Marine Stewardship Council fisheries assessments

UCSL – United Certification Systems Limited

Office 003, Pamelva Court,

1 Anastasi Shoukri Street, 3035, Limassol, Cyprus

Mobile phone: +7-960-242-4845

Email: t.pitieva@ucsl.eu

Website: https://ucsl.eu/

FSA Western Bering Sea Walleye pollock midwater trawl

Photo from: https://www.russianfishery.ru/products/

Announcement Comment Draft Report

Conformity Assessment Body (CAB)	UCSL United Certification Systems Limited
Assessment team	Petr Vasilets, Giuseppe Scarcella, Mohamed Samy-Kamal
Fishery client	Fishery Shipowners Association (FSA, Russian Federation)
Assessment type	Initial Assessment
Date	June 2021

1 Contents

Table of Tables

Table of Figures

2 Glossary

BSAI	Bering Sea and Aleutian Islands
CFMC	Centre for Fisheries Monitoring and Communications
CPUE	Catch per Unit Effort
CoC	Chain of Custody
EBS	Eastern Bering Sea
EMA	Ecosystem Monitoring and Assessment program
ETP	Endangered, Threatened, and Protected
FFA	Federal Fisheries Agency
FSA	Fishery Shipowners Association
FSB RF	Federal Security Service of Russian Federation
HCR	Harvest control rule
IUU	Illegal Unreported and Unregulated (fishing)
KamchatNIRO	Kamchatka branch of the All-Russian Science Research Institute of Fisheries and Oceanography
LME	Large Marine Ecosystem
LTL	Lower Trophic Level
MCS	Monitoring Control and Surveillance
MSC	Marine Stewardship Council
PBR	Potential biological removal
PC	Possible catch = Recommended yield (RY)
PCA	Pollock Catchers Association
PI	Performance Indicator
PRI	Point of Recruitment Impairment
PSA	Productivity Susceptibility Analysis
PSC	Prohibited Species Catch
RBF	Risk Based Framework
RY	Recommended yield = Possible catch (PC)
TAC	Total Allowable Catch
TINRO	Pacific Ocean branch of VNIRO
UoA	Unit of Assessment
UoC	Unit of Certification
VNIRO	Russian Federal Research Institute of Fisheries and Oceanography
VME	Vulnerable Marine Ecosystem
VMS	Vessel Monitoring System
WBS	Western Bering Sea
WBSZ	West Bering Sea Zone

List of symbols and reference points

Blim	Minimum biomass below which recruitment is expected to be impaired or the stock dynamics are unknown.
Bmsy	Biomass corresponding to the maximum sustainable yield (biological reference point); the peak value on a domed yield-per-recruit curve.
Bpa	Precautionary biomass below which stock biomass should not be allowed to fall to safeguard it against falling to Blim.
Btr	Biomass target reference point.
F	Instantaneous rate of fishing mortality.
Flim	Fishing mortality rate that is expected to be associated with stock ‘collapse’ if maintained over a longer time (precautionary reference point).
Fmsy	F giving maximum sustainable yield (biological reference point).
Fpa	Precautionary fishing mortality.
Ftr	Fishing mortality target reference point.
MSY	Maximum Sustainable Yield
SSB	Spawning Stock Biomass

3 Executive summary

Draft determination to be completed at Public Comment Draft Report stage

This report is the Announcement Comment Draft Report (ACDR) which provides details of the MSC assessment process for FSA Western Bering Sea Walleye Pollock midwater trawl fishery. The ACDR was published in June 2021.

A review of information presented by the client has been reviewed and evaluated by the assessment team – at the ACDR stage this does not represent a final scoring outcome or a certification decision.

The provisional scoring presented in this report has not been reviewed by stakeholders, peer reviewers or the client – these steps will all take place from here onwards. Stakeholders are encouraged to review the scoring presented in this assessment and use the Stakeholder Input Form to provide evidence to the team of where changes to scoring are necessary.

Any stakeholder comments received will be published ahead of the site visit. Currently, this has not been scheduled, but is anticipated to be off-site in line with the current MSC Derogation for COVID-19[1]. Arrangements will be made for stakeholders to meet with the assessment team virtually if meetings cannot be held onsite.

The Target Eligibility Date for this assessment is the date of publication of the Public Comment Draft Report (PCDR) version of the assessment report.

The assessment team for this fishery assessment comprised of Dr. Petr Vasilets (Team Leader and Principle 2 specialist), Dr. Giuseppe Scarcella (Principle 1 specialist) and Dr. Mohamed Samy-Kamal (Principle 3 specialist).

Client fishery strengths

Principle 1:

- Data on pollock biology in the Bering Sea go back as far as the middle of the 20th century and include long time-series of demersal (bottom-dwelling organisms) pelagic, acoustic and ichthyoplankton surveys. Catch and effort data on pollock are available and used in the assessment model and in the HCR.
- The application of modern, international-standard stock assessment models of great flexibility and complexity and the adoption of harvest control rules within a precautionary approach generate confidence in the fishery.

Principle 2:

- An observer programmes are in place for the WBSZ pollock fishery, with the aim of collecting scientific data on bycatch and ecosystem impacts, including on seabird and marine mammal interactions.
- Minor impacts on benthic habitats. Under normal conditions, there is no destructive effect of the midwater trawl on the bottom, as well as on benthic communities of organisms.

Principle 3:

- The management system is generally consistent with local, national or international laws that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.
- The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.
- The rights of fishery-dependent communities are explicitly stated in the Federal Fisheries Act.
- Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood.
- There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.

Client fishery weaknesses

Principle 1:

- The main weaknesses were identified in the potential lack of revision of measures to reduce unwanted catches of the UoA.
- The uncertainty related with the stock configuration of UoA can be considered a potential issue.

Principle 2:

- Lack of comprehensive information on about interaction with seabird.

[1] https://www.msc.org/docs/default-source/default-document-library/for-business/program-documents/chain-of-custody-supporting-documents/msc-covid-19-guidance-for-cabs---fisheries.pdf

- Lack of comprehensive information on likelihood of bottom contact during fishing and following gear loss.
- Lack of up-to-date information on ecosystem modelling.

Principle 3:

- There is no enough evidence to demonstrate that fishers comply with the management system.

It is noted that information for all three Principles will be reviewed and verified throughout the assessment process, including during the site visit.

Summary of further information to be sought / clarified

Principle 1:

- Clarification about the model outputs of Western Bering Sea Walleye Pollock will be requested during the site visit as well as information about the review of alternative measures to reduce unwanted catch of pollock.

Principle 2:

- More information about seabird interactions.
- Up-to-date information on ecosystem modelling.
- More information sought on likelihood of bottom contact during fishing or following gear loss.

Principle 3:

- Further information demonstrating that roles and responsibilities are understood for all areas.
- A clear demonstration of how information is or is not used in decision-making.
- Information on how the consultation process facilitates the effective engagement of all parties.
- Evidence to demonstrate that fishers comply with the management system.

Determination

On completion of the initial review of information and scoring, the assessment team conclude that no PI is likely to score below 60 nor weighted average score for any of the three principles to score below 80. Based on the ACDR provisional scoring this fishery is likely to pass the assessment against the MSC standard criteria, however, this is subject to client, peer and stakeholder review.

4 Report details

4.1 Authorship and peer review details

The assessment of the FSA Western Bering Sea pollock fishery was conducted by the following Team from UCSL United Certification Systems Limited:

Team Leader and Principle 2 Lead: Dr. Petr Vasilets

Dr. Petr Vasilets worked for more than 25 years as a fishery scientist in the Kamchatka branch of VNIRO (Russian Federal Research Institute of Fisheries and Oceanography). He received PhD in biology in 2000 with a thesis on the "The smelts in the coastal waters of Kamchatka". He has over 50 scientific publications on various aspects of fisheries. In 2020-2021, he successfully completed MSC online training, including MSC Risk Based Framework (RBF), for role "Fishery Team Leader". Petr has participated in six assessments conducted by CAB Marine Certification LLC (now — UCSL), as a trainee for team member and team leader and as a team member (expert on Principle 1 and Principle 2). He has passed the Traceability and RBF training modules. Petr has also taken CQI and IRCA Certified EMS Lead Auditor Training course.

UCSL confirms that Dr. Petr Vasilets meets the competency criteria for team members as specified in FCP v.2.2:

- He holds a PhD in marine Biology;

- He has more than 25 years' experience in fisheries;

- He has passed MSC Team Leader training, including relevant updates;

- He has passed the Traceability and RBF training modules;

- He has passed CQI and IRCA approved EMS Lead Auditor Training course.

It is also confirmed that Dr. Petr Vasilets has no conflicts of interest in relation to the fishery under assessment. A full C.V. is available on request.

Principle 1 Lead: Dr. Giuseppe Scarcella

Dr. Giuseppe Scarcella is an experienced fishery scientist and population analyst and modeller, with wide knowledge and experience in the assessment of demersal stocks. He holds a first degree in Marine Biology and Oceanography (110/110) from the Unversità Politecnica delle Marche, and a Ph.D. in marine Ecology and Biology from the same university, based on a thesis "Age and growth of two rockfish in the Adriatic Sea". After his degree he was offered a job as project scientist in several research programs about the structure and composition of fish assemblage in artificial reefs, off-shore platform and other artificial habitats in the Italian Research Council – Institute of Marine Science of Ancona (CNR-ISMAR, now CNR-IRBIM). During the years of employment at CNR-ISMAR he has gained experience in benthic ecology, statistical analyses of fish assemblage evolution in artificial habitats, fisheries ecology and impacts of fishing activities, stock assessment, otolith analysis, population dynamic and fisheries management.

During the same years he attended courses of uni- multivariate statistics and stock assessment. He is also actively participating in the scientific advice process of FAO GFCM in the Mediterranean Sea. At the moment he is member of the Scientific, Technical and Economic Committee for Fisheries for the European Commission (STECF). He is author and co-author of more than 50 scientific paper peer reviewed journals and more than 150 national and international technical reports, most of them focused on the evolution of fish assemblages in artificial habitats and stock assessment of demersal species. For some years now, Dr Scarcella has been working in fisheries certification applying the MSC standard for sustainable fisheries, currently concentrating on Principle 1 of the Standard. Furthermore, Dr Scarcella holds the credential as Fishery team leader (MSC v2.0) and he completed the MSC procedure training 2.1. He also holds the credential as certifier of Responsible Fisheries Management (RFM).

UCSL confirms that Dr. Giuseppe Scarcella meets the competency criteria for team members as specified in FCP v.2.2:

- He holds a PhD in in marine Ecology and Biology and more than 3 years research experience in fisheries;

- He has participated in more than 2 MSC fishery assessments in the last 5 years;

- He has more than 3 years experience of applying relevant stock assessment techniques; more than 3 years experience working with the biology and population dynamics different marine species;

- He has passed the Traceability and RBF training modules;

It is also confirmed that Dr. Giuseppe Scarcella has no conflicts of interest in relation to the fishery under assessment. A full C.V. is available on request.

Principle 3 Lead: Dr. Mohamed Samy-Kamal

Dr. Mohamed Samy-Kamal is a fisheries scientist. He was a scholarship holder of the research institution (IAMZ-CIHEAM) of Zaragoza for his MSc and of the Spanish Agency for International Development and Cooperation (MAEC-AECID) of Madrid for his PhD. His research experience focused on the evaluation of management measures applied to fisheries and the evaluation of fisheries policy and governance. His research areas are fisheries management especially multi-species demersal fisheries of Mediterranean Sea, trawl selectivity, Red Sea fisheries and MPAs. Dr. Mohamed Samy-Kamal has authored a number of scientific articles, regularly participates in international fisheries conferences (e.g. Iberian Symposium of Marine Biology Studies) and used to teach as well as to supervise MSc theses in the international master program of Sustainable fisheries management organized by University of Alicante and IAMZ-CIHEAM. Dr. Mohamed Samy-Kamal has also taken numerous technical courses, including on MSC evaluation tools, MSC RBF and MSC Chain of Custody (CoC). During the last 5 years he has been involved in different MSC full-assessments and pre-assessments mainly in Russia and Estonia and has gained experience as MSC certification P3 assessor.

UCSL United Certification Systems Limited confirms that Dr. Mohamed Samy-Kamal meets the competency criteria for team members as specified in FCP v.2.2:

- He holds an MSc in Economics and Management of Fisheries and a PhD in Marine Science and Applied Biology and more than 3 years' research experience in fisheries;
- He has passed MSC Team Member training, including relevant updates;
- He has participated in more than 2 MSC fishery assessments in the last 5 years;
- He has more than 3 years' experience as a practicing fishery manager and/or fishery/policy analyst/consultant;
- He has passed the Traceability and RBF training modules.

UCSL United Certification Systems Limited confirms that Dr. Mohamed Samy-Kamal meets the Team Member competency requirements (Table PC2, MSC 2020a), and contributes towards the Audit Team meeting the Fishery Team competency requirements (Table PC3, MSC 2020a). It is also confirmed that Dr. Mohamed Samy-Kamal has no conflicts of interest in relation to the fishery under assessment. A full C.V. of Dr. Mohamed Samy-Kamal is available on request.

Use of the Risk-Based Framework (RBF):

Dr. Petr Vasilets and Dr. Mohamed Samy-Kamal have been fully trained in the use of the MSC's Risk Based Framework (RBF).

For this assessment, the RBF is likely to be triggered for Secondary species outcome (PI 2.2.1) and ETP species outcome (PI 2.3.1).

Peer reviewer information to be completed at Public Comment Draft Report stage.

Peer Reviewer 1:

Peer Reviewer 2:

Peer Reviewer 3:

4.2 Version details

Table 1 – Fisheries program documents versions

Document	Version number
MSC Fisheries Certification Process	**Version 2.2**
MSC Fisheries Standard	**Version 2.01***
MSC General Certification Requirements	**Version 2.4.1**
MSC Reporting Template	**Version 1.2**

*Default assessment tree

5 Unit(s) of Assessment and Unit(s) of Certification and results overview

5.1 Unit(s) of Assessment and Unit(s) of Certification

5.1.1 Unit(s) of Assessment

The CAB shall include in the report a statement of the CAB's determination that the fishery is within scope of the MSC Fisheries Standard. For geographical area, the CAB should refer to G7.5.6.

Reference(s): FCP v2.2 Sections 7.4 and 7.5

A single Unit of Assessment (UoA) is described and assessed for Western Bering Sea Walleye pollock midwater trawl fishery, as presented in Table 2, below.

Table 2 – Unit(s) of Assessment (UoA)

UoA 1	Description
Species	Walleye pollock (*Gadus chalcogrammus*, or *Theragra chalcogramma**), also referred to as Alaska pollock
Stock	Russian Federation, Far Eastern Federal District, Chukotka autonomous district, EEZ of Russian Federation in the West-Bering Sea zone (61.01) of the Bering Sea
Fishing gear type(s) and, if relevant, vessel type(s)	Midwater pelagic trawl, 13 large trawl vessels with freezers
Client group	Fishery Shipowners Association which includes the following companies: LLC "Russian Fishery Company", JSC "INTRAROS", LLC "Vostokrybprom", LLC "Sovgavanryba", JSC "DMP-RM", JSC "RMD-YuVA 1", JSC “TURNIF” and LLC "Russian Pollock"
Other eligible fishers	Potential Russian fishing enterprises which are not members of the Fishery Shipowners Association (FSA) and have legal quotas for harvesting Walleye pollock in the West-Bering zone (61.01) of the Bering Sea and catch its on their own or contracted vessels with using midwater pelagic trawl.
Geographical area	Northwest Pacific (within FAO Major Fishing Area - 61): West Bering Sea zone (61.01) (east of 174 E) (Figure 1)

* This species name is commonly used in Russian scientific literature.

UCSL United Certification Systems Limited as the Conformity Assessment Body confirms that West Bering Sea Walleye pollock midwater trawl fishery is in scope for MSC assessment through meeting the following scope requirements in FCP v2.2 Sections 7.4 and 7.5:

- The fishery does not target amphibians, reptiles, birds or mammals;
- The fishery does not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client or client group does not include an entity that has been successfully prosecuted for a forced or child labour violation in the last 2 years;
- The client or client group does not include an entity that has been convicted for a violation in law with respect to shark finning;
- There is a mechanism for resolving disputes, and disputes do not overwhelm the fishery.

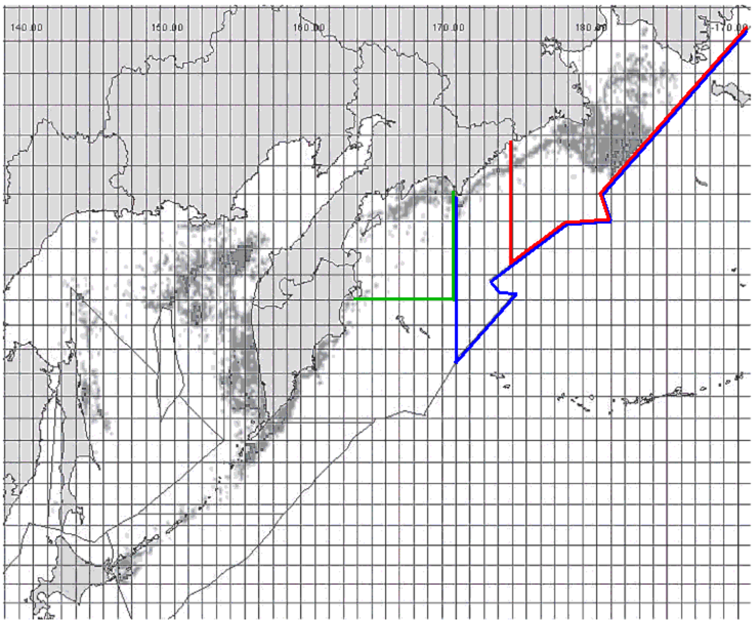


Figure 1 – Map of pollock fishing areas in the waters of the Russian Far East.
Based on data of Antonov *et al*. (2013). Green line – Karaginsky Subzone (61.02.1), Blue line – West Bering Sea Zone (61.01), Red line – UoA, West Bering Sea Zone east of 174 E.

In the article by Shubina *et al*. (2004) the intraspecific structure of major populations of the walleye pollock from the north-western part of the Bering Sea (Navarin, Olyutor and Shirshov shoals) was studied. Preliminary cluster analysis (TREECON) of PCR-RAPD data revealed the existence of cluster with low level of bootstrap support, which generally corresponds to geographic localization of the shoals. The value of the inter-population variance corresponded to published data on marine stocks, which were subject to high levels of gene flow. The Shirshov group was found to be equidistant from the Navarin and Olyutor groups, with the genetic distance between the latter two being significantly less.

5.1.2 Unit(s) of Certification

Table 3 – Unit(s) of Certification (UoC)

UoC 1	Description
Species	To be confirmed at PCR, but is anticipated to be the same as the UoA1
Stock	
Fishing gear type(s) and, if relevant, vessel type(s)	
Client group	
Geographical area	

5.2 Assessment results overview

5.2.1 Determination, formal conclusion and agreement

To be drafted at Public Comment Draft Report stage

The CAB shall include in the report a formal statement as to the certification determination recommendation reached by the assessment team on whether the fishery should be certified.

The CAB shall include in the report a formal statement as to the certification action taken by the CAB's official decision-maker in response to the determination recommendation.

Reference(s): FCP v2.2, 7.20.3.h and Section 7.21

5.2.2 Principle level scores

To be drafted at Client and Peer Review Draft Report stage

Table 4 – Principle level scores

Principle	UoA 1
Principle 1 – Target species	
Principle 2 – Ecosystem impacts	
Principle 3 – Management system	≥80

5.2.3 Summary of conditions

To be drafted at Client and Peer Review Draft Report stage

The CAB shall include in the report a table summarising conditions raised in this assessment. Details of the conditions shall be provided in the appendices. If no conditions are required, the CAB shall include in the report a statement confirming this.

Reference(s): FCP v2.2 Section 7.18

Table 5 – Summary of conditions

Condition number	Condition	Performance Indicator (PI)	Deadline	Exceptional circumstances?	Carried over from previous certificate?	Related to previous condition?
				Yes / No	**Yes / No / NA**	**Yes / No / NA**
				Yes / No	**Yes / No / NA**	**Yes / No / NA**

				Yes / No	**Yes / No / NA**	**Yes / No / NA**

5.2.4 Recommendations

To be drafted at Client and Peer Review Draft Report stage

If the CAB or assessment team wishes to include any recommendations to the client or notes for future assessments, these may be included in this section.

6 Traceability and eligibility

6.1 Eligibility date

The eligibility date for this fishery will be confirmed in the PCDR (MSC FCPv2.2 7.20.3j). Although some information gaps remain to be filled at the site visit, the FSA fishery traceability and segregation systems had already been deemed satisfactory under its previous MSC certification with the PCA. It is therefore likely the eligibility date could be set at the PCDR stage (MSC FCPv2.2 7.8.1.1) but additional information will be provided following the site visit to confirm this.

Should the fishery be certified (confirmed in the Public Certification Report), the Client fishery is informed that if they sell or label non-eligible (nonconforming) product as MSC certified, they must:

a. Notify any affected customers and the CAB of the issue within 4 days of detection.

b. Immediately cease to sell any non-conforming products in stock as MSC certified until their certified status has been verified by the CAB.

c. Cooperate with the CAB to determine the cause of the issue and to implement any corrective actions required.

6.2 Traceability within the fishery

All vessels in the Unit of Assessment (UoA) complete electronic fishing logs indicating catch quantity by species and fishing zone. Note that each vessel has to have a catch permit on board indicating how much product can be caught in which of fishing zones.

The UoA vessels catch and process pollock and other retained species at sea. The pollock are stripped from roe, headed and gutted and block-frozen. Some product is frozen whole, round. The frozen pollock blocks are then packaged, labelled with a production code (indicating inter alia the species name, day of production, catch zone or subzone, catch method and vessel name) and stored in the hold.

The fishery operates within a robust Monitoring Control and Surveillance (MCS) framework. All vessels are equipped with a Vessel Monitoring System (VMS), which sends data to the authorities every 10 minutes. Depending on fishing area, the vessels are tracked through offices of the Centre for Fisheries Monitoring and Communications (CFMC), which fall under the overall control of the Federal Fishery Agency (FFA) but share data with the Federal Security Service of Russian Federation (FSB RF). Quota uptake by fishing area is strictly controlled and while at sea, the vessels report at least daily on catches and production volumes in the electronic logbook. If vessels do not report at the end of each day, the monitoring centre contact them to identify the reason for lack of communication. The current system of manual daily catch reporting is done with the electronic logbook system, also operated through the CFMC.

The vessels stay at sea for long periods and transfer product to reefers or depot ships, but only under the supervision of FSB RF Coastguard officials. Once transhipped, all products caught by Russian vessels within the Russian EEZ has to be landed at a designated Russian port for Customs inspection prior to shore-based onward production or export to another location. This is also where ownership changes.

Although fishing may take place in other regions, catches are traceable through the fishing logbook, VMS and transhipment records. Furthermore, all movements to and from fishing grounds in the WBSZ have to be notified in advance to the Coastguard, and in any case, would remain identifiable through the packaging labels.

Table 6 – Traceability within the fishery

Factor	Description
Will the fishery use gears that are not part of the Unit of Certification (UoC)? If Yes, please describe: - If this may occur on the same trip, on the same	Other gear is generally not carried aboard, but if it is, it has to be sealed and unused. Bottom trawl fishing for pollock is completely banned in the WBSZ. Vessels are required to notify authorities on a daily basis when they switch gear and target other species. These species are separated from any pollock catch and non-pollock gear stowed when not in use. Allowable catch

vessels, or during the same season; - How any risks are mitigated.	permits and allocations are rigorously controlled by the management authority (FFA) and measures and procedures for fishing are provided in the Fishing Rules (2019, as recently amended). Pollock vessels focus on pollock using midwater trawl gear - the proportion of other TAC or PC species has been assessed and is monitored by at-sea inspections, as well by scientific observers. If large bycatches of these species occur, there are measures and protocols in place that require the vessel to move on and avoid further catches of species other than pollock. This risk is minimal.
Will vessels in the UoC also fish outside the UoC geographic area? If Yes, please describe: - If this may occur on the same trip; - How any risks are mitigated.	Although fishing may take place in other regions, catches are traceable through the fishing logbook, VMS and transhipment records. Furthermore, all movements to and from fishing grounds in the WBSZ have to be notified in advance to the Coastguard, and in any case, would remain identifiable through the packaging labels. In the Western Bering Sea (WBS), there are a number of other certified fisheries – in particular for cod and halibut using bottom trawl and longline gears – so these MSC products are also subject to traceability by a different UoC for these UoAs and are separated from any bycatch of the same species caught by the pollock midwater trawl UoC.
Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities. - Transport - Storage - Processing - Landing - Auction If Yes, please describe how any risks are mitigated.	The UoA vessels catch and process pollock and other retained species at sea. The pollock are stripped from roe, headed and gutted and block-frozen. Some product is frozen whole, round. The frozen pollock blocks are then packaged, labelled with a production code (indicating inter alia the species name, day of production, catch zone, catch method and vessel name) and stored in the hold. The vessels stay at sea for long periods and transfer product to reefers or depot ships, but only under the supervision of FSB RF Coastguard officials. Once transhipped, all product caught by Russian vessels within the Russian EEZ has to be landed at a designated Russian port for Customs inspection prior to shore-based onward production or export to another location. Overall, because the management system requires all catch to be traceable to the fishing area (by zone or subzone), the separation and identification systems in place ensure that the risk of substitution of UoC and non-UoC product is minimal.
Does transhipment occur within the fishery? If Yes, please describe: - If transhipment takes place at-sea, in port, or both; - If the transhipment vessel may handle product from outside the UoC; - How any risks are mitigated.	Yes – as explained above, the risk is minimal.
Are there any other risks of mixing or substitution between certified and non-certified fish? If Yes, please describe how any risks are mitigated.	The risk of fish substitution is minimal. The Client has a clearly defined group of companies and vessels permitted to catch certified pollock. There is intense competition between operators targeting pollock and vessels and operations outside of the UoC cannot use the MSC logo or

	the certificate.

6.3 Eligibility to enter further chains of custody

To be drafted at Client and Peer Review Draft Report stage

The CAB shall include in the report a determination of whether the seafood product will be eligible to enter certified chains of custody, and whether the seafood product is eligible to be sold as MSC certified or carry the MSC ecolabel.

The CAB shall include in the report a list of parties, or category of parties, eligible to use the fishery certificate, and sell product as MSC certified.

The CAB shall include in the report the point of intended change of ownership of product, a list of eligible landing points, and the point from which subsequent Chain of Custody certification is required.

If the CAB makes a negative determination under FCP v2.2 Section 7.9, the CAB shall state that fish and fish products from the fishery are not eligible to be sold as MSC certified or carry the MSC ecolabel. If the client group includes other entities such as agents, unloaders, or other parties involved with landing or sale of certified fish, this needs to be clearly stated in the report including the point from which Chain of Custody is required.

Reference(s): FCP v2.2 Section 7.9

6.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to enter further chains of custody

There are no IPI stocks in this fishery.

7 Scoring

7.1 Summary of Performance Indicator level scores

The following draft performance indicator scores are provided in Table 7. These scores may change as the Assessment Team receives and responds to new information provided through the assessment process, and as later versions of the assessment report are produced.

Table 7 – Draft Performance Indicator scores (at ACDR). *Scoring not complete.

Principle	Component	Performance Indicator (PI)		Score
1	Outcome	1.1.1	Stock status	≥80
		1.1.2	Stock rebuilding	
	Management	1.2.1	Harvest strategy	60-79
		1.2.2	Harvest control rules & tools	≥80
		1.2.3	Information & monitoring	≥80
		1.2.4	Assessment of stock status	≥80
2	Primary species	2.1.1	Outcome	≥80
		2.1.2	Management	≥80
		2.1.3	Information	≥80
	Secondary species	2.2.1	Outcome	RBF*
		2.2.2	Management	60-79
		2.2.3	Information	RBF*
	ETP species	2.3.1	Outcome	RBF*
		2.3.2	Management	60-79

Principle	Component	Performance Indicator (PI)		Score
		2.3.3	Information	RBF*
	Habitats	2.4.1	Outcome	≥80
		2.4.2	Management	≥80
		2.4.3	Information	≥80
	Ecosystem	2.5.1	Outcome	≥80
		2.5.2	Management	≥80
		2.5.3	Information	≥80
3	Governance and policy	3.1.1	Legal & customary framework	≥80
		3.1.2	Consultation, roles & responsibilities	≥80
		3.1.3	Long term objectives	≥80
	Fishery specific management system	3.2.1	Fishery specific objectives	≥80
		3.2.2	Decision making processes	≥80
		3.2.3	Compliance & enforcement	≥80
		3.2.4	Monitoring & management performance evaluation	≥80

7.2 Principle 1

7.2.1 Principle 1 background

Most of the data and information used in the background Principle 1 section and in the Principle 1 performance indicator scores was available from the translation of VNIRO report on stock assessment for walleye pollock in the West Bering Sea (cited as VNIRO, 2021). In addition, the Public Comment Draft Report (LR, 2021) was utilized for the background and scoring sections.

7.2.1.1 Overview of the Walleye pollock fishery

The fishery under assessment is the mid-water trawl fishery for Alaska or Walleye pollock (*Gadus chalcogrammus*) (henceforth referred to as walleye pollock), operating in the West Bering Sea zone (61.01); East Kamchatka zone (61.02) including – Karaginsky (61.02.1) and Petropavlovsk-Commander (61.02.2) subzones; in EEZ of Russian Federation. The fishery follows the movement of pollock spawning aggregations north and into the different subzones.

The fishery is prosecuted by member vessels of the Fishery Shipowners Association (FSA). The FSA was established in 2016 as a professional association, acting as industry liaison with government and scientific institutes, promoting stable conditions for industry investment projects, reducing the impact of administrative barriers on deep-sea fishing and fish processing, and contributing to the promotion of FSA member products onto Russian and foreign markets, including pollock fillets and surimi. On behalf of its members FSA carries out research and work to certify fishing areas and products in compliance with international and Russian ecological standards for its members' deep-sea fishing operations. The association has a membership of 15 commercial deep-sea fishing companies and more than 2,500 personnel are employed at the fishing and processing enterprises, which are part of the FSA. FSA members account for about 15% of the pollock catching quota in Russia and about 9% of its global catch.

The vessels stay at sea for long periods and transfer product to reefers or depot ships. An overview of the on-board processing and traceability in this fishery is given in Section 6. The vessels will have significantly higher catching and processing capacity than the current fleet, and completely reuse any of the processing by-products (thereby removing the need of discarding processing waste at sea).

7.2.1.2 Fishing gear and methods

Walleye pollock is only permitted to be harvested with mid-water trawls, with gear specifications varying between vessels, according to vessel size. An example is given in Figure 2. The trawls are 100-110 mm mesh and typically have a vertical opening of 60-85m and a horizontal opening of 130-165m. Towing speed varies as well, averaging at 4.5 knots. The gear is deployed at depths of 200-300 meters in the pelagic domain and usually does not interact with the seabed (the extent to which this may occur on rare occasions should be discussed further at the site visit). It is not anticipated that these operational characteristics will change with the arrival of the so-called super trawlers.

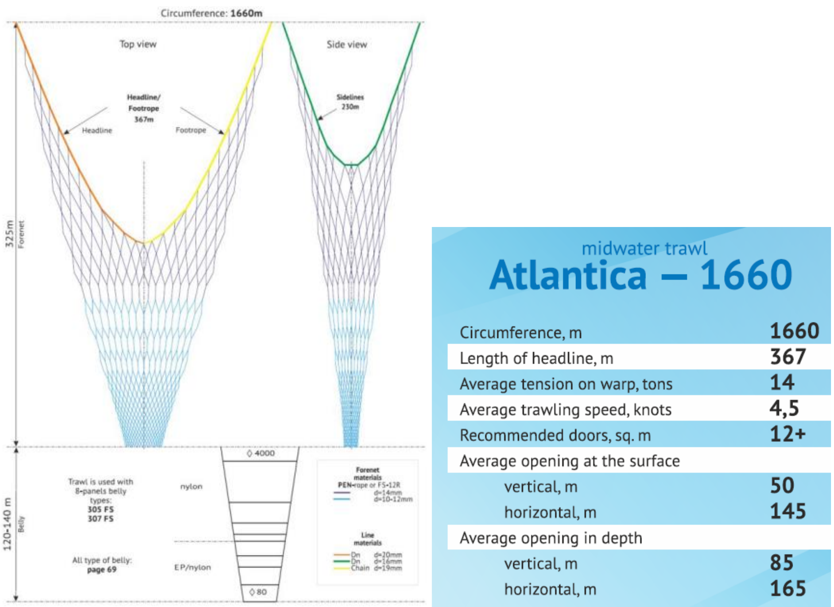


Figure 2 – Schematic and gear specifications for one of the larger mid-water trawl types used in the fishery. From 2020 Fishering Service LTD gear catalogue. www.fishering.com. Source: LR, 2021

7.2.1.3 Fishery Description and Location

According to the data available from TINRO the fishery is distributed in the northwestern part of the Bering Sea as in Figure 3. A total of 348 trawl sets observations were undertaken by TINRO and KamchatNIRO observers. Observers completed >70 000 measurements of pollock with biological analysis and >30 000 specimens of other bycatch species. Further, >18 000 samples were taken for full biological analysis. In all, 493 observation stations were occupied to observe seabird and marine mammal interactions with the fishery and gear (using prescribed monitoring protocols for those groups). During this period, observers recorded 6 dead birds, which included northern fulmar and thin-billed murre, fine-billed guillemot (1), black-backed albatross (1) and Bering Sea cormorant (1).

The fishery in the Navarin region has clear seasonal characteristics determined by fish distribution and weather conditions. Most of the catch is taken in summer and fall (autumn) when the fishery operates on feeding aggregations of pollock, with catches peaking usually in July. This seasonality is also reflected by in the data for the large tonnage vessels that shows effort peaking in the West Bering Sea in summer.

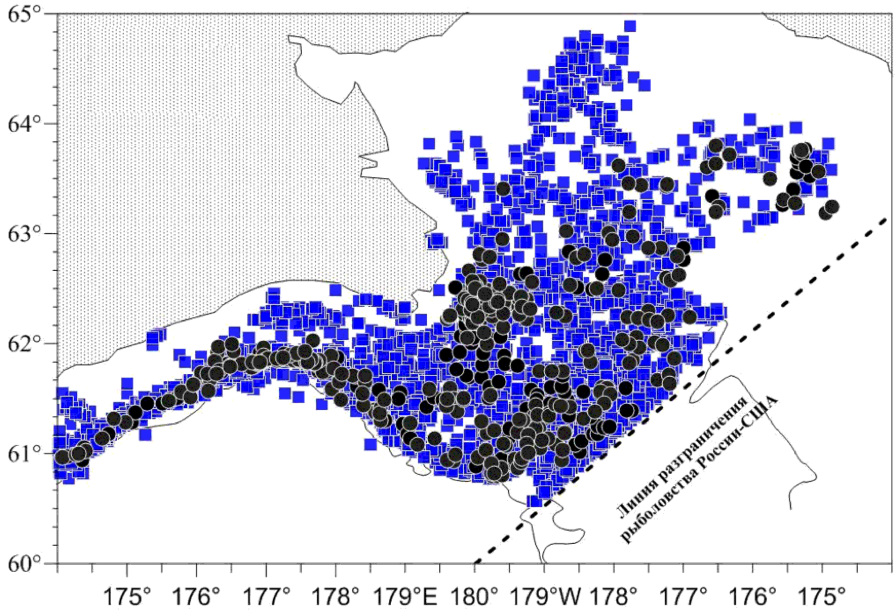


Figure 3 – Spatial distribution of pollock fishing operations (blue blocks) and trawls (circled) processed by scientific observers in the northwestern part of the Bering Sea June 21 - October 23, 2019[2]. Source: LR, 2021

7.2.1.4 Distribution and stock structure

Walleye pollock (*Gadus chalcogrammus*, formerly known as *Theragra chalcogramma*), also referred to as Alaska or Russian pollock, is a gadoid that is distributed in the North Pacific from the North West Bering and Chukchi seas, down the coast of the Kamchatka Peninsula into the Sea of Okhotsk (SOO) and the Sea of Japan. On the eastern side of the Pacific, pollock range from Californian waters, north through the Gulf of Alaska (GOA) out to the Aleutian Islands (Figure 4). There are two major viewpoints on the population status of pollock harvested in the West Bering Sea (Navarinsky Area). According to one opinion, Navarinsky pollock is part of the East Bering Sea population. This perspective is based on multiyear large-scale ichthyoplankton, pelagic trawl and bottom trawl surveys over pollock's distribution area, both in the eastern and western parts of the Bering Sea. Based on this information, two populations geographically isolated during the breeding period were identified, with spawning centres in the south-eastern part of the Bering Sea (area of Pribilof, Unimak, Bogoslov islands) and its western side, Olyutorsky Bay and Karaginsky Bay (Fadeyev, 1991; Balykin, 1990; Stepanenko, 1989, 1997, 2001, 2003, 2006; Stepanenko and Gritsay, 2014; Gritsay and Stepanenko 2003). High abundance of pollock in the Navarinsky area is explained by massive migrations of East Bering Sea population North West into the Navarinsky area during the summer-autumn (fall) period of active feeding (Stepanenko, 2001, 2003). It is argued that only a small portion of the population stays in this area in winter, mostly

[2]TINRO, 2019. Report on research and scientific works. Pollock fishery monitoring in the Bering Sea by scientific observers in summer-autumn period of 2019.

immature individuals, over the southern part of the shelf adjoining the delimiting line, and part of the population of oldest individuals (in the inshore zone of Anadyr Bay).

The second perspective is that there is an independent self-reproducing pollock stock in the Navarinsky area (Glubokov and Kotenev,1999, 2006; Glubokov and Norville, 2002; Glubokov,2003, 2005; Datskiy, 2000a.b; Vasilyev and Glubokov, 2005). Based on the analysis of meristic features of Northwest Bering Sea pollock, Datskiy (2000a,b) suggested that three pollock stocks may feed in this area: East Bering Sea, West Bering Sea and Navarinsky populations. Following allele frequency analysis of DNA markers, Glubokov and Shubina defined four populations for the Bering Sea: West Bering, Navarinsky, East Bering and East Kamchatka (Glubokov, 2003, 2005a,b; Shubina *et al.*, 2003, 2004, 2009). However, opponents argue that the definition of an independent Navarinsky stock was based on spatially and temporally limited data on biology, morpho-physiological adaptations and phenetic markers. It is clear that the population structure of pollock in the Bering Sea is complex, and identification of separate populations is difficult. It does not seem that there is a consensus on Navarin pollock population structure at the moment. It is important to note, however, that currently stock assessment teams in US and Russia perform stock assessments assuming the independence of Navarin pollock. US scientists do not consider pollock catches in the Navarinsky area as removals from the East Bering Sea stock in their assessment (Ianelli *et al.*, 2019), whereas TINRO scientists evaluate the Navarinsky stock assuming that the catch is taken from a separate stock (VNIRO, 2021). Given the lack of consensus among biologists, the fact that the stock is treated as independent by assessment scientists and reasonably assuming that some stock independence can exist within the framework of a large EBS population, for the purpose of this assessment we consider WBS / Navarinsky pollock as a separate stock and score it according to this assumption. Should the stock definition change or be more accurately defined in future in favour of it being a part of the greater EBS stock, harmonisation of the EBS and WBS fisheries will be required according to MSC guidance, and a number of scoring issues (SIs) in Principle 1 and 3 will have to be re-evaluated (LR, 2021).

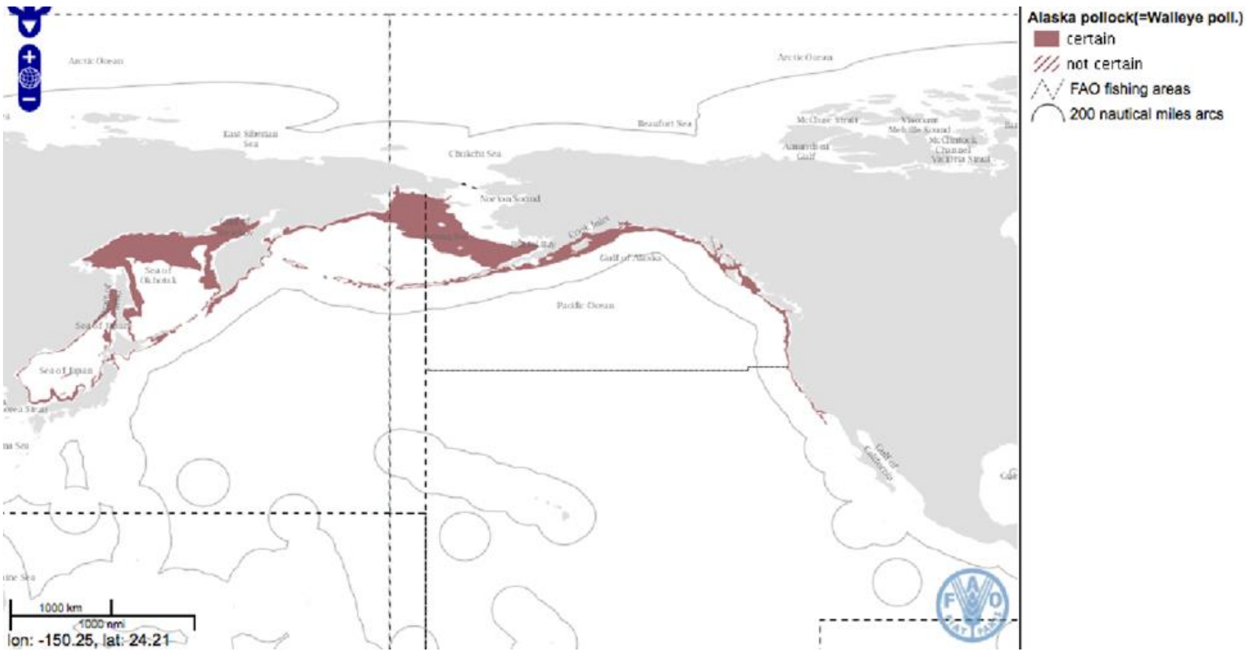


Figure 4 – Distribution of Walleye pollock in the Sea of Japan, Sea of Okhotsk, Bering Sea and Gulf of Alaska (Source: FAO 2020; http://www.fao.org/figis/geoserver/factsheets/species.html).

In total, the fisheries for pollock across the entire area of distribution constitute the largest whitefish fisheries by volume in the world. Within its range, pollock form various intraspecific populations. One of the most important factors influencing relative isolation between populations is their spatial separation during spawning. Consequently, most pollock stocks are identified according to the location of their spawning areas. In the waters of the North Pacific Ocean, pollock form several populations that are located along the North American and Asian coasts. In the Bering Sea, experts recognize the existence of the East Bering Sea, Aleutian Islands and Gulf of Alaska stocks along the North American continent and North Bering Sea (Cape Navarin) and West Bering Sea populations on the Asian side (Shuntov *et al.*, 1993; Bailey, 1998; Glubokov and Kotenev, 2006). The East Kamchatka population adjoins the West Bering Sea (Buslov, 2005). The second, most productive area after the Bering Sea (EBS + WBS) is the Sea of Okhotsk (SOO). In the north of the SOO, there is a Northern Okhotsk population of pollock, which is considered to be a superpopulation (Zverkova, 2008) and, off the coast of Kamchatka, an East Okhotsk population (Buslov, 2005). In the southern part of the Sea of Okhotsk, experts distinguish the South Kuril population, the reproductive centre of which is located northwest of the Siretoko Peninsula and in the Kunashir Strait (Zverkova, 2008).

The pollock is a schooling pelagic species that forms large shoals in midwater. The fish are typically found in depths of 100–300 m both offshore and nearshore. However, their habitat can extend down to 1000 m (Allen and Smith, 1988).

Pollock is polyphagous and consumes both planktonic and benthic organisms and fish. Juvenile pollock feeds on plankton. However, as the fish grow older, the proportion of benthos and fish consumed increases, including cannibalism on their own juveniles (Adams *et al*., 2007; Heintz and Vollenweider, 2011; Urban, 2012; Siddon *et al*., 2013a). Cannibalism increases in importance with larger adult pollock biomass (Boldt *et al*., 2012). Spatial overlap of various age groups of pollock has been documented to affect both growth and survivorship (Coyle *et al*., 2011; Smart *et al*., 2012; Hulson *et al*., 2013; Holsman and Aydin, 2015). Juvenile pollock feeds on plankton near the surface at night, adults selectively on euphausiids over all other categories of available zooplankton in both spring and summer, although decapods are the dominant prey late in the year (Adams *et al*., 2006). Pollock itself is an important prey species for other species of commercial groundfish, as well as for a range of marine birds and mammals such as the northern fur seal (*Callorhinus ursinus*) and Steller sea lion (*Eumetopias jubatus*), the latter a confirmed ETP species.

