	I wish to request an in-person meeting with the site team during their assessment visit (meetings without the fishery client present may be requested at this phase of the process if desired).	*Example: I am unable to attend the scheduled on-site meetings with the assessment team about this fishery but would like to ensure the following documents are considered when the team reviews the available information: 1. Doc A; 2. Doc B; 3. Doc C. All of these are available for download at the following web address…* Meeting: We would have welcomed the opportunity to discuss issues with the team during the site visit. However, visiting Vladivostok is costly and not straightforward, requiring lengthy visa processes and letters of invitation.

2 MSC Fisheries Certification Requirements, v2.0, section 7.8.4

e.g. ☒	I wish to submit written information about the fishery and its performance against the default tree and/or RBF to the assessment team *(please provide documents or references).*	However, we would like instead to be able to discuss our comments with the team by conference call. Dr Kevin Stokes, who is working with our consortium of interested parties, will lead in contacting the team and arranging for stakeholder consultation. Our written comments are attached and are relevant here and for section 5 (on the final surveillance). We are not submitting new information on the fishery. Rather, at this stage, we are highlighting some of our concerns with the existing certification and surveillances and are seeking information that may alleviate these concerns. At this stage, we are concentrating on Principle 1 though some of our comments on existing conditions touch on issues elsewhere. We hope that raising concerns now provides the team with an opportunity to address them early instead of at the Public Comment stage. Our primary aim is to ensure the integrity of pollock assessments and to this end we wish to make sure the SOO assessment is robust and credible. Our preference would have been to see the assessment conducted using MSC Version 2 requirements, noting UoA definition and other matters would influence outcomes. However, we note that the timing of the reassessment announcement is such, but only by the matter of a day that the fishery will instead be reassessed using Version 1.3. We would have had many additional concerns under Version 2 but do not include these.
☐	Other (please specify)	

• SECTION 5 • Return to Page 4

Assessment Stage	Fishery	Date	Name of Individual/Organisation Providing Comments
☐ Surveillance[3] Opportunity to provide information to the CAB about any changes in the fishery since certification and/or the achievements made towards conditions.	Russia Sea of Okhotsk pollock	9/29/17	Jim Gilmore/Austin Estabrooks, APA Glenn Reed, PSPA Ruth Christiansen, UCB

Nature of Comment (select all that apply)		Justification Please attach additional pages if necessary.
e.g. ☒	I wish to alert the assessment team to important changes in the circumstances of this fishery relevant to the MSC certification.	*Example: Since this fishery was certified 2 years ago, government scientists have been working closely with the fishery client to develop a system for monitoring stock status capable of ensuring a precautionary harvest strategy. Although not published, the progress on this work to date can be found in the following report (attached)…* Our written comments are attached and are relevant here and for section 3.
☐	I wish to provide information relevant to fulfilment of the conditions of certification.	

3 MSC Fisheries Certification Requirements, v2.0 section 7.23

☐	Other (please specify)	

After consideration of the content of this formal written input, the surveillance team amended some of the draft report and responded on Acoura letterhead as follows:

14 November 2017

(communicated by email)

Mr Jim Gilmore
Director of Public Affairs
At-Sea Processors Association
4039 21st Avenue W.
Suite 400
Seattle, WA 98199
USA

Dear Mr Gilmore and colleagues (Dr T. Kevin Stokes, consultant;
Mr Austin Estabrooks, APA; Ms Ruth Christiansen, United Catcher Boats)

Thank you for sharing with us your issues and concerns relating to the current MSC certification of the Russian (walleye) pollock fishery in the Sea of Okhotsk. As you are aware, all three of the assessment team were in Russia during October 2017, conducting the fourth surveillance audit of the fishery for the CAB named in this letterhead. Input from committed stakeholders such as yourselves is critical to us getting the facts right about this fishery, so be assured that both your input and this response will form part of the report into the 4th surveillance audit. That report along with relevant documentation will be appearing on the MSC website shortly, after it has been thoroughly checked by all interested parties.

In response to your email, I would like to address each of the subjects you raise individually (annotated by paragraph number in your email), to let you know our thinking on them at the moment, including how we have addressed them, adequately we hope.