The biological parameters of pollock populations differ significantly. Fastest growth is in the first year of life, but the rate of linear growth gradually decreases. The weight of a one-year-old pollock does not exceed 30 g, but by an age of 8 years, the weight of a Bering Sea pollock exceeds 1 kg. The maximum reported length is 93 cm and a weight of 5 kg (Fadeyev, 2005). Although the maximum age of pollock was reported as 28 years (Buslov, 2005) and even 31 (by NOAA), more typically the oldest ages observed in the fishery are 12–15 years.

Maturation of pollock begins at the age of 2+ or 3 years (26–28 cm) and can last up to 7 or 8 years (i.e. to 50–53 cm). Maturation is size-dependent, so the effects of environmental conditions, particularly water temperature and prey supply, can affect the age of maturation (Adams *et al*., 2007; Stahl and Kruse, 2008; Ianelli *et al*., 2014). Typically, more than half of all pollock are capable of reproducing at 4–6 years of age and a length of 35–40 cm. Males and females are externally indistinguishable, but sexual dimorphism in growth is pronounced: females reach maturity bigger and older than males. The fecundity of female pollock varies from 30 thousand to 2.5 million eggs, but average fecundity depends on the age composition in a particular year and usually ranges from 150 to 220 thousand eggs. Pollock is batch-spawners, with the number of batches generally no fewer than four. Spawning takes place at water temperatures from –1.5 to +6° C, sometimes under ice (Fadeyev, 2005), at depths from 20 to >1000 m. Eggs develop in the water column. Spawning months are mainly March–June, but vary depending on age and location, commencing from January through to as late as September in the most northern ranges (Buslov, 2005).

Pollock exhibits relatively complex migratory spawning patterns depending on age and spatial distribution. Active migration begins at age 1+ and, by age 2+, the distance of seasonal migration is comparable to the migrations of older fish. During feeding migrations, which take place from June to October, pollock also forms large aggregations on the shelf up to a depth of 20 m. No apparent stock–recruitment relationship has been identified at current levels of the stock, so the strength of year-classes does not depend on total population or female spawning biomass (Stepanenko and Gritsay, 2006). There is, however, significant annual variability in the abundance of pollock juveniles and hence in annual recruitment, depending on the location of spawning areas and the directions of the currents that distribute eggs, larvae and juveniles around the distribution area (Bailey *et al*., 1997; Stabeno *et al*., 1999). Survival variability of pollock at early stages of development on their shelf spawning grounds is reported to depend on factors including physical conditions over the shelf (gradients of temperature and salinity, ice distribution and coverage, storm activity, current direction). Environmental conditions on the deep spawning grounds are more stable and hence there is less annual variability in recruitment. Current research shows that annual changes in the physical oceanography at a mesoscale, productivity and species composition of the zooplankton community are associated with pollock seasonal migrations and distribution, spawning, survival of recruits at early stages of development and the strength of year classes and total biomass. The pollock is not considered to be a low trophic level (LTL) species.

7.2.1.5 Stock assessment process and HCR

Following the medium-term forecasting methodology within the precautionary approach to the management of commercial stocks of fish (Babayan, 2000), the harvest control rule (HCR) is determined to keep the stock at MSY level.

According to model Sinthez estimates (see 7.2.1.5), at the beginning of 2020, the spawning stock of pollock was 1,543 kt, which was 1.5 times higher than the target level Btr = 1,024 kt, so the goal is to operate the restored stock at the target level Ftr. So far, the piecewise-linear HCR has been chosen (Babayan *et al.*, 2018), since the stock is above the target level for biomass and the Ftarget is chosen to set the TAC, following the formulas 1–3.

$F_{rec_i} = F_0 = 0$, if Bi≤Blim, (1)

$F_{reci} = F_{tr}(Bi - Blim)/(Bi - Blim)$, if Blim<Bi<Btr (2)

$F_{rec_i} = Ftr = \text{const}$, if Bi≥Btr. (3)

Thus, the linear HCR will pass through the following reference points: F0 = 0 year-1, Ftr = 0.34 year -1, Blim = 663.8 kt, Btr = 1024 kt. The risk of overfishing will also be estimated relative to Flim = 0.514 year-1 in Sinthez.

Recalculations of the amount of stock forward was carried out with the same values of M, the proportion of mature fish by age, as when restoring the stock dynamics in retrospect. In the forecast period the values of the relative selectivity of the fishery and the mass of fish by age groups were taken equal to the average for the last 10 years. The catch for 2021 corresponds to the TAC, which is calculated by the model and equal to 400.001 kt, and in the pre-forecast year (2020) 384.9 kt.

At a given Ftr, is projected the median of SSB to slowly reach the level of maximum sustainable yield BMSY by 2028 and also further stabilization of the stock (Figure 5) under the condition of stationarity of the replenishment. However, about 50% of the likely SSB distribution may be below the target reference point, which is undesirable. Therefore, it is necessary to set a lower Ftr as a result of the risk analysis.

Using the identical procedure that was used for setup the models, the stock biomass was assessed 2 years in advance. Recruitment is taken as an average value of about 6.782297 billion fish from 2010 to 2019.

The SSB estimates correspond to the restored stock status (Figure 6). Therefore, according to the selected HCR F(rec_i)=Ftr=0.34. The TAC for the i-th forecast year was calculated using the classical formula 4 [Babayan *et al.*, 2018, p. 60]:

$$TAC_i = F_{rec_i} \sum_{j=t_c}^{T} s_j w_j N_{i,j} \frac{1-exp[-(M_j+s_jF_{rec_i})]}{M_j+s_jF_{rec_i}} \quad (4)$$

here F(rec_i) is the recommended value of fishing intensity in the i-th forecast year, calculated by the formula, wj is the mass of specimens, Ni,j is the number of the j-th age group, sj are age coefficients of selectivity, Mj is M by age j, tc is the age of the youngest in catches of the year class (1 year), and T is the terminal age (over 10 years).

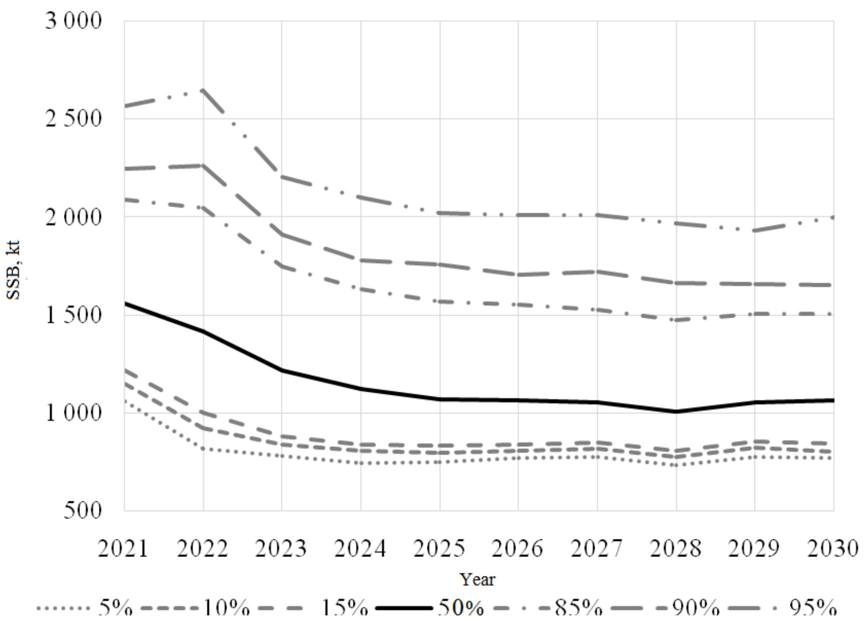


Figure 5 – SSB forecast at constant Ftr = 0.34 with an average replenishment of 6.782 billion specimens. Source: VNIRO, 2021

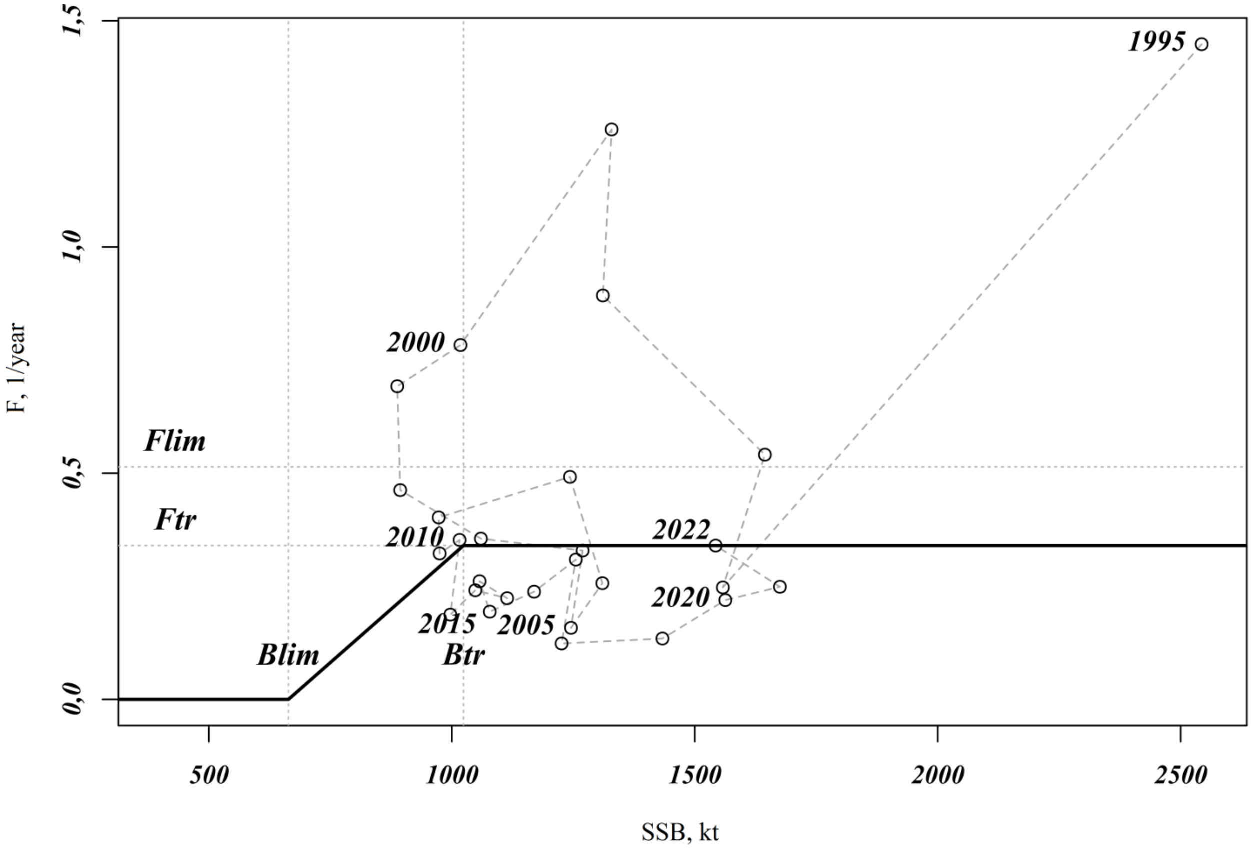


Figure 6 – HCR and its implementation in Sinthez. The captions of some dots show the year. Source: VNIRO, 2021

In model Sinthez calculation according to the formula (4) shows about 462 kt as the TAC number for 2022 (Table 8). Following the precautionary approach and the results of the risk analysis, TINRO recommends reducing the target reference point to 0.3 as safer (risk of SSB overfishing is 25%, see Figure 19).

Thus, in 2022 the TAC of pollock will be 414.715 kt for the West Bering Sea and Chukotka zones (Table 9). In addition, in 2022 the TAC of pollock for the West Bering Sea zone will be 409.7 kt and it will be 5.0 kt for the Chukotka zone, based on the fishery data and the average long-term data on the scale of pollock distribution from the West Bering Sea zone to the Chukotka zone (1.21% by biomass).

Table 8 – Calculation of the TAC based on abundance assessments with Ftr = 0.34. Source: VNIRO, 2021

Fish age, years	Fish abundance (N) at the beginning of 2020, million specimens	Fish abundance (N) at the beginning of 2021, million specimens	Fish abundance (N) at the beginning of 2022, million specimens	s_j	Average fish weight (w_j) over the last 10 years, kg	M_j	SSB at the beginning of 2021, kt	SSB at the beginning of 2022, kt	TAC for 2021, kt if F_{rec} = 0.24891	TAC for 2022, kt if F_{rec} = **0.34**
1	6750.050636	6782.297000	6782.297000	0.0070501466	0.0158	0.90	0.000	0.000	0.124	0.169
2	1004.607509	2739.72615	2752.64146	0.0720655152	0.0841	0.45	1.844	1.852	3.302	4.517
3	4038.559603	629.58224	1715.86983	0.4593054058	0.2201	0.30	40.182	109.512	12.969	47.353
4	789.066769	2679.56588	416.01893	0.9028330499	0.3953	0.30	679.993	105.573	185.203	37.840
5	744.786332	470.67650	1585.54885	0.9902564003	0.5136	0.30	203.560	685.726	45.909	202.825
6	529.508607	435.03907	272.51299	0.9991012437	0.6209	0.30	243.652	152.626	51.702	42.460
7	374.081652	308.63678	251.32566	0.9999177649	0.7302	0.30	213.648	173.975	43.166	46.083
8	155.155952	217.99973	178.26578	0.9999924812	0.8353	0.30	175.544	143.548	34.881	37.395
9	55.586358	90.41702	125.91231	0.9999993126	0.9436	0.30	82.761	115.251	16.343	29.838
10	48.396437	32.39286	52.22299	0.9999999372	1.0514	0.30	34.058	54.907	6.524	13.789
			Total:				**8933**	**32430**	**32430**	**7782**

Table 9 – Calculation of the TAC based on abundance assessments with Ftr = 0.30. Source: VNIRO, 2021.

Fish age, years	Fish abundance (N) at the beginning of 2020, million specimens	Fish abundance (N) at the beginning of 2021, million specimens	Fish abundance (N) at the beginning of 2022, million specimens	s_j	Average fish weight (wj) over the last 10 years, kg	M_j	SSB at the beginning of 2021, kt	SSB at the beginning of 2022, kt	TAC for 2021, kt if Frec = 0.24891	TAC for 2022, kt if F_{rec} = **0.30**
1	6750.050636	6782.297000	6782.297000	0.0070501466	0.0158	0.90	0.000	0.000	0.124	0.149
2	1004.607509	2739.72615	2752.64146	0.0720655152	0.0841	0.45	1.844	1.852	3.302	3.991
3	4038.559603	629.58224	1715.86983	0.4593054058	0.2201	0.30	40.182	109.512	12.969	42.139
4	789.066769	2679.56588	416.01893	0.9028330499	0.3953	0.30	679.993	105.573	185.203	33.937
5	744.786332	470.67650	1585.54885	0.9902564003	0.5136	0.30	203.560	685.726	45.909	182.174
6	529.508607	435.03907	272.51299	0.9991012437	0.6209	0.30	243.652	152.626	51.702	38.143
7	374.081652	308.63678	251.32566	0.9999177649	0.7302	0.30	213.648	173.975	43.166	41.398
8	155.155952	217.99973	178.26578	0.9999924812	0.8353	0.30	175.544	143.548	34.881	33.593
9	55.586358	90.41702	125.91231	0.9999993126	0.9436	0.30	82.761	115.251	16.343	26.804
10	48.396437	32.39286	52.22299	0.9999999372	1.0514	0.30	34.058	54.907	6.524	12.387
Total:							**8933**	**32430**	**32430**	**7177**

An important stage in testing the management strategy is to assess the probability that the spawning stock biomass will not fall below the limit reference point for biomass Blim at a given constant pace of exploitation in the long term (10 years ahead). In statistical Monte Carlo simulation this probability was estimated from 1000 iterations in the TAC application specially designed for the output Sinthez after resampling. The estimation of the uncertainty of the parameters was carried out with 1000-fold resampling.

The selected Ftr = 0.34 has less than 38% risk of SSB overfishing for 10 years, which is high, but Ftr = 0.30 has about 25% risk, which is an already acceptable (Figure 7). Therefore, it is recommended to lower the target reference point to 0.3.

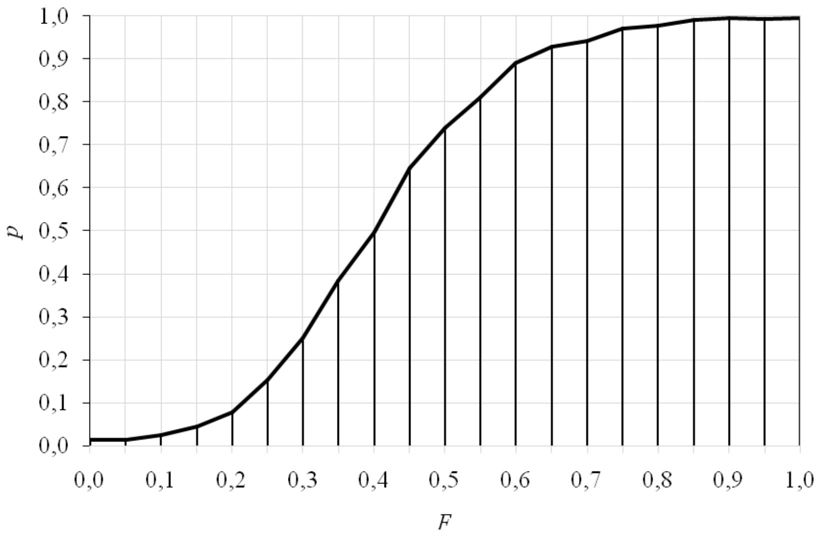


Figure 7 – Probability (p) of the spawning biomass falling below the limit reference point Blim at different F– p(SSB<Blim|C(2020)=400 kt, F(2020+i)=F, i=2,..,10). Source: VNIRO, 2021.

If in 2022 the TAC will be below 450 kt the probability of exceeding the limit reference point for fishing mortality (Flim = 0.51) will be less than 21% in 2022 with the full TAC use of 400.001 kt in 2021, (Figure 8), under similar conditions the probability of reducing spawning biomass below the limit will be less than 12% in 2023 (Figure 8), which we consider an acceptable risk level.

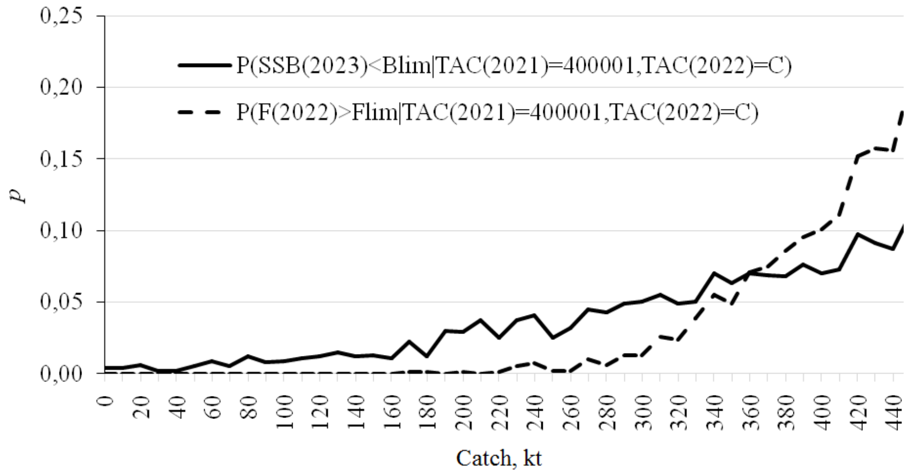


Figure 8 – Probability (p) of going beyond the Flim and Blim with the full TAC use in 2021 (400 kt) depending on the catch in 2022 (C). Source: VNIRO, 2021

7.2.1.6 Stock status

To assess the current state of the stocks and determine the TAC of pollock in the north-western part of the Bering Sea for 2022, the following available information support was used:

1. Estimates of the pollock resources state obtained from the results of complex research surveys carried out by TINRO in recent years in the northwestern part of the Bering Sea: in 2015 on the research vessels TINRO and Professor Levanidov, in 2017 on the research vessel Bukhoro, in 2018−2019 on the research vessel Professor Levanidov, in 2020 on the R/V TINRO, Professor Kaganovsky, Dmitry Peskov and by the Alaska Center for Fisheries Research of the United States (AFSC, NOAA) – in the eastern part of the sea in 2018 on the R/V Oscar Dyson, in 2017-2019 on the research vessel Alaska Knight and Westerlaaen. Research surveys of the Pacific branch of the FGBNU VNIRO in the northwestern part of the Bering Sea and the Alaska Center for Fisheries Research in the eastern part of the sea cover almost all areas of pollock habitat in the Bering Sea, including the grounds of juveniles concentration and feeding of mature specimens. In the course of these studies, data are collected on the resources state, on the value of the total and commercial stocks, reproduction, the number of replenishment, it is assessed the number of individual generations and the dynamics of the total pollock number. In addition, information is collected on the ecological situation in the pollock habitat area, the state and trends in the development of pelagic and bottom communities, the state of plankton communities, and the pollock food base.

2. Data collected by scientific observers on fishing vessels engaged in specialized pollock fishing in the West Bering Sea and Chukotka zones in the summer−autumn period of 1995−2020.

3. Information on the catch and distribution of the fleet during the fishing season of 2020 according to the Vessel Daily Reports (VDRs) from the Industrial (Commercial) Monitoring System of the Russian Federal Fisheries Agency (IMS). To access the IMS and primary data processing, the program «FMS analyst» (Vasilets, 2015) was used.

4. Data on catches per unit of fishing effort (CPUE) of large-tonnage fleet (tons per one day of fishing) by years of fishery for 1980−2020.

5. Archival materials for the period 1970−2019, information from domestic and foreign literature.

The minimum requirements for the composition of information correspond to the I level of information support (Appendix 1 to the Order of the Russian Federal Fisheries Agency No.104 of 06.02.2015).

The first level of information support allows the use of models of biological processes structured by age, and the Order of the Russian Federal Fisheries Agency No. 104 of February 6, 2016 obliges subordinate institutions to do this. Among the recommended ones are statistical cohort models, which unlike Virtual Population Analysis (VPA) models, are less sensitive to errors in determining the age of older fish, since the setting is carried out by imitating growth and decline of fish starting from the youngest ones, which are more common, including in scientific surveys, and are better separated by age than older fish. Moreover the maximum observed age of pollock in catches is 10 years, and it lives up to 28 years (Munk, 2001). Thus, the use of VPA-type methods, in which calculations for generations are carried out from the older age group to the younger one (Babayan *et al.*, 2018) cannot be considered justified.

The assessment of the pollock stock has already been carried out using statistical cohort model “Synthesis” (Ilyin, 2009), or “Sinthez” (Babayan *et al*., 2018). The model Sinthez was used to estimate the pollock TAC in the Far Eastern Seas (Ilyin *et al*., 2014), including the West Bering Sea Zone. Sinthez is also recommended for this stock, amongst other cohort methods (Babayan *et al*., 2018, see Appendix 1).

The age coefficients of selective fishing mortality in the Sinthez model were estimated by the logistic function (Formula 5) for two time periods: before 2001 and after. Optimization of maximum likelihood in the program for configuring the cohort model Sinthez included the selectivity parameters:

$$S = \frac{1}{1+e^{-\alpha(t-\beta)}} \quad (5)$$

S=11+e-αt-β

here α, β are the desired coefficients of the model, t is the age.

The division of selectivity into 2 periods is objectively necessary due to the introduction of requirements for the trawl fishery on selective insert in 2001. Natural mortality instantaneous rates (M) by age groups of pollock are set as in the Alaska Fisheries Science Center (AFSC): for 1-year aged pollock is 0.9, for 2-years aged pollock is 0.45, and for all others is 0.3 (Ianelli *et al*., 2019). The proportion of adult fish and average weights by age and year are also taken from the AFSC report. The pollock abundance by age from 1 to 10 years, as well as biomass assessment from surveys was provided by the TINRO Pollock and Herring Laboratory (see the subsection "Analysis of accessible information support").

In the Bering Sea, pollock traditionally forms the basis of one of the most large-scale Russian fisheries in the Far Eastern seas. The specialized pollock fishery in the Bering Sea began in the late 1950s. Until the end of the 1970s, fishing was primarily conducted in the eastern part of the sea and in some periods in the northern (Navarin area). In the period 1970−1977, the maximum of capture level in the Bering Sea was recorded in 1972, when the total catch exceeded 2.0 million tons; while 69.2% was caught in the south-eastern part of the sea and 23.7% in the north of the sea.

In Russian waters, the emergence of domestic fishery dates back to the early 1970s. For a decade, pollock was caught mainly in the western part of the sea – in the Karaginsky and Olyutorsky Gulfs. With an increase in the intensity of fishing, the fishing area also expanded at the same time: after the introduction of 200-mile economic zones in 1977 fishing was conducted practically on the entire Asian shelf of the Bering Sea from the Gulf of Ozernaya to the dividing line with the US zone.

The second peak of catches in the Bering Sea was noted in 1988. Then the total catch of pollock was according to various sources 4.07−4.20 million tons, including 33.1% and 32.6% (including in the Navarin area – 20.9%) of the catch in the waters of the United States and Russia (including the areas of Aleutian and Komandorskiye Basins) and 34.3% in the central part of the sea. The large-scale distribution of pollock in the areas of deep-water basins was due to an increase in its biomass due to the most numerous generation in 1978, for the entire observation period, and a number of numerous generations of adjoining years. After the release of these generations from the commercial part of the population, the pollock distribution in the basins decreased, its annual catches in the central part of the sea (enclave) began to decline sharply: over five years (1989−1993), they decreased from 1,448 to 2 kt. In 1994, after the signing of the six-party international Convention on the Conservation of pollock resources in the Bering Sea, there was a moratorium on its fishing in the central part of the sea, which is still in effect. In the past twenty years, the total catch of pollock in the entire Bering Sea has been at the level of 1.2−2.0 million tons.

In the western part of the Bering Sea (west of 174° E) high and relatively stable catches of pollock were observed from 1976 to 1994 inclusive. Here, on average, 273 kt were caught per year (the maximum was in 1976 – 549 kt). After 1994, catching and catch per unit of effort declined due to a decrease in stocks. In 1995− 2001, the average annual catch decreased by 3.2 times (the maximum was recorded in 1999 – 149 kt). In the second half of the 1990s a decrease in catches was also observed in the eastern part of the Bering Sea (US zone). However already in 2000–2004 the pollock catch in the US zone increased again (Figure 9) with further stabilization in 2005–2006. That was due to the entry of a number of numerous and relatively numerous generations 1995−1997, 1999−2001 into the fishery. In 2008−2010 the catch in the eastern part of the sea decreased sharply (due to a reduction in the resources of the exploited part of the population). And in 2011 the value of the allowable catch was again increased, which was justified by the fact that a relatively large generation of 2006 entered the commercial part of the population. In the last eight years (2013−2020), the American catch was 1265−1425 kt. That was provided by the presence of numerous generations of 2008 and 2012 and a number of average in number generations, of adjacent years.

In the Russian part of the Bering Sea, the annual catch of pollock was historically determined not only by its number but also by socio-economic factors. The intensity of fishing in certain periods largely depended on organizational and technical reasons. In the first half of the 1990s, the decline in pollock catch in the Bering Sea was caused by the crisis in the fishing industry. During this period, the Russian pollock fishery was conducted primarily in the Sea of Okhotsk.

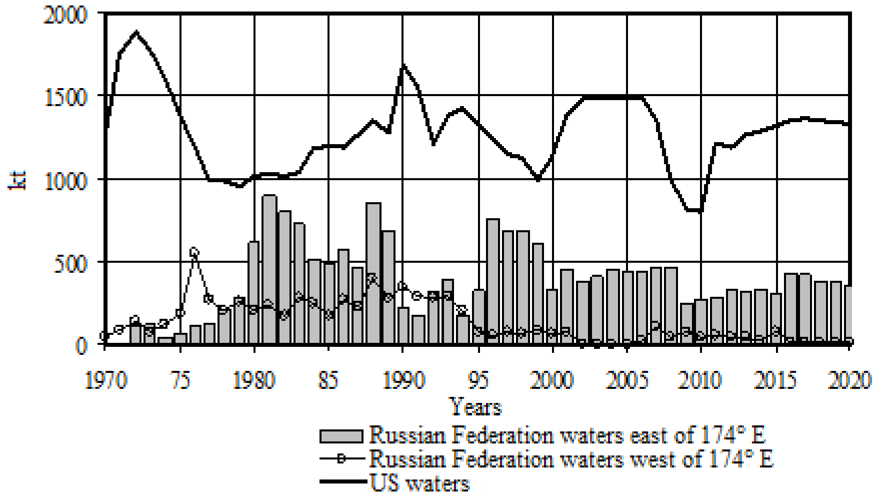


Figure 9 – The dynamics of the pollock catch in the Bering Sea in 1970–2020. Source: VNIRO, 2021.

The northwestern part of the Bering Sea (east of 174° E, up to the Russian – US maritime line of delimitation, or Navarin area) is currently, as before, the second most important pollock fishing area in the Russian EEZ: in 1985−1992 from 178 to 852 kt were caught here (on average, 514 kt or 16.8% of the total pollock catch in the Bering Sea). In the late 1990s, the capture level exceeded 30% of the total catch in the Bering Sea. Until 1990, in this area, year-round fishing was conducted without restrictions on the capture level and the size composition of catches; the amount of catch was completely determined by the intensity of fishing (Figure 10). In the following years, the pollock fishery in the area became regulated; the amount of the annual catch is determined by the state of its resources. Until 2002, the vessels engaged in the pollock fishery in the West Bering Sea zone were stationed in the water area from Cape Olyutorsky up to the delimitation line of the Russian−US zones. During the years of temporary prohibition of fishing (2002−2006) in the West Bering Sea zone in the area to the west of 174° E specialized pollock fishery was conducted only in the Navarin area. From 2007 until 2016 the fishing fleet fished in the entire water area of the West Bering Sea zone. In 2016 there was introduction of a ban on specialized fishing west of 174° E throughout the year. However, during the fishing season most of the vessels operated east of 174° E. In 2016 the Fishing Rules were adjusted, according to which pollock fishing in the West Bering Sea zone (west of 174° E) is prohibited throughout the year. Currently, according to paragraph 15.1 of the "Fishing Rules" (2019) pollock fishing is conducted exclusively in the water area to the east of 174° E.

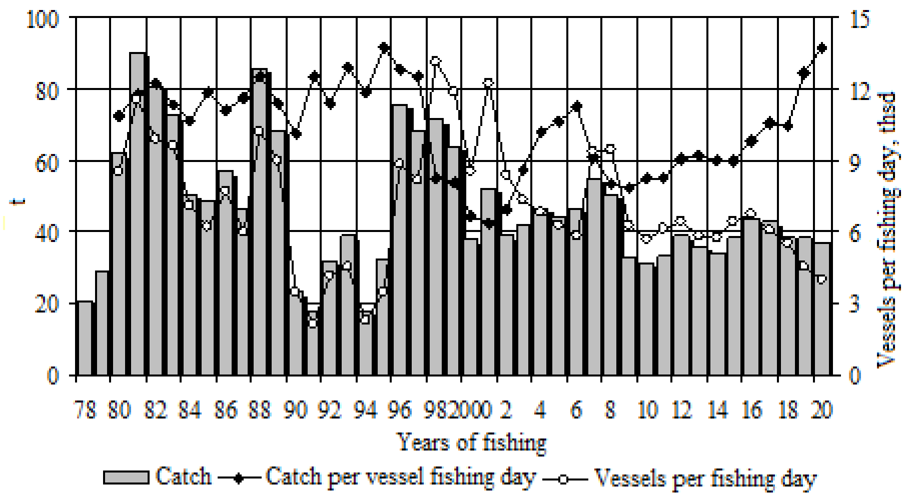


Figure 10 – Pollock catch in Navarin area (× 104 t), the estimated number of vessels per fishing day and catch per vessel fishing day in 1978−2020.
Note: Prior to 1998, data on catches are given only for the area east of 176° E. Since 1998, catches data cover entire the West Bering Sea zone, including middle-tonnage fleet (MTF) and foreign catch. The number of vessels per fishing day is calculated based on catches per unit of effort large-tonnage fleet (LTF) and total catch. Source: VNIRO, 2021.

At present, in the Russian part of the Bering Sea, the determination of the total allowable catch of pollock is made separately for two areas corresponding to two stock units: in the western part (Olyutorsky, Karaginsky Gulfs) and in the northwestern part (the area to the east 174° E up to the delimitation line of the Russian–US zones).

In the summer period, pollock distributes in an insignificant amount to the Chukotka zone (67.01), where until 2008 the pollock TAC was not established, and it was caught mainly as a by-catch. So, in 2005, the total catch was only 1 t and 857 t in 2007. In 2008, the catch increased to 2.6 kt. However, already in the next year only 5 t of pollock were caught. In 2011–2020 the catch was of the same order with an average of TAC use of 62.9% (Table 10). The reason for the TAC underuse is the insignificant distribution of pollock to the Chukotka zone in the summer period (especially in 2014–2015) from the West Bering Sea zone.

Table 10 – Pollock TAC, catch and TAC use in the Chukotka zone in 2011–2020. Source: VNIRO, 2021.

Year	Chukotka zone		
	TAC, kt	Catch, kt	Percentage of TAC use, %
2011	5.7	3.822	67.1
2012	5.3	4.441	83.8
2013	5.6	4.376	78.1
2014	5.3	3.404	64.2
2015	5.5	2.136	38.8
2016	6.2	5.506	88.8
2017	6.5	3.995	61.5
2018	5.4	4.548	84.2
2019	5.5	2.612	47.5
2020	4.8	0.723	15.1

There is not always observed the direct dependence of pollock catch in the West Bering Sea zone on the number of pollock replenishment and biomass in the northwestern part of the sea. One of the main reasons for the significant year-to-year variability in catches is the fact that here the pollock fishery is based both on catch of pollock of local origin (to a lesser extent) and on catch of fish migrating to this area during the feeding period, mainly from the eastern part of the Bering Sea. Therefore, the number, biomass, size and age structure of pollock and the effectiveness of fishing in the northwestern part of the sea depend not so much on the number of generations of local origin, but on the scale of fish distribution from the eastern part of the Bering Sea in the summer and autumn period.

Zooplankton of the large fraction in the Bering Sea, primarily, euphausiids and large species copepod are the main, preferred food items for Pollock. The distribution and abundance of these has a significant and, in some years, a decisive influence on the pollock distribution and the efficiency of fishing in the northwestern part of the sea in the summer-autumn period. In 2011, on the northwestern shelf of the Bering Sea, the maximum amount of zooplankton was observed since 2002, due to the constantly increasing biomass of sagitta in previous years, an increased biomass of copepods and, to a lesser extent, of euphausiids. In 2012−2020, there was a steady downward trend in the abundance of high-calorie zooplankton of the large fraction (euphausiids and large copepod species) in the Bering Sea, including in its northwestern part and in the Russian zone.

In 2013, the biomass of zooplankton of the large fraction in the Navarin area decreased by 1.5−2.0 times compared to 2011. The downward trend in the number of zooplankton, both in the eastern and northwestern parts of the sea, continued in 2014−2020. During these years, in the greater water area of the Bering Sea shelf, including in the Russian part of the sea, small species of copepods with low calorie content prevailed in plankton and the diet of Pollock. Pollock feeding intensity was low during the feeding period. This factor had a direct impact on the behavior and distribution of pollock in the northwestern part of the Bering Sea, including in Russian waters.

Pollock distribution to the West Bering Sea zone in 2013−2020 from the eastern part of the Bering Sea was intense already in the first half of summer, since the temperature factor during these years did not limit seasonal migrations to the northwestern part of the sea, and the number of zooplankton of the large fraction in the wintering and spawning areas in the eastern part of the Bering Sea was small. However, at the end of the summer period in the northwestern part of the sea, a shortage of forage zooplankton began to occur, and therefore the distribution of pollock to this region significantly slowed down and unusually early (in comparison with long-term data), already in late summer and early autumn, the migration of pollock began to the adjacent East Bering Sea shelf, where total plankton resources are potentially higher. In late summer and early autumn in recent years in the southeast direction the migration of large adult pollock is particularly significant. Therefore, already at the beginning of the autumn period in the northwestern part of the sea, the relative number of juvenile, immature pollock increases significantly. In 2013−2020, the most stable and dense concentrations of pollock were noted in the West Bering Sea zone during the summer period.

In 2016−2019, the ice distribution in the winter-spring period in the Bering Sea was less than the long-term average. In 2020, the ice distribution in the eastern and northwestern parts of the Bering Sea was higher than the long-term average. Nevertheless, the seasonal warming of the water in late spring and early summer in 2020 occurred close to the long-term average; the temperature factor did not prevent the spread of pollock to the northwestern part of the Bering Sea, including to the shelf of the Gulf of Anadyr. Thus, the rapid seasonal warming of waters in the northwestern part of the sea in 2012−2020 was one of the reasons for the larger-scale distribution of pollock in the Russian EEZ already at the beginning of summer.

It should be noted that since the early 2000s, there has been no division of the West Bering Sea zone into statistical subareas corresponding to the distribution of different pollock populations. Therefore, in recent years, the catch of the West Bering Sea pollock was included in the total pollock quota in the West Bering Sea zone. With significant pollock spread to the West Bering Sea zone in the summer–autumn period the abolition of the border between statistical subareas led to an overfishing of the recommended amount of pollock withdrawal of this population. In some years, pollock was withdrawn here 2.5–4.4 times more than the recommended one (Table 11). This circumstance could have a negative impact on the state of the resources of the West Bering Sea pollock, especially in recent years, when there is a steady tendency to reduce its reproduction and the amount of resources.

The introduction of a prohibition on pollock fishing in the West Bering Sea zone (west of 174° E) in 2016 may have a positive effect on the restoration of pollock resources of the West Bering Sea population.

In the area to the east of 174° E over recent years, the value of TAC has changed significantly (see Table 11). The maximum (542.4 kt) of the catch was recommended in 2007, after which it decreased until 2010 due to a decrease in stocks. In 2011, the allowable catch was increased to 331.9 kt (due to the entry into the commercial part of the population of the numerous generation of 2006), and the TAC in the West Bering Sea zone as a whole was increased to 353.6 kt. In 2012, the TAC in the West Bering Sea was increased to 410.8 kt, as the commercial part of the population was replenished with another generation (2008), the number of which was initially estimated above the average level. In 2013−2014 the TAC was slightly lower than in 2012, as the size of the 2006 generation declined as a result of natural and commercial decrease in number. In 2015−2017 the TAC was increased from 430.0 to 475.5 kt due to the replenishment of the commercial part of the pollock population with numerous (2012) and several average in number generations, and in 2018−2020 TAC was reduced due to the loss of the 2012 generation and other average in number generations.

Table 11 – Pollock TAC, catch and TAC use in the West Bering Sea zone in 2003−2020 according to IS “Rybolovstvo” (Information System “Fishery”). Source: VNIRO, 2021.

Year	West of 174° E	East of 174° E	Total for the West Bering Sea zone		
	Catch, kt		TAC, kt	Catch, kt	Percentage of TAC use, %
2003	3.815	415.303	425	419.118	98.6
2004	4.920	422.356	420	427.276	101.7
2005	6.192	444.531	452.5	450.723	99.6
2006	21.122	442.204	467	463.326	99.2
2007	119.154	448.719	619.4	567.873	91.7
2008	53.221	449.713	555.7	502.934	90.5
2009	95.176	228.341	428	323.517	75.6
2010	38.529	273.025	338.1	311.554	92.1
2011	50.144	282.724	353.6	332.868	94.1
2012	46.442	339.127	410.8	385.570	93.9
2013	48.482	310.410	393.1	358.892	91.3

2014	52.883	289.522	393.0	342.405	87.1
2015	79.125	304.707	430.0	383.832	89.3
2016	10.654	431.893	455.8	442.547	97.1
2017	14.718	416.141	475.5	430.859	90.6
2018	12.640	374.926	392.8	387.566	98.7
2019	9.731	390.965	399.8	400.696	100.2
2020	9.260	372.465	390.0	381.725	97.9

Pollock fishery in the West Bering Sea zone is conducted mainly by midwater trawls in June-December on feeding clusters and in small volumes in January-February during the pre-spawning migrations.

In the summer, the catch per unit of effort increases and during the main period of the pollock fishery (summer – early autumn) in the northwestern part of the Bering Sea (Navarin area) is at a relatively stable level. The short-period variability of catches during the summer–autumn period depends on the dynamics of seasonal migrations of the pollock of the East Bering Sea population.

Under environmental conditions close to the long-term average, the maximum catch occurs, as a rule, in the second half of summer – the first half of autumn, which is ensured by the maximum distribution of pollock in the Navarin area during this period. However, in recent years, the dynamics of the catch has a different character - the maximum catch occurred in the middle of the summer period, which is due to the relatively early reverse migration of pollock in the southeast direction to the adjacent eastern part of the Bering Sea.

According to long-term data, in the West Bering Sea zone (east of 174° E), in the catches are dominated by pollock aged 2+ to 5+ years (Figure 11), which in some years may account for up to 90 % of the total. Nevertheless, there is year-to-year variability in the age and length composition of pollock, which varies depending on the number of generations and the scale of fish distribution from the adjacent areas of the eastern part of the Bering Sea.

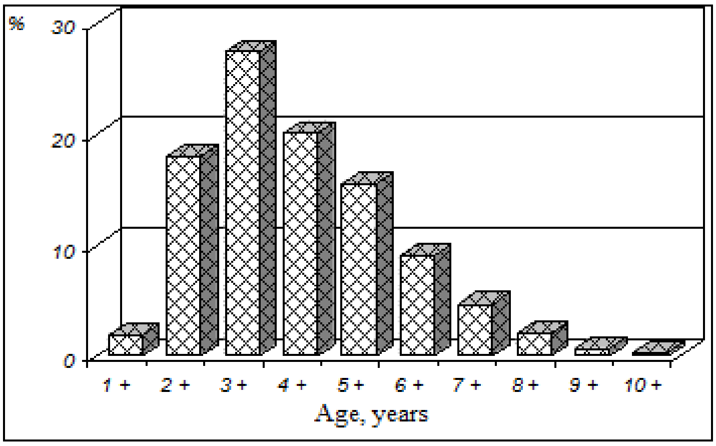


Figure 11 – Average long-term age composition of pollock (percentage by number) in commercial catches in the Navarin area of the Bering Sea in 1995−2009, 2012, 2017−2020. Source: VNIRO, 2021.

In 2018, the pollock biomass in the pelagial of the eastern part of the Bering Sea (2.5 million tons), according to the trawl-acoustic survey, turned out to be 49.51% less than in 2016 (4.06 million tons); the number in 2018 (5.57 billion specimens) is lower than in 2016 (10.75 billion specimens) by 48.19%.

A significant decrease in the biomass (3.11 million tons) and abundance (5.97 billion specimens) of pollock in 2018 was also observed in the bottom layer of the eastern part of the Bering Sea; the assessment of biomass is 35.56% lower compared to 2017 (4.81 million tons), the abundance is lower than 2017 (8.48 billion specimens) by 29.5%. The total biomass of pollock in the eastern part of the sea in 2018 according to surveys data (5.6 million tons) is 37.57% less compared to 2016 (8.97 million tons). The abundance and biomass of pollock in the bottom layer in the eastern part of the Bering Sea increased until 2014, after which the stocks began to decline (Figure 12). In 2017, the rate of decrease in the abundance and biomass of pollock in the bottom layer of the eastern part of the Bering Sea slowed down

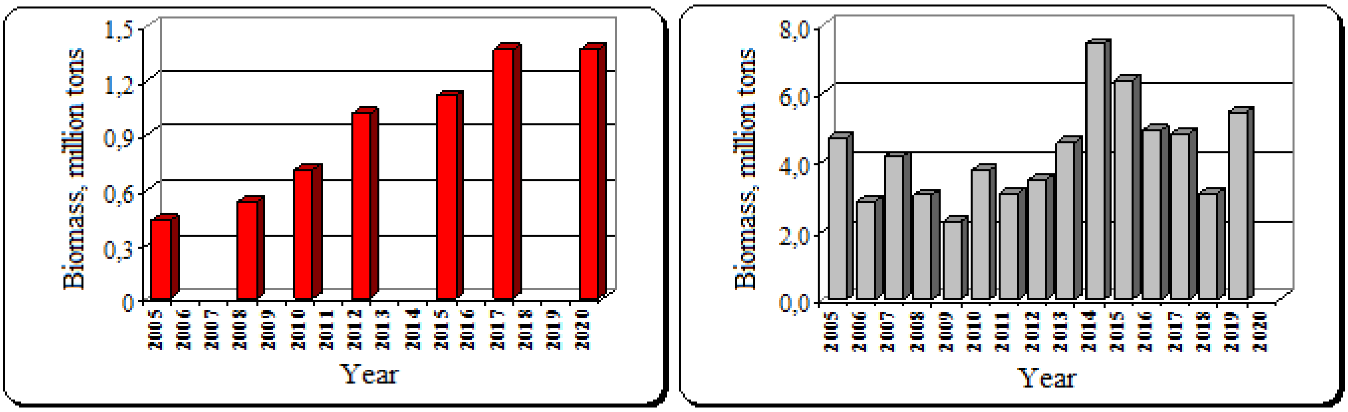


Figure 12 – Year-to-year dynamics of the biomass of the East Bering Sea pollock in the EEZ of Russia (Navarin area - right) and the US EEZ (left) for the period 2005–2020 according to data of bottom trawl surveys TINRO and AFSC. Source: VNIRO, 2021.

In 2019, the biomass and abundance of pollock in the bottom layer of the eastern part of the Bering Sea, according to the standard bottom trawl survey, is significantly higher than the assessment of a similar survey in 2018 – 5.45 million tons (higher than the results of 2018 by 75.24%) and 9.13 billion specimens (higher than the data of 2018 by 52.93%). According to the 2019 survey, generations of 2013–2014 prevailed in the bottom layer of the eastern part of the Bering Sea, and according to the 2018 survey, generations of 2012–2013 prevailed. The amount of pollock biomass and abundance in 2019 is comparable to the indicators of 2017. There is a possibility that the stocks of pollock in the bottom layer of the eastern part of the Bering Sea in 2018 has been estimated below the levels of 2016–2017 and 2019 due to the fact that in the summer of 2018 (during the survey period) a significant part of the pollock lived in the northern and northwestern parts of the sea outside the US zone.

In 2018 (July–August) in the northwestern part of the Bering Sea (Russian zone), according to the echo-integration-trawl survey, the biomass of pollock in pelagial was estimated at 598.0 kt, the number was estimated at 1.191 billion specimens.

In the northwestern part of the Bering Sea (West Bering Sea zone) in the summer of 2018, according to the trawl-acoustic survey, there prevailed in almost equal proportions pollock of medium-sized generations of 2013 (21.03%) and 2014 (20.04%). The generation of 2012 was also relatively numerous (10.34%); the 2015–2016 generations had a small size. Juvenile pollock of the 2017 generation, according to the survey, had a significant abundance in the northwestern part of the sea (24.7%); most of this generation was also noted in the eastern part of the Bering Sea. In the Chukotka zone, in the pelagial in the summer of 2018, fish of generations 2013 (26.8%) and 2012 (16.4%) prevailed (Figure 8). It should be noted that surveys carried out in previous years revealed the presence in the Chukotka zone in the summer-autumn period of only some age and length groups of pollock.

In 2020 (August–September), the pollock biomass in the pelagial of the West Bering Sea and Chukotka zones, according to the echo-integration-trawl surveys, has been estimated at 425.6 kt, the number has been estimated at 1.609 billion specimens. The distribution of pollock, its abundance and biomass in the northwestern part of the Bering Sea in August–September 2020 are close to the data of a similar survey in July–August 2018.

In the northwestern part of the Bering Sea, in the summer–autumn period of 2020, pollock of medium-sized generations of 2013 and 2014 prevailed in the pelagial, and the generation of 2018 was predominant among fingerlings. The number of generations of 2017 and 2019 was also relatively high, as well as the number of fingerlings (generation in 2020). According to the results of the bottom survey, the abundance and biomass of pollock in the West Bering Sea zone in 2020 was estimated at 5.48 billion specimens and 1.39 million tons (if CC = 1).

Thus, the abundance and biomass of the East Bering Sea pollock in the period 2014–2020 decreased due to the leaving of both numerous (2008 and 2012) and a number of medium-sized generations (2010–2011, 2013–2014). At the present stage, the biomass of the East Bering Sea pollock (according to 2018–2020 data) is at an average level.

In the catches of the fishing fleet in the West Bering Sea zone in the spring-summer period of 2018, as in 2017, pollock of average generations of 2013−2014 prevailed. The relative abundance of the 2012 generation in commercial catches in 2018 was significantly lower compared to the previous year. In 2019, the age and length composition of pollock in commercial catches was monomodal and almost identical during the main fishing period (July−September). The catches were dominated by the generations of 2012−2014, which together accounted for 74.8% of the total abundance. Pollock by-catch with length less than minimum commercial size (MCS) was less than 7.0%. In 2020, in the catches of the fishing fleet, the modal group in the size range consisted of pollock 43−52 cm long, which accounted for 59.7% of the total abundance. More than ¾ of the catch (75.3%) was represented by generations of 2013−2016. with a clear predominance of 2014 (25.2%). By-catch of pollock less than MCS was 13.7% of the total abundance.

In accordance with the growth of pollock stocks in 2010−2013, catch per unit of effort in the West Bering Sea zone increased, in 2014−2015 it stabilized, which corresponded to the stabilization of its resources. Further increase in catch per unit of effort in 2016−2020 was not due to an increase in resources, but to an increase in the distribution of adult pollock to the northwestern part of the sea, including Russian waters, during the summer period.

Analysis of the state of pollock resources conducted at the Alaska Fisheries Research Center (AFSC) (Ianelli *et al*., 2014) using an age structured model [Fournier, Archibald, 1982] showed that the biomass of the spawning part of the pollock population decreased in the first decade of the 2000s, then until 2014 there was a growth trend (Figure 13).

Thus, in the early 2010s, the resources of the East Bering Sea pollock population stabilized and then increased due to the contribution of medium-sized generations (2006, 2009−2011, 2013-2014) and generations, the number of which is estimated as high (2008 and 2012).

Comparative assessment of pollock biomass based on trawl-acoustic, bottom trawl surveys and model data, carried out for the period since 1978, showed that these data coincide for most years (Figure 14).

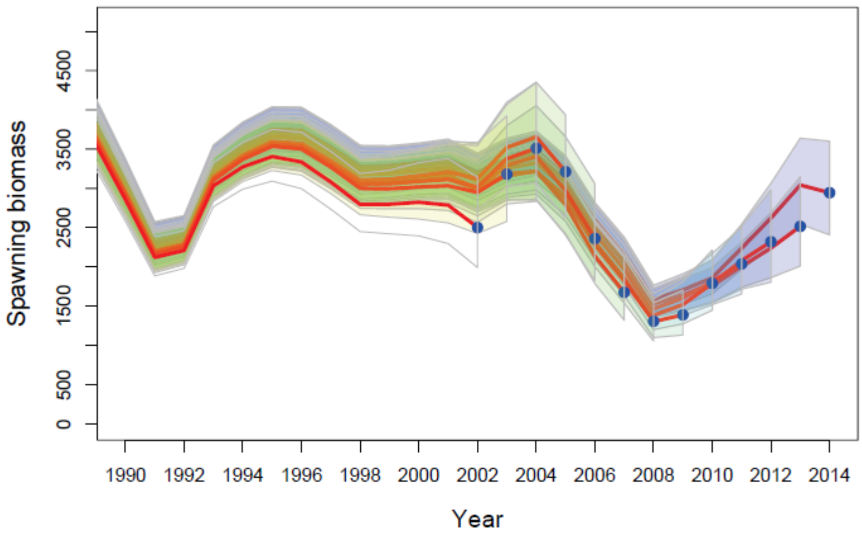


Figure 13 – Retrospective data of the confidence interval of the estimate biomass of the spawning part of the pollock population in 1990−2014 (according to the age structured model (Fournier, Archibald, 1982)). Source: VNIRO, 2021.

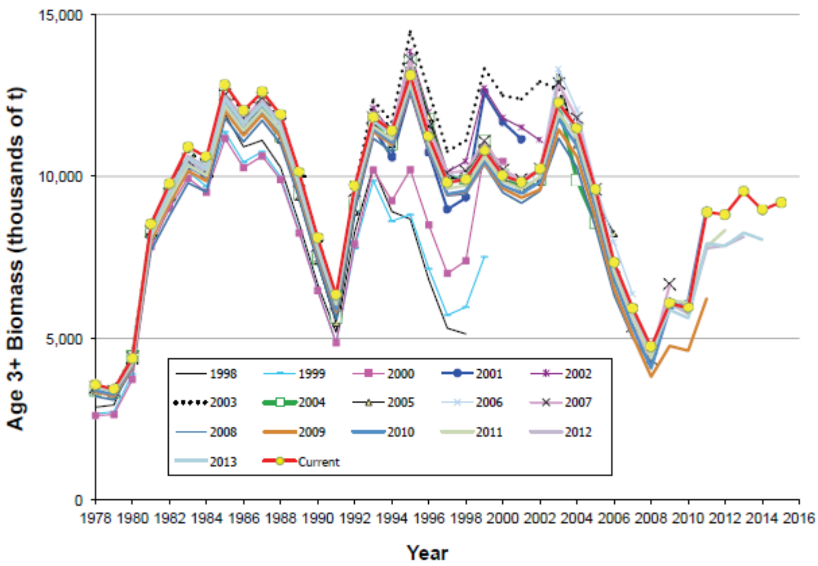


Figure 14 – Comparative assessment of the biomass of adult pollock based on survey data and model data at the beginning of the year in 1978−2015 (Ianelli, 2014). Source: VNIRO, 2021.

In the northwestern part of the Bering Sea, as a result of calculations in Sinthez at the beginning of 2020, the spawning stock (SSB - Spawning Stock Biomass) of pollock was about 1563 kt, and the total biomass (TSB – Total Stock Biomass) was about 2610 kt. Re-sampling of the initial data and repeating of the stock assessment procedure 1000 times showed that on the Ln-scale the standard error is less than 0.13, which can be roughly interpreted as the coefficient of variation less than 13%, based on the approximate correspondence of the variance of observations on the scale of natural logarithms with the square of the coefficient of variation (Lewontin, 1966). In general, over the period, this error ranged from 0.10 to 0.16 for TSB and from 0.08 to 0.13 for SSB. In recent years, relative growth of pollock stocks (TSB and SSB) has been noted above the target, but in absolute terms, the 2020 estimate is below 2019 due to scale instability (Figure 15). This instability is caused by the lack of fixation of the catchability coefficients and their annual free adjustment. Errors are at a relatively low level for biological research, but in the analysis and diagnostics section of the results obtained, they will be taken into account along with the risk analysis.

The dynamics of the number of recruits (cohorts aged 1 year), found in the Sinthez, does not have a clear trend, since the adjustment was used without taking into account the dependence of the number of recruits and the parental stock (Figure 16). It is worth noting that almost all extreme values are reproduced from year to year, which makes it possible to speak with some certainty about the stability of finding the desired number of fish at the age of 1 year, which did not depend on the number of parents in this case.

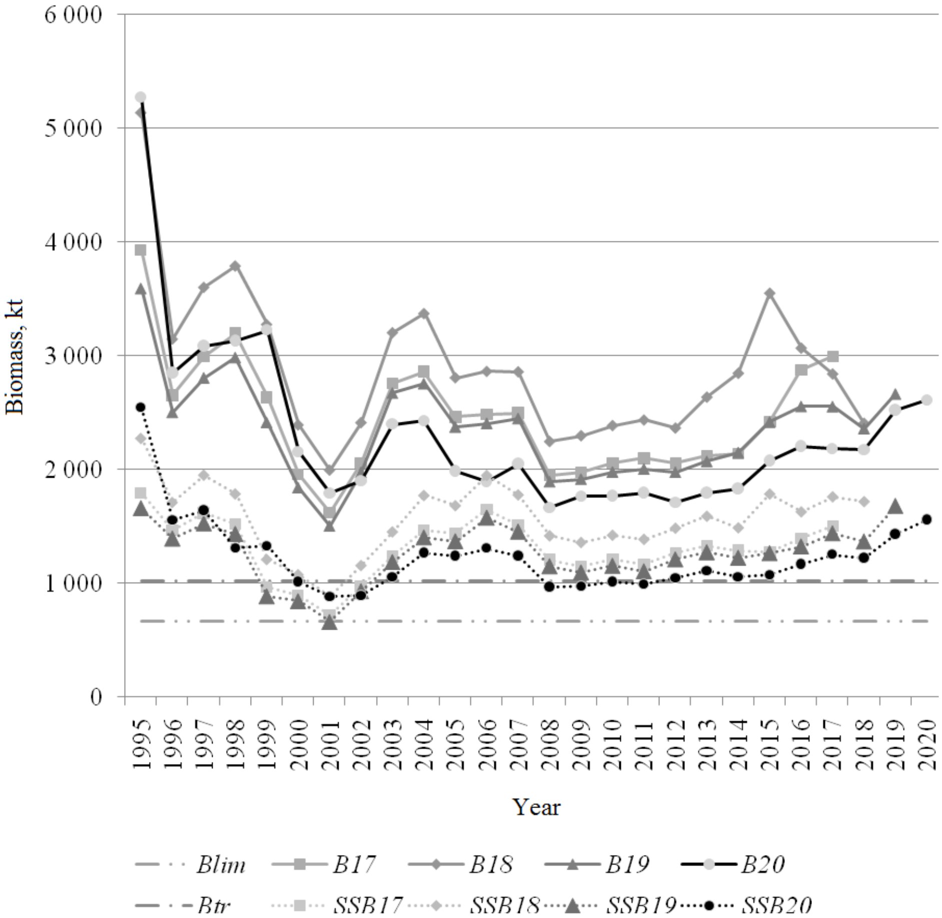


Figure 15 – Calculated in Sinthez dynamics of the total (B) and spawning biomass (SSB) against the background of the target (Btr) and limit (Blim) reference points for biomass, based on the full (2020) and truncated data for the specified years (2017−2019) shown by the last two digits of the year. Source: VNIRO, 2021.

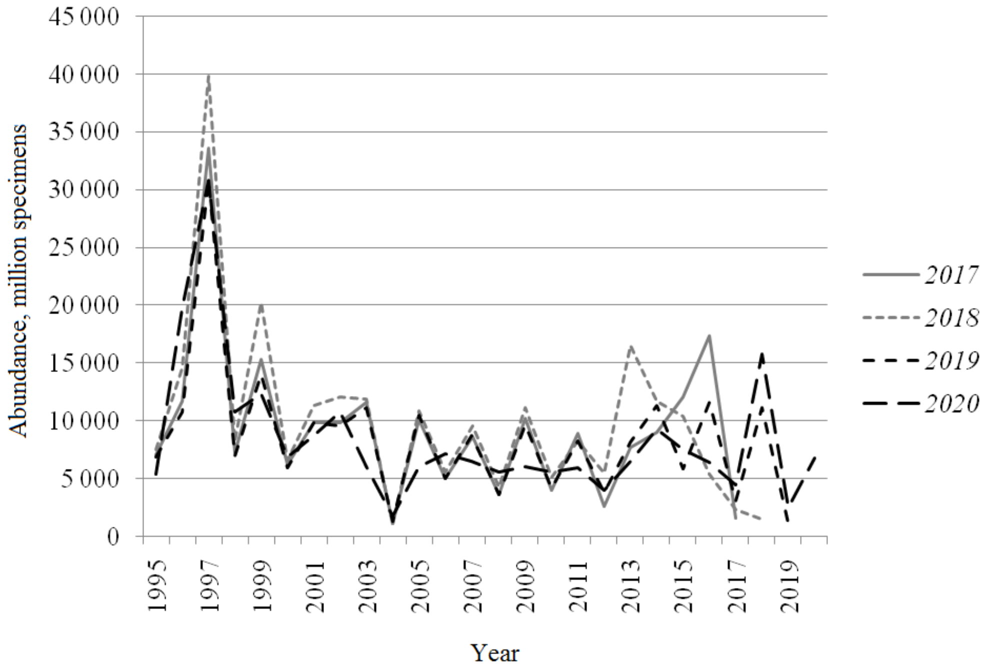
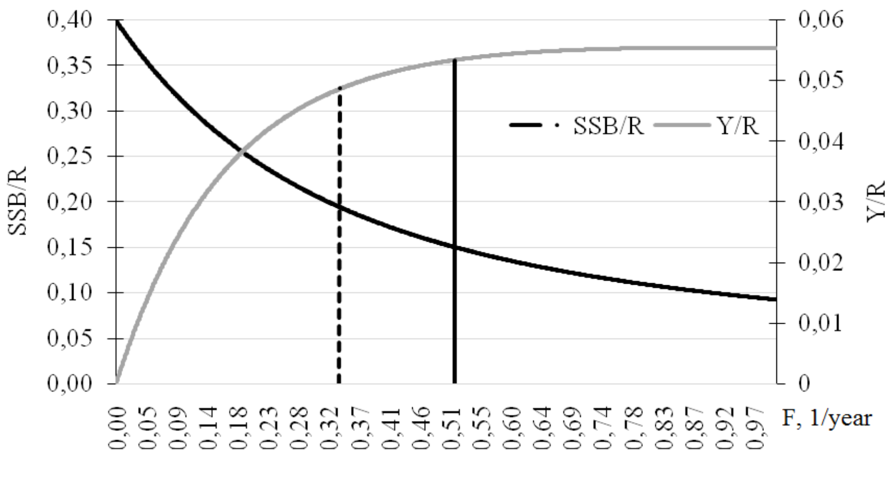


Figure 16 – Year-to-year dynamics of the number of one-year-old fish (million fish), calculated in Sinthez, based on full (2020) and truncated for the indicated years (2017−2019) data. Source: VNIRO, 2021.

The reference point for fishing mortality F, found in 2020 when justifying the TAC for 2021 from the equilibrium catch curves (Figure 17), was too high (FMSY = Fmed = 0,51 year-1 in Sinthez), therefore it was used here as a limit reference point Flim, and not a target reference point for fishing mortality (Ftr). The last one was chosen according to the empirical Caddy dependence (Caddy, 1998): Ftr = 0.34 year-1, which corresponds to the rate of exploitation H = 0,288 according to the Ricker' formula (1979): H = 1-exp(-F). The selected Ftr = 0.34 year-1 is still lower than Fmed, which was at the level of 0.514 year-1 in 2020 estimate, and here, taking into account the new data, it decreased to 0.378 year-1.

The quantity of F0 was taken equal to 0, so as not to overestimate the curve for the Fв HCR, similar to ICES (Babayan, 2000). The limit reference point for biomass Blim was taken similarly to the precautionary reference point Bpa in ICES based on the lowest observed SSB (Babayan, 2000), i.e. Blim = Bpa = Bloss = 663.8 kt, found in Sinthez in 2020, as a more precautionary out of many possible.

The target reference point for SSB was set according to the equilibrium catch curves and SSB per recruit (Figure 17) at the BMSY level in Sinthez, i.e., Btr = 1024 kt.



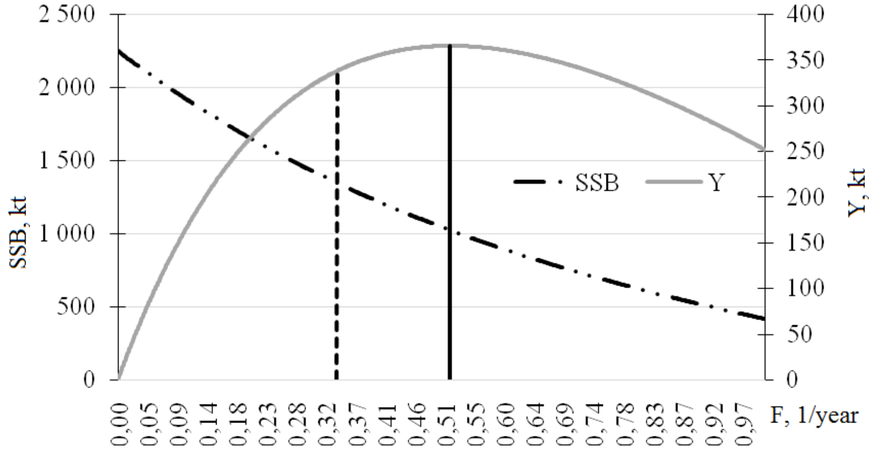


Figure 17 – The curves of equilibrium SSB and equilibrium catch (Y) per recruit (R), found in Sinthez, the dotted line shows F = 0.34, and the solid vertical corresponds to FMSY. Source: VNIRO, 2021.

7.2.1.7 Fishery management

The Alaska pollock targeted fishery began in the Bering Sea in the late 1950s. Until the late 1970s, fishing operations were conducted mostly in the sea's eastern and northern (Navarinsky area) sectors (Fadeyev, 1980, 1991; Smith *et al*., 1981). Maximum catch in the Bering Sea during the period 1970-1977 was in 1972, when total yield exceeded 2.0 million tonnes, of which 69.2% was harvested over the south-eastern shelf and 23.7% in the sea’s northern part. The start of the national fishery in Russian waters dates back to the early 1970s. During that decade, Alaska pollock were harvested mostly in the western part of the sea – Karaginsky Bay and Olyutorsky Bay. As fishery intensity grew, the operating area also expanded, and by the late 1970s, after 200-mile economic zones were introduced in 1977, the fishery encompassed virtually the entire Asian shelf from Ozernoy Bay in the south to Anadur Bay and the border with the U.S. in the north. The second peak of catch volume was registered in the Bering Sea in 1988, when Alaska pollock total catch amounted to 4.07-4.2 million tonnes according to various sources (Fadeyev and Wespestad, 2001; Bulatov, 2002). Overall catch in the Bering Sea as a whole then stabilised at a level of 1.5-2.0 million tons (PCA 2020a). The size of the domestic catch in the Russian part of the Bering Sea has been historically determined both by Alaska pollock abundance and fishery intensity, which is dependent on organizational and technical limits. In the first half of the 1990s (when a free market environment was emerging in Russia’s economy), pollock catch reduction in the Bering Sea was caused by a critical economic situation in the domestic fishing industry and the national pollock fishery focused mostly on the Sea of Okhotsk (Fadeyev and Wespestad, 2001).

The northern part of the West Bering Sea (east of 174°E to the delimiting line between Russian and U.S. zones, Navarinsky Area) is the second-largest pollock fishing area within the Russian EEZ, with the catch ranging from 178,000 to 852,000 t (514,000 t on average). Pollock harvested there during 1985-1992 comprised 16.8% of the total pollock catch in the Bering Sea, and in the late 1990s catch volume exceeded 30% of the total (Fadeyev and Wespestad, 2001). Until 1990, the fishery was conducted in the Navarinsky area on a year-round basis with no catch limits and size restrictions, with catch volume determined by effort (Fadeyev and Gritsay, 1999). Regulations and restrictions were introduced in the early 2000s and the quantum of the catch became regulated by setting an annual TAC based on rigorous scientific advice.

The TAC for the West Bering Sea (east of 174°E) varied significantly over the past two decades. A maximum of 542,400 t was recommended in 2007, after which the TAC decreased due to a decline in stock size. In 2013-2014, the TAC was set at 398,700 and 398,300 t, respectively, in 2015 it was increased to 435,500 t in 2016 to 455,800 t, and in 2017 to 475,500 t, following the recruitment of average or above average annual recruitments to the exploitable stock. In 2018, the TAC was reduced to 392,800 t due to the fishing out of the large 2012 year class. In 2019, the TAC was again slightly increased (by 7000 t) to 399,800 t.

The regulatory measures contained in the "Fishing Rules for the Far Eastern Fisheries Basin", approved by the order of the Ministry of Agriculture of the Russian Federation № 267 of 23.05.2019, contribute to minimize the negative impact of fishing on pollock stocks and on the environment:

1. Restrictions on the standard output of pollock raw roe for all types of production of fish products and other (paragraph 22.10). For the West Bering Sea zone, in the period from November to April inclusive, the output of raw roe should be no more than 4.5% of the mass of raw fish received for cutting.

2. Prohibited periods for specialized pollock fishing (par. 28.1). In the West Bering Sea zone east of 174º E specialized pollock fishing is prohibited from the beginning of mass spawning, but no later than from March 1 to May

15. Specialized pollock fishing is prohibited throughout the year in area of the West Bering Sea zone to the west of 174º E.

3. Types of prohibited gears and method of capture (catching) in the conduct of specialized pollock fishery in all areas (par. 32.4). In all areas of specialized pollock fishing, the use of bottom trawls, midwater trawls with double-layer covering of codends, midwater trawls without selective inserts with a square mesh arrangement is prohibited. Also in paragraph 35, the permitted mesh size of the capture (catching) gears used in the pollock fishery is established.

4. The minimum pollock size for fishing in all areas is 35 cm, which is set by paragraph 36.

5. The permissible by-catch of pollock juvenile (fish of less than the commercial size) in the account per unit of effort is established by paragraph 38.1. In the West Bering Sea zone east of 174º E by-catch of pollock juvenile is set in the amount of no more than 40%.

With strict compliance with the current "Fishing Rules" (Fishing Rules, 2019, as recently amended), the capture (catching) of pollock within the recommended TAC will not have a negative impact on the environment and pollock resources in the northwestern part of the Bering Sea.

7.2.1.8 Data Collection

Pollock biomass and abundance in the West Bering Sea is assessed by pelagic trawl acoustic and bottom trawl surveys conducted by KamchatNIRO, TINRO and VNIRO with varying degrees of regularity and, occasionally, by the Alaska Fisheries Science Center (Seattle, USA) under a joint research programme. Surveys are carried out in summer/fall and cover all areas of stock distribution, coinciding with fishing fleet operation (Figure 18 and Figure 19). Abundance and biomass estimates are generated using standard survey estimation methodology for both pelagic and bottom components (Figure 20 and Table 12).

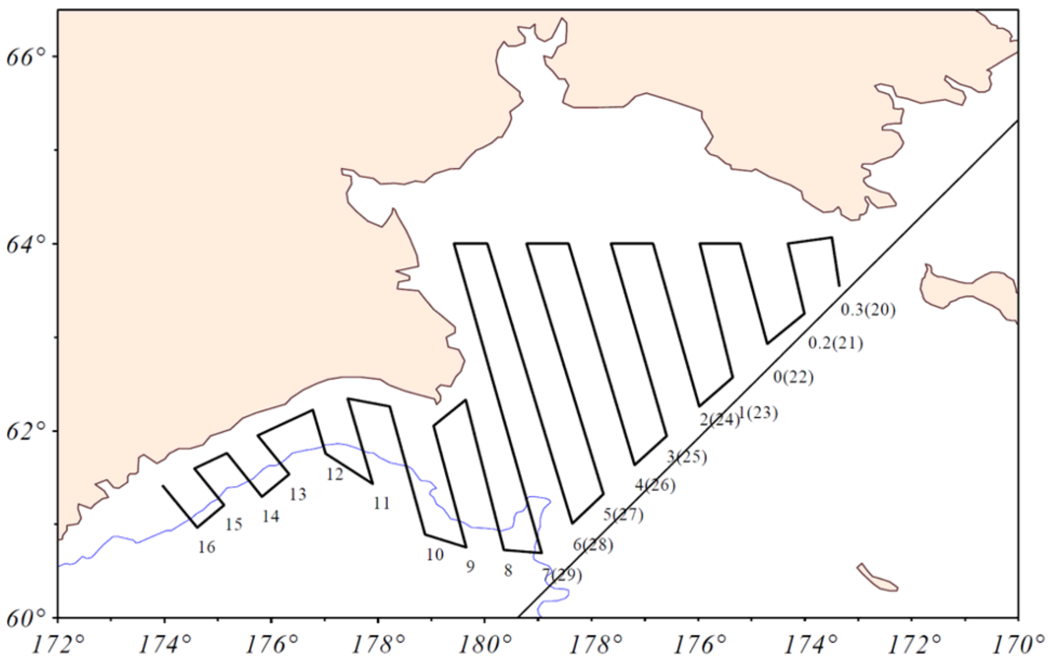


Figure 18 – Standard tracks of TINRO pelagic trawl/acoustic survey in the Navarin region. Source: LR, 2021

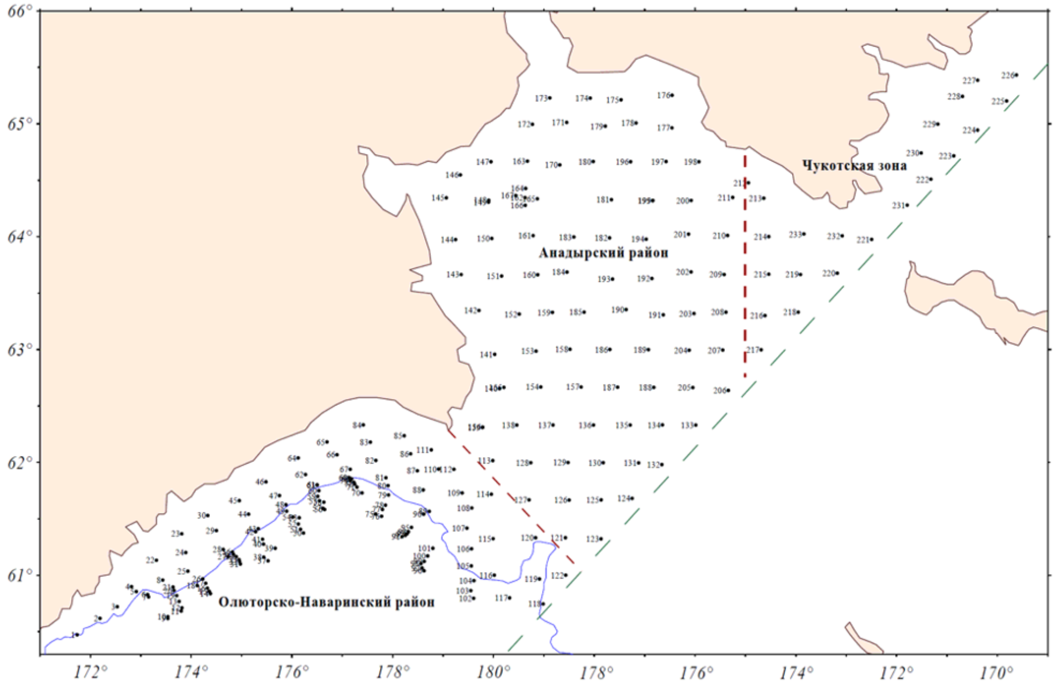


Figure 19 – Standard station locations of the TINRO bottom trawl survey in the North West Bering Sea. Source: LR, 2021.

Information on the Russian zone catch of pollock and bycatch species is provided by all fishing vessels to the regional office of the CFMC through mandatory daily fishing reports and to research institutions in accordance with the Fishing Rules (2019) for the Far Eastern Fishery Basin. The amount of pollock and bycatch taken is recorded against the target pollock fishery. In accordance with Section II, Clause 7.1 of the Rules (2019), all users engaged in the commercial fishery have to keep a record of the catch of each species of aquatic living resources separately, indicate the ratio of species in the catch by weight, and list fishing gear and harvesting locations (e.g. area, subarea, fishing zone) in the fishing logbook and other reporting documentation. In addition, fishing vessel captains have to submit to the regional office of the CFMC daily reports (SDRs) containing information on catch by weight of all biological resources harvested during operations of the target fishery. The same procedure is applied to records of pollock taken as bycatch in fisheries targeting other species. Discarding undersized pollock is not allowed, so all catch has to be processed on board and recorded in logbook and processing plant records. Pollock bycatch from other fisheries is summed with catches of the direct fishery to generate estimates of total removals of the species, which are logged against the annual TAC.

Biological characterization of the catch is completed based on the data collected by scientific observers, who are managed completely independent of the fishery by TINRO. Observers are well-trained, educated biologists who are assigned to fishing vessels by research institutions to perform their activities in line with trip-specific instructions. The main mission of observers working on board fishing vessels is to collect data on catch volume, species composition and species-specific biological data (size, age, sex composition, maturity, fecundity, feeding conditions). Observers also record fishing information such as location, time, depth, duration of trawling, environmental conditions, and any interactions with marine mammals and seabirds.

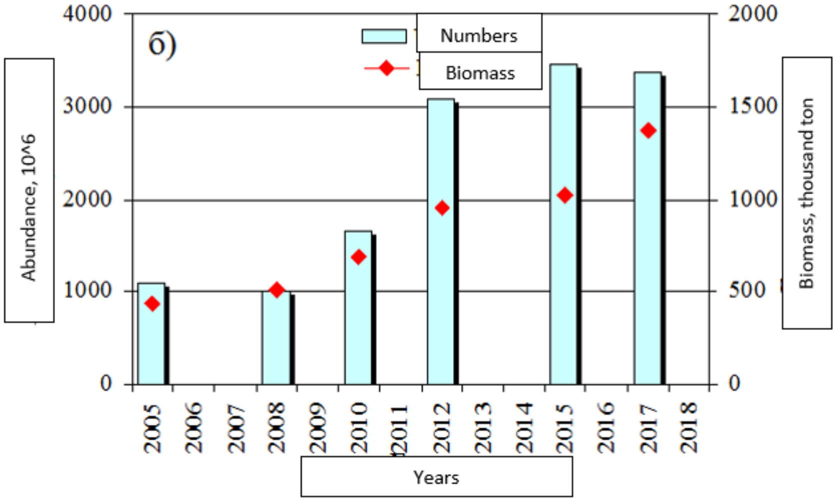


Figure 20 – Survey estimates of pollock abundance and biomass in the bottom area of the Western Bering Sea in the years 2005–2019. Source: LR, 2021.

Table 12 – Pollock abundance (N, billions of fish) and biomass (B, million tonnes) estimates based on the pelagic and bottom trawl surveys in the West and East Bering Sea, 2010–2019. Source: LR, 2021

Year	West Bering Sea				East Bering Sea			
	Pelagic		Bottom		Pelagic		Bottom	
	N	B	N	B	N	B	N	B
2010	0.571	0.144	1.652	0.686	13.41	2.46	5.397	3.74
2011	1.994	0.406	-	-	-	-	4.845	3.11
2012	0.935	0.263	3.085	0.954	6.67	1.84	6.475	3.49
2013	0.436	0.129	-	-	-	-	7.707	4.58
2014	2.987	0.206	-	-	17.10	3.48	11.831	7.43
2015	3.276	0.397	3.460	1.021	-	-	10.983	6.39
2016	-	-	-	-	10.75	4.06	8.532	4.91
2017	-	-	3.379	1.368		-	8.483	4.81
2018	1.191	0.598	-	-	5.57	2.50	5.972	3.11
2019	-	-	-	-	-	-	9.131	5.46

N.B. Both pelagic and bottom trawl surveys were completed in the West Bering Sea in 2020, but the estimates were not finalized at the time of drafting).

7.2.2 Catch profiles

Catch profiles are available in figures Figure 9 and Figure 10.

7.2.3 Total Allowable Catch (TAC) and catch data

Table 13 – Total Allowable Catch (TAC) and catch data - Western Bering Sea

TAC	Year	**2020**	Amount	**390, kt**
UoA share of TAC	Year	**2020**	Amount	**390, kt**
UoA share of total TAC	Year	**2020**	Amount	**390, kt**
Total green weight catch by UoC	Year (most recent)	**2020**	Amount	**55592, t**
Total green weight catch by UoC	Year (second most recent)	**2019**	Amount	**59660, t**

Table 14 – Total Allowable Catch (TAC) and catch data - Western Bering Sea by companies of FSA.

Name of company	Fishing area	Year	TAC	Quota of company	Actual total catch of company in the fishing area	All actual total catch (of all fleet) in the fishing area
JSC "TURNIF"	Western Bering Sea	2016	455800	21159	21149	442547
		2017	475500	21773	21398	430859
		2018	392800	17291	17269	387566
		2019	399800	18112	18109	400696
		2020	390000	16879	16876	381725
		2021*	415000			
JSC "INTRAROS"	Western Bering Sea	2016	455800	10999	10999	442547
		2017	475500	11318	8568	430859
		2018	392800	8988	8988	387566
		2019	399800	9416	9415	400696
		2020	390000	8775	8774	381725
		2021*	415000			
LLC Vostokrybprom	Western Bering Sea	2016	455800	17878	17870	442547
		2017	475500	19864	19692	430859
		2018	392800	15775	15771	387566
		2019	399800	16525	16522	400696
		2020	390000	15400	15398	381725
		2021*	415000			
LLC Sovgavanryba	Western Bering Sea	2016	455800	2365	2354	442547
		2017	475500	2433	2406	430859
		2018	392800	1932	1930	387566
		2019	399800	2025	2024	400696
		2020	390000	1887	1886	381725
		2021*	415000			
JSC "DMP-RM"	Western Bering Sea	2016	455800	15504	15066	442547
		2017	475500	15955	15552	430859
		2018	392800	12670	12670	387566
		2019	399800	13332	13331	400696
		2020	390000	12424	12422	381725
		2021*	415000			
LLC "RMD YuVA 1"	Western Bering Sea	2016	455800	0	0	442547
		2017	475500	309	297	430859
		2018	392800	246	244	387566
		2019	399800	258	257	400696
		2020	390000	240	234	381725
		2021*	415000			

7.2.4 Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is **likely** that the stock is above the point where recruitment would be impaired (PRI).	It is **highly likely** that the stock is above the PRI.	There is a **high degree of certainty** that the stock is above the PRI.
	Met?	Yes	Yes	Yes
Rationale				

MSC guidance to the Fisheries Standard v2.01 SA 2.2.1.1 defines “likely” “highly likely” and “high degree of certainty”as at least a 70, 80 and 95 probability that the true status of the stock is higher than the point at which there is an appreciable risk of recruitment being impaired. The point of recruitment impairment or threshold is defined by VNIRO as Blim. The limit reference point for biomass Blim was taken similarly to the precautionary reference point Bpa in ICES based on the lowest observed SSB [Babayan, 2000], i.e. SSBlim = SSBpa = SSBloss = 663.8 kt, found in Sinthez in 2020, as a more precautionary out of many possible. Blim is then set to this value to minimise the risk of the stock entering an area where stock dynamics is unknown (ICES, 2003).

Stock status of West Bering Sea Pollock has been determined in the past using age structured models (VNIRO, 2021). For the recent round of assessment only Sinthez models was used. Based on the assessment results the SSB2020 is equal to 1563 kt which is more than twice Blim. Under the present TACs and considering an average replenishment of 6.782 billion of recruits (mean recruitment of the last 10 year), the probability of SSB goes below SSBlim is almost zero. Therefore, SG60, 80 and 100 are met.

b	**Stock status in relation to achievement of Maximum Sustainable Yield (MSY)**			
	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is **a high degree of certainty** that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		Yes	No
Rationale				

Based on Synthez model spawning stock biomass in terminal year 2020 was above SSBMSY (1024 kt) where SSBMSY is estimated as median recruitment for the time series multiplied by SSB/R from the equilibrium SPR analysis (VNIRO, 2021). The generation time for Pollock is estimated at approximately 7.8 years using MSC guidance GSA2.2.4 on calculation of generation time. Based on the Sinthez model the SSB of West Bering Sea stock has been above SSBMSY for 8 years since 2012. Therefore, for at least one generation time in most recent period. The median F estimates from Stock Recruitment plot (Fmed) values are used as proxy for Fmsy appeared to be high (Fmsy = Fmed=0.51), but were nearly identical to the one reported for the other Pollock stock in the East Bering Sea (Fmsy =0.51, Ianelli *et al.*, 2019). The target fishing mortality rate selected for West Bering Sea stock is much lower than Fmsy and corresponds to precautionary F reference points such as F0.1 or F by Caddy (1998) and, as such, should result in SSB being substantially higher than SSBMSY. Selecting low target F ensures a precautionary approach to managing the stock by keeping SSB level fluctuating at or above Bmsy and keeping it well above the Blim value. A series of estimates of stock size that have been above BMSY in all years of the last one generation time. Considering the uncertainty envelope (95 CIs) around SSB estimates relative to the point estimate of Bmsy, there is at least 50%

but less than 100% certainty that SSB was above Bmsy estimates over the last period equal to generation time. SG80 is met.

There is less than 95% chance that SSB was above Bmsy estimates over last period equal to generation time. Therefore the 1.1.1.b does not meet SG100.

References

VNIRO, 2021; Caddy, 1998; Ianelli, 2019

Stock status relative to reference points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	*PRI (Blim = Bloss).*	*663.8 kt*	*2.35*
Reference point used in scoring stock relative to MSY (SIb)	*BMSY.*	*1024 kt*	*1.52*

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	≥80
Information gap indicator	More information sought - Clarification about the model outputs will be requested during the site visit.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the **shorter of 20 years or 2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed **one generation time** for the stock.
	Met?	NA		NA
Rationale				

The stock is not depleted

b	**Rebuilding evaluation**			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is **evidence** that the rebuilding strategies are rebuilding stocks, **or it is likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the **specified timeframe**.	There is **strong evidence** that the rebuilding strategies are rebuilding stocks, **or it is highly likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the **specified timeframe**.
	Met?	NA	NA	NA
Rationale				

The stock is not depleted

References

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	-
Information gap indicator	-

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.1 – Harvest strategy

<table>
<tr><th colspan="2">PI 1.2.1</th><th colspan="3">There is a robust and precautionary harvest strategy in place</th></tr>
<tr><td colspan="2">Scoring Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td colspan="4">Harvest strategy design</td></tr>
<tr><td>Guide post</td><td>The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.</td><td>The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.</td><td>The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td colspan="5">Rationale</td></tr>
</table>

A harvest strategy consists of a harvest control rule (HCR) designed to maintain the population indefinitely at sustainable level by keeping the stock biomass at Bmsy which is achieved through regulating removals (Figure 5) in accordance with the stock assessment model, which uses as input the data collected for this stock every year (see 1.2.3). The HCR employs West Bering Sea stock specific information on status of the stock and target and limit biological reference points for fishing mortality and biomass. The strategy for West Bering Sea Pollock contains all these elements and is based on the national strategy of precautionary fishery management outlined in Babayan (2000) and is similar to strategies developed for other (well managed) stocks elsewhere in the world (Restrepo, 1999; ICES, 2018; Kvamsdal *et al*, 2018). SG60 is met.

The harvest strategy is responsive to the state of the stock through projections that evaluate the achievement of objectives under assessed uncertainties. Stock assessment is updated on annual basis and stock status is estimated relative to the target and threshold SSB and F. TAC is adjusted on annual basis following the HCR. The harvest strategy is designed to achieve these objectives as reflected in target and limit reference points. There is good evidence that TACs are based on the scientific advice that accounts for assessment uncertainty and that catch is maintained within the TACs. SG 80 is met.

The strategy is designed to keep the SSB at or above the SSB target (Bmsy) by maintaining fishing mortality at the target when SSB > SSBmsy and reducing F according to the HCR when SSB declines below the SSBmsy. The HCR performance has been tested via simulation model. There is good evidence that TACs are based on the scientific advice that accounts for assessment uncertainty and that catch is maintained within the TACs calculated based on the stock size. Therefore, the HCR is designed to achieve the goal and the harvest strategy is responsive to changes in stock status. SG100 is met.

<table>
<tr><td rowspan="3">b</td><td colspan="4">Harvest strategy evaluation</td></tr>
<tr><td>Guide post</td><td>The harvest strategy is likely to work based on prior experience or plausible argument.</td><td>The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.</td><td>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.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td colspan="5">Rationale</td></tr>
</table>

The harvest strategy based on HCR and has been used to provide TAC advice for the years 2010–2022. The results of the most recent stock assessment (VNIRO, 2021) conducted using an age structured assessment model indicate that the SSB of the stock has been above Bmsy for 8 years since 2012. Therefore, for at least one generation time in recent period and it is projected to remain at its target until at least 2022. Thus, prior experience indicates that HCR is working. SG60 is met.

Further evidence that the harvest strategy is achieving its objectives is provided in projections in Figure 5. Fishing mortality was above the F threshold during the early period of the time series but declined to below the Flim and fluctuated below or around the F target in recent years. Thus, there is evidence that harvest strategy is achieving its objectives. SG80 is met.