Introductory general comment

The PCA website (www.russianpollock.com) did indeed have some blank pages and broken links. This has hopefully been largely addressed recently. For instance, the Sharov (2016) report in English is now uploaded and available, and the surveillance team stand by the earlier team's belief that Condition 3 was rightly closed as a result. Comment on uptake of that report's recommendations is contained in this surveillance report and in Appendix 1 of Varkentin and Ilyin (2017)'s stock assessment report. The lack of updated stock assessment reports on the site is regrettable, but understandable given that management recommendations on future TACs are stated in all reports, and until the VNIRO-convened review of the assessment has been completed and TACs announced, it would be inappropriate to make them publically available. The Varkentin and Ilyin (2015) paper that was used in his analysis by Sharov (2016) is now uploaded, and uploading of the subsequent

Varkentin and Ilyin (2016) assessment paper is imminent because the VNIRO review is at this time of year and 2018 TACs will shortly be announced. Varkentin and Ilyin (2017) will be uploaded towards the end of 2018.

Condition 1 and third surveillance reporting (items i and ii)

The testing of the harvest strategy to explore its robustness to management and assessment uncertainties has been done and in the surveillance team's opinion is rigorous (comment included in this report and in Varkentin and Ilyin (2017). The Sharov (2016) paper is now available on the website and its provision and content supports the closure of Condition 3 in late 2016.

Sharov paper relevance to TAC calculation (item iii)

A valid point and perhaps the process of the VNIRO evaluation of TAC and the report of Sharov should have been kept separate, as has been done better in this report.

Condition 2 on monitoring/observer improvements (item iv)

The mixing of progress on stock (P1) and by-catch (P2) issues in the third surveillance report is regretted and has not arisen in this report, where new text is provided to close the condition.

Condition 3 and uncertainty monitoring (item v)

The third surveillance team did have access to the Sharov report, and now so does everyone else who is interested. The fourth surveillance team supports the decision made in 2016 to close Condition 3.

Condition 4 and main by-catch species (item vi)

Extensive comment is made in the fourth surveillance report about the extent of formal monitoring coverage, and the decision to close Condition 4 at the third surveillance audit is supported by the current team.

Condition 7 and decision-making (item vii)

We do not agree that the previous closure of Condition 7, or the wording, relied on the double use of matters related to MCS evaluation; that is a personal opinion of APA. The team did look at the document suggested by APA, but found nothing to enhance understanding regarding translation issues. Language translation issues will always arise in fisheries prosecuted in non-English speaking countries, and the provision of the largely English-dominated www.russianpollock.com website has proved a great help to all the surveillance teams working on this fishery.

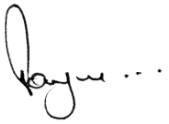
Principle 1 comments

Updated stock assessments and other new documents are provided on the website mentioned above. These and other documents currently not allowed to be uploaded to the website but reviewed in full by the surveillance team in this comprehensive surveillance report answer many of the constructive comments offered here by the APA. We hope that this suffices for the present time. The Fishsource information outlined by APA is regrettably inaccurate, but we hope that the extensive comment provided in this report have laid to rest some of the concerns that the APA team have expressed. Finally, we cite the policy basis for the HCR in summary as the actual order enshrining it in Russian law (FFA Executive Order 104 dated 6 February 2015 [amended 4 April 2016]. The surveillance team has seen and reviewed the

order, and are content that it serves its purpose to international norms for such documents and orders.

The surveillance team reiterates its thanks to APA for its meaningful suggestions for improving confidence in the belief that the Russian pollock fishery in the Sea of Okhotsk is being prosecuted sustainably. We understand that many of the comments are intended to place down markers of concern and accuracy in advance of a possible recertification exercise, but are grateful for the effort made in reviewing the manifold documents that have helped us better structure and lay out evidence during the current surveillance.

Best regards



(Dr) Andrew I.L. Payne (team leader), David W. Japp and Robert O'Boyle
Surveillance team 4th SA, PCA Pollock
Acoura

Appendix 3 - Surveillance audit information (if necessary)

The client provided electronically in advance of the site visit a written report and summary of the relevant information the team had been expecting to see during the audit, including extensive supplementary background material such as reports on the commissioned work in support of issues generally covered in the Conditions originally set. In particular, much information was given on the progress and performance of the fishery over the past year. Further documentation was provided on request during the site visit and subsequently, for clarification purposes. All this information was reviewed by the team and has been included where relevant in this surveillance report, some as references and some in summary as substantive text.

Appendix 4 - Additional detail on conditions/ actions/ results (if necessary)

None. This site visit and the report constitute the final surveillance for the certificated Sea of Okhotsk midwater trawl pollock fishery, and because all Conditions have been met, no further action is necessary.