The testing of the harvest strategy and associated HCR is carried out using simulations to test the HCR for robust performance under the assessed starting stock conditions and uncertainties. In determining the TAC based on HCR, the two-year projections from the terminal year of the assessment using stochastic projection model are undertaken to determine the risk of fishing mortality increasing above Flim and SSB decreasing below Blim during the projection period over a range of assumed TACs. Greater uncertainty in assessed stock conditions results in higher risk for a given TAC and has the effect of reducing the TAC. The probability of projected SSB falling below Blim should be less than selected risk tolerance for a selected level of TAC. If the probability of SSB < Blim is more than recommended risk tolerance level, TAC is adjusted downwards. In addition, ten-year projections are completed to confirm the robustness of the harvest strategy to stock conditions and uncertainties over the longer term. Target level for F was estimated as F value that results in less than 5% probability of SSB falling below Blim. This F estimate was further corrected (lowered) to account for the uncertainty. Bmsy was estimated as SSB corresponding to maximum yield for stochastic projections, corrected (increased) for the uncertainty in SSB estimate. The probability based testing of HCR in selecting appropriate TAC is strong evidence of robust testing of the strategy. There is sophisticated probabilistic simulation procedure available to test harvest strategy and adjust as necessary. SG 100 is met.

c	**Harvest strategy monitoring**			
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Yes		
Rationale				

Monitoring is in place (i.e. regular trawl and acoustic survey, observer program, commercial fleet CPUEs and annual stock assessment). The information collected is sufficient to provide biomass and fishing mortality estimates to inform the harvest strategy’s HCR and to evaluate whether the harvest strategy is working. SG60 is met.

d	**Harvest strategy review**			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Yes
Rationale				

The components of the harvest strategy are reviewed and improved as necessary through an annual multi-stage internal and external review process that involves regional and central fishery research institutes, FFA, universities and the Academy of Science. The HCR is reviewed regularly and improved as necessary. The last review was completed during 2020 as part of the 2021 and 2022 TAC-setting process. Long-term (10-year) projections have been added to the strategy to ensure achievement of its objectives. SG100 is met.

e	**Shark finning**			
	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

Scoring Issue need not be scored if sharks are not a target species.

f	**Review of alternative measures**			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	Yes	No	Not scored

Rationale

The unwanted catch of Pollock as the target stock in West Bering Sea fishery is presented mostly in the form of the undersized Pollock. Current regulations establish minimum size for Pollock at 35 cm of fork length. There is a maximum percent of undersized fish by weight allowed for a single trawl. Until 2016 undersized fish in a single trawl could not exceed 20% by weight. Undersized fish in the catch cannot be discarded and must be processed. When percent of undersized fish exceeds the limit, the vessel; must report on high percent of undersized and move at least five miles away. However, due to the fact that smaller, younger fish migrating to Navarin region from EBS waters often dominate in the whole area, changing vessel position was ineffective and stimulated some illegal discards. To reduce the burden an incentive for discards, the maximum percent of undersized fish in WBS was increased to 40% of total weight. Based on this information, the SG60 is met.

No evidence was provided to the audit team that would suggest such a review of measures is conducted on a regular basis (at least once every 5 years).SG 80 is not met.

Note: As SG80 is not met for all SIs SG 100 is not scored.

References

Babayan, 2000; Fishing Rules, 2019; Restrepo and Powers, 1999. Kvamsdal *et al*., 2016; Iliyn *et al*., 2014; ICES Advice, 2018: https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/Introduction_to_advice_2018.pdf

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	60-79
Information gap indicator	More information sought – review of alternative measures to reduce unwanted catch of pollock.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	**Generally understood** HCRs are in place **or available** that are **expected** to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	**Well defined** HCRs are **in place** that **ensure** that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock **fluctuating around** a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock **fluctuating at or above** a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, **most** of the time.
	Met?	Yes	Yes	No
Rationale				

The HCR is similar to HCRs developed in other (well managed) fisheries elsewhere in the world (Restrepo and Powers, 1999). It consists of determination of a TAC based on the status of fishing mortality and spawning biomass in relation to limit and target reference points (B_{lim}, B_{target}, F_{lim} and $F_{target,}$ see Figure 5) as well as to F_0, a value set to allow scientific fishing below B_{lim} (Babayan, 2000). When stock biomass is above B_{target}, fishing mortality is set at F_{target}. Fishing mortality is reduced as stock levels decrease between B_{lim} and B_{target}, whereas below B_{lim} it is set at F_0. The latter allows for scientific fishing while the commercial fishery is closed. The type of HCR employed here is standard, well understood and tested around the world by many fisheries and is expected to work as designed. SG 60 is met.
The HCR works in concert with the results of the annual stock assessment as part of a two steps, two-year projection process in which the current stock biomass along with the upcoming year's TAC is used to project the following year's TAC. The upcoming year's TAC is normally established during the preceding year using the HCR. The previously set TAC is updated in the following year, using updated survey results and harvest data. The HCR is used to set fishing mortality and hence to establish the TAC for the second year of the projection. The projection is done in a probabilistic manner by sampling the uncertainty in the abundance estimates of age 2 and older fish, recruitment (age 1) during the preceding 10 years, and fishery selectivity at age. If the joint probability of fishing mortality and biomass being above and below F_{lim} and B_{lim}, respectively, is <5% (one-tailed test), then the results using the HCR can be adopted (Babayan, 2000; Ilyin, 2014). Otherwise, the fishing mortality and hence the TAC in the second year of the projection are adjusted down such that the probability for projected fishing mortality being above F_{lim} and biomass being below B_{lim}, is <5%. This approach ensures that biomass does not fall below B_{lim}. There is, therefore, a well-defined HCR in place that is a key part of the harvest strategy, which is designed to ensure that fishing mortality is reduced as B_{lim} is approached. SI meets SG80.
As argued above, the HCR is designed, tested and expected to keep stock biomass at or above the Bmsy level in the long term aspect. However, it does not account for the ecological role of Pollock explicitly. While ecotrophic studies suggested that pollock removals do not have any detrimental effect on the state of the Barents Sea Ecosystem, neither pollock consumption by other predators (which is captured in natural mortality rate) nor the role of pollock as a predator are explicitly incorporated into HCR on a precautionary basis. SG 100 is not met.

b	**HCRs robustness to uncertainty**			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a **wide** range of uncertainties including the ecological role of the stock, and there is **evidence** that the HCRs are robust to the main uncertainties.
	Met?		Yes	No
Rationale				

HCR takes the main uncertainties into account through its design and its use of stock assessment outputs. HCR allows for the F_{target} only when biomass is at or above B_{target} and reduces fishing mortality to near zero when biomass declines from B_{target} to B_{lim}. This allows for a precautionary reduction in fishing mortality attributable to the heightened risk of crossing the unknown "true" value of B_{lim} as a consequence of uncertainty in our understanding of Pollock population dynamics. The requirement for projected SSB to have only 5% chance to fall below B_{lim} is considered a strong precautionary feature of the HCR in ensuring that biomass does not fall below B_{lim} and is kept above B_{tr} with a high degree of certainty. To estimate uncertainty in the TAC projections, non-parametric bootstrap sampling of the assessment-model-derived residuals associated with the catch-at-age and stock abundance indices (e.g. CPUE and survey indices) is used in repeated assessment model runs (1000) to characterize uncertainty in the projection inputs (Ilyin *et al*., 2014; VNIRO, 2021). Parametric bootstrapping is undertaken in repeated projection runs to characterize the uncertainty in the projections. Greater assessment uncertainty translates into greater uncertainty in the projection inputs which has the effect of making the slope of the risk curve more gradual. This would trigger the 5% criterion of $B<B_{lim}$ at a lower range of the second year's TAC. In this manner, greater uncertainty in the assessment translates to lower recommended TACs (VNIRO, 2021). As and when the uncertainty in the assessment inputs change, the updated estimates of uncertainty are incorporated into the HCR and hence the TAC advice. SIb meets SG80.
The HCR in general is expected to keep the stock fluctuating at a target level consistent with MSY. However, in its current form it does not ensure that it will be at or above MSY level most of the time. Furthermore, the current HCR formulation is focused on the management of Pollock and does not consider the wider implications and uncertainties of fishing mortality on the ecosystem. There is also uncertainty in the stock structure with respect to the migrations of EBS Pollock. Therefore, SG100 is not met.

	HCRs evaluation			
c	Guide post	There is **some evidence** that tools used **or available** to implement HCRs are appropriate and effective in controlling exploitation.	**Available evidence indicates** that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Yes	Yes	No
Rationale				

There is a suite of regulatory tools used to implement the TAC produced by the HCR. This includes catch quotas allocated to fleet sectors, gear and mesh regulations, and time/area closures, similar to management efforts elsewhere in the world, frequent vessel inspections at sea, daily catch reports, scientific observers program, VMS reporting. All these tools are considered to be appropriate and effective at controlling fishing mortality. SG60 is met.
Long-term trends of declining F and increasing SSB is evidence that the tools are effective at controlling fishing mortality. Furthermore, the favourable comparison of science advice and approved TACs indicates that science advice is followed closely by fishery decision-makers. The F/SSB phase plot for Synthez model provides an indication that the tools in use are effective in achieving the exploitation levels required under the HCR. Fully recruited fishing mortality (F) was above the target and limit rates) in early 2000s but dropped to below the limit and recently below the target following harvest constraints based on HCR application. SG80 is met.
Although long-term trends of declining F and increasing SSB provide evidence that the tools are effective at controlling fishing mortality, change of assessment models and reference points does not allow to conclude with high confidence that the tools were effective in keeping exploitation levels at or near the target. More time is required for full evaluation of effectiveness of current HCR. SIc does not meet SG100.

References

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	≥80
Information gap indicator	<u>Information sufficient to score PI</u>

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	**Some** relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	**Sufficient** relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A **comprehensive range** of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Yes	Yes	No

Rationale

There is a wealth of multi-decadal fishery research in the Bering Sea by Russian and US scientists (Aydin *et al*., 2002; Stepanenko, 1989; Balykin, 1990; Fadeev 1991; Shuntov *et al*, 1993; Stepanenko, 1997; Chukuchalo 2006; Coyle *et al*, 2011). A wide range of data is available on all major components of stock productivity of West Bering Sea Pollock, including information on age and growth (Buslov 2005), natural mortality, maturity and fecundity Buslov, 2005), spatial distribution (Fadeev and Gritsay, 1999; Datksy, 2000a,b; Glubokov and Kotenev), effects of oceanographic conditions on growth and food availability for various age groups (Volkov 2006, 2012). These data have been and are still routinely collected through fishery independent surveys and fishery monitoring, and summaries of the data are produced each year as part of the annual stock assessment process. Overall, the number of observations is very large. Sources of recruitment variation have been the subject of research over the years (Stepanenko 2006, Stepanenko and Gritsay 2014). There is general understanding that environment and specifically large zooplankton influence Pollock recruitment, but there has been no more recent formal analysis of this. Estimates of natural mortality (M) in the past were based on life history parameters, specifically the maturation age (method of Tuirn, 1972), but recently were changed to the values similar to the ones reported in Ianelli *et al*. (2019). The index of stock abundance traditionally was represented by the CPUE of large tonnage commercial vessels, but recently trawl acoustic biomass index was also used (VNIRO, 2021). The design and methodologies used to analyse the data from these surveys have been considered by TINRO and KamchatNIRO since their inception. The data yield trends in Pollock stock abundance since 1990s. Fishery removals are monitored via daily electronic reporting and in person by FSB inspectors aboard fishing and catcher-processor vessels. The age/size composition of the catch is monitored by at-sea observers and stock composition is characterised by scientific surveys. A comprehensive array of information exists on the physical and biological oceanography and the ecosystem as a whole. Such data are collected routinely on the surveys both nationally and bilaterally with the US scientists and reported in such media as PICES, and are an important supplement to the Pollock assessment information. Therefore, SG 60 and 80 are met.

Although, there is a comprehensive range of information on Pollock in term of abundance since at least 1990s as well as in term of fleet composition and fishery removals. Stock structure and connectivity with EBS are not directly related to the current harvest strategy therefore, SG100 is not met.

b	**Monitoring**			
	Guide post	Stock abundance and UoA removals are monitored and **at least one indicator** is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA 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	**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 inherent **uncertainties** in the information [data] and the

			sufficient frequency to support the harvest control rule.	robustness of assessment and management to this uncertainty.
	Met?	Yes	Yes	No
Rationale				

Trawl and acoustic surveys for Pollock are conducted annually by TINRO and KamchatNIRO, although in some years no sampling was completed (Kuznetsov and Nikolaev, 2000). This is complemented by bottom trawl surveys conducted every other year and by US trawl acoustic survey in Russian waters based on bilateral agreement. The surveys provide area expanded estimates of total biomass and biological information on age structure, growth, maturity, etc. Research on reproduction, areas of spawning, larval distribution and survival is conducted in parallel studies onboard research and commercial vessels. Commercial vessel CPUE index available since 1995 is used in the stock assessment as stock biomass index (VNIRO, 2021). Additionally, SSB index has been developed from the trawl survey and used as tuning index in assessment models. Therefore at least two indicators of biomass are available, one from fishery independent survey and one from the fishery dependent data (commercial CPUE). SG60 is met.

In addition to stock biomass and biological data on age and size structure, removals of the UoA are also monitored on detailed spatial and temporal scale. Monitoring of fishery removals is conducted by the FSB's Coastguard aboard fishing vessels. Daily catch reports are mandatory. Cumulative annual landings are available on daily basis. Verification of the landings and transhipments has been 100% since 2010. Scientific observers (managed by TINRO) are deployed to fishing vessels to collect information on the composition of the catch, including discards of pollock (VNIRO, 2021). SG80 is met.

However, it cannot be stated that the information collected has a high degree of certainty also taking into account the uncertainties related with stock configuration, hence SIb does not meet SG100

c	**Comprehensiveness of information**			
	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		**All elements: Yes**	
Rationale				

The vast majority of Pollock catch is taken is by midwater trawls. There is some catch by Danish seines and bycatch in bottom trawls targeting other species. Pollock bycatch in other fisheries is subject to the same requirements for reporting and monitoring as directed fishery. Pollock catch in other fisheries is reported via Daily Catch Reports to the monitoring database and is counted towards total area TAC. Foreign vessels possessing permit to harvest in Russian zone based on bilateral agreements are subject to the same stringent reporting requirements and control. SG80 is met.

References

Kuznetsov and Nikolaev, 2000; VNIRO, 2021; Shuntov *et al.*, 1993; Tuyrin, 1972;

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.4 – Assessment of stock status

PI 1.2.4		**There is an adequate assessment of the stock status**		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Yes	No
Rationale				

The Synthez model estimated stock status relative to standard reference points (Bmsy, Bpa, Fmsy, Fmax, and F0.1), which were calculated based on the assessment results and used to inform a HCR. The Synthez model has been tested using simulated data to ensure that it assesses stock dynamics adequately. This model was preceded by other age structured models as state space model SAM (see: LR, 2021). Despite some differences, all models generated similar results and supported similar standard reference points (VNIRO, 2021). The Synthez assessment takes into account major features of the stock, fitting the data to age structure, CPUE and biomass index. SG80 is met.

Current assessment considers West Bering Sea stock as an independent self-sustained unit. However, there is no consensus between researchers on whether the Pollock aggregation is a separate stock or a mix of West Bering and East Bering stock, as described in in P1 section 7.2.1.3. Due to stock structure uncertainty, current assessment model does not account for the level of stocks mixing / movement in and out of the area. Therefore, SI does not meet SG100.

b	**Assessment approach**			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	Yes	Yes	
Rationale				

Prior to 2010, assessments of West Bering Sea Pollock were based on direct enumeration (biostatistical method) of trawl and acoustic surveys and biological information (age structure, maturity, weight at age, sex ratio at age (LR, 2021). Since 2010, the “Synthez” statistical catch-at-age model has replaced the biostatistical method as the basis for management advice. Ae structured models evaluate stock status relative to the standard, widely used reference target and threshold reference points (Bmsy. Bpa, Fmsy, Flim, Babayan, 2000). SG60 is met.

Biomass and fishing mortality reference points are estimated within the assessment model framework, thus being consistent with the assessment scale and are appropriate to inform a HCR directly for the stock. SG80 is met.

c	**Uncertainty in the assessment**			
	Guide post	The assessment **identifies major sources** of uncertainty.	The assessment **takes uncertainty into account**.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a **probabilistic** way.
	Met?	Yes	Yes	Yes

Rationale

The assessment identifies major sources of uncertainty, such as uncertainty caused by measurement errors in input data (errors in reported total landings, age and size structure, indices of abundance) and uncertainty in the model approximation of population dynamics (VNIRO, 2021). SG60 is met.

Assessment model currently used to characterise stock status (Synthez model) belong to the class of statistical catch at age models that assume some measure of error is present in catch age information and relative indices of abundance used in the model as inputs (Nielsen and Berg, 2014; Ilyin *et al*., 2014). The assessment characterises the major sources of uncertainty, such as uncertainty caused by measurement errors in input data and uncertainty in the model approximation of population dynamics. SG80 is met.

The assessment model generates probability density distributions based on bootstrap and Monte Carlo simulations to characterise the probability distribution of SSB and F in the terminal year (VNIRO, 2021). These distributions are compared to the target and limit reference points to define the probability of overfishing (F is too high) and being overfished (SSB too low). Furthermore, TACs are being calculated for a year and two years forward via random resampling from distributions of recruitment and abundance at age in terminal year and projecting forward under different levels of catch as well as target fishing mortality and estimating a probability of projected SSB falling below Blim. In other words, the assessment model provides the inputs and their uncertainty to a harvest control rule that determines the probability of TAC options exceeding these reference points over 2- and 10-year projection periods. Consequently, SIc meets SG100.

d	**Evaluation of assessment**			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			No

Rationale

The stock historically was accessed with different methods – the biostatistical method based on expansion of survey data, separable VPA (TISVPA) with variable selectivity's and two statistical catch at age models (SAM). The assessment therefore appears to be robust. However, there is no evidence that alternative hypotheses were formulated and explored rigorously to verify robustness of stock status determination. SG 100 is not met.

e	**Peer review of assessment**			
	Guide post		The assessment of stock status is subject to peer review.	The assessment has been **internally and externally** peer reviewed.
	Met?		Yes	Yes

Rationale

The stock assessment and the TAC for future years with the two year lag are subject to a multistage review process both internally (within TINRO / VNIRO scientific process and by FFA) and externally (by the expert group of the Ministry of Nature) on annual basis. However, the focus is mostly on TAC and less so on the assessment as a methodology. The degree of technical details in peer review evaluation both internally and externally is not well characterized. Nonetheless, the assessment is subject to mandatory internal and external review. SG80 is met.

Once the assessment is prepared by TINRO and reviewed internally, it is further being subjected to the review by the Pollock Scientific Council consisting of experts on pollock biology and stock assessment from several research institutes of FFA. This is followed by the peer review by the Scientific Council of VNIRO, the head Institute within the FFA system. Finally, the assessment and proposed TACs are reviewed by the independent expert group of the Ministry of Natural Resources. At each of these steps reviewers provide critique, comments and suggestions to be addressed by the assessment authors. These steps are repeated on annual basis. SG100 is met.

References

Nielsen and Berg, 2014; Ilyin *et al*., 2014; VNIRO, 2021.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

7.2.5 Principle 1 references

Aydin K.Y., Lapko V.V., Radchenko V.I., Livingstone P.A. A Comparison of the Eastern Bering and Western Bering Sea Shelf and Slope Ecosystems Through the Use of Mass-Balance Food Web Models // NOAA Tech. Memorandum NMFS-AFSC-130. – 2002.

Babayan V.K. Precautionary approach to the assessment of the total allowable catch (TAC): analysis and recommendations for use (In Russian) [Предосторожный подход к оценке общего допустимого улова (ОДУ): Анализ и рекомендации по применению]. Moscow: Publishing house VNIRO, 2000, 192 p.

Babayan V.K., Bobyrev A.E., Bulgakova T.I., Vasil'ev D.A., Ilyin O.I., Kovalev Yu.A., Mikhailov A.I., Mikheev A.A., Petukhova N.G., Safaraliev I.A., Chetyrkin A.A., Sheremet'ev A.D. Methodological recommendations for assessing the stock of priority types of aquatic biological resources (In Russian) [Методические рекомендации по оценке запасов приоритетных видов водных биологических ресурсов]. Moscow: Publishing house VNIRO, 2018, 312 p.

Balykin P.A.1990. Biology and stock assessment of pollock in the western Bering Sea. Abstr. Ph.D. dissert. Petropavlosk-Kamchatski : 23 p.

Buslov A.V, 2005. Growth of Pollock and size and age structure of its populations. Petropavlovsk Kamchatsky. KamchatNIRO publishing. 228 p. Caddy, J., 1998. A short review of precautionary reference points and some proposals for their use in data-poor situations (No. 379). Food & Agriculture Organization.

ICES Advice 2018: https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/Introduction_to_advice_2018.pdf

Chuchukalo V.I. Nutrition and nutritional relationships of nekton and nectobenthos in Far Eastern seas. Vladivostok: TINRO Center. 2006.511 p. Coyle, K. O.; Eisner, L. B.; Mueter, F. J.; *et al*. 2011. Climate change in the southeastern Bering Sea: impacts on pollock stocks and implications for the oscillating control hypothesis. Fisheries Oceanography 20 : 139-156 Datsky A.V. 2000a. On the population heterogeneity of pollock Theragra chalcogramma in the Anadyr-Navarinsky district // Voprosy Rybolovstva . - 2000 a.- T.1, No. 4.- S.74-90 Datsky A.V. - 2000b.- Features of the distribution of pollock in the northwestern part of the Bering Sea // Voprosy Rybolovstva T. 1. №2-3.- S. 109-110. Fadeev N.S. 1991. Distribution and migration of pollock in the Bering Sea. – VNIRO press, Moscow. 54 p. Fadeev N.S., Gritsay E.V. 1999. Fishing and size-age composition of pollock in the northern part of the Bering Sea in 1995-1998. // Izv. TINRO. T. 126.P. 237-245.

Fishing Rules for the Far Eastern Fisheries Basin, 2019 (as amended on July 20, 2020) (Source: http://docs.cntd.ru/document/554767016; http://xn--b1a3aee.xn--p1ai/pravila-rybolovstva.html).

Glubokov A.I., Kotenev B.N. 1999. Pollock of the Navarinsky district // Voprosy Rybolovstva. No.5. P.36.37.

Glubokov A.I., Kotenev B.N. The population structure of pollock Theragra chalcogramma in the northern part of the Bering Sea. M .: Publishing house VNIRO. 2006.200 s.

Ianelli J., Fissel B., Holsman K., Honkalehto T., Kotwicki S., Monnahan C., Siddon E., Stienessen S., Thorson J. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea // Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration: Seattle, WA, USA. — November 18, 2019. — 169 p. (Available at https://www.afsc.noaa.gov/refm/stocks/plan_team/2019/EBSPollock.pdf);

ICES Advice. 2003. http://ices.dk/sites/pub/Publication%20Reports/Advice/2003shy/may/Reference%20points.pdf

Ilyin O.I. On one method for assessing stocks and forecasting the TAC of marine commercial fish based on a continuous model of the dynamics of the age structure of the population (In Russian) [Об одном методе оценки запасов и прогноза ОДУ морских промысловых рыб на основе непрерывной модели динамики возрастной структуры популяции]. Research of aquatic biological resources of Kamchatka and the northwestern part of the Pacific Ocean [Исследования водных биологических ресурсов Камчатки и северо-западной части Тихого океана], Petropavlovsk-Kamchatsky, 2009, issue № 13, pp. 27-34.

Ilyin O.I., Sergeeva N.P., Varkentin A.I. 2014 Stock assessment and forecasting ODE of East Kamchatka Pollock (Theragra chalcogramma) based on a precautionary approach // Transactions of VNIRO. - 2014. - T. 151. - p. 62–74;

Kuznetsov M.Yu., Nikolaev A.V. 2000.Guide to the collection and primary processing of data acoustic measurements during trawl-acoustic surveys of pollock stocks in Bering Sea. Vladivostok: TINRO Center. 68 p.Nielsen, A. and Berg, C.W., 2014. Estimation of time-varying selectivity in stock assessments using state-space models. Fisheries Research, 158, pp.96-101.PCA, 2020a. P1 Stock status. Submitted to LR Fisheries. 68 p.

Kvamsdal, S.F., Eide, A., Ekerhovd, N.-A., Enberg, K., Gudmundsdottir, A., Hoel, A.H., Mills, K.E., Mueter, F.J., Ravn-Jonsen, L., Sandal, L.K., Stiansen, J.E. and Vestergaard, N., 2016. Harvest control rules in modern fisheries management. Elem Sci Anth, 4, p.000114. DOI

Lewontin, R.C. On the Measurement of Relative Variability. Systematic Biology, 1966, 15 (2):141-142.

LR, 2021. Western Bering Sea Pollock - Public Comment Draft Report. Conformity Assessment Body (CAB): Lloyd's Register Assessment team: Dave Japp, Alexei Sharov, Andy Payne. Fishery client: Pollock Catchers Association. Assessment type: Initial Assessment. Date: April 2021

Methot, R. D., Jr., C. R. Wetzel, I. G. Taylor, and K. Doering. 2020. Stock Synthesis User Manual Version 3.30.15. U.S. Department of Commerce, NOAA Processed Report NMFS-NWFSC-PR-2020-05. https://doi.org/10.25923/5wpn-qt71

Munk K.M. Maximum ages of groundfishes in waters off Alaska and British Columbia and consideration of age determination. Alaska Fish. Res. Bull., 2001, vol. 8, №1, pp. 12-21.

Nielsen, A. and Berg, C.W., 2014. Estimation of time-varying selectivity in stock assessments using state-space models. Fisheries Research, 158, pp.96-101.

Restrepo, V. R. and Powers, J. E. 1999. Precautionary control rules in US fisheries management: specification and performance. ICES J. Mar. Sci. 56 (6): 846-852.

Riker U.E. Methods of assessment and interpretation of biological indicators of fish populations (In Russian) [Методы оценки и интерпретация биологических показателей популяций рыб]. Moscow: Publishing house Food industry, 1979, 408 p.

Shuntov V.P., Volkov A.F., Temnykh O.S., Dulepova E.P. Pollock in the ecosystems of the Far East Sea // Vladivostok, TINRO. – 1993. – 426 p

Stepanenko M.A. 1989. The state of stocks and distribution of pollock in the Bering Sea. Proc. Intern. Symp. Biol. Managem. Walleye pollock, Alaska Sea Grant Report No 89-1: 537-547.

Stepanenko M.A. 1997. Interannual variation of pollock Theragra chalcogramma and cod Gadus macrocephalus spatial differentiation in the Bering Sea. Journ. of Ichtyol., vol. 37(1): 19-26.

Stepanenko M.A. 2006. Interannual variability of juvenile and 1-year-old pollock abundance and recruitment in the Bering Sea. Abs. 24 th Lowell Wakefield Fish. Symp. «Resiliency of Gadid Stocks to Fishing and Climate Change», Anchorage, Alaska: 151 p.

Stepanenko M.A. and Gritsay E.V. 2014. Eastern Bering Sea Pollock recruitment, abundance, distribution and approach to fishery management. // Fisheries Science – 2014. - v. 80 (1) - 151-160.

Stepanenko M.A., Gritsay E.V. (2006) Effect of biological and physical factors on recruitment variability of eastern Bering Sea pollock. PICES press, XV Ann. Conf.: 152.

Tyurin P.V. 1972 "Normal" curves of the survival and rate of natural mortality of fish as a theoretical basis for fisheries regulation // Izv. GosNIORH. T. 71. S. 71–128.

Vasiliev D.A. 2006. Certificate of official registration computer programs No. 2006611764. Register of computer programs //Tripleseparable Virtual Population Analysis (TSVPA)

Vasiliev D.A. 2015 Toolkit for the application of the TISVPA model to assess the stocks of commercial fish. M .: Publishing house VNIRO. - 2015.24 p.

VNIRO 2021. Materials of the total allowable catch in the area of harvesting (catch) of aquatic biological resources in the internal sea waters of the Russian Federation, in the territorial sea of the Russian Federation, on the continental shelf of the Russian Federation, in the exclusive economic zone of the Russian Federation and the Caspian Sea on 2022 (with an environmental impact assessment). Part 2. Fish of the Far Eastern Seas". Pollock (Theragra chalcogramma) 67.01 − Chukotka zone, 61.01 − West Bering Sea zone (east of 174° E). Vladivostok: Pacific branch of FGBNU "VNIRO". 32 p. - http://tinro.vniro.ru/ru/ob-slush/8-vse-publikatsii/133-obyavlenie-o-provedenii-obshchestvennykh-slushanij-vladivostok (Retrieved – April 20, 2021; in Russian)

Volkov A.F. The results of studies of zooplankton of the Bering Sea under the program "NPAFC" (expedition BASIS). Part 2. Western areas // Izv. TINRO. – 2012. – T. 169. – S. 45–66.

Volkov A.F., Chuchukalo V.I. Composition and distribution of mesoplankton in the Bering Sea (according to TINRO studies 1949-1982) // Izv. TINRO. – 1985. – T. 110. – Pp. 120–124.

7.3 Principle 2

7.3.1 Principle 2 background

7.3.1.1 Principle 2 definitions

P2 definitions according to MSC Fisheries Standard v2.01:

Primary species in P2 are those for which all of the following criteria are met:

1) Species in the catch that are not covered under P1 because they are not included in the UoA;

2) Species that are within scope of the MSC program as defined in FCP Section 7.4; and

3) Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points.

Secondary species in P2 are species in the catch which are not covered under P1 because they are not included in the UoA and:

1) Are not considered 'primary' as defined above for primary species; or

2) Species that are out of scope of the program, but where the definition of ETP species is not applicable.

We designate "main" primary and secondary species as those which comprise at least 5% of the total catch, or at least 2% of the total catch for "more vulnerable/less resilient" species, whose life history characteristics may make them more prone to overexploitation. All "out of scope" secondary species must be classified as "main."

7.3.1.2 Observer Programmes

Data on the monitoring of the midwater trawl pollock fishery in the West Bering Sea / Navarinsky area by independent observers was provided for the years 2017–2020. Monitoring in the WBS zone was conducted by rigorously trained scientific observers managed by KamchatNIRO and TINRO, the two largest regional branches of the national marine and fisheries agency VNIRO. Historically, only two observers operated in the pollock fishery in the north-western part the WBS, but to increase the amount of information collected and to expand the coverage of fishing operations in 2019 and 2020, the number of trained scientific observers was increased to 6 (5 from TINRO, 1 from KamchatNIRO). In addition, one observer was dedicated specifically to the collection of data on marine mammals and seabirds (Table 15). A portion of the WBS TAC is allocated to foreign fishing – these vessels have 100% inspector (Coastguard) coverage, whereas independent scientific observer coverage focuses on the national fleet (Lloyd's Register, 2021).

Table 15 – WBS pollock fishery observers' coverage for Russian fleet in 2019 and 2020 (Lloyd's Register, 2021)

Indicator	2019	2020
Catch, metric tons	399,000	285,000
Total numbers of observers (inspectors)	7	7
Number of observed hauls (operations)	992	839
Observer vessel-days	441	329
Weight measurements of pollock, individuals	101,500	54,705
Biological analysis of pollock, individuals	5,100	4,137
Observations on seabirds and marine mammals' bycatch and interaction	493	1,258
Fishery coverage	8.0%	8.9%
Spatial and temporal scope of monitoring activities	72.7%	66.0%

7.3.1.3 Catch Composition

According to official fishery statistics, the share of pollock in catch composition for specialized midwater trawl fishery in the WBSZ in 2010–2019 was 95.75% by weight. The share of all sculpin species in the sum was 1.91%; Pacific cod, Pacific herring, all species of squid and flounder – less than 1% each; other species – Pacific halibut, Greenland halibut, sablefish, all skate species in the sum, all species of arrow-toothed halibut, rockfish, Hexagrammidae, Macrouridae – less than 0.1% each (Zolotov, 2021).

The detailed composition of the midwater trawl catches in the WBSZ in 2017-2020 as reported by observers is shown in Table 16. As can be seen from the table, the share (by weight) of the target species (walleye pollock) exceeds 90%, the share of the only main primary species (Pacific herring) does not exceed 10%. The share of Pacific cod was less than 1%, and for each of the rest species it was less than 0.1%.

Species highlighted in brown in the table are classified as main primary species, and the species highlighted in blue are main secondary species. The only shark species is painted in grey. Invertebrates are highlighted in yellow, and benthic invertebrates (crabs, starfish and sea anemone) are highlighted in red.

The occurrence of benthic organisms in the catch was no more than 2%, that is, two trawls out of 100 touched the bottom during fishing. Species associated with vulnerable marine ecosystems (VME) such as soft corals, sponges, and ascidians were not recorded in the catch.

Regarding the fisheries management regime, the species were differentiated by those for which there is a total allowable catch (TAC) or possible catch (PC) for individual species; for which is TAC or PC for group of species (G); and non-commercial species (NCS).

Table 16 – Observer data on the catch in the midwater trawl pollock fishery in the WBSZ (east to 174° E) in 2017-2020.

Scientific name	Common name	Exploi-tation mode	Catch share by weight, %		Occurrence rate, %	
			Max	Min	Max	Min
Theragra chalcogramma	Walleye pollock	TAC	98.65	90.633	100	100
Clupea pallasii	Pacific herring	PC	8.397	0.25	39.326	27.3
Gadus macrocephalus	Pacific cod	TAC	0.724	0.17	56.742	28.8
Atheresthes evermanni	Kamchatka flounder	G	0.085	0.0001	21.795	4.0
Myoxocephalus polyacanthocephalus	Great sculpin	G	0.0762	0.008	15.73	1.6
Bathyraja parmifera	Alaska skate	G	0.038	0.0001	16.292	0.8
Berryteuthis magister	Commander squid	G	0.027	0.001	12.393	10.112
Atheresthes stomias	Arrowtooth flounder	G	0.015	0.0001	22.472	3.2
Hippoglossus stenolepis	Pacific halibut	TAC	0.015	0.001	14.53	5.6
Anoplopoma fimbria	Sablefish	PC	0.0145	0.0024	6.838	5.056
Lepidopsetta polyxistra	Northern rock sole	G	0.014	0.0001	14.53	3.2
Reinhardtius hippoglossoides matsuure	Greenland halibut	TAC	0.0131	0.0001	25.24	5.6
Hippoglossoides robustus	Bering flounder	G	0.011	0.006	22.65	20.787
Sebastes alutus	Pacific ocean perch	G	0.011	0.00001	14.045	1.6
Bathyraja maculata	White-blotched skate	G	0.00963	0.00963	1.685	1.685
Hippoglossoides elassodon	Flathead sole	G	0.0065	0.00003	9.829	3.2
Bathyraja aleutica	Aleutian skate	G	0.006	0.000736	13.483	1.282
Malacocottus zonurus	Darkfin sculpin	G	0.006	0.002	11.798	7.692
Pleuronectes quadrituberculatus	Alaska plaice	G	0.008	0.0003	13.483	5.6
Oncorhynchus keta	Chum salmon	PC	0.005	0.0002	16.239	3.371
Careproctus furcellus	Emarginate snailfish	NCS	0.0045	0	1.709	0
Sebastes borealis	Shortraker rockfish	G	0.00346	0.000026	3.846	1.124
Limanda aspera	Yellowfin sole	G	0.0021	0.0002	5.618	0.855
Lepidopsetta bilineata	Rock sole	G	0.002	0.002	19.101	19.101
Myoxocephalus brandtii	Sculpin	G	0.002	0.00002	11.236	0.855
Myoxocephalus jaok	Plain sculpin	G	0.002	0.0012	9.1	3.846
Ulca bolini	Big-mouthed sculpin	NCS	0.0019	0.0001	6.742	0.8

Aptocyclus ventricosus	Smooth lumpsucker	NCS	0.002	0.00003	15.73	0.8
Chrysaora melanaster	Northern sea nettle (jellyfish)	NCS	0.00074	0.000004	2.247	0.427
Hemilepidotus jordani	Yellow Irish lord	G	0.002	0.0001	8.1	3.846
Oncorhynchus tschawytscha	Chinook salmon	PC	0.001	0	8.1	0
Bathyraja violacea	Okhotsk skate	G	0.000478	0.000478	1.124	1.124
Sebastes aleutianus	Rough-eyed rockfish	NCS	0.00047	0.0002	2.247	1.282
Bathyraja isotrachys	Raspback skate	G	0.00042	0.00042	3.371	3.371
Octopus sp.	Unidentified octopus	NCS	0.00041	0.00041	1.685	1.685
Lycodes raridens	Marbled eelpout	NCS	0.00034	0.00002	2.809	0.8
Glyptocephalus zachirus	Rex sole	G	0.0003	0.00002	3.371	1.709
Oncorhynchus nerka	Sockeye salmon	PC	0.0003	0.000048	1.709	1.124
Pandalus goniurus	Humpy shrimp	NCS	0.00021	0.00021	1.685	1.685
Careproctus rastrinus	Salmon snailfish	NCS	0.0002	0.00001	4.494	1.0
Liparis ochotensis	Okhotsk snailfish	NCS	0.0002	0.00008	2.137	1.685
Gymnocanthus detrisus	Purplegray sculpin	G	0.002	0.000059	16.2	1.124
Hemitripterus villosus	Sea raven	NCS	0.0002	0.000032	1.709	0.562
Rhinoraja taranetzi	Mud skate	NCS	0.0002	0.0002	0.427	0.427
Percis japonicus	Dragon poacher	NCS	0.00016	0.000003	4.274	1.6
Bathymaster signatus	Searcher	NCS	0.000134	0.00002	2.991	0.8
Triglops scepticus	Spectackled sculpin	NCS	0.00013	0.000002	2.809	0.427
Lycodes concolor	Ebony eelpout	NCS	0.000122	0.000122	1.124	1.124
Glyptocephalus stelleri	Blackfin flounder	G	0.00012	0.000014	1.124	0.855
Sebastes glaucus	Blue perch	NCS	0.000113	0.000035	1.124	0.427
Hemilepidotus hemilepidotus	Red Irish lord	G	0.000106	0.000106	1.124	1.124
Chionoecetes bairdi	Bairdi crab	NCS	0.0001	0.0001	1.685	1.685
Pleurogrammus monopterygius	Atka mackerel	G	0.0001	0.000035	4.701	1.124
Lipolagus ochotensis	Eared blacksmelt	NCS	0.0001	0.0001	0.427	0.427
Phacellophora camtshchatica	Fried egg jellyfish	NCS	0.000098	0.000098	0.562	0.562
Somniosus pacificus	Pacific sleeper shark	NCS	0.000096	0	0.855	0
Coryphaenoides cinereus	Popeye grenadier	NCS	0.00008	0.00008	0.427	0.427
Zaprora silenus	Prowfish	NCS	0.000074	0.000064	1.124	0.427
Lycodes soldatovi	Soldatov's eelpout	NCS	0.00007	0	0.855	0
Lycodes yamatoi	Eelpout	NCS	0.000066	0.000066	0.562	0.562
Oncorhynchus gorbuscha	Pink salmon	PC	0.000065	0.000018	1.124	0.855
Sebastolobus macrochir	Broad-banded thornyhead	NCS	0.000063	0.000017	0.855	0.562
Sebastes polyspinis	Rockfish	NCS	0.00006	0.000003	0.562	0.427
Gymnocanthus galeatus	Armorhed sculpin	G	0.0001	0.0000321	5.1	0.427
Boreoteuthis borealis	Armhook squid	NCS	0.00006	0	0.427	0
Actiniaria	Sea anemone	NCS	0.000055	0.000055	1.124	1.124
Sarritor frenatus	Sawback poacher	NCS	0.00005	0.000001	2.809	0.427
Careproctus colletti	Alaska snailfish	NCS	0.00005	0	0.855	0
Albatrossia pectoralis	Giant grenadier	NCS	0.00004	0	0.427	0
Octopus dofleini	Giant Pacific octopus	NCS	0.000036	0.000036	0.562	0.562
Psychrolutes paradoxus	Tapdole sculpin	NCS	0.000032	0.000032	0.562	0.562
Careproctus cypselurus	Falcate snailfish	NCS	0.00003	0.00003	2.247	2.247
Dasycottus setiger	Spinyhead sculpin	NCS	0.00003	0	0.855	0.562
Hexagrammos lagocephalus	Rock greenling	NCS	0.00003	0.00003	0.427	0.427
Lithodes aequispinus	Golden king crab	NCS	0.000028	0.000028	0.562	0.562
Triglops forficatus	Scissortail sculpin	NCS	0.000028	0.000028	0.427	0.427
Coryphaenoides acrolepis	Pacific grenadier	NCS	0.00002	0.00002	0.427	0.427
Sebastolobus alascanus	Short-spined thornyhead	G	0.000016	0.000016	0.562	0.562

Hippoglossoides dubius	Flathead flounder	NCS	0.000016	0.000016	0.562	0.562
Lycodes palearis	Wattled eelpout	NCS	0.000014	0.000002	1.124	0.855
Lycodes brevipes	Shortfin eelpout	NCS	0.000011	0.000005	1.124	0.855
Entosphenus tridentatus	Pacific lamprey	NCS	0.00001	0.000001	0.855	0.562
Elassodiscus tremebundus	Blackbelly snailfish	NCS	0.00001	0	0.855	0
Eleginus gracilis	Saffron cod	PC	0.000008	0.000008	0.562	0.562
Lycodes diapterus beringi	Bering eelpout	NCS	0.000008	0.000008	0.427	0.427
Hemilepidotus papilio	Silverspotted sculpin	G	0.000005	0.000005	0.562	0.562
Lethenteron camtschaticum	Japanese brook lamprey	NCS	0.000003	0.000003	0.562	0.562
Leptagonus decagonus	Atlantic poacher	NCS	0.000003	0.000003	0.427	0.427
Podothecus veternus	Veteran poacher	NCS	0.000002	0.000002	1.124	0.427
Stenobrachius leucopsarus	Northern lanternfish	NCS	0.000002	0.000002	0.562	0.562
Lumpenella longirostris	Long-snouted blenny	NCS	0.000002	0.000002	0.562	0.562
Icelus spiniger	Horny sculpin	NCS	0.000002	0.0000004	0.562	0.427
Leucopsarus sp.	Lanternfish	NCS	0.000002	0.000002	0.562	0.562
Blepsias bilobus	Crested sculpin	NCS	0.000002	0	0.427	0
Melletes papilio	Butterfly sculpin	G	0.00001	0.000002	2.4	0.427
Sarritor leptorhynchus	Longnose poacher	NCS	0.000001	0.000001	0.562	0.562
Pandalus borealis	Nordic shrimp	PC	+	0	2.247	2.247
Echeneidae	Remoras	NCS	+	0	0.562	0.562
Asteriidae	Starfish	NCS	+	0	0.562	0.562

Note: + – less than 0.0000005 %; G – management is carried out for a group of species; NCS – non-commercial species. Species highlighted in brown is classified as main primary species, and the species highlighted in blue are main secondary species. Invertebrates are highlighted in yellow, and benthic invertebrates (crabs, starfish and sea anemone) are highlighted in red. The only shark species is highlighted in gray.

7.3.1.4 Primary bycatch species

7.3.1.4.1 Main primary species

Pacific herring (*Clupea pallasii*) is the only main primary species in the UoA.

West Bering Sea Zone (east of 174° E)

UoA for this fishery include only part of the West Bering Sea Zone east of 174° E.

The western Bering Sea is a feeding ground of at least two stocks of Pacific herring. From July to October, adults of the Korf-Karaginsky herring feed here. In the same period, the East Bering Sea herring stocks migrated here from the eastern part of the Bering Sea for feeding. Location of the spawning and winter grounds of main western (Korf-Karaginsky herring) and eastern Bering Sea herring stocks is shown in Figure 21. An example of the distribution of herring biomass in the western Bering Sea based on the data of the pelagic trawl survey conducted in September — October 2010 shown in Figure 22.

The harvest control rule (HCR) for management of direct herring fishery in WBSZ is shown in Figure 23, according which Blim is set equal 120 thousand metric tons. The abundance of herring in WBSZ according to the results of the trawl surveys 2010-2018 is presented in Figure 24. In 2018 the herring stock in WBSZ was much higher than Blim and slightly low Btr. In the previous 9 years, the biomass was higher than Btr. The dynamic of the abundance of herring year classes in the West Bering Sea Zone in 2012−2018 and forecast for 2019−2020 is shown in Figure 25. It is expected that the reduction of the biomass of 2008–2011-year classes will be compensated by growing percentages of herring belonging to 2012–2015-year classes and migrating to Russia's EEZ for feeding.

Since in the WBSZ the stock of herring from other regions is exploited, let us also consider the state of the stock of herring in these regions.

Korfo-Karaginsky herring stock

Pacific herring of the Korfo-Karaginsky stock is represented by one population, without local and seasonal groups (Loboda, Zhigalin, 2017). It lives up to 13 years and reaches a length of 39 cm. Few individuals of males and females become sexually mature at the age of 2+. Mass maturation is observed at the age of 4+ with a length of 28 cm (Sergeeva, 2019).

According to the KamchatNIRO's forecast (KamchatNIRO, 2021), the target and limit biological reference points for the Korfo-Karaginsky herring stock were determined in 2014. They remained unchanged in the forecast for 2022: F_{lim}

= 0.376 1/year; F_0, which reserves the volume of research fishing, equal to 0.1 × F_{tr} = 0.022 1/year; B_{tr} = **193.2** thousand metric tons, B_{lim} = **96.7** thousand metric tons. B_{tr} is a proxy for B_{msy}.

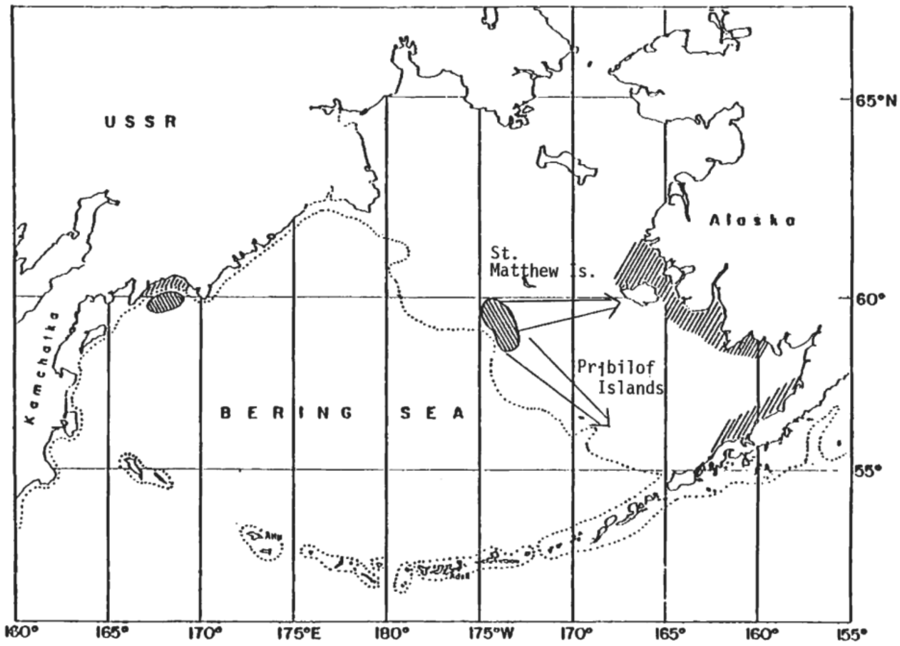


Figure 21 – Location of the spawning and winter grounds (oval areas) of main eastern and western Bering Sea herring stocks and routes of migration of eastern stocks to spawning areas (Ron Regnart *et al*., 1978).

Figure 22 – Distribution of herring biomass (kg/km^2) in the western Bering Sea on the data of pelagic trawl survey conducted on September 17 — October 24, 2010 (Loboda, Zhigalin, 2017).

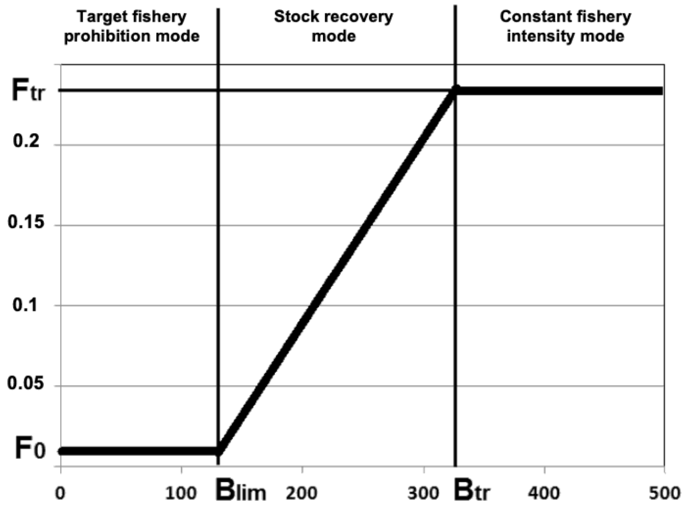


Figure 23 – Determination of herring stock management reference points in West Bering Sea Zone (TINRO, 2019).

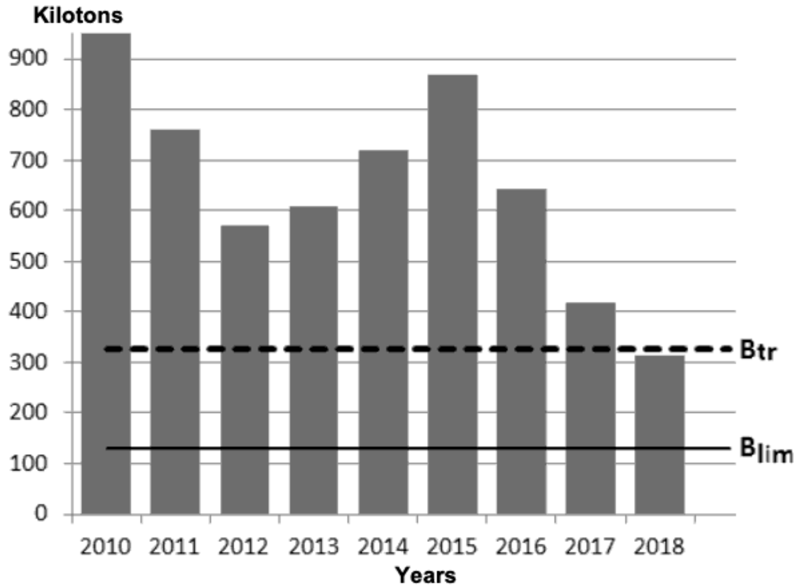


Figure 24 – Dynamic of herring biomass in the West Bering Sea Zone in 2010–2018 (TINRO, 2019).

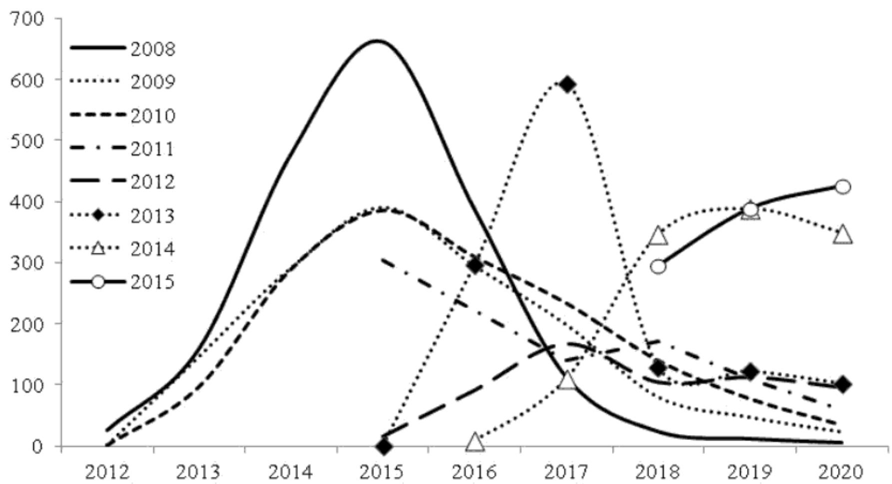


Figure 25 – Dynamic of the abundance of herring year classes in the West Bering Sea Zone in 2012−2018; forecast for 2019−2020 (TINRO, 2019).

Over the past 15 years, the peak in the biomass of the spawning stock of the Korfo-Karaginsky herring was in 2011. In 2012–2020 the stock either decreased or increased, however, there was a clear trend towards a decrease in resources, and in 2020 the biomass of producers according to the results of aerial survey amounted to 208.0 thousand metric tons, which is the minimum number since 2011. According to the results of model calculations, the total stock of Korfo-Karaginsky herring at the age of 4–13 years at the beginning of 2020 was **279.4** thousand metric tons, and the spawning stock - **267.4** thousand metric tons. The main reasons for the decline in herring stocks are the absence of powerful annual classes after the productive generations of 2010–2011, the natural elimination of fish, and the impact of fishing. According to data available for 2020, generations 2015–2016 are rated as low in number.

An important stage in testing by KamchatNIRO the management strategy for stock of Korfo-Karaginsky herring is to assess the likelihood that, in the long term (10 years ahead), the biomass of the spawning stock will not fall below the B_{lim} at a given constant rate of exploitation. Within the framework of statistical simulation modelling using the Monte Carlo method, this probability was estimated. With the intensity of fishing for 10 years at the level of the target F_{tr}, the risk of overfishing by recruitment does not exceed the recommended level $\alpha = 0.1$. Therefore, the current management strategy will not harm the stock. The results of modelling the dynamics of the stock for a long period of time at the rate of removal recommended according to the HCR also confirm the effectiveness of the proposed fishing strategy. If the HCR is observed, the stock of Korfo-Karaginsky herring with a 95% probability will not go beyond the biologically safe limits and will be slightly higher than the Btr (KamchatNIRO, 2021).

Therefore, in time of assessment, the team can conclude that there is a high degree of certainty that Korfo-Karaginsky stock of Pacific herring is above the PRI and are fluctuating around a level consistent with MSY.

Eastern Bering Sea Herring

The population structure of the eastern Bering Sea herring is complex. On the basis of genetic and morphometric analyses, comparison of other biological indicators, the heterogeneity of its stock was proved. Currently, it includes up to 9 spawning populations (Loboda, Zhigalin, 2017).

Herring are highly abundant and ubiquitous in Alaska marine waters. Commercial fisheries in the Bering Sea and Aleutian Islands (BSAI), mainly for herring roe, exist along the western coast of Alaska from Port Moller north to Norton Sound (Figure 26). These fisheries target herring returning to nearshore waters for spawning, and herring in different areas are managed as separate stocks. The largest stock in the BSAI spawns in Togiak Bay in northern Bristol Bay: the spawning biomass was estimated at 163,480 short tons in 2015. The next largest stock, in Norton Sound, had a 2015 biomass estimate of 53,786 short tons. Herring are hypothesized to migrate seasonally between their spawning grounds and two overwintering areas in the outer domain of the eastern Bering Sea (EBS) continental shelf. The herring fisheries are managed by the Alaska Department of Fish & Game (ADFG) which uses a combination of various types of surveys and population modelling to set catch limits. In federal fisheries, herring are managed as Prohibited Species: directed fishing is banned and any bycatch must be returned to the sea immediately. The amount of herring bycatch allowed is also capped and if the cap is exceeded the responsible target fishery is closed in special Herring Savings Areas (Figure 26) to limit further impacts. In the BSAI, the Prohibited Species Catch Quota for herring is calculated as 1% of the estimated annual biomass of herring in the eastern Bering Sea.

Herring spawn in nearshore areas in the spring, then migrate to overwintering areas on the outer EBS shelf. Older studies suggest that this is primarily a clockwise migration along the southern edge of the EBS ending at a single overwintering area north of the Pribilof Islands. A more recent analysis suggests a more complex series of movements, with an additional overwintering ground in the southern EBS and multiple migration routes. The routes used in any one year may depend on environmental factors, particularly temperature. The bottom trawl survey occurs primarily in June and July and is likely capturing herring that are out-migrating from nearshore spawning areas; the areas of high CPUEs on the southern edge of the EBS and around Nunivak Island. The EMA survey is conducted primarily during September, and by this time herring may have moved out of the sampling area in the south-eastern Bering Sea and are no longer available to the survey. The high CPUEs observed in the EMA survey in the north-eastern Bering Sea, particularly in Norton Sound, are harder to explain. It is possible that those herring belong to the Norton Sound stock, which is the second-largest in the BSAI, but it is unclear whether they are migrating or have a different overwintering strategy.

Herring biomass estimates and frequency of occurrence display high interannual variability (Figure 27). **Biomass estimates were above the mean during 2017-2019.** The best **estimate of 2020 and 2021 herring biomass is 253,207 mt.** This amount was developed by the Alaska Department of Fish and Game based on biomass for spawning aggregations (https://www.federalregister.gov/d/2020-04475).

Herring biomass has been above average over the past five years and well above the minimum since 1987. Therefore, in time of assessment, the team can conclude that there is a high degree of certainty that eastern Bering Sea herring is above the PRI. We do not have an information about target biological points for these stocks.

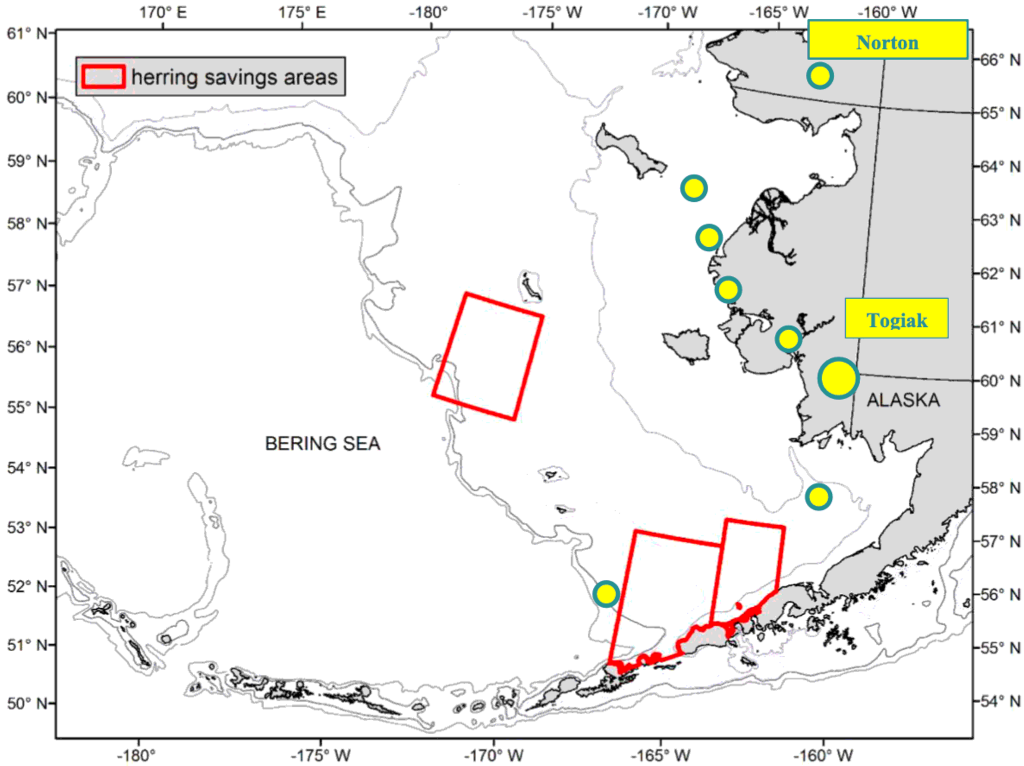


Figure 26 – Locations of Pacific herring fisheries in the Bering Sea/Aleutian Islands region (yellow dots) and Herring Savings Areas (red-outlined polygons). The two largest herring fisheries are labelled by name; the larger dot at Togiak indicates that this is by far the biggest fishery (Ormseth, 2019).

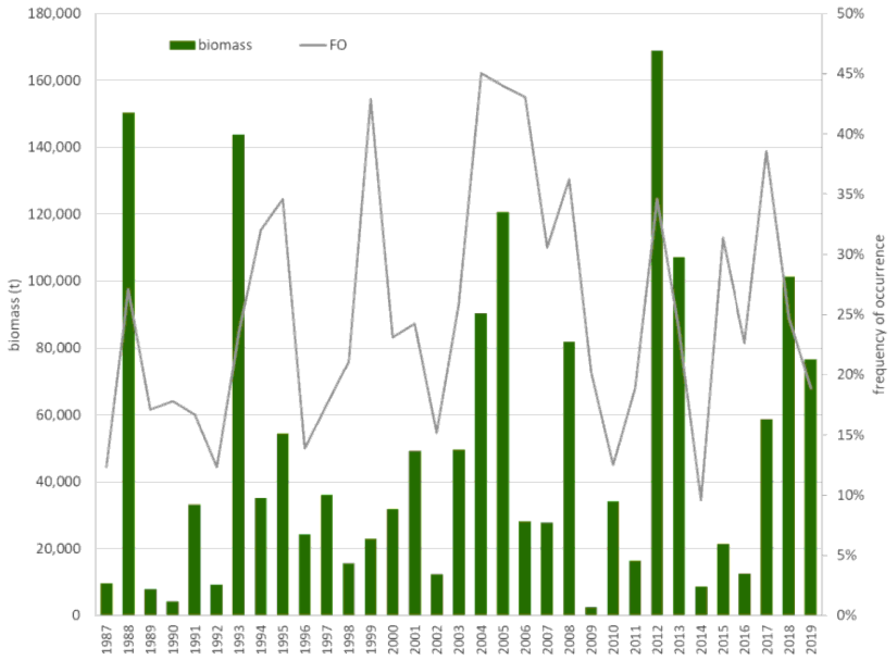


Figure 27 – Biomass estimates (t) and frequency of occurrence for Pacific herring in the eastern Bering Sea shelf bottom trawl survey, 1987-2019 (Ormseth, 2019).

7.3.1.4.2 Minor primary bycatch species

7.3.1.4.2.1 Pacific cod (*Gadus macrocephalus*)

Maximum age is 13 years, maximum length is 110 cm, maximum weight – 14 kg. Pacific cod reaches sexual maturity at the age of 2+ years and in the mass (72%) becomes mature at the age of 5+ with a length of 60 cm (TINRO, 2021a).

For Pacific cod of the WBS stock there are next biological reference points, based on a precautionary approach (TINRO, 2021a).

Blim = Bloss = 142.14 thousand metric tons.

Bpa = Blim × $e^{1.645s}$ = 156.37 thousand metric tons.

Btr = Bmsy = 1123.21 thousand metric tons.

Flim = Floss = 0.805 $year^{-1}$.

Fpa = Flim × $e^{-1,645s}$ = 0.863 $year^{-1}$;

In the Bpa and Fpa formulas, 1.645 is the value of the Student's coefficient for a confidence level of 95% of a lognormal random variable; s - measure of uncertainty obtained as a result of 1000 resampling (bootstrap)

According to model estimates, the spawning stock biomass of the WBS Pacific cod is much higher than Bpa and has exceeded Btr since 2017 (Figure 28).

The directed Pacific cod fishery in the WBS is MSC-certified (Marine Certification, 2019).

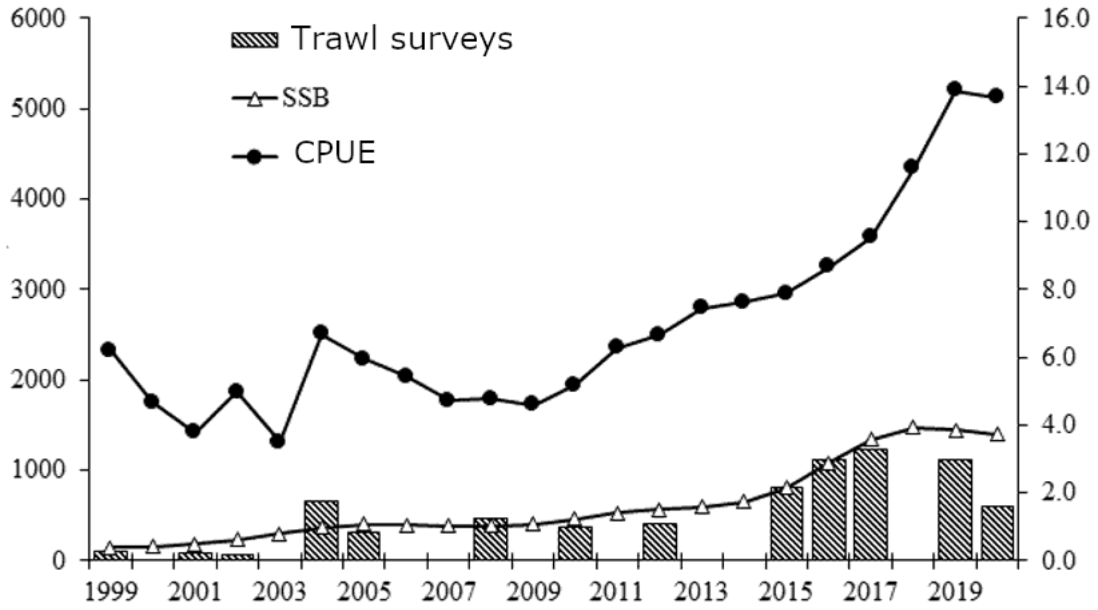


Figure 28 – Dynamics of biomass and CPUE of Pacific cod in the WBS (TINRO, 2021a).

X-axis – years; left Y-axis – biomass in thousand metric tons; right Y-axis – CPUE.

7.3.1.4.2.2 Pacific halibut (*Hippoglossus stenolepis*)

In WBSZ maximum age is 28 years, maximum length is 160 cm. Pacific halibut reaches sexual maturity at the age of 7-9 years (TINRO, 2021a).

For Pacific halibut of the WBS stock there are following biological reference points, based on a precautionary approach (TINRO, 2021a).

Bmsy = 23.3 thousand metric tons.

Blim = 0.1 Bmsy = 2.33 thousand metric tons.

Ftr = 0.04. Ftr is reduced in comparison with Fmsy by the amount of its error.

Stock biomass dynamic of Pacific halibut in the WBSZ according to bottom trawl surveys 2005-2020 is shown in Table 17. In accordance with model estimates and taking into account the adherence to the selected HCR, the biomass of halibut in the coming years will average 15 thousand metric tons (TINRO, 2021a). This in much more than Blim.

The total bycatch of Pacific halibut in the WBS pollock fishery is less than 0.02%. This means that the halibut bycatch is less than 80 metric tons per 400,000 metric tons of the total annual catch in the fishery. The TAC for Pacific halibut in the WBSZ for 2021 is set at 1,760 and for 2022 at 1,000 metric tons (TINRO, 2021a). The directed Pacific halibut fishery in the WBS is MSC-certified (Marine Certification, 2019).

Table 17 – Abundance of Pacific halibut in the WBSZ according to bottom trawl surveys 2005-2020 (TINRO, 2021a).

Years	2005	2008	2010	2012	2015	2017	2019	2020
Biomass, thousand metric tons	3.7	14.4	10.7	34.0	20.0	12.9	10.6	9.0
Commercial stock, thousand metric tons	2.7	5.7	3.6	5.7	8.6	8.6	7.1	4.8

7.3.1.4.2.3 Greenland halibut (*Reinhardtius hippoglossoides matsuurae*)

Maximum age is 16 years, maximum length is 100 cm. Greenland halibut reaches sexual maturity at the age of 7-9 years.

For Greenland halibut of the WBS stock there are following biological reference points, based on a precautionary approach (TINRO, 2021a).

Bmsy = 10.1 thousand metric tons.

Btr = 13.93 thousand metric tons. Btr is more than Bmsy by the amount of its error.

Blim = 0.1 Bmsy = 1.01 thousand metric tons.

Ftr = 0.06 Ftr is reduced in comparison with Fmsy by the amount of its error.

Total and commercial stocks biomass dynamic of Greenland halibut in the WBSZ according to bottom trawl surveys 2008-2020 is shown in Table 18Table 17. In 2020, commercial stock was estimated in 18.6 thousand metric tons (TINRO, 2021a). This in much more than Blim.

The total bycatch of Greenland halibut in the WBS pollock fishery is less than 0.02%. This means that the halibut bycatch is less than 80 metric tons per 400,000 metric tons of the total annual catch in the fishery. The TAC for Greenland halibut in the WBSZ for 2022 is set at 750 metric tons. The directed Greenland halibut fishery in the WBS is MSC-certified (Marine Certification, 2019).

Table 18 – Abundance of Greenland halibut in the WBSZ according to bottom trawl surveys 2008-2020 (TINRO, 2021a).

Years	Survey area, thousand km²	Depth, m	Biomass, thousand metric tons	Commercial stock, thousand metric tons	Density, mt/km²
2008	145.7	23-750	25.0	14.1	0.172
2010	149.3	18-997	27.8	15.1	0.167
2012	140.3	45-800	40.7	12.4	0.290
2015	139.5	20-788	36.7	16.2	0.263
2017*	139.3 (139.5)*	22-386	16.2 (24.4)**	11.5 (18.6)**	0.116 (0.175)*
2018*	14.2 (139.5)*	345-968	8.1 (24.3)**	7.1 (18.6)**	0.570 (0.174)*
2020	151.5	15-1000	13.7	13.0	0.090

Note: * – data from bottom trawl surveys in 2017 and 2018 are incomplete for estimating Greenland halibut stock.

** – estimates taking into account unexplored water areas.

7.3.1.5 Secondary bycatch species

7.3.1.5.1 Main secondary bycatch species

There are no fish among main second species in the UoA.

The scientific literature contains up-to-date information on the interaction of seabirds with midwater trawl fishery in the Sea of Okhotsk (Artukhin, 2018, 2019).

For the Bering Sea, up-to-date information on this issue is presented in the 2020 observer report (Korobov, Glushchenko, 2020). According to observers, there are five species of seabird, the mortality of which is recorded in relation with the midwater trawl pollock fishery in WBSZ.

According to Zolotov (2021) fishing fleet spend in the specialized pollock fishery in WBSZ 5710 vessel-days.

Vessel with observers, was involved in pollock fishery in the West Bering Sea zone for 110 days – from July 14 till October 31, of these 101 days were spent actually on fishing, and the rest 9 days were spent on passages to operation areas, searching for fish aggregations, transhipment of products and bunkering (Korobov, Glushchenko, 2020).

5710/101 = 56.5 – approximately 57 fishing vessels annually participate in the fishery throughout the season.

This is the number by which registered bird mortality should be multiplied to roughly estimate the total mortality of seabirds as a result of the fishery in the UoA. The result of the multiplication can be seen in Table 19.

In certification report on Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GoA) Pollock (MRAG, 2020) seabird mortality reported only for one species (northern fulmar) and only in one UoA (BSAI). There was no any seabird bycatch in the GoA midwater trawl pollock fishery. Over the time period of 2010-2018, the average annual mortality of northern fulmar from all groundfish fisheries has been 3,634. However, “when compared to estimates of total population size of northern fulmar in Alaska of 1.4 million birds, observed fisheries account for an annual mortality of 0.26%”. According to MRAG experts, the impact from BSAI and GoA pollock fisheries on northern fulmar is relatively minimal (MRAG, 2020). BSAI and GoA pollock fisheries can be seen as an analogy to midwater pollock fishery in the WBSZ. Seabird mortality figures (Table 19) comparable to those in the eastern Bering Sea pollock fishery.

Table 19 – Seabird mortality in UoA reported by observers during the survey (Korobov, Glushchenko, 2020) and calculated by the team.

Species	Mortality		Share of TPA, %	Total population abundance (TPA) in Pacific (individuals)
	survey (1 vessel)	calculated for UoA		
Laysan albatross	3	171	0.015	1,180,000
Fulmar	42	2394	0.054	4,400,000
Short-tailed shearwater	49	2793	0.012	23,000,000
Black-legged kittiwake	21	1197	0.027	4,500,000
Red-legged kittiwake*	1	57	0.057	100,000

* Red-legged kittiwake is listed in the Red Book of the Russian Federation and will be discussed in the ETP section.

Below, we assessed the attributes of the Productivity Susceptibility Analysis (PSA) for all 5 seabird species whose mortality was reported by observers. The PSA results indicate that all 5 seabird species are at low risk (Table 20).

Table 20 – Productivity Susceptibility Analysis for seabird species whose mortality is connected with the UoA.

Attribute	Value and scores	Laysan albatross	Fulmar	Short-tailed shearwater	Black-legged kittiwake	Red-legged kittiwake
PSA productivity attributes and scores						
Average age at maturity, years	1) <5 2) 5-15 3) >15	2	2	2	2	2

Average maximum age, years	1) <10 2) 10-25 3) >25	3	3	3	3	3
Fecundity, eggs per year	1) > 20000 2) 100 – 20000 3) <100	3	3	3	3	3
Average maximum size, cm	1) <100 2) 100-300 3) >300	2	2	2	2	2
Average size at maturity, cm	1) <40 2) 49-200 3) >200	2	2	2	2	2
Reproductive strategy	1) Broadcast spawner 2) Demersal egg layer 3) Live bearer	2	2	2	2	2
Trophic Level	1) <2.75 2) 2.75-3.25 3) >3.25	3	3	3	3	3
Total productivity score (average)		2.43	2.43	2.43	2.43	2.43
PSA susceptibility attributes and scores						
Areal overlap (availability): % Overlap of the fishing effort with a species concentration of the stock	<10 2) 10-30 3) >30	1	1	1	1	1
Encounterability: The position of the stock/species within the water column relative to the fishing gear, and the position of the stock/species within the habitat relative to the position of the gear	1) Low overlap with fishing gear. 2) Medium overlap with fishing gear. 3) High overlap with fishing gear (high encounterability). Default score for target species (Principle 1).	1	1	1	1	1
Selectivity of gear type: Potential of the gear to retain species	1) Low 2) Medium 3) High	3	3	3	3	3
Post-capture mortality: The chance that, if captured, a species would be released and that it would be in a condition permitting subsequent survival	1) Low 2) Medium 3) High	3	3	3	3	3
Total susceptibility score (multiplicative)		1.20	1.20	1.20	1.20	1.20
PSA Score		2.71	2.71	2.71	2.71	2.71
MSC PSA-derived score		81	81	81	81	81

7.3.1.5.2 Minor secondary by-catch species

According to the observer data for 2017-2020 the list of organisms to be counted as minor secondary bycatch species include: 82 species of fish and cyclostomes, 2 species of squid, 2 species of shrimps, 2 species of jellyfish, 2 species of crabs, sea anemones and starfish (Table 16). Four species of Pacific salmon, six species of skates and one species of shark have been recorded among the fish. For skates, catch share by weight was no more than 0.04%, for Pacific salmon – no more than 0.001%. Pacific sleeper shark was recorded in just one fishing trip. The frequency of occurrence was 0.855% and catch share by weight was 0.000096%. In theory, the list of organisms could be much broader. Any of the 504 species recorded in pelagic and bottom trawl surveys in the Bering Sea (Volvenko *et al*., 2018) may be present in small numbers in catches.

The occurrence of benthic organisms (crabs, sea anemones and starfish) in the catch was less than 2%, that is, two trawls out of 100 touched the bottom during fishing. Species associated with vulnerable marine ecosystems (VME) such as soft corals, sponges, and ascidians were not recorded in the catches.

Review of the bycatch species reported and those appearing on the IUCN and the World Register of Marine Species suggest that none of these species are vulnerable or at high risk of impact by the fishery. Skates and sharks may be considered vulnerable owing to their low productivity rate. However, skates are commercially harvested, and an annual possible catch (PC) is set for the group based on regular trawl survey estimates of biomass, and they are not considered to be at risk or below the PRI. Pacific sleeper sharks are observed individually and rarely, so expanded to the whole fleet, values are also insignificant. There are no stock assessments for secondary minor species and no reports or publications on any of them being at or below the PRI.

7.3.1.6 ETP species

7.3.1.6.1 Definitions

The CAB team shall assign ETP (endangered, threatened or protected) species as follows: 1) Species that are recognised by national ETP legislation;

2) Species listed in the binding international agreements given below:

a) Appendix 1 of the Convention on International Trade in Endangered Species (CITES), unless it can be shown that the particular stock of the CITES listed species impacted by the UoA under assessment is not endangered.

b) Binding agreements concluded under the Convention on Migratory Species (CMS), including:

ii. Annex 1 of the Agreement on Conservation of Albatross and Petrels (ACAP);

iii. Table 1 Column A of the African-Eurasian Migratory Waterbird Agreement (AEWA);

iv. Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS);

v. Annex 1, Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS);

vi. Wadden Sea Seals Agreement;

vii. Any other binding agreements that list relevant ETP species concluded under this Convention.

3) Species classified as ‘out of scope’ (amphibians, reptiles, birds and mammals) that are listed in the IUCN Red list as vulnerable (VU), endangered (EN) or critically endangered (CE).

In Russia, rare and endangered animal species are protected in accordance with Federal Law No. 52 “On Fauna” and are listed in the Red Book of the Russian Federation (http://redbookrf.ru/) at federal level, as well as in regional Red Books. Six categories of rarity of species are accepted in these Red Books: 0 – probably extinct; 1 – endangered; 2 – declining in number; 3 – rare; 4 – uncertain in status, 5 – restored and recovering. In addition to national legislation, Russia is a signatory to internationally binding agreements such as the Convention on International Trade of Endangered Species (CITES) and the Agreement on the Conservation of Albatrosses and Petrels (ACAP).

7.3.1.6.2 ETP species in the area

7.3.1.6.2.1 Marine mammals

There are 31 marine mammal species living in the Bering Sea, Sea of Okhotsk, Pacific waters of Kamchatka and of North Kuril Islands. Almost half of them is enrolled in list of ETP species, which is given below based on KamchatNIRO’s “Action plan for minimization of potential pollock trawl fishery impacts on marine mammals” (2020).

According to observers, there was no bycatch or mortality of ETP marine mammal in the UoA in 2017 – 2020.

Steller sea lion *Eumetopias jubatus* (Schreber, 1776)

Conservation status. Category 2. Steller sea lion’s western subspecies, one of two currently identified subspecies, with its abundance declining in the greater portion of its geographic range, lives in Russian waters.

This subspecies is listed in the IUCN Red List, Red Books of RF, Kamchatka Krai and Sakhalin Oblast. It is protected in accordance with RF laws. Many onshore rookeries in Sakhalin Oblast are found in SPAs. Further scientific studies are needed to identify causes of the reduction of Steller sea lion abundance and develop measures for its recovery.

Abundance and limiting factors. Steller sea lion abundance in Kamchatka varied in the range of 8–10 thousand individuals by data as of the late 1970s to 700 individuals older than 1 year in 2002. In previous years, there were three breeding rookeries near the eastern coast of Kamchatka, of which only one has continued existing by the beginning of the 21st century – on rocks near Cape Kozlov. Steller sea lion abundance in the Commander Islands varied from occasional encounters in the late 19th century to 3–4 thousand animals in the summer period in the 1960s. By data for 2006– 2007, its abundance in summer was 678 individuals including 101 pups in Kamchatka rookeries and 931 individuals including 220pups in the Commander Islands. Total abundance of juvenile and adult sea lions in the Russian Far East waters had decreased during 15 years by 21% or to 13.5thousand individuals by 2017. Potential reasons for the reduction of Steller sea lion abundance are anthropogenic factors, ocean pollution, depletion of its food sources, predatory behaviour of killer whales, climate change, etc.

Common seal (subspecies – Kuril harbour seal) *Phoca vitulina stejnegery* (Allen, 1902)

Conservation status. Category 3. In the waters of Kamchatka and Sakhalin, it is a rare low-abundant representative of one of the five currently identified subspecies.

This subspecies is listed in the IUCN Red List, Red Books of RF, Kamchatka Krai and Sakhalin Oblast. It is protected in accordance with RF laws. Kuril common seals are protected in the boundaries of the Kuril State Nature Reserve and wildlife refuges. Restrictions are imposed on any business activities near some islands of the Kuril Archipelago. Studies on this subspecies' biology and efforts on its abundance monitoring are required.

Abundance and limiting factors. Harbour seal abundance is low near Kamchatka. It was 250– 400 individuals in the mid-1980s. The latest full count surveys of harbour seal in Kamchatka were carried out in 2000 when its total abundance in the peninsula was about 500 individuals. This species' abundance is higher on islands: several thousand harbour seals were counted in the Commander Islands in the 19th century, but it had significantly declined already by the beginning of the 20th century due to hunting. Harbour seal stock recovery was proceeding very slowly: its number in Mednyi Island was only 100 individuals in 1930s–1940s and reached 1.5–2 thousand only by the 1980s–1990s. By data of the latest full count surveys carried out in 2003–2005, harbour seal abundance in this archipelago exceeds 4 thousand individuals. In the Kuril Islands, its abundance was about 3.5 thousand individuals in 2000. Limiting factors for this species are unfavourable ice conditions, coastal fisheries and, in some locations, poaching. Its natural enemies are killer whale, brown bear in Kamchatka and polar fox for juveniles in the Commander Islands.

Sea otter *Enhydra lutris* (Linnaeus, 1758)

Conservation status. Category 3. Category 3. One of three currently identified subspecies (1), with its abundance abruptly varying. This species' abundance in the Russian waters has dropped more than twice during last 10 years.

It is listed in the IUCN Red List, Red Books of RF, Kamchatka Krai and Sakhalin Oblast, and CITES Appendix II. It is protected in accordance with RF laws. Sea otter is protected in the boundaries of the Kuril State Nature Reserve and wildlife refuges. There are 2–12-mile-wide protection zones around some islands of the Kuril Archipelago in which any business activities are prohibited or significantly limited.

Abundance and limiting factors. This species' abundance has been varying from one hundred to several thousand animals during the period of its study in Commander Islands and Kamchatka. Its total abundance in the Russian waters has dropped more than twice during last 10 years and is currently some 6 thousand individuals according to our estimates. Less than 500animals live in Kamchatka and probably some 3 thousand live in the Kuril Islands (Urup I. – about 600 individuals, Shumshu I. and Paramushir I. – about 1.5 thousand, Atlasov I. – about 100, Lesser Kuril Chain – about 150, and other islands of the Greater Kuril Chain – some 600–700 individuals). Sea otter abundance in the Commander Islands was more than 3 thousand individuals in 2015.

The key threat to sea otter is its fur contamination with oil products as its dense fur provides thermal insulation in cold water. Its abundance is also limited by depletion of food sources, parasite invasions, coastal fisheries, more intensive vessel traffic, water pollution, etc.

Far Eastern killer whale (flesh-eating form) *Orcinus orca* (Linnaeus, 1758)

Conservation status. Category 4. Encounters with flesh-eating killer whales are very rare in Kamchatka waters, and their abundance is low. There are two key ecological types of killer whale singled out in the North Pacific (fish-eating and flesh-eating) differing in nutritional specifics, appearance, behaviour, social structure, etc. According to many indications, fish-eating and flesh-eating killer whales constitute two independent species, but the status of these ecological types currently remains uncertain, and they are treated as genetically isolated sympatric populations. This species is listed in the Red Books of RF and Kamchatka Krai, IUCN Red List and CITES Appendix II. No conservation measures have been applied to this species in Russia to date. Studies of flesh-eating killer whale abundance and distribution in Russia waters are needed.

Abundance and limiting factors. Same as in the Northeast Pacific, flesh-eating killer whales occur across the Russian waters considerably less frequently and in smaller numbers than fish-eating ones. Their total abundance in Far Eastern seas is expected to be within 500– 600 individuals, of which some 250 animals live in the western part of the Sea of Okhotsk. The key threat to these whales is environment pollution and conflict with Greenland halibut fisheries.

Harbour porpoise *Phocoena phocoena vomerina* (Gill, 1865)

Conservation status. Category 4. Common but understudied species in Kamchatka waters.

Harbour porpoise is listed in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix II. It is protected in accordance with RF laws.

Abundance and limiting factors. Total abundance of harbour porpoise across its geographic range is estimated at 700 thousand individuals as a minimum. Its abundance in the Northwest Pacific is unknown. As it lives in coastal waters, harbour porpoise is one of cetacean species most frequently captured in fishing nets. Cases of harbour porpoise death due to asphyxiation when ice formation proceeds quickly in harsh winters are also known. Coastal water pollution, offshore oil and gas field development, overexploitation of their food sources and climate change are also potential limiting factors. Furthermore, this species is sensitive to man-induced noises.

Baird's beaked whale *Berardius baidii* (Stejneger, 1883)

Conservation status. Category 4. Understudied species in Kamchatka waters with unknown abundance. It is listed in the IUCN Red List, CITES Appendix I and Red Book of Kamchatka Krai.

Abundance and limiting factors. According to tough estimates, there are some 7thousand individuals living in Japan's waters, of which 660 whales live in the southern part of the Sea of Okhotsk. There are some 1.1 thousand Baird's beaked whales in the Northeast Pacific. No data are available on its abundance in the Russian waters. Same as other beaked whales, it is particularly sensitive to loud man- induced sounds: military sonars, seismic surveys, etc. Rare cases of occasional by-catch are reported. In Japan's waters, this whale is harassed by intensive vessel traffic. Other threats are ocean pollution and overhunting in some areas.

Cuvier's beaked whale *Ziphius cavirostris* (G. Cuvier, 1823)

Conservation status. Category 3. Furtive understudied species with unknown abundance. This species is listed in the IUCN Red List, Red Book of RF, CITES Appendix II and Red Book of Kamchatka Krai. It is protected in accordance with RF laws.

Abundance and limiting factors. Its total abundance in the World Ocean exceeds 100 thousand individuals and its abundance in the Russian waters is unknown. According to observations from ships, encounters with Cuvier's beaked whales are extremely rare in Kamchatka waters (data of the project on Steller sea lion studies performed by the Kamchatka Branch of the Pacific Geographical Institute of the Far Eastern Branch of the Russian Academy of Sciences (KB PGI FEB RAS)). It is unknown whether this is a consequence of this species' low abundance or furtive behaviour. Dead Cuvier's beaked whales are regularly found on the shores of the Commander Islands which is evidence of their relatively high abundance in this area. Beaked whales are more sensitive to loud man-induced sounds such as military sonars, seismic surveys, etc. than other cetaceans (18), and some experts explain this species' mass stranding cases by this fact. Due to their nutritional behaviour specifics, beaked whales swallow plastic debris more frequently than other cetaceans.

Stejneger's beaked whale *Mesoplodon stejnegery* (True, 1885)

Conservation status. Category 4. Species with unknown abundance living in a narrow geographic range. It is a rare understudied species in Kamchatka waters. It is listed in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix II. It is protected in accordance with RF laws.

Abundance and limiting factors. Its abundance is unknown across its entire geographic range but is likely to be extremely low in the Russian waters. A limiting factor may be climate change resulting in increasing water temperatures and narrowing geographic range. Same as Cuvier's beaked whales, this whale is most likely sensitive to adverse effects of loud man-induced sounds (military sonars, seismic surveys, etc.) and death due to swallowing of plastic debris.

Gray whale *Eschrichtius robustus* (Lilljeborg, 1861)

Conservation status. Category 2 (Sea of Okhotsk population, endangered), category 5 (Chukchi-California population with recovering abundance). It is common in Kamchatka waters, but additional information is needed about its population structure and status of its populations. Gray whale is listed in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix I. It is protected in accordance with RF laws.

Abundance and limiting factors. The current abundance of the eastern population is estimated at 16–22 thousand whales. It is unknown whether there are any individuals belonging to the western population, believed completely extinct in the 1970s, among whales feeding off Sakhalin Island. A potential limiting factor for whales feeding in the Sea of Okhotsk is offshore exploration and production works in the shelf of Northeast Sakhalin.

Greenland right whale *Balaena mystictus* (Linneus, 1758)

Conservation status. Category2 (Sea of Okhotsk population – endangered), category 5 (Bering-Chukchi population – rare). It is a rare low-abundant understudied species in Kamchatka waters.

Greenland right whale is listed in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix I. It is protected in accordance with RF laws.

Abundance and limiting factors. Before the beginning of large-scale whale hunting activities, the abundance of this whale's Sea of Okhotsk population was estimated at 2 to more than 20 thousand animals and that of its Bering-Chukchi population – at 18 thousand animals. Its current abundance across the Sea of Okhotsk is within 400 individuals, while that of its Bering-Chukchi population is about 17 thousand individuals (11). The key factor preventing recovery of its abundance after overhunting in the 18th189th centuries is extremely low breeding rates.

North Pacific right whale *Eubalaena japonica* (Lacepedae, 1818)

Conservation status. Category 1. Endangered species. It is currently one of the rarest baleen whale species. This species is listed in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix I. It is protected in accordance with RF laws.

Abundance and limiting factors. This species has become critically endangered due to overhunting. Its current abundance in the Russian waters is unknown but is deemed to be within several hundreds of individuals, the majority of them living in the Sea of Okhotsk. The key limiting factor preventing recovery of its abundance after overhunting in the 18th–19th centuries is extremely low breeding rates. Threats for this whale species include entanglement in fishing nets and collision with ships. As it feeds in near-surface water layers, this whale is particularly vulnerable to water contamination with plastic debris and oil products. It is also sensitive to noise generated by ships.

Humpback whale *Megaptera novaeanliae* (Borowski, 1781)

Conservation status. Category 1. This species is regularly seen in Kamchatka waters in recent years but no data on its abundance in the region are available. This species is listed in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix I. It is protected in accordance with RF laws.

Abundance and limiting factors. The current abundance of humpbacks in the whole North Pacific is estimated at some 21 thousand individuals of which at least 2 thousand whales feed in the Far Eastern seas. This species' key limiting factor is entanglement in fishing nets. Areas with intensive vessel traffic are also a threat for this whale. Humpback whale is a favourite object of observation for ecotourism and, if tourists are too active, this may become harassing for these animals in their feeding and breeding locations.

Sei whale or sardine whale *Balaenoptera borealis* (Lesson, 1828)

Conservation status. Category 2. Rare understudied species in Kamchatka waters. Sei whale is listed in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix I. It is protected in accordance with RF laws.

Abundance and limiting factors. During the period of whale hunting in the North Pacific, sei whale abundance had declined from 42–50 thousand to 21–23 thousand animals. By other data, no more than 8.6 thousand individuals had been left in this area by 1974. It is expected that some 14 thousand sei whales currently live here. Same as in previous years, this whale is rare near the shores of Kamchatka and the Commander Islands (data of the project on Steller sea lion studies performed by KB PGI FEB RAS). The degree of its population recovery in the post-hunting period is unknown, with slow breeding rates being a limiting factor. Areas with intensive vessel traffic may pose a threat for this whale due to potential collision.

Blue whale (northern subspecies) *Balaenoptera musculus musculus* (Linneus, 1758)

Conservation status. Category 1. Extremely rare species in Kamchatka waters with unknown abundance. This species is listed in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix I. It is protected in accordance with RF laws.

Abundance and limiting factors. During the period of whale hunting, the northern subspecies' abundance had declined from 5 thousand to 1–2 thousand individuals. Its current abundance is unknown. In the waters of East Kamchatka and the Commander Islands, blue whales were common in the 1930s–1950s but were seen extremely rarely by the close of whale hunting operations. Encounters with blue whales in Kamchatka waters had been occasional before 2017. In May 2017, 14 blue whales were observed from board the Professor Khromov proceeding from Petropavlovsk-Kamchatskiy to the Commander Islands and another 3 individuals were observed on its way back. The key limiting factor is extremely low breeding rates.

Fin whale (northern subspecies) *Balaenoptera physalus physalus* (Linneus, 1758)

Conservation status. Category 2. Common species in Kamchatka waters but its current abundance is unknown. This subspecies is listed at the level of species in the IUCN Red List, Red Books of RF and Kamchatka Krai, and CITES Appendix I. It is protected in accordance with RF laws.

Abundance and limiting factors. During the period of intensive whale hunting in the North Pacific, this species' abundance had declined from 44 thousand to 17thousand animals according to data for 1975. Its current abundance is estimated at 16 thousand individuals in the whole region and, separately, at 4 thousand in the Sea of Okhotsk and Bering Sea. In the last decade, finbacks are regularly observed in the coastal waters of Kamchatka and the Commander Islands (data of the project on Steller sea lion studies performed by KB PGI FEB RAS). This species' key limiting factor is low breeding rates. Potential threats are collision with ships and entanglement in fishing nets.

7.3.1.6.2.2 Sea birds

According to literature data, in WBSZ are found 18 ETP seabird species which listed in the Red Book of Russia or in bilateral agreements concluded Russia with other countries (Table 21).

Red-legged kittiwake *Rissa brevirostris*

Red-legged kittiwake is included in the Red Book of Russia in category 3 – rare species (RF, 2020). Observers conducting a dedicated study on the impact of midwater trawl pollock fishery in WBSZ on seabird reported the death of one Red-legged kittiwake during the observation period in 2020. During the entire study period, 762 individuals of this bird were encountered. The mortality rate of this species in the assessed fishery can be calculated as follows:

1*100/762 = 0.13%.

The team concluded that the 0.13% mortality rate will not prevent Red-legged kittiwake from recovering.

The Red-legged Kittiwake is a Beringean endemic that remains in the Bering Sea during winter and feeds at the margins of sea-ice (Orben *et al*. 2015, 2018). Abundance of Red-legged kittiwake is estimated in 280 thousand individuals (BirdLife International, 2021). Robinson *et al*. (2019) article is the first documentation of Red-legged Kittiwake breeding activity on St. Matthew Island, which represents a potential northward expansion of this species' breeding range by nearly 400 km.

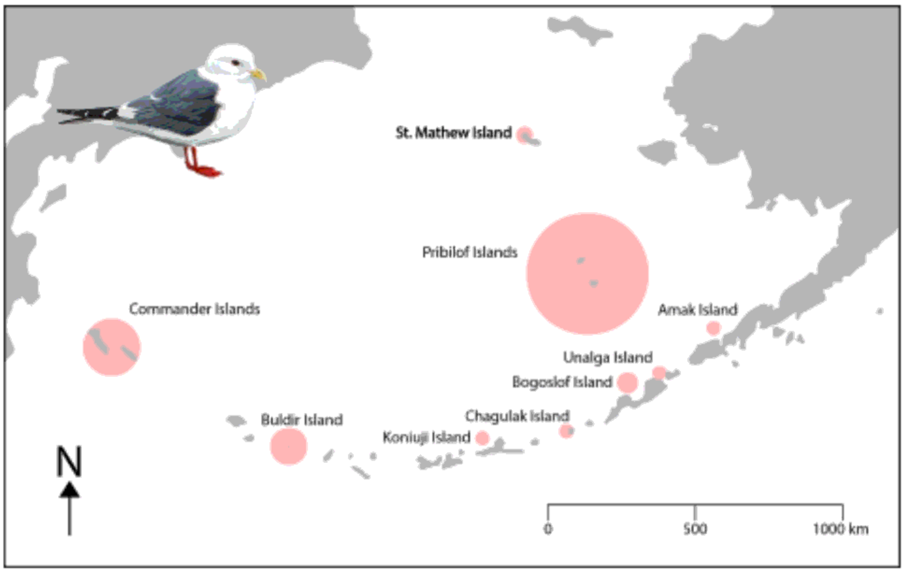


Figure 29 – Red-legged Kittiwake breeding distribution. Colonies are indicated by red circles representing relative colony size (range: 235624 individuals on the Pribilof Islands to eight individuals on Koniuji Island) (Robinson *et al*., 2019).

Short-tailed albatross *Phoebastria albatrus*

Short-tailed albatross is included in the Red Book of Russia in category 1 – endangered species. Cases of catching short-tailed albatross by longline fishery in the WBSZ are described (Artukhin *et al*., 2016). There is no data about short-tailed albatross mortality connected to midwater trawl fishery in WBSZ. Also, there is no information from observers on the species bycatch in the UoA in 2017 – 2020.

Table 21 – Endangered, Threatened or Protected (ETP) bird species in the Bering Sea based on data from sites redbookrf.ru, www.iucnredlist.org and http://russianpollock.com.

Name of species	Protection status *
White-billed loon *Gavia adamsii* (G. R. Gray, 1859)	RL IUCN (NT), RB RF (3) Listed in Annexes to bilateral agreements concluded Russia with the USA, Japan, the Republic of Korea and the DPRK on migratory birds protection.
Short-tailed albatross *Phoebastria albatrus* (Pallas, 1769)	RL IUCN (VU), RB RF (1) Listed in the Red Book of Asia, CITES Annex 1, Bonn Convention Annex 1, Annexes to bilateral agreements concluded by Russia with Japan on migratory birds protection.
Black-footed albatross *Phoebastria nigripes* (Audubon, 1839)	RL IUCN (NT) Listed in the Red Book of Asia, Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.
Leach's storm petrel *Oceanodroma leucorhoa* (Vieillot, 1817)	RL IUCN (VU) Listed in Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.
Fork-tailed storm petrel *Oceanodroma furcata* (Gmelin, 1789)	RL IUCN (LC) Listed in Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.
Red-faced cormorant *Phalacrocorax urile* (Gmelin, 1789)	RL IUCN (LC) Listed in Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.
Glaucous-winged gull *Larus glaucescens* Naumann, 1840	RL IUCN (LC) Listed in Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.
Sabine's or fork- tailed gull *Xema sabini* (Sabine, 1819)	RB RF (3), Listed in Annex to bilateral agreements between Russia and USA on migratory birds protection.
Red-legged kittiwake *Rissa brevirostris* Bruch, 1853	RL IUCN-2004, RB RF (3) Listed in Annex to bilateral agreements between Russia and USA on migratory birds protection.
Ross' gull *Rhodostethia rosea* (MacGillivray, 1824)	RB RF (3) Listed in Annex to bilateral agreements between Russia and USA on migratory birds protection.
Ivory gull *Pagophila eburnean* (Phipps, 1774)	RB RF (3) Listed in Annex to bilateral agreements between Russia and USA on migratory birds protection.

Name of species	Protection status *
Aleutian Tern Onychoprion aleuticus Baird, 1869	RL IUCN (LC), RB RF (3) Listed in Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.
Pigeon guillemot *Cepphus columba* Pallas, 1811	RL IUCN (LC), RB RF (3) Listed in Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.
Marbled murrelet *Brachyramphus marmoratus perdix* (Pallas, 1811)	RL IUCN-2004, RB RF (3) Listed in Annexes to bilateral agreements between Russia and USA, Japan, Republic of Korea and DPRK on migratory birds protection.
Kittlitz's murrelet *Brachyramphus brevirostris* (Vigors, 1829)	RL IUCN (NT), RB RF (3) Listed in the Red Book of Asia, Annex to bilateral agreement between Russia and USA on migratory birds protection.
Ancient murrelet *Synthliboramphus antiquus* (Gmelin, 1789)	RL IUCN (LC), RB RF (4) Listed in Annexes to bilateral agreements between Russia and USA, Japan, Republic of Korea and DPRK on migratory birds protection.
Whiskered auklet *Aethia pygmaea* (Gmelin, 1789)	RL IUCN (LC), RB RF (3) Listed in Annex to bilateral agreement between Russia and USA on migratory birds protection.
Least auklet *Aethia pusilla* (Pallas, 1811)	RL IUCN (LC) Listed in Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.
Parakeet auklet *Cyclorrhynchus psittacula* (Pallas, 1769)	RL IUCN (LC) Listed in Annexes to bilateral agreements between Russia and USA and Japan on migratory birds protection.

Note: * RL IUCN–Red List of IUCN, protection status indicated in parentheses: DD – Data deficient, EN – Endangered, LC – Least concern, NT – Near threatened, VU – Vulnerable; RB RF – Red Book of Russia, protection status indicated in parentheses: 1 – endangered, 2 – decreasing, 3 – rare, 4 – uncertain Status, 5 – rehabilitated and rehabilitating.

To add here text from the FSA Code of Conduct on ETP species policy (TBD) within site visit.

7.3.1.7 Habitats

7.3.1.7.1 Mapping of habitats and benthos

Scheme of bottom sediments distribution in the Anadyr Bay is given in Figure 30. Bottom sediments on continental shelf of the Koryak district is shown in Figure 31.

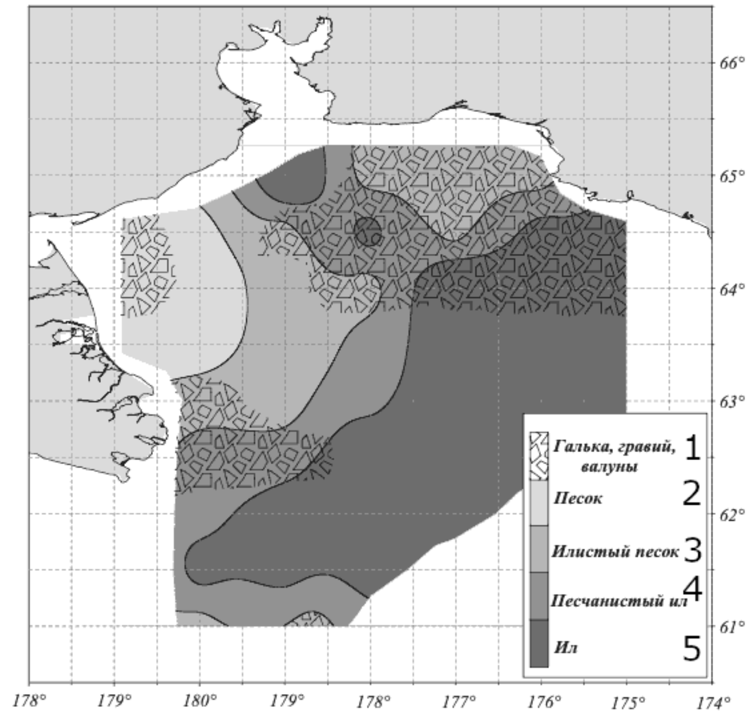


Figure 30 – Scheme of bottom sediments distribution in the Anadyr Bay (mapped in 2005).

1 – gravel, pebbles and boulders; 2 – sand; 3- silty sand; 4 – sandy silt; 5 – silt (Nadtochy *et al*., 2017a).

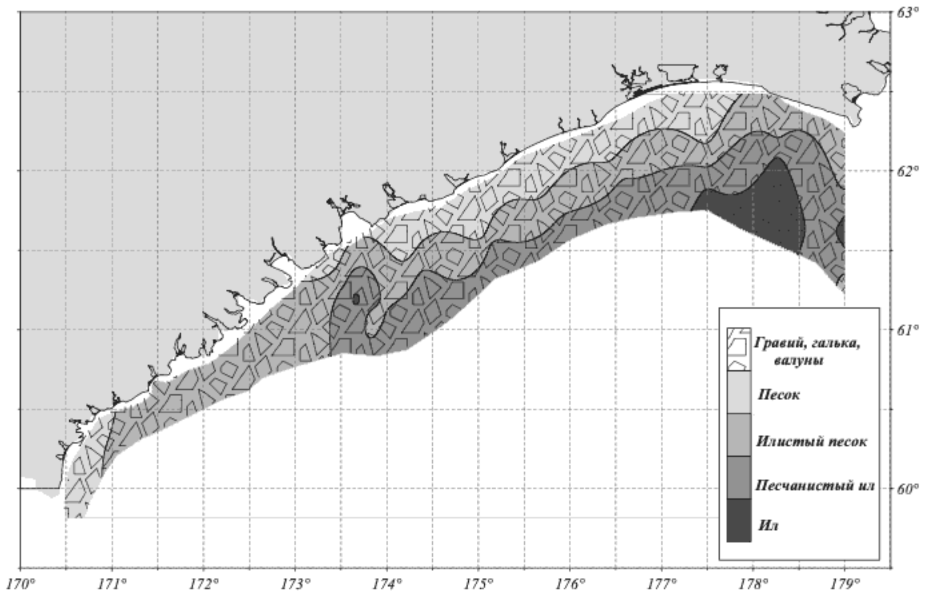


Figure 31 – Bottom sediments on continental shelf of the Koryak district (mapped in 2005).

Symbols as in Figure 30 (Nadtochy *et al*., 2017b).

In the article by Nadtochy *et al*. (2017a) potential VME indicators are determined for the area of the **Anadyr Bay** in the Bering Sea on the base of results of 4 benthic surveys using bottom sampler (1985, 2005) and bottom trawl (2008, 2012), as the most common species in some macrozoobenthic groups of epifauna (Table 22, Table 23). They are *Gersemia rubiformis* for soft corals, *Myxilla incrustans*, *Halichondria panicea*, *Semisuberites cribrosa* for sponges (Figure 32), *Halocynthia aurantium*, *Boltenia ovifera* for sea squirts, *Cystisella saccata*, *Flustra foliacea* for bryozoans, *Chirona evermanni* for barnacles, and *Gorgonocephalus eucnemis* for brittle stars. Their distribution is mapped. According to their life history and feeding habits, these species-indicators are divided onto two groups: immobile sestonophages (alcyonarians, sponges, ascidians, bryozoans, cirripedians) and mobile filtrators (brittle stars). The first group prevails on hard and mixed grounds mainly along southwestern and north-eastern coasts of the Anadyr Bay at the depths of 80–90 m (sponges and bryozoans — to 250 m in the Navarin Canyon) with relatively warm water, active hydrodynamics and high biological productivity. The second group represented by *G. eucnemis* dominates on soft sediments in the central part of the Anadyr Bay with the depths of 50–270 m occupied by the cold-water pool. Quantitative distribution of brittle star, on the one hand, and barnacles with sea squirts, on the other hand, is alternative to each other. On the contrary, barnacles, sponges and sea squirts have similar distribution of the biomass, being complementary species. Distribution patterns of all species-indicators are stable for many decades. However, biomass of some these species has changed in the southern Anadyr Bay between the similar surveys conducted in the 2008 and 2012: the mean biomass of barnacle *Ch. evermanni* and sea squirt *H. aurantium* had decreased in 6.5 and 3.7 times, respectively, whereas the mean biomass of sponges, brittle star *G. eucnemis* and sea squirt *B. ovifera* did not change. Bottom trawl fishery is not active in the north-western Bering Sea, moreover, the habitats of immobile sestonophages with hard grounds are avoided by bottom trawlers being dangerous for fishing gears, so the observed decreasing of two species abundance is presumably caused by natural reasons or is a random error of the mosaic-distributed stocks assessment with insufficiently dense sampling grid.

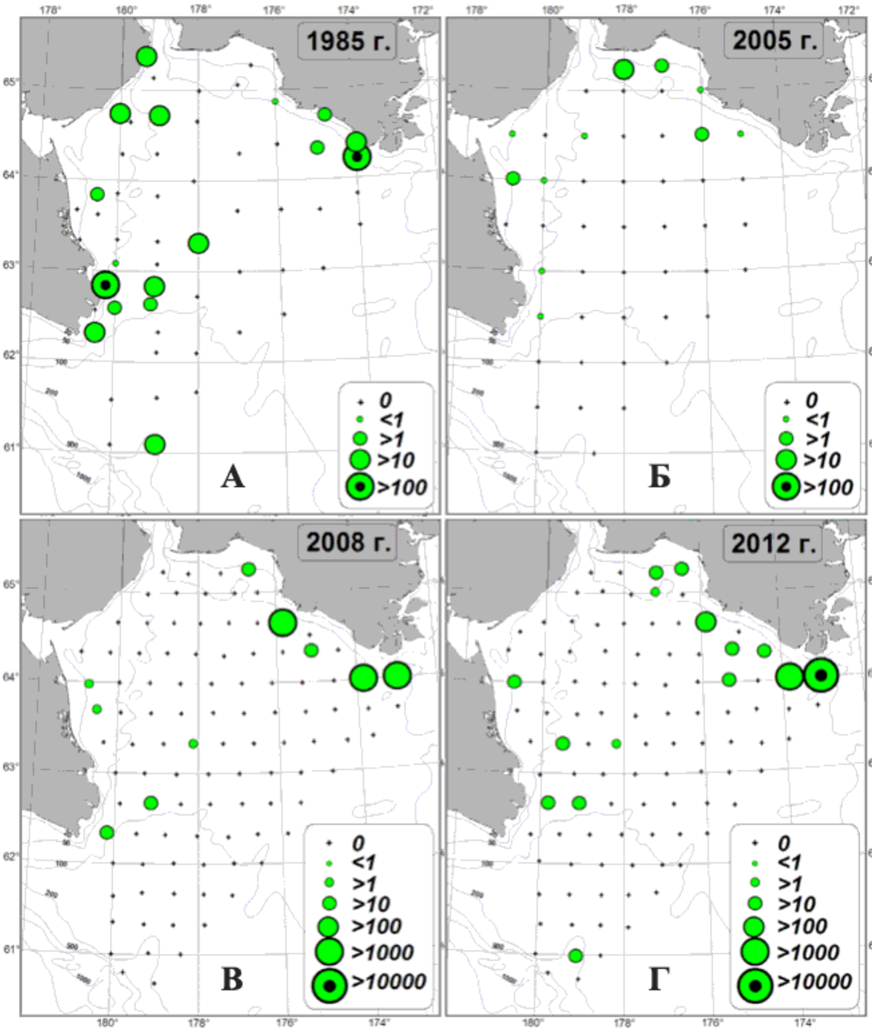


Figure 32 – Distribution of sponges in the Anadyr Bay area

А, Б — by bottom sampler, g/m^2 (1985, 2005); В, Г — by bottom trawl, kg/km^2 (2008, 2012) (Nadtochy *et al*., 2017a).

In another article by Nadtochy et al. (2017b) species composition of the most common species belonging to the taxa of macro-zoobenthos — potential indicators of vulnerable marine ecosystems is considered on the data of bottom-sampler and bottom trawl surveys in the Chukotka and Koryak districts of the Bering Sea (Table 24).

The Chukotka district is mostly shallow-water area (prevailing depths 20–60 m) where these taxa-indicators are: sponges (*Myxilla incrustans*, *Halichondria panicea*, and *Semisuberites cribrosa*) (Figure 33), barnacles (*Chirona evermanni*), ascidians (*Halocynthia aurantium* and *Boltenia ovifera*), octocorals (*Gersemia rubiformis*), bryozoans (*Cystisella saccata* and *Flustra foliacea*), and brittle stars (*Gorgonocephalus eucnemis*). Settlements of immobile sestonophages (the first 5 taxa) occupy mainly the hard or mixed bottom grounds in the coastal zone and movable filtrator (the last taxon) is distributed deeper on loose grounds. The Koryak district is deeper (up to 870 m depth); beyond the abovementioned taxa the other common taxa-indicators here are marine whips (*Halipteris willemoesi*), sea lilies (*Heliometra glacialis*), and sea anemones (*Actinostola callosa*) and 3 more species are common for octocorals (*Anthomastus rylovi*, *Paragorgia arborea*, and *Paragorgia sp*.). The list of taxa-indicators includes immovable or almost immovable sestonophages (octocorals, sponges, ascidians, bryozoans, barnacles, sea whips, and sea lilies), moving filtrators (brittle stars) and predators (sea anemones). All these taxa could be divided onto 3 groups according to the depth of their occurrence: i) continental shelf residents (barnacles, bryozoans, sea squirts *Boltenia ovifera* and *Gersemia rubiformis*); ii) continental slope residents (octocorals, sea whips and sea lilies); iii) interzonal dwellers (sponges, brittle stars, sea squirt *Halocynthia aurantium*, and sea anemones). The epibenthos is the most abundant in the area between Cape Navarin and Cape Haidin that obviously is the sign of high bioproductivity of this area. The data of long-term observations confirm high stability of distribution patters and abundance of the epibenthic communities in the western Bering Sea.

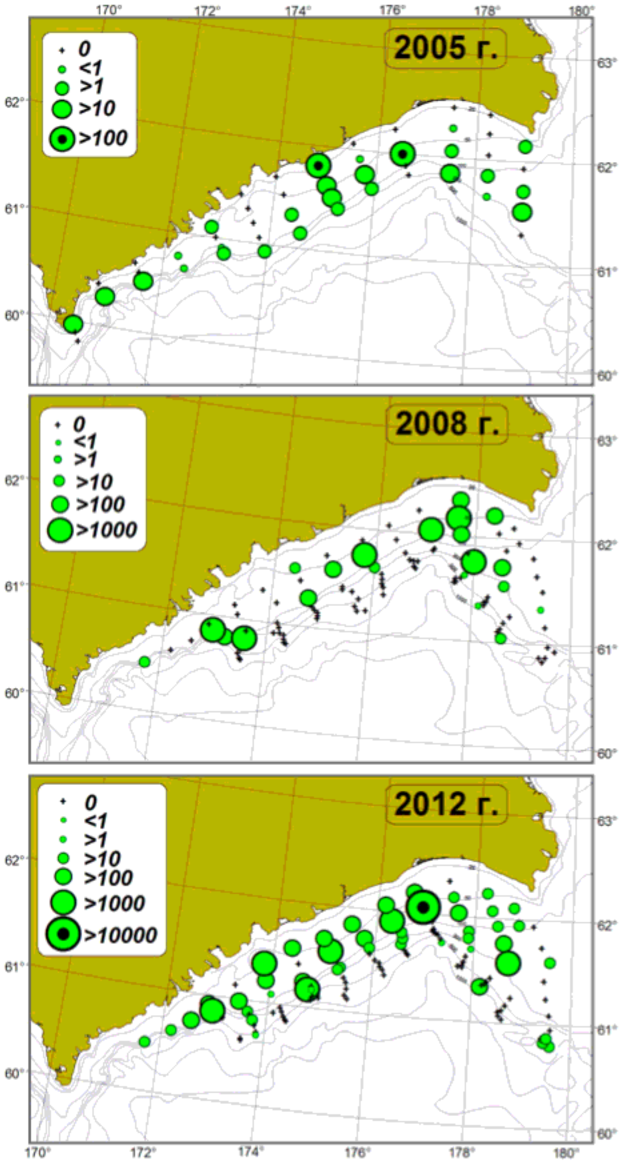


Figure 33 – Distribution of sponges in the Koryak districts In 2005 (by bottom sampler data, g/m^2) and in 2008 and 2012 (by bottom trawl data, kg/km^2) (Nadtochy *et al*., 2017b).

Table 22 – Biomass (g/m^2) and percentage of macrobenthic taxa — potential VME indicators for the Anadyr Bay area (by bottom sampler data) (Nadtochy *et al*., 2017a).

Таксон	1985 г.			2005 г.		
	$M \pm m$, г/м^2	Доля, %	F, %	$M \pm m$, г/м^2	Доля, %	F, %
Spongia	11,71 ± 5,89	3,05	30,4	1,06 ± 0,67	0,25	23,4
Alcyonaria (*Gersemia rubiformis*)	10,98 ± 6,71	2,86	10,7	1,50 ± 1,30	0,35	6,4
Cirripedia	13,23 ± 5,60	3,44	17,9	10,27 ± 7,61	2,41	17,0
Bryozoa	0,54 ± 0,29	0,14	17,9	0,19 ± 0,11	0,04	12,8
Ascidiacea	10,36 ± 5,01	2,70	25,0	2,57 ± 1,16	0,60	23,4
Итого	46,82	12,19		15,59	3,65	
Общая биомасса бентоса	384,14 ± 59,29	100		426,57 ± 87,77	100	
Обследованная площадь, км^2	93040			103000		
Кол-во станций	56			47		

Remarks: Таксон – Taxon; Доля – Percentage; г/м^2 – g/m^2; Итого – Total, Общая биомасса бентоса - Total biomass of benthos; Обследованная площадь, км^2 - Examined area, km^2; Кол-во станций – Number of stations; M ± m – mean value ± standard error; F,% – frequency of occurrence.

Table 23 – Biomass (g/m^2) and percentage of macrobenthic taxa — potential VME indicators for the Anadyr Bay area (by bottom trawl data) (Nadtochy *et al*., 2017a).

Таксон	2008 г.			2012 г.		
	$M \pm m$, г/м^2	Доля, %	F, %	$M \pm m$, г/м^2	Доля, %	F, %
Spongia	0,175 ± 0,118	6,7	10,8	0,2440 ± 0,2170	6,5	15,1
Chirona evermanni	0,007 ± 0,005	0,3	3,2	0,0010 ± 0,0005	+	5,4
Gorgonocephalus eucnemis	0,486 ± 0,117	18,7	62,4	0,6840 ± 0,3360	18,4	52,7
Halocynthia aurantium	0,160 ± 0,100	6,2	12,9	0,0430 ± 0,0190	1,2	12,9
Boltenia ovifera	0,272 ± 0,134	10,5	18,3	0,2420 ± 0,1560	6,5	17,2
Итого	1,1	42,3		1,2140	32,6	
Общая биомасса бентоса	2,603 ± 0,381	100,0		3,7270 ± 0,6000	100,0	

Remarks: Таксон – Taxon; Доля – Percentage; г/м^2 – g/m^2; Итого – Total, Общая биомасса бентоса - Total biomass of benthos; M ± m – mean value ± standard error; F,% – frequency of occurrence.

Table 24 – Biomass (g/m^2) and percentage of macrozoobenthic taxa — potential indicators of vulnerable marine ecosystems — in the Koryak district (bottom trawl data) (Nadtochy *et al*., 2017b).

Таксон	2008 г.			2012 г.		
	$M \pm m$, г/м^2	Доля, %	F, %	$M \pm m$, г/м^2	Доля, %	F, %
Porifera	0,290 ± 0,117	2,7	21,2	0,3000 ± 0,1530	5,4	41,5
Chirona evermanni	+	+	0,9	0,0003 ± 0,0001	+	1,6
Gorgonocephalus eucnemis	0,055 ± 0,049	0,5	3,9	0,1860 ± 0,1440	3,4	7,6
Halocynthia aurantium	0,334 ± 0,176	3,1	18,2	0,1370 ± 0,1050	2,5	22,0
Boltenia ovifera	0,200 ± 0,152	1,8	7,7	0,1000 ± 0,0970	1,8	3,4
Heliometra glacialis	–	–	–	0,0390 ± 0,0390	0,7	0,9
Actinostola callosa	5,650 ± 2,148	51,1	20,2	3,1640 ± 1,9890	56,9	17,0
Halipteris willemoesi	0,083 ± 0,053	0,8	3,9	0,0470 ± 0,0320	0,9	8,5
Всего	6,61	60,0		3,97	71,6	
Общая биомасса бентоса	10,871 ± 2,364	100		5,5190 ± 2,0350	100	

Remarks: Таксон – Taxon; Доля – Percentage; г/м^2 – g/m^2; Всего – Total, Общая биомасса бентоса - Total biomass of benthos; M ± m – mean value ± standard error; F,% – frequency of occurrence.

7.3.1.7.2 Overlap of the fishery with habitats

According to the Fishing Rules (2019), walleye pollock is harvested only with midwater trawls and bottom trawling is prohibited. Midwater trawls commonly encounter the pelagic habitat. The Fishing Rules establish mandatory requirements to minimize the impact on the pelagic environment. Inner mesh size shall be not less than 100 mm for a net of nylon and not less than 110 mm for all the other kinds of material. Pelagic trawl allows pollock juveniles (less than 35 cm) to escape the net through a special insert with selective "mirror" arrangement of the mesh. Use of selective insert, which is mandatory for the midwater walleye pollock fishery, is an important solution for the improvement of the selectivity of fishing gear. Recent studies confirm the high efficiency of the applied selective insert.

Operating with big size (100-110 mm) mesh net, trawl fishing catches larger fish, and squid but it does not affect the structure and function of the pelagic habitat; including communities of phytoplankton, zooplankton, and small pelagic fish. When operated properly, the trawl should not touch the bottom and impact the benthic environment.

Size of the midwater trawls can differ based on the size of the vessel. For the large-scale fleet, the vertical opening of a standard midwater trawl is about 60-65 meters, horizontal opening – 100-110 meters. Trawl opening can be adjusted with trawling speed, length of the trawl warps, and weights set on the trawl. The midwater trawl is equipped with sonar and other tools allowing crew to control the depth of immersion and volume of fish in the net. As a result, midwater trawls seldom contact with the bottom and present minimum negative impact on the benthic ecosystem.

According to the Fishing Rules (2019), all gears must be marked with information to identify the fishing company operating the gear and an individual fishing permit number. Trawl labelling is checked by the authority. In the event of trawl loss the captain must take all the necessary actions to find the lost gear. The loss of a trawl is also indicated in the inventory report and sent to the company. Midwater trawls have a big cost, so the crew makes all possible actions not to lose it. Crews deliver old and depleted trawls to special facilities for processing. Based on fishing practices and gear types, the pollock midwater trawl fishery has minimal impact on the pelagic environment.

At the October 2020 DVNPS meeting participants made proposals to modify the Fishing Rules section 17 on gear lost regulations to specify captain's obligations in case of gear lost, including notification to FFA Territorial Departments (Administrations), search actions, and details of the situation (date, time, coordinates) within 24 hours. The adoption was supported by the DVNPS and will be included into next revised version of the Fishing Rules (2019). FSA client group members reported no cases of gear lost during WBS pollock fishery in 2016-2020 (Figure 48). These actions represent a partial strategy to manage and review potential benthic impacts of the trawl fishery.

According to the observer data for 2017-2020, the list of bycatch species in midwater trawl pollock fishery in WBSZ includes 85 species of fish and cyclostomes, 2 species of squid, 2 species of shrimps, 2 species of jellyfish, 2 species of crabs, sea anemones and starfish (Table 16). The occurrence of benthic organisms (crabs, sea anemones and starfish) in the catch was less than 2%, that is, two trawls out of 100 touched the bottom during fishing. Of the species associated with vulnerable marine ecosystems (VMEs), only sea anemones were found in bycatch. Soft corals, sponges and ascidians not recorded as bycatch.

7.3.1.8 Ecosystem

There are many studies of the ecosystem of the WBS carried out by both fishery institutes and academic science. In this section we will look at some of them.

The article by Volvenko *et al et al*. (2018) systematized information on research surveys of TINRO, performed in the Far Eastern seas, including in the WBS, in the period up to 2018 (Figure 34). In accordance with the principles of sustainable use of natural resources, based on the ecosystem approach to their study and management, monitoring of marine communities and their environment has been carried out in the study region for many years. Records of nekton, benthos and macroplankton (the latter includes large jellyfishes, comb jellies, pelagic tunicates, etc.) in these expeditions are based on trawl catches.

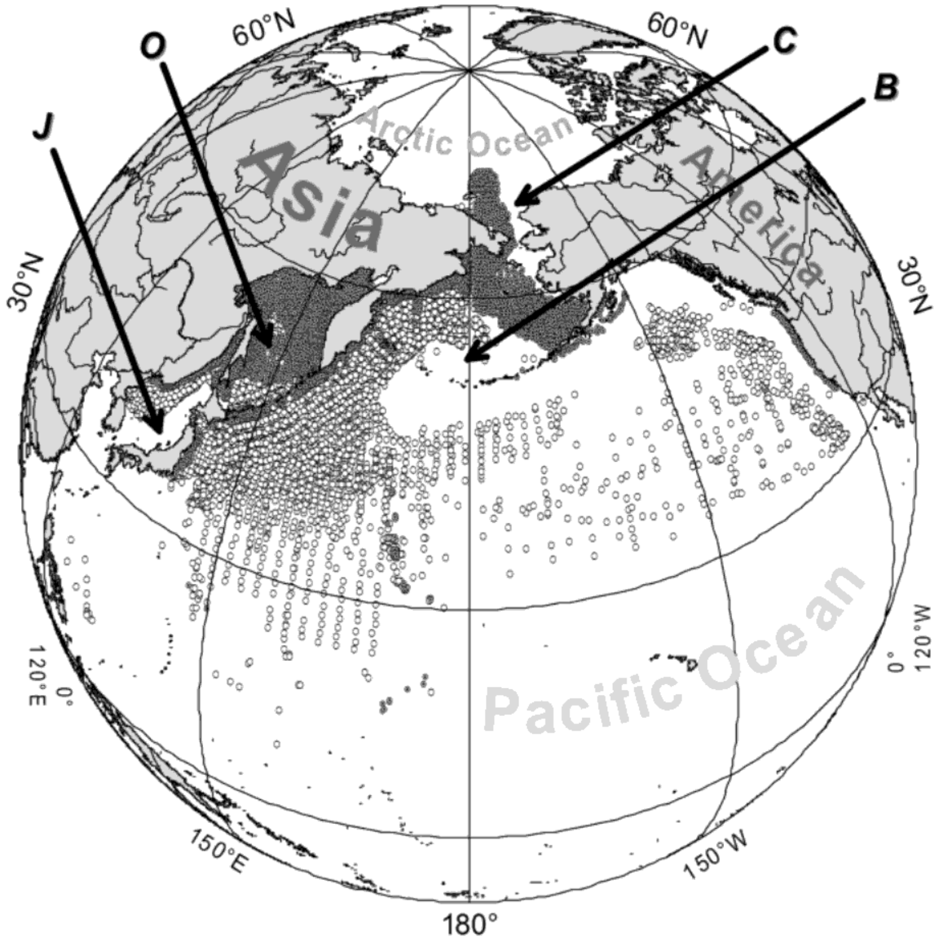


Figure 34 – Spatial distribution of midwater (open circles) and bottom (dark circles) trawl stations. Key to basins: B, Bering Sea; C, Chukchi Sea; J, Sea of Japan; O, Sea of Okhotsk; P, Pacific Ocean (Volvenko *et al*., 2018).

Research in this area is carried out not only by fishery scientists, but also by academic scientists. For example, the R/V SONNE expedition SO-249 is part of the research project BERING, conducted in the framework of the Russian-German Agreement on Marine and Polar Research and in close cooperation with U.S. colleagues. R/V SONNE cruise SO-249 BERING conducted geological, morphological, and biological studies in the in western the Aleutians, the Pacific seafloor subducting beneath the Aleutians and northern Kamchatka, and in the western Bering Sea. The main goal of biological sampling was to survey the benthic biodiversity in the study area. In addition, fresh specimens pertaining to specific taxa (Cnidaria, Brachiopoda, Cephalopoda, Echinodermata) were collected to supplement ongoing research projects. Of the 150 dredges taken, 150 (100%) contained sediment and 112 (74.7%) contained macrofauna. In addition to the 150 sediment samples, almost 1,500 single benthic, benthopelagic, and pelagic macrofaunal organisms were obtained. The majority of the objectives of biological sampling were reached, in particular with regard to obtaining fresh tissue for immunohistochemical, genomic, and transcriptomic analysis from various brachiopod and ophiuroid species (Werner *et al*., 2016).

7.3.1.8.1 Productivity

Generalized scheme of the Bering Sea currents is shown in Figure 35.

Detailed study of the hydrochemical conditions of primary production in the Bering Sea was carried out in the work of Kivva (2016). The information on the distribution of the main nutrients in the summer period at the horizons of 10, 50 and 100 meters: silicon silicates (Figure 36), nitrate nitrogen (Figure 37), and phosphorus phosphates (Figure 38) is presented. The distribution of seasonal loss (from spring to summer) of silicon silicates, total mineral nitrogen and phosphorus phosphates in the Bering Sea (Figure 39) and the distribution of net production of the community over the Bering Sea area (Figure 40) were calculated (Kivva, 2016). As you can see from the figure, the WBSZ belongs to the areas with high productivity.

The main part of the annual primary production in the Arctic and Subarctic zones of the World Ocean is formed during the spring phytoplankton bloom. The timing of the bloom depends on combination of physical factors. Oscillating control hypothesis, proposed in (Hunt *et al*., 2002) for the Eastern Bering Sea, describes annual peculiarities of ecosystem development related to conditions of the spring phytoplankton bloom. Authors review propositions of this hypothesis on the reasons of phytoplankton bloom and its connection with physical processes for four local regions of the Bering Sea shelf. The regions include western, northern and south-eastern parts of the shelf. The analysis is based on ocean colour and microwave remotely sensed data as well as on atmospheric reanalysis. The results allow for hypothesis improvement. An early phytoplankton bloom may be present in the surface layer in April or May along the eastern Bering Sea shelf even in situations of early sea ice retreat (e. g. February-March) or absence of ice during winter. However, such combinations were not observed in the western Bering Sea shelf region. In 1998–2018, early ice retreat in the western shelf region was always accompanied by relatively late phytoplankton bloom. The temporal lag between sea ice retreat and phytoplankton bloom may be substantial in some years along the southernmost position of the ice edge. On the other hand, the spring bloom in the northern part of the shelf usually follows the ice retreat. In case of early ice retreat, the timing of the bloom is determined not only by wind conditions, but also by heat balance at the surface of the sea. The results are proposed to be used in further analysis of ecosystem dynamics of the western Bering Sea shelf (Kivva *et al*., 2020).

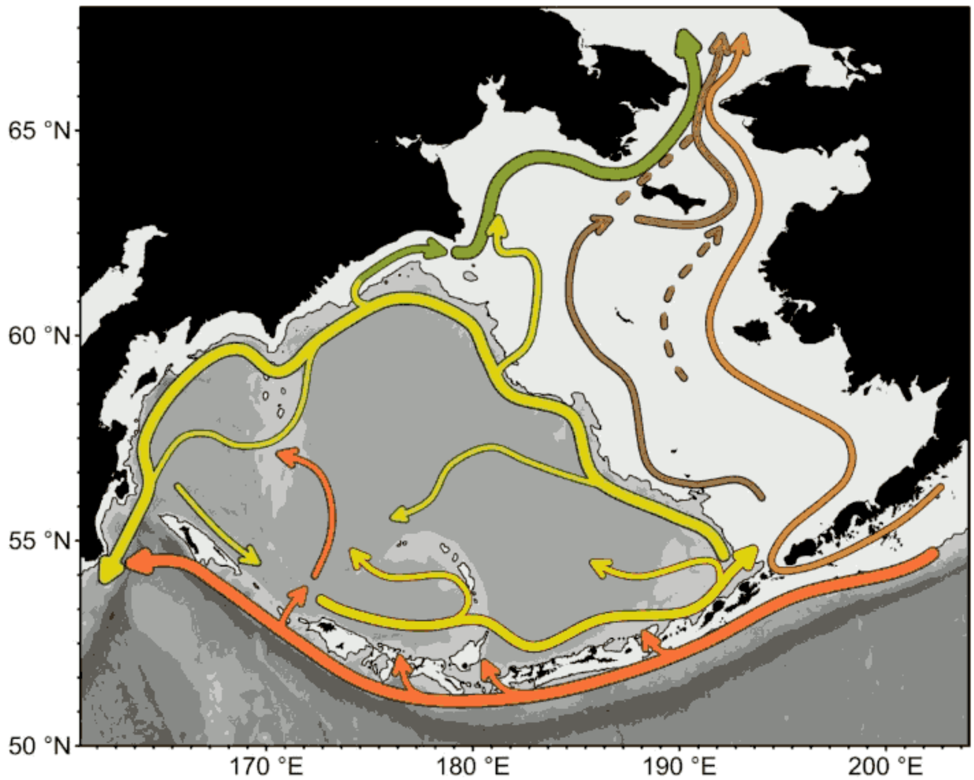


Figure 35 – Generalized scheme of the Bering Sea currents. The thickness of the lines conventionally reflects the severity of the current (velocity in the core and stability). Dotted lines – changeable currents (Kivva, 2016).

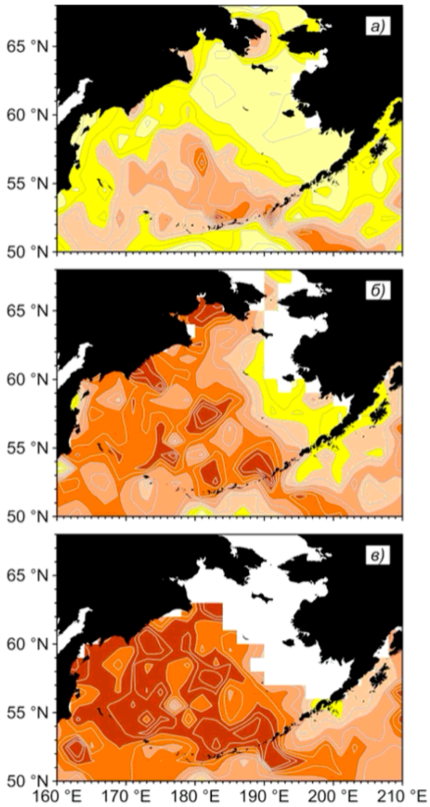


Figure 36 – Average long-term distribution of silicon silicates (μmol L^{-1}) in summer (July-September) at the horizons of 10 m (а), 50 m (б), and 100 m (в) (Kivva, 2016).

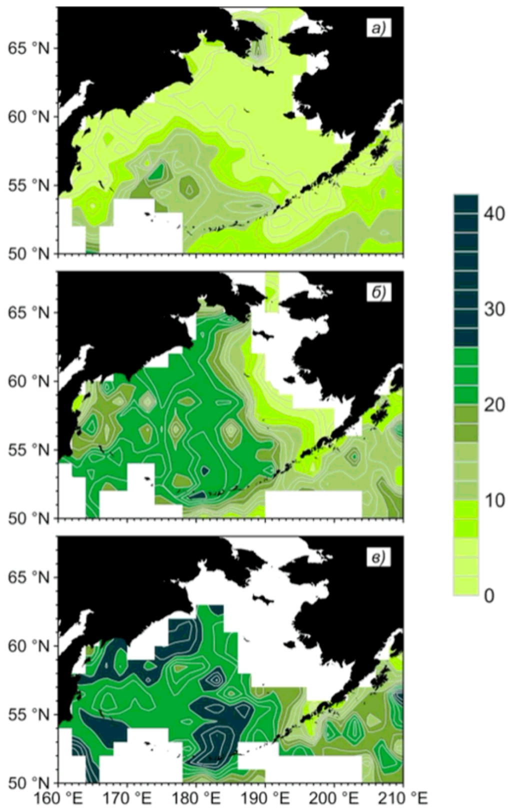


Figure 37 – Average long-term distribution of nitrate nitrogen (μmol L^{-1}) in summer (July-September) at the horizons of 10 m (а), 50 m (б), and 100 m (в) (Kivva, 2016).

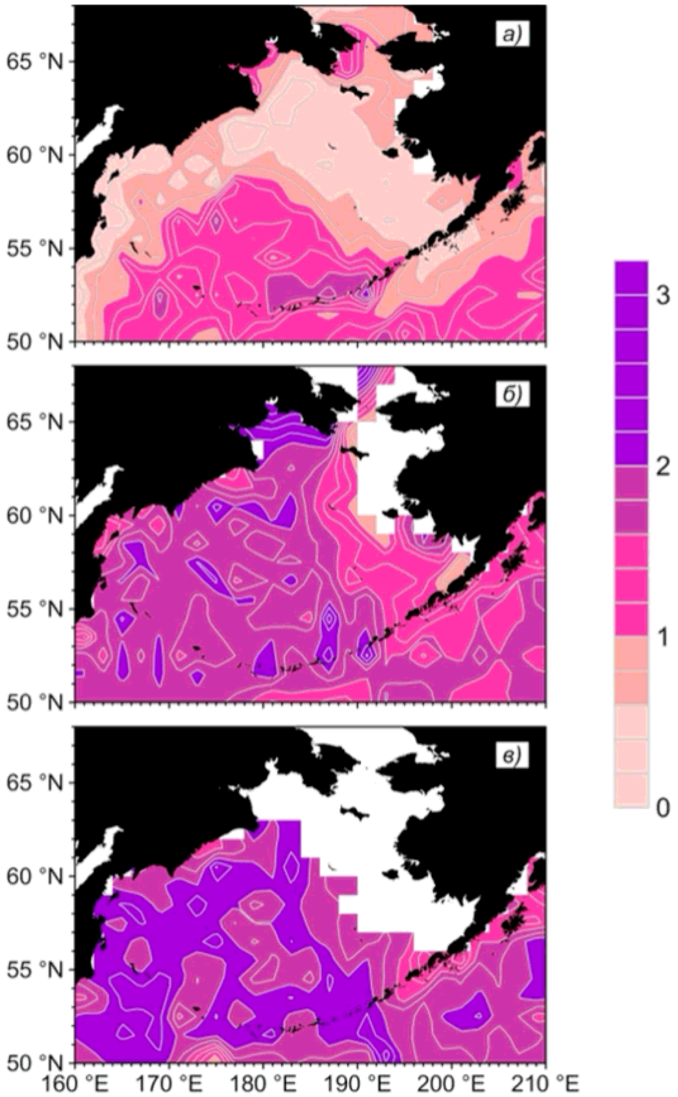


Figure 38 – Average long-term distribution of phosphorus phosphates (μmol L-1) in summer (July-September) at the horizons of 10 m (а), 50 m (б), and 100 m (в) (Kivva, 2016).

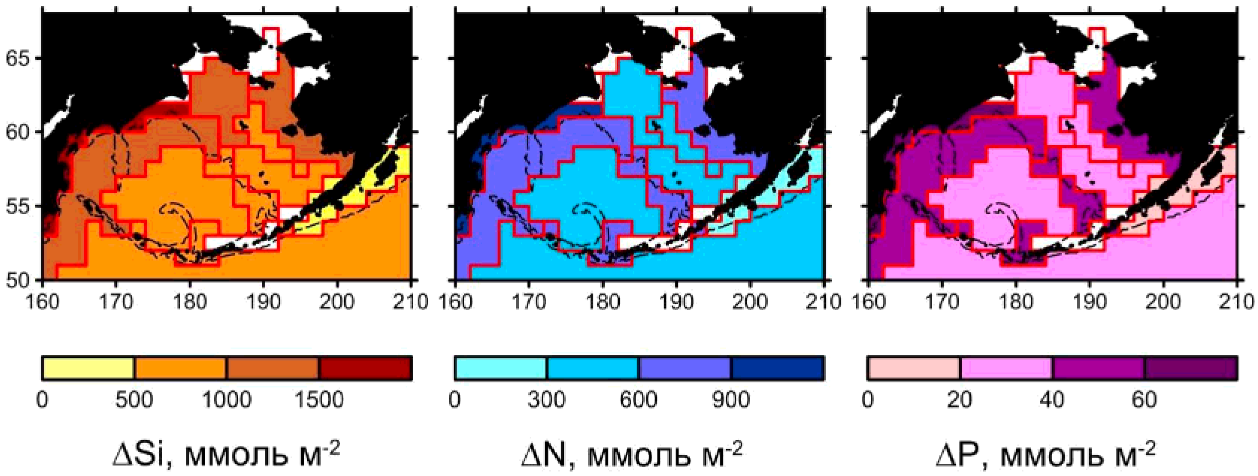


Figure 39 – Distribution of seasonal loss (from spring to summer) of silicon silicates, total mineral nitrogen and phosphorus phosphates in the Bering Sea. White - no data (Kivva, 2016).

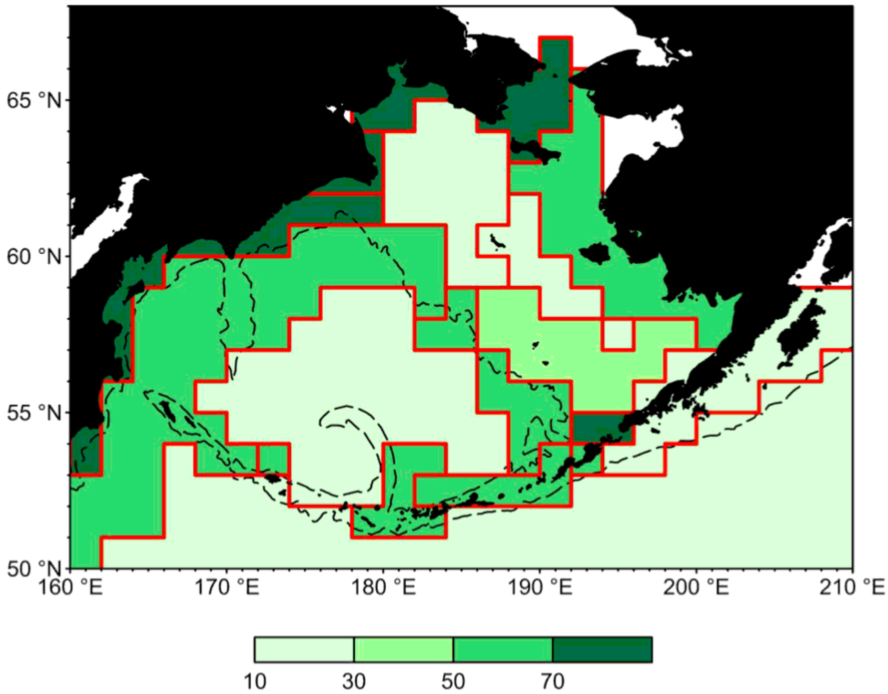


Figure 40 – Distribution of net production of the community over the Bering Sea area, g C m^{-2} g^{-1}. The colour shows average annual values obtained as a result of calculations and estimates. The dotted line is the approximate position of the 2000 m isobath (Kivva, 2016).

7.3.1.8.2 Fauna

According to Volvenko *et al*. (2018), there are 697 macrofauna species in the Bering Sea, 306 in pelagic and 678 in benthic habitats (Table 25). Under this term "trawl macrofauna" authors consider animals with a body size from 1 cm to several meters weighing from several grams to hundreds of kilograms caught by bottom and midwater trawls with a fine-mesh liner in the cod end over a period of 38 years. The main share of species was fish. In the pelagic community, they account for 81%, in near-bottom habitats - 48%. (Figure 41). Invertebrates were represented in benthic biotopes much more widely (347 species) than in the pelagic zone (72 species).

Biomass of the main groups of organisms will be discussed later in the section 7.3.1.8.3.

Table 25 – Species richness in habitats of Bering Sea (Volvenko *et al*., 2018).

Taxon/Group	Pelagic	Benthic	Total
Fish	232	329	340
Cyclostomes	2	2	2
Tunicates	1	8	9
Crabs	0	25	25
Shrimps	22	52	52
Other crustaceans	0	14	14
Cephalopods	29	30	31
Gastropods	1	54	54
Bivalves	0	39	39
Other molluscs	0	4	4
Sea urchins	0	4	4
Holothurians	0	12	12
Other echinoderms	0	42	42

Coelenterates	17	29	33
Comb-jellies	2	0	2
Bryozoans	0	6	6
Sponges	0	10	10
Brachiopods	0	1	1
Other benthic invertebrates	0	17	17
All invertebrates	72	347	355
Total macrofauna	306	678	697

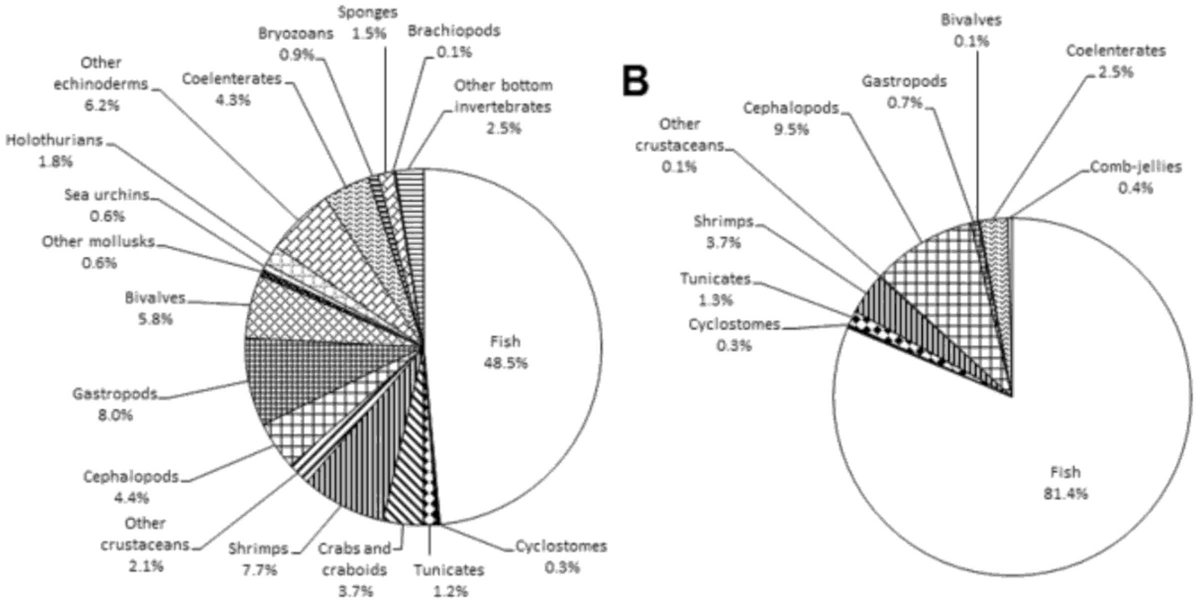


Figure 41 – Percentage of species of different taxonomic groups in benthic (left diagrams) and pelagic (right diagrams) trawl catches from Bering Sea (Volvenko *et al*., 2018).

Zooplankton

Composition and structure of plankton communities in major biostatistical areas in the Bering Sea are described in the article by Gorbatenko (2021). On the data of long-term surveys (1986–2018), mean biomass of plankton in the epipelagic layer of the Bering Sea is evaluated as 821.3 mg/m³ (1058.2 mg/m³ in shelf areas and 760.6 mg/m³ in the deep-water areas) and the stock as $245.1 \cdot 10^6$ t WW ($64.4 \cdot 10^6$ t over the shelf and $180.7 \cdot 10^6$ t in the deep-water sea). By taxa, the average annual portions are: 55.1 % for copepods, 26.3 % for arrowworms, 10.8 % for euphausiids, 3.2 % for medusas, and 2.9 % for amphipods. The dominant species are the arrowworm *Sagitta elegans* (26.3 %) and the copepod *Eucalanus bungii* (19.7 %); other mass species are: large-sized copepods *Neocalanus cristatus* (10.4 %), *Neocalanus plumchrus* + *Neocalanus flemingeri* (7.8 %) and *Calanus glacialis* + *Calanus marshallae* (5.1 %), euphausiids *Thysanoessa raschii* (3.5 %) and *Thysanoessa longipes* (3.4 %), small-sized copepods *Metridia pacifica* (3.5 %) and *Oithona similis* (3.5 %), medusa *Aglantha digitale* (3.2 %).

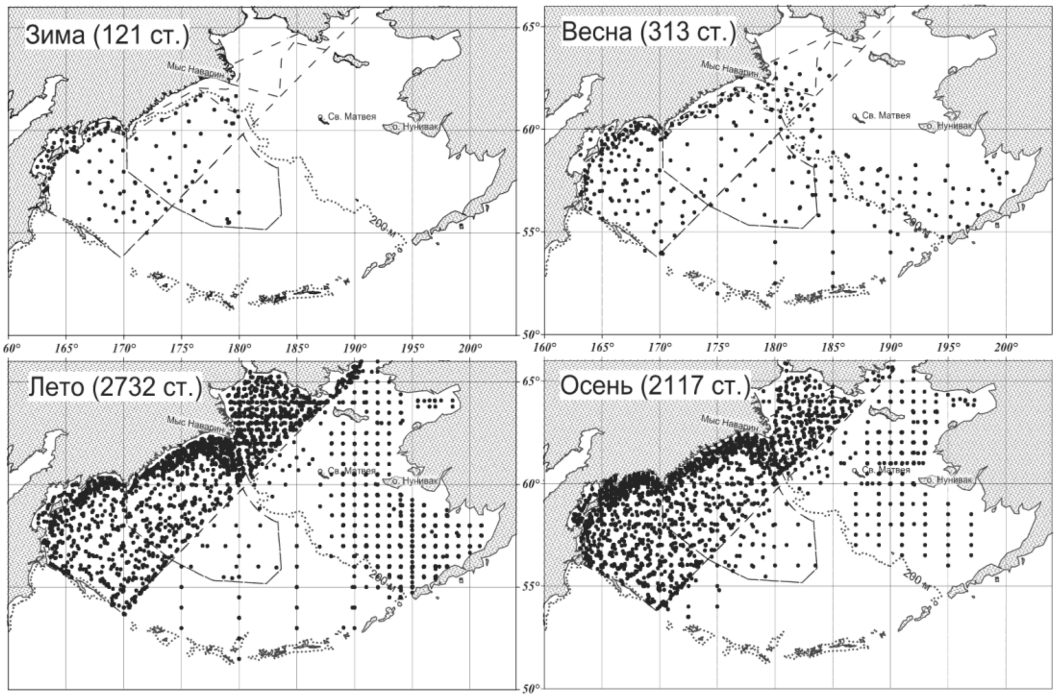


Figure 42 – Scheme of plankton samplings by TINRO in the Bering Sea in 1986–2018 (Gorbatenko, 2021)

Top, left – winter (121 stations); top, right – spring (313 stations); bottom, left – summer (2732 stations); bottom, right – autumn (2117 station).

In the article by Zuenko and Basyuk (2017) described the seasonal and interannual variability of zooplankton in the area at Cape Navarin are considered on the base of long-term surveys. This area is the main fishing grounds for Russian pollock fishery in the Bering Sea. Species composition of zooplankton changes cardinally during the feeding period: large-size copepods prevail in summer, but euphausiids, mainly the krill *Thysanoessa inermis* — in autumn. Year-to-year changes of the zooplankton abundance are species-specific and driven by different environmental factors. The water circulation is crucially important for such allochthonous species as krill by transporting them from the spawning areas. Advection either from the south, i.e., from the continental slope (till 2006), or from the east and west, i.e., from the shelf (in 2007–2014), was observed in the last two decades that corresponded to replacing of relatively warm oceanographic regime by relatively cold regime and could be traced by dynamics of the ice cover and the cold-water pool area on the eastern Bering Sea shelf. The advection from the slope provides the krill transport to the area at Cape Navarin, but conditions of the cold regime limit the transport. From the other hand, the cold oceanographic regime is favourable for reproduction of many zooplankton species, including krill, because of higher primary productivity. As the result, the krill and some other mass zooplankton species have a bell-shape dependence of their abundance on water temperature: they have the maximal biomass in relatively warm years within the cold periods and in relatively cold years within the warm periods. In the years with severe winters, the pollock starts its back migration early, in August-September because of seasonal depletion of copepods and lack of krill, while the years with warm winters are also unfavourable for long feeding of pollock in the Navarin area because of low abundance of many zooplankton species. «Moderate» conditions are optimal for long feeding of pollock in this area, when the Russian fishery continues here longer, till November-December, with the annual landings > 500,000 mt (as in 1996–1999, 2001, 2007–2008).

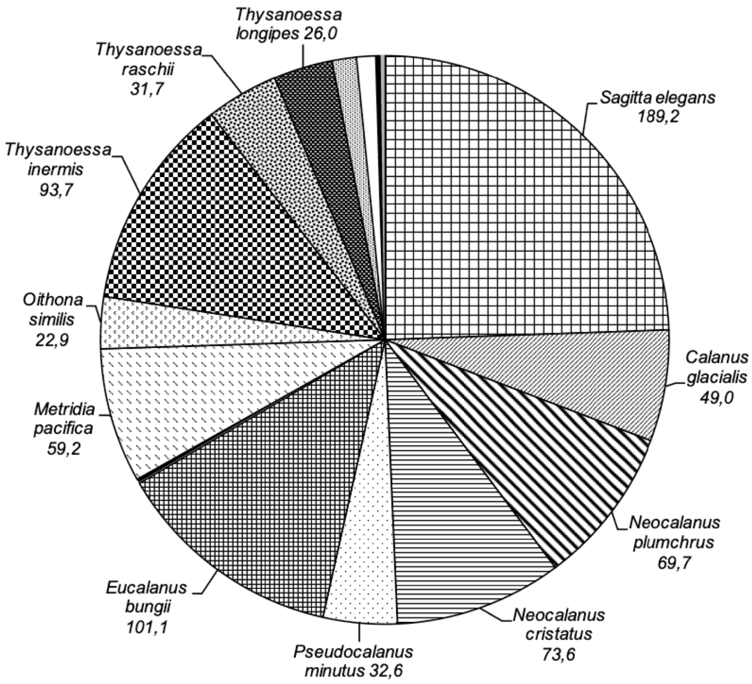


Figure 43 – Averaged for 1986–2014 species composition of summer-fall zooplankton community in north-western part of the Bering Sea. Mean biomass of mass species is shown, mg/m³ (Zuenko, Basyuk, 2017).

7.3.1.8.3 Ecosystem trophic structure and energy flows

Changes of quantitative composition and trophic structure of the nekton community in the western Bering Sea are considered for the last decades and role of pacific salmons in dynamics of trophic flows is evaluated in dependence on their abundance using the ecosystem model Ecopath (Zavolokin *et al*., 2014). Two models are developed that describe trophic structure of the community in two cases: 1) low biomass of salmons and high biomass of walleye pollock (in 1980s, the year 1986 is analysed as an example) and 2) decreased pollock biomass and increasing salmon biomass (in 2000s, the year 2006 as an example) (Figure 44). Besides, a hypothetical situation is modelled with the salmon biomass multiplied by 1.5 relative to its level in 2006. Significant decrease of pollock abundance between 1980s and 2000s caused twofold reduction of total food consumption by nekton species; the heightened consumption by salmons and squids in the 2000s compensated only a small part of this reduction. However, the tenfold increase of salmon's biomass changed their main diets with lowering of the prey trophic level from amphipods and squids to euphausiids, copepods, and pteropods. Now the salmons are the only numerous predator group of the fourth trophic level in the upper pelagic layer of offshore waters in the western Bering Sea. Due to their high trophic plasticity, they can feed by wide range of prey belonged to 2–3rd trophic levels that supplies them by a large amount of food. Even in the modelled case of increasing of the salmon's biomass in 1.5 times relative to the level of 2000s, the current level of forage resources is able to support their populations. There is concluded that carrying capacity of the western Bering Sea is excessively sufficient for pacific salmons in periods of their high abundance.

In paper by Aydin *et al*. (2002) a comparison of the food webs of the eastern and western Bering Sea continental shelf large marine ecosystems (EBS and WBS LMEs) is presented, with a literature review of Russian and English sources for the western Bering Sea food web. A model is constructed using Ecopath, a tool for performing quantitative mass-balance calculations to synthesize food web data. The model focuses on the earliest period for which detailed diet data was available in both systems, 1980-1985. A final method of examining top-down vs. bottom-up forcing is the trophic impact graph, described in Christensen and Pauly (2000). The graph shows the normalized, expected linear perturbation in one component, the "impacted" group (up or down) given a proportional increase in production and consumption of a second component, the "impacting" group. This calculation is performed for every pair of functional groups in each system: the fishery (total catch) may be similarly treated.

The results for each pairwise interaction of trophic impact is shown in Figure 45 (WBS). The grid shows the effect of the impacting species (shown in the left-hand column) on the impacted species (shown on the top). Black circles indicate a positive effect (an increase in the impacting species leads to an increase in the impacted species) while white circles indicate a negative effect (an increase in the impacting species leads to a decrease in the impacted species). Effect size is proportional to circle area, with the largest circles indicating effects of ±1.0 and no circle indicating effects near zero.

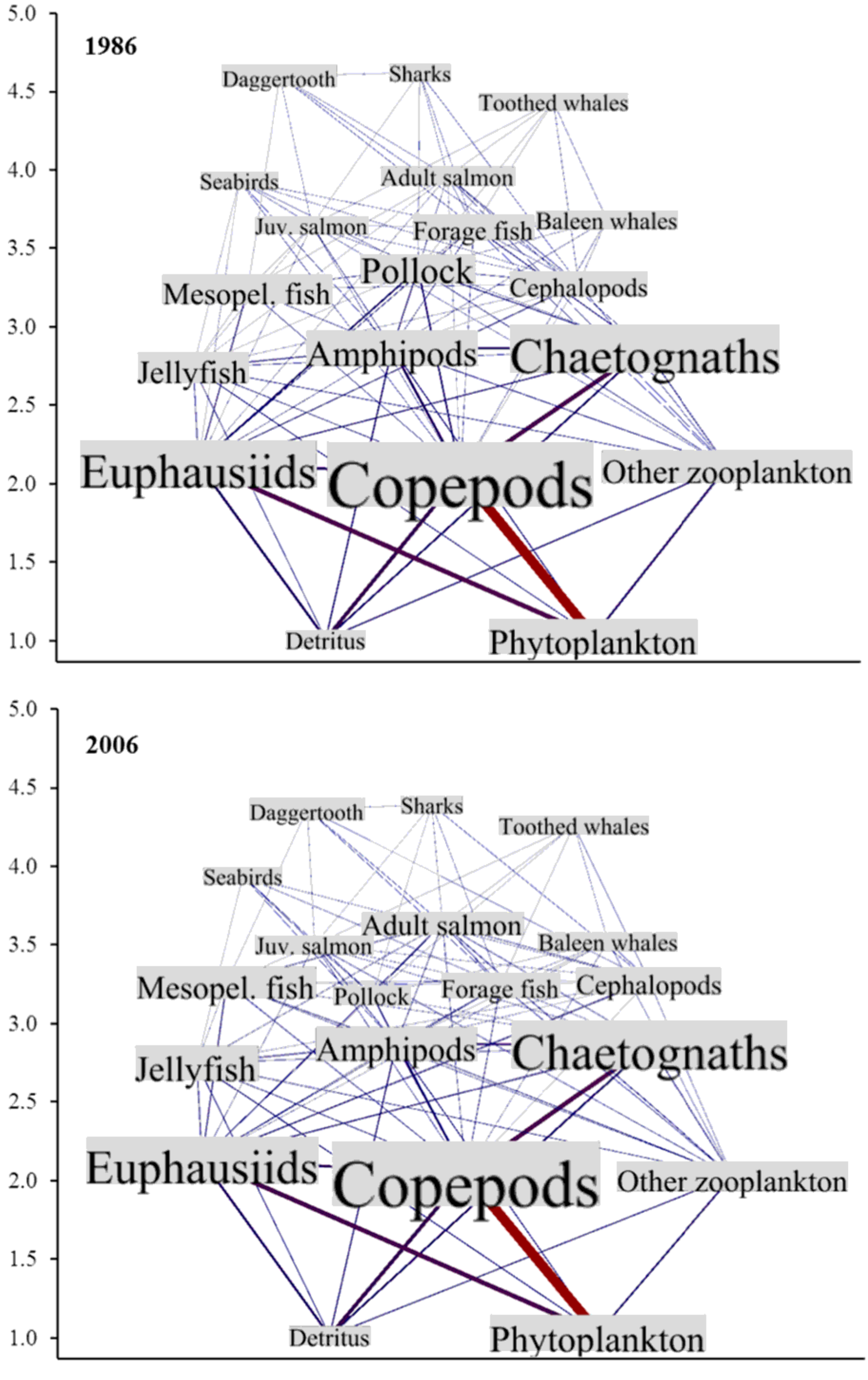


Figure 44 – Models of trophic web in the upper pelagic layer of the western Bering Sea (deep basins and Cape Navarin area) for 1986 and 2006.
Box heights are proportional to square root of the biomass (t/km^2); the width of each predator/prey flow is proportional to square root of the flow volume (t/km^2/year/2) (Zavolokin *et al*., 2014).

The bars along the left and top of Figure are the sums of the absolute values of each impact value in the row or column respectively, divided by the number of species in each system. This gives a measure of how much a species impacts all other species in the system (left bars) or is impacted by all other species in the system (top bars). The diagonal line of white circles on the Figure indicates the self- limiting (density-dependent) effect of each species on itself. Groups below this diagonal, tending to be lower trophic levels, show a large number of black circles indicating general bottom-up forcing and an overall high upward impact.

The fishery creates a strong negative effect on most fished species and is also large for marine mammals due to their low growth rates relative to indigenous harvest. Some positive effects of the fishery are due to the removal of competitors. The effect of adult pollock is mixed but generally negative on many species, as they act as a competitor rather than a food source. Juvenile pollock, on the other hand, have a positive effect on a wide range of species in both ecosystems, particularly seabirds, Arrowtooth flounder, and Greenland turbot.

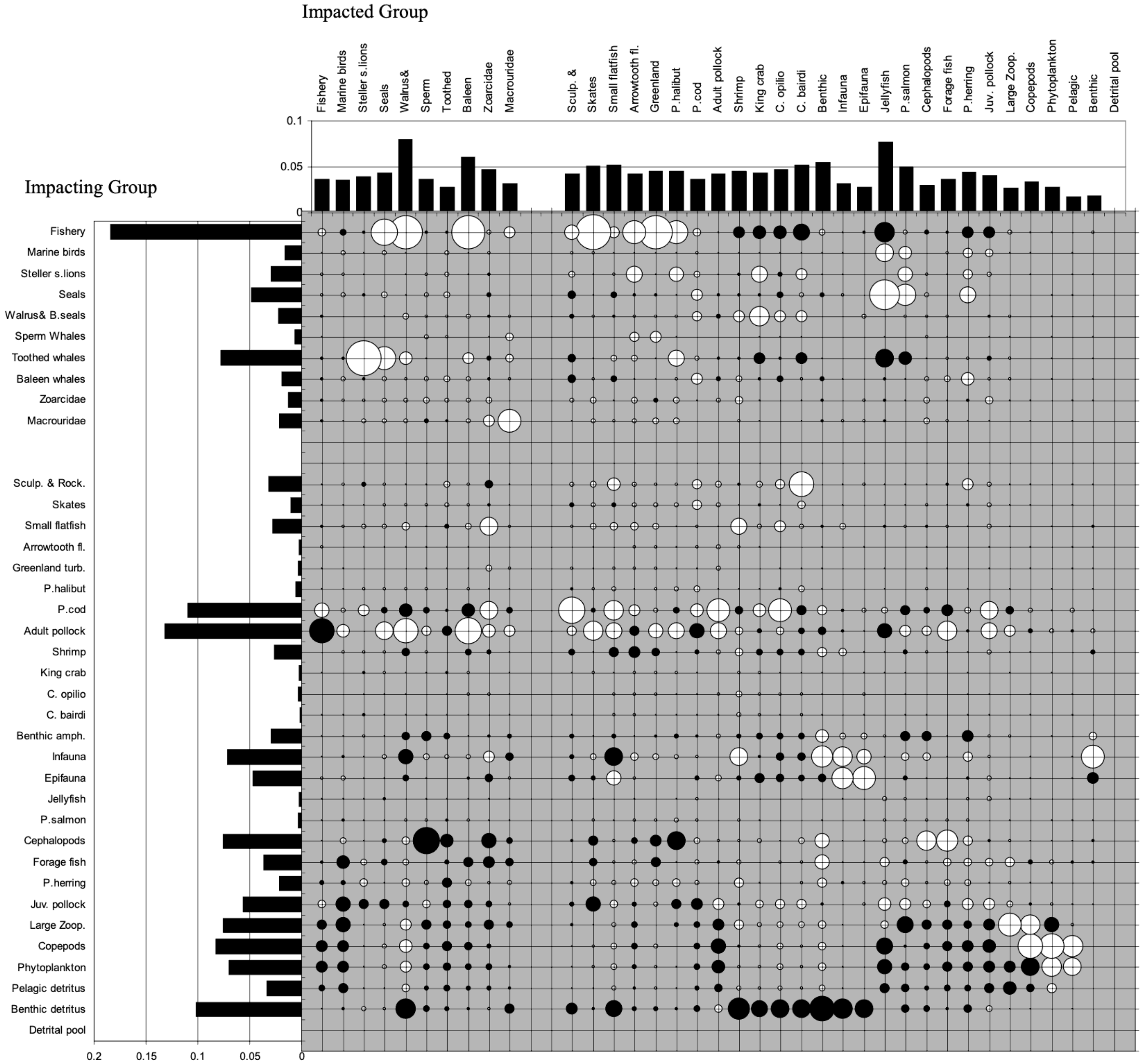


Figure 45 – Trophic impact graph and impacting/impacted indices for each species in the WBS (Aydin *et al*., 2002).

7.3.1.9 Principle 2 scoring elements

The analysis for P2 is made considering that the UoA and the UoC (to be determined) are the same and consist of pelagic trawlers with permits to land walleye pollock. The species composition of the bycatch in midwater trawls in the WBSZ is summarized on the basis of scientific observer reports for 2017–2020 in Table 16. Elements evaluated in the scoring of the fishery are as shown in Table 26.

Table 26 – Scoring elements

Component	Scoring elements	Designation	Data-deficient
Target	*Gadus chalcogrammus* (*Theragra chalcogramma*) (Walleye pollock)	Target	No
Primary	*Clupea pallasii* (Pacific herring)	Main	No
Primary	*Gadus macrocephalus* (Pacific cod)	Minor	No
Primary	*Hippoglossus stenolepis* (Pacific halibut)	Minor	No
Primary	*Reinhardtius hippoglossoides matsuurae* (Greenland halibut)	Minor	No
Secondary	All seabirds as presented in Table 19	Main	Potentially, yes. RBF triggered
Secondary	Minor species are listed in Table 16	Minor	No
ETP	Steller sea lion	N/A	No
ETP	Short-tailed albatross	N/A	No
ETP	Red-legged kittiwake	N/A	Potentially, yes. RBF triggered
Habitats	VME	Minor	No
Ecosystem	Oceanographic processes of the WBS that underpin trophic structure and function.	N/A	No

7.3.2 Principle 2 Performance Indicator scores and rationales

PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are **likely** to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are **highly likely** to be above the PRI. OR If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which categorise this species as main**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

The Korf-Karaginsky stock of Pacific herring in UoA

Pacific herring is the only main primary species in the UoA. This species bycatch in the WBSZ fishery consists of individuals belonging to two large groups: the Korf-Karaginsky stock and the stocks of the eastern Bering Sea. For Korf-Karaginsky stock of herring B_{lim} = 96.7 thousand metric tons and B_{tr} = 193.2 thousand metric tons. From 2011 the stock biomass was higher than B_{tr} which is a proxy for B_{msy} (KamchatNIRO, 2021). Therefore, we can say that there is a high degree of certainty that the Pacific herring of the Korf-Karaginsky stock are above the PRI and are fluctuating around a level consistent with MSY. Therefore, for this stock **SG 100 is met**.

Pacific herring of the eastern Bering Sea in UoA

With regard to Pacific herring of the eastern Bering Sea, it can be said that for the last 5 years the abundance of these stocks has been above average and highly likely is above the PRI. **SG 60 and SG 80 are met**.

Since the level of herring abundance over past 5 years is many times higher than the minimum level of herring abundance in the historical period, there is a high degree of certainty that the Pacific herring of the eastern Bering Sea is above the PRI. We do not have an information about target biological points for the eastern Bering sea stocks.

But there is Btr = 338.5 thousand metric tons for all mixed stocks, which is using by TINRO for forecast of possible catch of herring in WBSZ. Experts of Lloyd's Register (2021) believe that this parameter can be used as proxy for B_{msy}, and we join this opinion. **SG 100 is met**.

b	**Minor primary species stock status**			
	Guide post			Minor primary species are highly likely to be above the PRI.

				OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			**Yes**

Rationale

In this UoA 3 species (Pacific cod, Pacific halibut and Greenland halibut) are considered minor primary species. They represented less than 1% of the total catch for Pacific cod, and less than 0.02% for Pacific halibut and Greenland halibut (Table 16). Current stock assessments for all these species indicate that they are not overfished, and current stock levels are above the levels expected to impair recruitment (TINRO, 2021a). Therefore, all minor primary species are highly likely to be above the PRI. **SG100 is met**.

References

- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a **partial strategy** in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a **strategy** in place for the UoA for managing main and minor primary species.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Definitions

In the context of this performance indicator (Source: MSC FCR v2.01; Table SA8):

"**Measures**" are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

A "**partial strategy**" represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

A "**strategy**" represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

The walleye pollock fishery in WBS are managed by the FFA, which issues catch permits for each vessel that list all the TAC species they are allowed to catch. The requirement for permits, the use of TACs based on reference points, and limitation of gear types are the primary management measures for most primary species. The following measures apply to the fishery in general (http://www.russianpollock.com/ecosystem/by-catch-management/).

- All by-catch species must be recorded, and reported;
- When by-catch species exceeds 2% for TAC species and 49% for PC (possible catch) species there is a "move-on" rule of at least five miles from areas of high by-catch;
- If by-catch exceeds 2% or 49% depending on by-catch specie in a trawl, the excess catch must be returned to the sea, and reported;
- Vessels can have quotas for multiple species which eliminates the need to apply mitigation as long as the allocation to the vessel for the by-catch species is not exceeded;
- If by-catch is in excess of the TAC or PC, the management authority can enforce time-area closures to mitigate further excess by-catches;
- Bottom trawling is prohibited;
- Full or partial ban in some fishing zones. Trawling is not permitted less than 30 miles off-shore and 5-12 miles from islands (to protect marine mammals rookery and seabird nesting sites);

- Vessel captains must keep records of by-catch and submit daily vessel report (DVR) to the Fisheries Monitoring System electronic database;
- Vessels, trawling operations, and catches are observed by scientific observers from fishery research institutes, Coast Guard inspectors, and FFA inspectors. The cross referencing system between data systems and inspections suggests that there is little scope for misreporting of retained catches or discarding.

Pacific herring: the only main primary species in specialized midwater pollock fishery in WBSZ (east of 174° E). In this zone, herring is managing via possible catch (PC). Fishing Rules (2019) specify that species / stocks that are regulated by PC and which are caught as a bycatch in a directed fishery such as for pollock, should not account for more than 49% of the total directed catch by weight. So, Pacific herring bycatch that are less then 49% of the total catch can be retained, processed and landed for sale. There is no unwanted herring catch in this case. PC and TAC estimates are reviewed annually at national level through multistage peer review process and are subject to HCRs. Target reference points are designed to keep populations near Bmsy indefinitely. This combination of measures can be considered as a strategy for managing the main primary species (Pacific herring). **SG 100 is met**.

Minor bycatch stocks: Pacific cod, Pacific halibut and Greenland Halibut for which there are full quantitative assessments available with reference points and control rules. All these stocks are also managed via a TAC and have applied the same measures as Pacific herring. The vessel should possess a catch permit that allows it to catch any designated bycatch species and has a “quota” to retain the TAC species caught. There is therefore a strategy including measures in place for managing these species. **SG100 is met**.

b	**Management strategy evaluation**			
	Guide post	The measures are considered **likely** to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	**Yes**	**Yes**	**No**
Rationale				

There are harvest strategies for all primary species that limit exploitation rates across all fisheries, including the WBS midwater pollock fishery. There is Fishing Rules (2019) which include many measures, including catch limits that are applied by fishery zones and species. There is strong evidence that these measures applied to the WBS pollock fishery work in maintaining bycatch at low levels. Where vessels catch more substantial quantities, although these are still relatively low compared to the overall catch, quotas are applied so that they are included in the overall strategy. Measures limiting the bycatch to relatively low levels are likely to work because the relevant bycatch is low compared to overall catch. **SG 60 is met**.

There are stock assessments which include bycatch as well as other data for primary species. This gives an objective basis for confidence that the harvest strategy as it applies to the pollock fishery is working. **SG 80 is met**.

Testing of the strategies depend on the assessment of the species stock status. All primary species are currently near or above the biomass target. However, no information about a testing of measures designed to manage the fishery’s impact on primary species are available. **SG 100 is not met**.

c	**Management strategy implementation**			
	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its overall objective as set out in scoring issue (a).**
	Met?		**Yes**	**No**

Rationale

There is some evidence that the measures/partial strategy is being implemented successfully. Total catch does not exceed TAC. Companies and vessels adhere to their catch quotas. Daily vessels catch reports are submitted to centralized database and can be verified on next day. Directed and bycatch removals for each of the primary species are inspected and verified by Coastguard. Stock assessments for all primary species indicate that the stocks have been fluctuating around Bmsy. **SG 80 is met**.

There is no clear evidence that the strategy is being implemented successfully. **SG 100 is not met**.

d	**Shark finning**			
	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	**NA**	**NA**	**NA**

Rationale

Sharks are not a primary species. Scoring Issue need not be scored.

e	**Review of alternative measures**			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	**NA**	**NA**	**NA**

Rationale

There are no unwanted catches of Primary species in the UoA. Scoring Issue need not be scored.

References

- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd’s Register, 2020, 2021;
- TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main primary species with respect to status. **OR** **If RBF is used to score PI 2.1.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is **adequate to assess** the impact of the UoA on the main primary species with respect to status. **OR** **If RBF is used to score PI 2.1.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status.
	Met?	**Yes**	**Yes**	**No**
Rationale				

As described above, both fishery-dependent and fishery-independent data are available to assess the stock status and fishery impact on Pacific herring in WBSZ (east of 174° east longitude) (the only main primary species in the UoA), and biomass is monitored and compared to reference points. Therefore, qualitative and some quantitative information is available and is adequate to assess the impact of the UoA on Pacific herring with respect to status. **SG 60 and SG 80 are met**.

There is no strong evidence that available quantitative information is adequate to assess with a high degree of certainty the impact of the UoA on Pacific herring species with respect to status. **SG 100 is not met**.

b	**Information adequacy for assessment of impact on minor primary species**			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			**No**
Rationale				

There is no conclusive evidence that the presented quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status. **SG 100 is not met**.

	Information adequacy for management strategy			
c	Guide post	Information is adequate to support **measures** to manage **main** primary species.	Information is adequate to support a **partial strategy** to manage **main** primary species.	Information is adequate to support a **strategy** to manage **all** primary species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Pacific herring is the only main primary species in the UoA. Both fishery-dependent and fishery-independent data are used to support management measures. The partial strategy for management of Pacific herring in WBSZ (east of 174° E) includes permit requirements, PC and reference points. Catch data are collected to assure that PC are complied with. Biomass is monitored and assessed relative to reference points. The information provided through catch statistics, research surveys, and observers. **SG 60 and SG 80 are met**.

Besides Pacific herring, there are 3 minor primary species in the UoA. There is no high degree of certainty that the available information is adequate to support a strategy to manage all primary species. **SG 100 is not met**.

References

- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought -** tables of retained catches in the pollock fishery for the last three years that reflect the amount of primary species.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guide post	Main secondary species are **likely** to be above biologically based limits. OR If below biologically based limits, there are **measures** in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are **highly likely** to be above biologically based limits. OR If below biologically based limits, there is either **evidence of recovery** or a **demonstrably effective partial strategy** in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are **considerable**, there is either **evidence of recovery** or a, **demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main secondary species are above biologically based limits.
	Met?	**RBF**	**RBF**	**RBF**
Rationale				

In this assessment, only seabirds are the main secondary species. As the RBF is likely to be used to assess these species, this SI not scored in the ACDR.

b	**Minor secondary species stock status**			
	Guide post			Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based

				limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			**No**
Rationale				

The nature of the classification into secondary species indicates that these species are not managed with using of TAC, and in many cases do not have the necessary analytical assessment to determine the biologically based limits. There is little evidence available which shows that these species are highly likely to be above biologically based limits. We have not evaluated all the minor secondary species individually. **SG100 is not met**.

References

- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**RBF**
Information gap indicator	**More information sought** – *Information for RBF*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.2.2 – Secondary species management strategy

PI 2.2.2		**There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch**		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based	There is a **partial strategy** in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above	There is a **strategy** in place for the UoA for managing main and minor secondary species.

		limits or to ensure that the UoA does not hinder their recovery.	biologically based limits or to ensure that the UoA does not hinder their recovery.	
	Met?	**Yes**	**Yes**	**No**
Rationale				

In this assessment, only seabirds and possibly marine mammals are the main secondary species. All interactions fishery with seabirds and marine mammals are now reported on by VNIRO observers, and the overall impact of the WBS midwater trawl pollock fishery on the status of the populations concerned is assessed. The ongoing monitoring is a key element of the strategy to manage fishery impacts on these species. Other measures include the explicit closure of fishing areas designed to protect marine mammal rookeries and seabird breeding sites (Fishing Rules, 2019). These measures together make up a partial strategy. **SG 60 and SG 80 are met**.

UoA does not have a strategy in place for managing minor secondary species. **SG 100 is not met**.

b	**Management strategy evaluation**			
	Guide post	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The outcome of the PSA and the nature of the fishery provides an objective basis for confidence that there is small impact on these species from this fishery. Observer data shows that bycatch rates are low. **SG 60 and SG 80 are met**.

There has been no formal testing for any of the species assessed. **SG 100 is not met**.

c	**Management strategy implementation**			
	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a).**
	Met?		**Yes**	**No**
Rationale				

Catch composition has been evaluated through an on-board scientific observer regime; available observer data show low secondary species bycatch (Table 16). There is thus some evidence that the partial strategy is achieving the objective of minimising bycatch. **SG 80 is met**.

There has not been a special review that might provide clear evidence that the bycatch strategy for all secondary species is being implemented successfully. **SG 100 is not met**.

d	**Shark finning**

	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Only one species of sharks is rarely observed in the catch – Pacific sleeper shark. The scientific observer data report that sleeper sharks are released alive or dead. **SG 60 and SG 80 are met**.

Information available shows that sharks and other chondrichthyan species are rarely caught in pollock-directed midwater trawls. In Russia there is no demand for shark fins (as is the case in Asian countries) and there is no incentive to fin sharks. There is therefore a high degree of certainty that shark finning is not taking place on UoA vessels. **SG100 is met**.

e	**Review of alternative measures to minimise mortality of unwanted catch**			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of all secondary species, and they are implemented, as appropriate.
	Met?	**Yes**	**No**	**No**
Rationale				

All VNIRO observers in UoA record interactions and mortality rates of bird and marine mammal species in the WBS pollock trawl fishery and provide detailed information on this in the observer reports (including on the nature of the interaction and what aspect of the gear was involved). To date, all observer reports (completed by independent VNIRO scientists) conclude that the fishery does not have a detrimental impact on the populations of the marine mammal and seabird species considered. The team concludes therefore that there is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the identified bird and marine mammal species. **SG 60 is met**.

There is no a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch. **SG 80 and SG 100 are not met**.

References

- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue		SG 60	SG 80	SG 100
a		Information adequacy for assessment of impacts on main secondary species		
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and **adequate to assess** the impact of the UoA on main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and **adequate to assess with a high degree of certainty** the impact of the UoA on main secondary species with respect to status.
	Met?	**RBF**	**RBF**	**RBF**
Rationale				

In this assessment, only seabirds and possibly marine mammals are the main secondary species. As the RBF is likely to be used to assess these species, this SI not scored in the ACDR.

b		**Information adequacy for assessment of impacts on minor secondary species**		
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			**Yes**
Rationale				

There are catch data from the Observer Programme that provide quantitative information to estimate the impact on potential minor secondary species. However, individual species within this group of species are not evaluated as their occurrence by weight is <0.01% of the average catch. Nevertheless, **SG 100 is met**.

c	**Information adequacy for management strategy**

	Guide post	Information is adequate to support **measures** to manage **main** secondary species.	Information is adequate to support a **partial strategy** to manage **main** secondary species.	Information is adequate to support a **strategy** to manage **all** secondary species, and **evaluate** with a **high degree of certainty** whether the strategy is **achieving its objective**.
	Met?	**Yes**	**No**	**No**
Rationale				

In this assessment, only seabirds and possibly marine mammals are the main secondary species. Independent VNIRO observers record in UoA record bycatch of all species, interactions and mortality rates of bird and marine mammal species in the WBS pollock trawl fishery and provide detailed information on this in the observer reports (including on the nature of the interaction and what aspect of the gear was involved). To date, all observer reports (completed by independent VNIRO scientists) conclude that the fishery does not have a detrimental impact on the populations of the marine mammal and seabird species considered. The information available is therefore adequate to support measures to manage main secondary species. **SG 60 is met**.

The information available is limited to only a few observer trips and a single comprehensive trip dedicated to operational impacts of the fishery on birds, classified here as main secondary. This information is not considered adequate for a partial strategy to support measures for their management. **SG 80 and SG 100 are not met**.

References

- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**RBF**
Information gap indicator	**More information sought** *Information for RBF*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guide post	Where national and/or international requirements set limits for ETP species, the **effects of the UoA** on the population/ stock are known and **likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, the **combined effects of the MSC UoAs** on the population /stock are known and **highly likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a **high degree of certainty** that the **combined effects of the MSC UoAs** are within these limits.
	Met?	**RBF**	**RBF**	**RBF**
Rationale				

There are no significant direct effects of the WBS walleye pollock midwater trawl fishery that can hinder recovery of ETP species were mentioned in the reports of VNIRO observers. RBF is triggered as a precautionary measure in case ETP species will be identified before or during the site visit, so this SI not scored in the ACDR.

b	**Direct effects**			
	Guide post	Known direct effects of the UoA are likely to not **hinder recovery** of ETP species.	Direct effects of the UoA are **highly likely** to not **hinder recovery** of ETP species.	There is a **high degree of confidence** that there are no **significant detrimental direct effects** of the UoA on ETP species.
	Met?	**RBF**	**RBF**	**RBF**
Rationale				

RBF is triggered as a precautionary measure in case ETP species will be identified before or during the site visit, so this SI not scored in the ACDR.

c	**Indirect effects**			
	Guide post		Indirect effects have been considered for the UoA and are thought to be **highly likely** to not create unacceptable impacts.	There is a **high degree of confidence** that there are no **significant detrimental indirect effects** of the UoA on ETP species.
	Met?		**RBF**	**RBF**
Rationale				

RBF is triggered as a precautionary measure in case ETP species will be identified before or during the site visit, so this SI not scored in the ACDR.

References

Fishing Rules, 2019;

KamchatNIRO, 2021;

Lloyd's Register, 2020, 2021;

TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**RBF**
Information gap indicator	**More information sought** *Information for RBF*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.3.2 – ETP species management strategy

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** - **meet national and international requirements;** - **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species**		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guide post	There are **measures** in place that minimise the UoA-related mortality of ETP species, and are expected to be **highly likely to achieve** national and international requirements for the protection of ETP species.	There is a **strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be **highly likely to achieve** national and international requirements for the protection of ETP species.	There is a **comprehensive strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to **achieve above** national and international requirements for the protection of ETP species.
	Met?	**Yes**	**Yes**	**No**
Rationale				

There are measures in place, amounting to a strategy, which is expected to ensure the UoA do not hinder the recovery of ETP species. Fishing Rules (2019) define fishery closure areas designed to protect seabirds and marine mammals and their primary forage and breeding habitats. Catch and bycatch composition, interactions with seabirds and marine mammals are recorded on by TINRO observers. Impact of the WBS midwater trawl walleye pollock fishery on the status of the ETP species populations is assessed. These measures constitute a strategy which ensure that the fishery does not hinder the recovery of possible ETP species.

The Code of Conduct (TBD) must include measures to evaluate and mitigate any interactions with ETP species: including catch recording in the bycatch log, the application of any technologies to reduce interactions / ensure high survival, the requirement to follow scientific advice and provide access for scientific observers. **SG 60 and SG 80 are met**.

These measures would not constitute a comprehensive strategy. **SG 100 is not met**.

b	**Management strategy in place (alternative)**			
	Guide post	There are **measures** in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **strategy** in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **comprehensive strategy** in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	**NA**	**NA**	**NA**
Rationale				

This Scoring Issue need not be scored if requirements for protection or rebuilding are provided through national ETP legislation or international agreements. The SI is therefore considered not applicable.

c	**Management strategy evaluation**			
	Guide post	The measures are **considered likely** to work, based on **plausible argument** (e.g., general experience, theory or comparison with similar fisheries/species).	There is an **objective basis for confidence** that the measures/strategy will work, based on **information** directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a **quantitative analysis** supports **high confidence** that the strategy will work.
	Met?	**Yes**	**Yes**	**No**
Rationale				

According the TINRO observer reports (2019 - 2020) there is no mortality of ETP species in the WBS midwater trawl pollock fishery. Therefore, it can be concluded that the UoA does not significantly impact upon or hinder rebuilding of the seabird and marine mammal species concerned. This provides some objective basis for confidence that the strategy for Steller sea lions will work. **SG 60 and SG 80 are met**.

There has been no quantitative analysis, and observer coverage is not sufficiently comprehensive to support a high degree of confidence. **SG 100 is not met**.

d	**Management strategy implementation**			
	Guide post		There is some **evidence** that the measures/strategy is being implemented	There is **clear evidence** that the strategy/comprehensive strategy is being implemented

			successfully.	successfully and **is achieving its objective as set out in scoring issue (a) or (b).**
	Met?		**Yes**	**No**
Rationale				

There is some evidence that the strategy is being implemented successfully, as the reports on catch composition in the fishery indicates that no ETP species have been recorded in this fishery. Observers monitor the UoA annually. There are dedicated research surveys of interaction seabirds and marine mammals with the WBS midwater trawl pollock fishery. **SG 80 is met**.

There has not been a special review that might provide clear evidence that the strategy is being implemented successfully. **SG 100 is not met**.

e		**Review of alternative measures to minimise mortality of ETP species**		
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	**Yes**	**No**	**No**
Rationale				

All VNIRO observers in UoA record bycatch, abundance, interactions and mortality rates of ETP species in the WBS pollock trawl fishery and provide detailed information on this in the observer reports (including on the nature of the interaction and what aspect of the gear was involved). To date, all observer reports (completed by independent VNIRO scientists) conclude that the fishery does not have a detrimental impact on the populations of the ETP species considered. The team concludes therefore that there is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species. **SG 60 is met**.

There is no a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species. **SG 80 and SG 100 are not met**.

References

- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd’s Register, 2020, 2021;
- TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI** *Will be verified at site visit. May be corrected if any ETP species will be found before or during the site visit.*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.3.3 – ETP species information

PI 2.3.3		Relevant information is collected to support the management of UoA 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		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guide post	Qualitative information is **adequate to estimate** the UoA related mortality on ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Qualitative information is **adequate to estimate productivity and susceptibility** attributes for ETP species.	Some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Some quantitative information is **adequate to assess productivity and susceptibility attributes** for ETP species.	Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species.
	Met?	**RBF**	**RBF**	**RBF**
Rationale				

There are ETP species in the UoA. Although VNIRO observers did not report mortality of these species from the UoA fishery, RBF is triggered as a precautionary measure in case ETP species will be identified before or during the site visit. Therefore, the scoring for this SI cannot be completed.

b	**Information adequacy for management strategy**			
	Guide post	Information is adequate to support **measures** to manage the impacts on ETP species.	Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species.	Information is adequate to support a **comprehensive strategy** to manage impacts, minimise mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives.

	Met?	**Yes**	**No**	**No**
Rationale				

Independent VNIRO observers record in UoA record bycatch of all ETP species, abundances, interactions and mortality rates of bird and marine mammal species in the WBS pollock trawl fishery and provide detailed information on this in the observer reports (including on the nature of the interaction and what aspect of the gear was involved). This information is adequate to support measures to manage the impacts on ETP species. **SG 60 is met**.

Observer coverage is not sufficiently comprehensive to evaluate fishery impacts with a high degree of certainty. **SG 100 and SG 80 are not met**.

References

- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- TINRO, 2021a.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**RBF**
Information gap indicator	**More information sought** *Information for RBF*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The midwater trawl fishery is directed at the pelagic component of the ecosystem; this is the commonly encountered habitat. Vessels trawl in midwater depths with a 100-110 mm mesh net that minimizes impacts to small fish. Fishing Rules (2019) do not allow bottom fishing. The fishery is unlikely to reduce structure and function of the pelagic habitat. **SG 60 is met**.

According to the Fishing Rules (2019) and information from client and research institute, walleye pollock is harvested only with midwater trawl. Size of the midwater trawls can differ based on the size of the vessel. For the large-scale fleet, the vertical opening of a standard midwater trawl is about 60-65 meters, horizontal opening – 100-110 meters. Seeking to harvest large groups of pollock, trawls usually operate at depths of 200-300 meters in the pelagic zone. Midwater trawlers must use a selective insert that allows pollock juveniles to escape the net. Trawl opening can be adjusted with trawling speed, length of the trawl warps, and weights set on the trawl. The midwater trawl is equipped with sonar and other tools allowing crew to control net depth of immersion and volume of fish in the net. As a result, midwater trawls seldom contact with the bottom and present minimum negative impact on the benthic habitats. The UoA is highly unlikely to reduce the structure and function of the pelagic habitats. **SG 80 is met**.

There is a long history of fishing with midwater trawls in the WBS. Large-scale benthic surveys were conducted on the shelf of the Bering Sea by TINRO twice in the end of 20th and in the beginning of 21st century in Gulf of Anadyr and the shelf of the Koryakskiy coast, using a similar set of stations in 2005 as those sampled in the 1980s. This allowed for comparing and understanding of the long-term variability of bottom communities under the influence of fishing. Comparison of the 1985 and 2005 data indicated few changes and overall a similar spatial distribution of biomass and taxa. Despite some differences in the total biomass and biomass of dominant groups and species, there were no significant changes in composition macrobenthos over a 20-year period. It was concluded that bottom fauna of the surveyed areas of West Bering Sea is almost in the same state, as in the 1940-1980s (Nadtochy *et al*., 2008). Similar studies are being carried out at the recent years. The bottom trawl surveys of the shelf and upper parts of the continental slope in the WBS were completed in summer of 2008, 2012 (Nadtochy *et al*., 2017a, 2017b); 2015, 2017 (Savin, 2018); and 2019 (Orlov et. al., 2020; Savin, 2021). Therefore, it can be concluded that the midwater trawl fishery for Pollock does not negatively impact the composition and functioning of benthic communities of the WBS. The long-term stability of pelagic and demersal fish communities plus the resilience of the walleye pollock stock provides evidence that the fishery is highly unlikely to reduce the structure and function of the pelagic habitat. **SG 100 is met**.

b	**VME habitat status**			
	Guide post	The UoA is **unlikely** to reduce structure and function of the VME habitats to a point	The UoA is **highly unlikely** to reduce structure and function of the VME habitats	There is **evidence** that the UoA is highly unlikely to reduce structure and function

		where there would be serious or irreversible harm.	to a point where there would be serious or irreversible harm.	of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	**NA**	**NA**	**NA**
Rationale				

There are no legally defined VMEs in the Russian Federation. This scoring issue is not applicable but will be verified during the site visit.

c	**Minor habitat status**			
	Guide post			There is **evidence** that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			**No**
Rationale				

There is the FSA letter stating no cases of gear loss in 2016-2020 (Figure 48). There was no information available on the frequency of incidental interaction with the bottom and there is no direct evidence that the UoA is highly unlikely to reduce structure and function of the minor habitat. **SG 100 is not met.**

References

- Dulepova, 2002, 2014;
- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- Nadtochy *et al*., 2008, 2017a, 2017b;
- Naydenko, Somov, 2019
- Orlov et. al., 2020;
- Savin, 2018, 2021;
- Shuntov, 2001;
- TINRO, 2021a;
- Zagrebelniy, 2020;
- Zavolokin, Radchenko, Kulik, 2014.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** *about lost gears and frequency of interaction with seabed.*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.4.2 – Habitats management strategy

<table>
<tr><th colspan="2">PI 2.4.2</th><th colspan="3">There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats</th></tr>
<tr><td colspan="2">Scoring Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td colspan="4">Management strategy in place</td></tr>
<tr><td>Guide post</td><td>There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.</td><td>There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.</td><td>There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="5">Rationale</td></tr>
</table>

Fishing Rules (2019) define acceptable net size and configurations to reduce impacts to the pelagic habitat, restrict bottom fishing, define closed seasons, establish buffer zones around marine mammal habitats and set depth restrictions in coastal areas. Other measures set 2% by-catch limits for TAC species and 49% limits for Recommended Yield fish and related move on rules. Vessel captains must keep records of by-catch and submit Daily Vessel Reports (DVRs). These measures represent a partial strategy that is expected to achieve the Habitat Outcome 80 level of performance. **SG 60 and SG 80 are met**.

Although Russia defines no legal VMEs, scientists have defined potential VME indicator species and mapped their distributions. VME indicator species occasionally appear in trawls. However, there is no strategy or marine spatial plan to manage impacts to potential VMEs. **SG 100 is not met**.

<table>
<tr><td rowspan="3">b</td><td colspan="4">Management strategy evaluation</td></tr>
<tr><td>Guide post</td><td>The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).</td><td>There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.</td><td>Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="5">Rationale</td></tr>
</table>

The switch from bottom to midwater gear in the fishery in the 1990s was a significant development that effectively mitigated trawl gear impacts to the benthic habitat. Few potential VME species are recorded in by-catch provide some evidence that the habitat protection strategy is working. In addition, an objective basis for confidence that the measures / strategy is working comes from long-term benthic and ecosystem research that shows stable habitat structure and function over the history of pollock fishing. **SG 60 and SG 80 are met**.

There is no official list of VME indicator species and limited mapping and long-term monitoring of potential VME habitats. With limited information about impacts to potential VMEs and indicator species observed in the catch there is not adequate information to support testing of management strategies or evaluation of alternatives. **SG 100 is not met**.

c	**Management strategy implementation**

	Guide post		There is **some quantitative evidence** that the measures/partial strategy is being implemented successfully.	There is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		**Yes**	**No**
Rationale				

There is no evidence of midwater trawl fisheries significantly interacting with the benthic environment or potential VMEs. Evidence presented in the P3 background section suggests that compliance levels in the fleet are good and that monitoring is effective, suggesting the strategy for the fishery is implemented successfully. **SG 80 is met**.

But there is no clear quantitative data showing the status and trends of potential VMEs. There is no evidence that there is a common strategy that is being implemented to mitigate the impact of all pollock fisheries on habitat. **SG 100 is not met**.

d	**Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs**			
	Guide post	There is **qualitative evidence** that the UoA complies with its management requirements to protect VMEs.	There is **some quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is **clear quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	**NA**	**NA**	**NA**
Rationale				

There are no legally defined VMEs in the Russian Federation. Therefore, SI is not scored.

References

- Dulepova, 2002, 2014;
- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- Nadtochy *et al*., 2008, 2017a, 2017b;
- Naydenko, Somov, 2019
- Orlov et. al., 2020;
- Savin, 2018, 2021;
- Shuntov, 2001;
- TINRO, 2021a;
- Zagrebelniy, 2020;
- Zavolokin, Radchenko, Kulik, 2014.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**

Information gap indicator	**More information sought** *about lost gears and frequency of interaction with seabed.*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	The types and distribution of the main habitats are **broadly understood**. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and **vulnerability** of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The fishery has an insignificant impact on the pelagic habitat. Biological, chemical and physical data provide evidence. There are active research programs for WBS undertaken by VNIRO and other research agencies. Surveys provide baselines and have described habitat and ecosystem data since the 1960s. Historical data include information about substrate, benthos, zooplankton, invertebrates, ichthyoplankton, fish, marine mammals and other species. Ecological studies about community structure and trophic relationships help evaluate related habitat stability and change. Benthic surveys identified indicator species associated with potential VMEs. The distribution of benthic habitats and communities in WBS are known and documented. Daily Vessel Reports (DVRs) help identify the scale and intensity of fishing effort that overlaps with various habitat types. The overall habitat types are therefore well understood and monitored to evaluate status and trends. As a result, managers have a good understanding of the nature, distribution and vulnerability of habitats. **SG 60 and SG 80 are met**.

The distribution of habitat type in depths up to 200 m is well known and documented (Nadtochy, 2008, Nadtochy *et al*., 2017a, Nadtochy *et al*., 2017b). Benthic surveys data are available for potential identification of species associated that could be considered as VMEs, but none are identified to date. The overall habitat types are therefore well understood, and the information is adequate to determine the risk posed by UoA and the effectiveness of the strategy to manage impacts on habitats. **SG100 is met**.

b	**Information adequacy for assessment of impacts**			
	Guide post	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and	The physical impacts of the gear on all habitats have been quantified fully.

		gear. OR **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	location of use of the fishing gear. OR **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	**Yes**	**Yes**	**No**
Rationale				

Information is adequate to broadly understand the nature of the main impacts on habitat of the gear used. Midwater trawls used in the pollock fishery are well known and have little impact on the habitats. **SG 60 is met**.

The spatial and temporal extent of the fishery is well known. The WBS UoA habitat type is known broadly – while the fishery may be overlap spatially and temporally with different benthic and substrate types, it does not interact with them. The behaviour of gear in the water is well known and the interaction between gear, fishery and habitat is understood. Information is adequate to allow for identification of the main impacts of the UoA on the main habitats. **SG 80 is met**.

There is no evidence that the physical impacts of the midwater trawls on all habitats have been quantified fully. **SG 100 is not met**.

c	**Monitoring**			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.
	Met?		**Yes**	**No**
Rationale				

Adequate information continues to be collected to detect an increase in risk to the main habitats. The bottom trawl surveys of the shelf and upper parts of the continental slope in the WBS were completed in summer of 2015, 2017 (Savin, 2018) and 2018, 2019, 2020 (Orlov et. al., 2020; Savin, 2021; TINRO, 2021a). **SG 80 is met**.

There is no evidence that changes in all habitat distributions over time are measured. **SG 100 is not met**.

References

- Dulepova, 2002, 2014;
- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- Nadtochy *et al*., 2008, 2017a, 2017b;
- Naydenko, Somov, 2019
- Orlov et. al., 2020;
- Savin, 2018, 2021;

- Shuntov, 2001;
- TINRO, 2021a;
- Zagrebelniy, 2020;
- Zavolokin, Radchenko, Kulik, 2014.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought.** *Any information collected specifically to detect any increase in risk to the main habitats and changes in habitat over time*.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is **unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is **highly unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The main impact of the UoA fishery on the WBS ecosystem is through the removal of the two main species that are caught, pollock and herring. The stocks for both are considered in good condition (see PIs 1.1.1 and 2.1.1) despite an ongoing pollock fishery. Impacts on other components of the ecosystem, such as ETP species and habitats, are considered insignificant (see PIs 2.3.1 and 2.4.1). The key ecosystem element under consideration here is therefore the trophic structure of the WBS and how this may be affected through the removal of pollock and, to a lesser extent, herring by the UoA.

TINRO has been collecting various data on ecosystem status of Bering Sea since 1980s, this includes monitoring of the trophic structure as well as climatic-oceanographic and hydro-biological conditions. The monitoring programmes included bottom-trawl and pelagic macro-surveys and benthic surveys for biomass of nekton, groundfish, macro-benthos and the collection of information on composition and quantitative distribution of meso- and macro-plankton (Shuntov, 2001; Dulepova, 2002, 2014).

Consumption rates were estimated for most groundfish and pelagic species and demonstrated the importance and main trophic linkages between pollock and the ecosystem as a whole. The work concluded in general that pollock has a leading role in the trophic the structure of the pelagic zone of the Far Eastern seas even in the years when its abundance was low. TINRO scientists also concluded that the ecosystem dynamics relating to total biomass of nekton in the WBS over a period of 40 years corresponded to changes in natural fish productivity and natural cycles and that there was little evidence suggesting the exploitation of key resources such as for pollock, was impacting the system. Ecosystem models are developed that describe trophic structure of the WBS community. Was shown that the effect of adult pollock is mixed but generally negative on many species, as they act as a competitor rather than a food source. Juvenile pollock, on the other hand, have a positive effect on a wide range of species in both ecosystems (Aydin *et al*., 2002). Changes of quantitative composition and trophic structure of the nekton community in the WBS are considered for the last decades and role of pacific salmons in dynamics of trophic flows is evaluated in dependence on their abundance (Zavolokin *et al*., 2014). The historical changes in the pollock abundance indicate that the system is resilient to the scale of the fishery. There have been no apparent changes in biodiversity or indications of ecosystem stress. Consolidated material provides supportive evidence that the pollock fishery has had little impact on the ecosystem and that WBS ecosystem processes vary primarily with large-scale climatic and oceanographic conditions (Shuntov, 2016).

This in line with the conclusions of the PCA MSC assessment (Lloyd's Register, 2020) that the WBS midwater trawl pollock fishery has had little impact on the WBS ecosystem processes that vary primarily with large-scale climatic and oceanographic conditions. Thus, there is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

SG 60, SG 80 and SG 100 are met.

References

- Dulepova, 2002, 2014;
- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- Nadtochy *et al*., 2008, 2017a, 2017b;
- Naydenko, Somov, 2019
- Orlov et. al., 2020;
- Savin, 2018, 2021;
- Shuntov, 2001;
- TINRO, 2021a;
- Zagrebelniy, 2020;
- Zavolokin, Radchenko, Kulik, 2014.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary which take into account the **potential impacts** of the UoA on key elements of the ecosystem.	There is a **partial strategy** in place, if necessary, which takes into account **available information and is expected to restrain impacts** of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a **strategy** that consists of a **plan**, in place which contains measures to **address all main impacts of the UoA** on the ecosystem, and at least some of these measures are in place.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Fisheries-specific management measures for key ecosystem elements are set out in the Fishing Rules (2019) and other fisheries regulations (see P1 and P2 scoring above). Measures described under P1 aim to ensure that the fishery is conducted within sustainability limits. There is a range of technical measures and protocols to minimize bycatch of other fish species, which may play an important role in ecosystem structure and function. There are closed areas in place either for all fisheries or for some particular fisheries. Low interaction with marine mammals and seabirds has been recorded and the nature of the gear (midwater trawl) should minimise impacts on benthic habitats. All these measures are applied as required. **SG 60 is met**.

These measures in combination also constitute a partial strategy using all available information to mitigate ecosystem impacts of the UoA. **SG 80 is met**.

There is no specific WBS ecosystem- based management strategy which consists of a plan. **SG 100 is not met**.

b	**Management strategy evaluation**			
	Guide post	The **measures** are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is **some objective basis for confidence** that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	**Testing** supports **high confidence** that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The WBS is defined as one of the world's Large Marine Ecosystems (LMEs). Its high productivity identifies it as a largely unique system but with productivity characteristics similar to many other LMEs. Information from across studies of several LMEs suggest that the measures in place to manage fisheries in the WBS (i.e. setting TACs based on precautionary reference points, gear restrictions, time/area closures etc.) are likely to work. **SG 60 is met**.

Ecosystem impacts are primarily controlled through specific measures implemented in the fishery. Part of the scientific recommendation process undertaken annually is for the annual TAC recommendations to be reviewed taking the ecosystem into consideration. Data for ecosystem studies is collected by specialists of the branches of VNIRO during trawl surveys in the WBS. The data on the main components of the ecosystem suggest that ecosystem function has not been disrupted by fishing over the past 30 years (TINRO, 2021a; Shuntov, Volvenko, 2020). This provides some objective basis for confidence that the partial strategy will work. **SG 80 is met**.

The partial strategy described in scoring issue a has not specifically been tested in relation to its effects on the WBS ecosystem. **SG100 is not met**.

	Management strategy implementation			
c	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a).**
	Met?		**Yes**	**No**
Rationale				

The fishery is monitored and there is good compliance; in addition, the ecosystem data available suggest that the ecological function of the system has not been impaired over 30 years of fishing during which there has been data collection (TINRO, 2021a; Shuntov, Volvenko, 2020). Therefore, the evidence suggests that fishery ecosystem management is being implemented successfully. **SG 80 is met**.

There is no clear evidence about the implementation of all aspects of the strategy. **SG100 is not met**.

References

- Dulepova, 2002, 2014;
- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd’s Register, 2020, 2021;
- Nadtochy *et al*., 2008, 2017a, 2017b;
- Naydenko, Somov, 2019
- Orlov et. al., 2020;
- Savin, 2018, 2021;
- Shuntov, 2001;
- TINRO, 2021a;
- Zagrebelniy, 2020;
- Zavolokin, Radchenko, Kulik, 2014.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	**Information quality**			
	Guide post	Information is adequate to **identify** the key elements of the ecosystem.	Information is adequate to **broadly understand** the key elements of the ecosystem.	
	Met?	**Yes**	**Yes**	
Rationale				

Ecosystem-based research has been ongoing in the WBS including multi-year ecosystem monitoring activities that were started in the 1980s. This work incorporates all levels of the ecosystem – trophic structure, community composition, habitat studies, biological oceanography, etc. Biomass and production in the WBS ecosystem have been reported on since early 1990s. There is also a significant established information base on the WBS ecosystem that is published nationally and internationally where the fishery removals are quantified. **SG 60 is met**.

The information, both historical and ongoing, provided input into modelling of the WBS ecosystem, and is leading to increasingly better understanding of the system (Aydin *et al*., 2002; Zavolokin et al., 2014; Shuntov, Volvenko, 2020; Savin, 2021). **SG 80 is met**.

b	**Investigation of UoA impacts**			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but **have not been investigated** in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and **some have been investigated in detail**.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and **have been investigated in detail**.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Ecosystem monitoring has been carried out by VNIRO in Far Eastern Seas, including the WBS, for over 30 years. Ecosystem research, including recent modelling, has consolidated the available ecosystem information. This includes the key elements of the WBS ecosystem (plankton, nekton, benthos, seabirds, marine mammals, biological oceanography, predator/prey and trophic relationships, and fishery-specific removals and impacts). Past research and current studies are providing good baseline information used to infer fishery impacts. **SG 60 is met**.

The main functions of ecosystem components have been described and most have been reported in national and international literature in detail. The key elements have been considered and conclusions drawn on their significance to the WBS (Shuntov, Volvenko, 2020). Current trophic modelling infers in detail specific impacts of the fishery on the broader ecosystem of the WBS. **SG 80 is met**.

Although there is increasing spatial and temporal information on most forms of fishing and captures, it cannot be said that all the main interactions have been investigated in detail. **SG 100 is not met**.

c	**Understanding of component functions**			
	Guide		The main functions of the components (i.e., P1 target	The impacts of the UoA on P1 target species, primary,

	post		species, primary, secondary and ETP species and Habitats) in the ecosystem are **known**.	secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are **understood**.
	Met?		**Yes**	**No**
Rationale				

The current research program focuses on all key elements of the ecosystem. For each component, its role in the WBS ecosystem is broadly understood. The ongoing work aims to identify the impacts of the fishery on the ecosystem including the main trophic roles of the different ecosystem components within the UoA. This ongoing work has helped clarify the role of the UoA including the target, primary, secondary and ETP species. **SG80 is met**.

Not all impacts are understood, in particular those on the many secondary minor species which occur at a very low frequency in the fishery. **SG100 is not met**.

d	**Information relevance**			
	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components **and elements** to allow the main consequences for the ecosystem to be inferred.
	Met?		**Yes**	**Yes**
Rationale				

Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred. There is a significant amount of information on the WBS ecosystem accumulated by TINRO. Trophic-dynamic modelling is currently underway (Aydin *et al*., 2002; Zavolokin *et al*., 2014). **SG80 is met**.

The WBS ecosystem has been tested over time and the fishery has gone through low periods and poor management, but more recently improved management and control. Throughout this history, the ecosystem has shown no direct fishery-specific impacts on most elements (habitat, ETP, target and bycatch species etc.). Current research and modelling focus increasingly on these fishery-specific elements which will allow the main consequences for the ecosystem to be inferred (Zavolokin, Radchenko, Kulik, 2014; Naydenko, Somov, 2019). **SG100 is met**.

e	**Monitoring**			
	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		**Yes**	**No**
Rationale				

Adequate data continues to be collected to detect any increase in risk level. The bottom trawl surveys of the shelf and upper parts of the continental slope in the WBS were completed in summer of 2015, 2017 (Savin, 2018) and 2019 (Orlov et. al., 2020; Savin, 2021). Census surveys of marine mammals are carried out. For example, at the Pacific walrus rookery on Cape Vankarem in 2018, 2019, and 2020 (Zagrebelniy, 2020). Satellite information is widely used to obtain oceanographic data (Kivva *et al*., 2020). **SG 80 is met**.

There is no strong evidence that information is adequate to support the development of strategies to manage ecosystem impacts. **SG 100 is not met**.

References

- Dulepova, 2002, 2014;
- Fishing Rules, 2019;
- KamchatNIRO, 2021;
- Lloyd's Register, 2020, 2021;
- Nadtochy *et al*., 2008, 2017a, 2017b;
- Naydenko, Somov, 2019
- Orlov et. al., 2020;
- Savin, 2018, 2021;
- Shuntov, 2001;
- TINRO, 2021a;
- Zagrebelniy, 2020;
- Zavolokin, Radchenko, Kulik, 2014.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

7.3.3 Principle 2 references

Antonov N.P., Klovach N.V., Orlov A.M., Datsky A.V., Lepskaya V.A., Kuznetsov V.V., Yarzhombek A.A., Abramov A.A., Alekseev D.O., Moiseev S.I., Evseeva N.A., Sologub D.O. 2016. Fishing in the Russian Far East fishery basin in 2013 // Trudy VNIRO. V. 160. P. 133–211. (In Russ.) https://www.elibrary.ru/item.asp?id=26539731

Artukhin, Yu.B. 2018. Near-vessel seabird aggregations in the winter trawl fishery of pollock in the Okhotsk Sea, Izv. Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr., 2018, vol. 193, pp. 50−56.

Artukhin, Y.B. 2019. Winter Seabird Populations in Open Waters of the Sea of Okhotsk. Russ J Mar Biol 45, 6–14 (2019). https://doi.org/10.1134/S1063074019010024

Artukhin, Yu.B., Andreev, A.V., Gerasimov, Yu.N., *et al*. 2016. Morskie klyuchevye ornitologicheskie territorii Dal'nego Vostoka Rossii (Marine Important Bird Areas of the Russian Far East), Moscow: BirdsRussia. (In Russ.) https://birdsrussia.ru/for_members/library/ornitologia/morskie-klyuchevye-ornitologicheskie-territorii-dalnego-vostoka-rossii/

Aydin K.Y., Lapko V.V., Radchenko V.I., Livingston P.A. 2002. A comparison of the eastern and western Bering Sea shelf and slope ecosystems through the use of mass-balance food web models. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-130, 78 p.

BirdLife International (2021) Species factsheet: Rissa brevirostris. Downloaded from http://www.birdlife.org on 12/05/2021.

Dulepova, E. P. 2002. Comparative bioproductivity of the Far East Seas' macroecosystems. TINRO, Vladivostok. 273 pp. (In Russ.)

Dulepova E.P. 2014. Dynamics of production parameters for zooplankton as the main component of forage base for nekton in the western Bering Sea // Izvestiya TINRO. 179:236–249. (In Russ.)

Fishing Rules, 2019. Fishing Rules for the Far Eastern Fisheries Basin (as amended on July 20, 2020) (Source: http://docs.cntd.ru/document/554767016; http://xn--b1a3aee.xn--p1ai/pravila-rybolovstva.html).

Gorbatenko K.M. 2021. Composition and structure of plankton communities in the Bering Sea // Izvestiya TINRO; 201(1):158-176. (In Russ.) https://doi.org/10.26428/1606-9919-2021-201-158-176

Hunt Jr. G.L., Stabeno P., Walters G., Sinclair E., Brodeur R.D., Napp J.M., Bond N.A. 2002. Climate change and control of the southeastern Bering Sea pelagic ecosystem. // Deep Sea Res. Part II: Topical Studies in Oceanography. V. 49 P. 5821–5853.

KamchatNIRO. 2020. Report "Development of an action plan for minimization of potential pollock trawl fishery impacts on marine mammals in the West Bering Sea and North Kuril zones and Petropavlovsk-Commander subzone". KamchatNIRO. Petropavlovsk-Kamchatsky.

KamchatNIRO. 2021. Brief materials (abstracts) to the forecast of TAC for 2022. KamchatNIRO. Petropavlovsk-Kamchatsky. (In Russian) http://kamniro.vniro.ru/filemanager/download/2189

Kivva, K.K. 2016. Hydrochemical conditions of primary production in the Bering Sea, Cand. Sci. (Geogr.) Dissertation, Moscow: Moscow State Univ. (In Russ.) https://istina.msu.ru/download/38231712/1laMJC:Ih2xNbqlYtEEw3NpLS1ktF1MKsY/

Kivva K.K., Selivanova J.V., Pisareva M.N., Sumkina A.A. 2020. Role of physical processes in formation of spring phytoplankton bloom in the Bering Sea // Trudy VNIRO. Vol. 181. P. 206–222. (In Russ.) https://doi.org/10.36038/2307-3497-2020-181-206-222

Kornev S.I. 2019. Walleye pollock (*Theragra chalcogramma*) fishery in the Sea of Okhotsk and its impact on Steller sea lion (*Eumetopias jubatus*). The researches of the aquatic biological resources of Kamchatka and the North-West Part of the Pacific Ocean. 2019;1(54):23-45. (In Russ.) https://doi.org/10.15853/2072-8212.2019.54.23-45

Korobov D.V., Glushchenko Yu.N. 2020. Study of mid-water trawl pollock fishery impact on the status of seabird populations in the West Bering Sea zone (Preliminary draft report). Prepared for Noncommercial organization "Pollock Catchers Association". http://russianpollock.com/upload/iblock/de3/birds-impact-survey-wbs-pollock-2020.pdf

Lloyd's Register. 2020. Western Bering Sea Pollock. ACDR. MSC.org.

Lloyd's Register. 2021. FSA Sea of Okhotsk pollock fishery. ACDR. MSC.org.

Loboda S.V., Zhigalin A.Yu. 2017. Some results of researches on Pacific herring in the northwestern Bering Sea in 2010–2015 // Izvestiya TINRO. 188:125–139. (In Russ.) https://doi.org/10.26428/1606-9919-2017-188-125-139

Marine Certification. 2019. Western Bering Sea Pacific cod and Pacific halibut longline. PCR. MSC.org.

MRAG. 2020. Bering Sea and Aleutian Islands and Gulf of Alaska Pollock. PCR. MSC.org.

Nadtochy V.A., Budnikova L.L., Bezrukov R.G. 2008. Some results of benthos researches in the Russian Far Eastern Seas: composition and quantitative distribution (Bering Sea) // Izvestiya TINRO. 153: 264–282. (In Russ.)

Nadtochy V.A., Kolpakov N.V., Korneichuk I.A. 2017a. Distribution of macrozoobenthic taxa - potential indicators of vulnerable marine ecosystems in the western part of Bering Sea. 1. Anadyr Bay area. Izvestiya TINRO. 189:156-170. (In Russ.) https://doi.org/10.26428/1606-9919-2017-189-156-170

Nadtochy V.A., Kolpakov N.V. and Korneychuk I.A. 2017b. The distribution of macrozoobenthos taxa - potential indicators of vulnerable marine ecosystems (VMEs) in the western part of the Bering Sea. 2. Chukotka and Koryak districts // Izvestiya TINRO. 191:177–195. (In Russ.) https://doi.org/10.26428/1606-9919-2017-190-177-195.

Naydenko S.V., Somov A.A. 2019. Seasonal Trophodynamics of the Upper Epipelagic Nekton Community in the Western Bering Sea // Journal of Ichthyology, Vol. 59, No. 5, pp. 786–804. https://doi.org/ 0.1134/S0032945219050096

ORBEN, R.A., IRONS, D.B., PAREDES, R., ROBY, D.D., PHILLIPS, R.A. & SHAFFER, S.A. 2015. North or south? Niche separation of endemic red-legged kittiwakes and sympatric black-legged kittiwakes during their non-breeding migrations. Journal of Biogeography 42: 401–412.

ORBEN, R.A., KOKUBUN, N., FLEISHMAN, A.B., *et al*. 2018. Persistent annual migration patterns of a specialist bird. Marine Ecology Progress Series 593: 231–245.

Orlov A., Savin A., Gorbatenko K., Benzik A., Morozov T., Rybakov M., Terentiev D., Vedishcheva E., Kurbanov Y., Nosov M., Orlova S. 2020. Biological studies in the Russian Far Eastern and Arctic seas in the VNIRO Transarctic expedition // Trudy VNIRO. Vol. 181. P. 102–143. (In Russ.) https://doi.org/10.36038/2307-3497-2020-181-102-143

Ormseth O.A. 2019. Status of forage species in the Bering Sea and Aleutian Islands region. Alaska Fisheries Science Center. https://apps-afsc.fisheries.noaa.gov/refm/docs/2019/BSAIforage.pdf

RF. 2020. ORDER OF THE MINISTRY OF NATURAL RESOURCES AND ECOLOGY OF THE RUSSIAN FEDERATION of March 24, 2020 No 162 On approval of the List of wildlife objects included in the Red Book of the Russian Federation. https://docs.cntd.ru/document/564578614?marker=6560IO

ROBINSON, B.W., JOHNSON, A.S., LOVETTE, I.J. & ROMANO, M.D. 2019. Potential northward expansion of the breeding range of Red-legged Kittiwake Rissa brevirostris. Marine Ornithology. 47: 229–234. https://www.researchgate.net/publication/336442001_Potential_northward_expansion_of_the_breeding_range_of_Red-legged_Kittiwake_Rissa_brevirostris

Ron Regnart, Richard Randall, Louis Barton, Irving Warner, Pete Jackson, Dennis Blackenbeckler, Mike Nelson, Vidar Wespestad. 1978. Briefing Report on the Fishery Management Plan for Herring in the Eastern Bering Sea. North Pacific Fisheries Management Council. http://www.adfg.alaska.gov/fedaidpdfs/AYK.Herring.09.pdf

Savin A.B. 2018. Fish Resources in Near-Bottom Biotopes of the Shelf and the Upper Edge of the Continental Slope in the Northwestern Bering Sea // Russian Journal of Marine Biology, Vol. 44, No. 7, pp. 1–18. https://doi.org/10.1134/S1063074018070088

Savin A.B. 2021. Modern state of stocks for demersal and pelagic fishes on the shelf of Olyutorsky-Navarin area // Izvestiya TINRO; 201(1):24-43. (In Russ.) https://doi.org/10.26428/1606-9919-2021-201-24-43

Sergeeva N.P. 2019. Maturation patterns of Pacific herring Clupea pallasii (val.) in case of the Korf-Karagin population. The researches of the aquatic biological resources of Kamchatka and the North-West Part of the Pacific Ocean. 2019;(55):107-125. (In Russ.) https://doi.org/10.15853/2072-8212.2019.55.107-125

Shubina, E.A., Mel'nikova, M.N., Glubokov, A.I., Mednikov, B.M. 2004. Analysis of the Genetic Structure of Northwestern Bering Sea Walleye Pollock, Theragra chalcogramma . Environmental Biology of Fishes 69, 177–185. https://doi.org/10.1023/B:EBFI.0000022883.13864.ff

Shuntov V.P. 2001. Biologiya dal'nevostochnyh morej. – T.1. – Vladivostok: TINRO-centr, – 580 p. (In Russ.)

Shuntov V.P. 2016. Biologiya dal'nevostochnyh morej. – T. 2. – Vladivostok: TINRO-centr, – 604 p. (In Russ.)

Shuntov V.P., Ivanov O.A. 2019. Climate changes and current state of biota in the Russian waters of the Far-Eastern Seas // Izv. TINRO. — Vol. 197. — P. 83–107. (In Russ.) https://doi.org/ 10.26428/1606-9919-2019-197-83-107

Shuntov V.P., Volvenko I.V. 2020. On rearrangements in bottom and near-bottom fish communities in the Russian Far Eastern seas under the fishing pressure // Problems of Fishiries, Vol. 21. No 4. P. 359–378. (In Russ.) https://doi.org/10.36038/0234-2774-2020-21-4-359-378

TINRO. 2019. Materials to the forecast of PC for 2020. TINRO. Vladivistok. (In Russian)

TINRO. 2021. Report for FSA about BMS midwater trawl walleye pollock fishery. VNIRO. Vladivistok (TBD).

TINRO. 2021a. Materials to the forecast of TAC for 2022. TINRO. Vladivistok. (In Russian) https://disk.yandex.ru/d/4iu1jK3sW821OQ

Volvenko, I.V., Orlov, A.M., Gebruk, A.V. *et al*. 2018. Species richness and taxonomic composition of trawl macrofauna of the North Pacific and its adjacent seas. Sci Rep 8, 16604. https://doi.org/10.1038/s41598-018-34819-4

Werner R, Hoernle K, Hauff F, Portnyagin M, Yogodzinski G, Ziegler A. 2016. RV SONNE Fahrtbericht/cruise report SO 249 BERING – origin and evolution of the Bering Sea: an integrated geochronological, volcanological, petrological and geochemical approach. GEOMAR Report N Ser. 2016; 30: 1–89. https://doi.org/10.3289/GEOMAR_REP_NS_30_2016

Zagrebelniy S.V. 2020. Estimation of the population density, age and sexual structure, seasonal mortality level of the pacific walruses on the Vancarem Cape rookery in 2020 // Trudy VNIRO. Vol. 182. P. 216–223. (In Russ.) https://doi.org/ 10.36038/2307-3497-2020-182-216-223

Zavolokin A.V., Radchenko V.I., Kulik V.V. 2014. Dynamics of trophic structure for the epipelagic community in the western Bering Sea // Izvestiya TINRO. 179:204–219. (In Russ.) https://elibrary.ru/item.asp?id=22578508

Zolotov A.O. 2021. Modern specialized fishery of sea fish in the western Bering Sea // Izvestiya TINRO; 201(1):76-101. (In Russ.) https://doi.org/10.26428/1606-9919-2021-201-76-101

Zuenko Yu.I., Basyuk E.O. 2017. Impact of changing oceanographic conditions on species composition and abundance of zooplankton on the fishing grounds at Cape Navarin and their importance for the Russian pollock fishery in the Bering Sea. Izvestiya TINRO. 189:103-120. (In Russ.) https://doi.org/10.26428/1606-9919-2017-189-103-120

7.4 Principle 3

7.4.1 Principle 3 background

(Note – all hyperlinks provided in the following sections were accessed successfully in May 2021).

7.4.1.1 Governance and Policy

The Russian Federation consists of various levels of autonomy with its centralized authority represented by the federal government in Moscow, where final decisions are made. In Russia, fisheries management has developed since the rupture of the former USSR. Similarly, the fisheries management system consists of different levels of authority for management and research, also with final decisions centralized in Moscow.

Russian fisheries management has a federal body and territorial offices in Russia's eight fishery regions (basins): 1) the Far Eastern, 2) the Northern, 3) the Western, 4) the Black and the Azov Seas, and 5) the Baikal 6) the Volga-Caspian, 7) the East Siberian and 8) West Siberian (Source: http://fish.gov.ru/territorialnye-upravleniya).

The Federal Fisheries Agency (FFA or in Russian: Росрыболовство / Rosrybolovstvo) is by far the most important fisheries management body in Russia. By Presidential Decree No. 724 on 12 May 2008, the FFA replaced the pre-existing State Committee for Fisheries under the Ministry of Agriculture. The FFA has been directly submit to the Government, but due to some changes in the Russian Government structure (in May 2012), the FFA is now subordinating to the Ministry of Agriculture. In other words, the FFA is an implementing authority of the decisions that are made by the Ministry of Agriculture (Source: http://mcx.ru/). In addition, the Department of Regulation in the Field of Fisheries and Aquaculture (Fish Farming), under the Ministry of Agriculture of Russia, carries out the practical implementation of the functions assigned to the Ministry for the development of state policy and legal regulation (Source: https://mcx.gov.ru/ministry/departments/departament-regulirovaniya-v-sfere-rybnogo-khozyaystva-i-akvakultury-rybovodstva/).

The fishery is totally under the national jurisdiction and is performed only in the EEZ of the Russian Federation so it is managed at national level and therefore only the Russian's fisheries management system should be considered.

7.4.1.2 Legal and/or customary framework

In the Russian management system there is no explicit environmental policy that refers directly to fisheries. A series of inter-linked laws, decrees, orders, and rules consistent with local, national, and international mandates, are in place, instead of a specific policy, to protect the environment and fisheries resources.

The Federal Law "**On Fishery and Protection of Aquatic Biological Resources**" (2004) (Source: https://legalacts.ru/doc/federalnyi-zakon-ot-20122004-n-166-fz-o/), (as amended by Federal Law of October 15, 2020 N 331-F3 "On Amendments to the Federal Law" https://rg.ru/2020/10/20/o-rybolostve-dok.html), is the overarching framework for fishery regulation in Russia. The main goals and objectives for the fishery sector are not clearly defined in the regulatory documents. This law defines Total Allowable Catch (TAC) levels for fishery stocks as "*scientifically justified annual catch of aquatic biological resources of particular species in a fishing area*" (**Article 1.12)**). It also states the protection and conservation of aquatic biological resources "*regulation of relationship in the field of fishery and conservation of aquatic biological resources is performed on the basis of perceiving them as a natural entity, protected as most important component of Nature, a natural resource, used by human being for human consumption and also a basis of performing economic and other activities, and, at the same time as a property right object*" (**Article 2.1**). The Law also argues "*priority of conservation and rational use of aquatic bio-resources over the use of bio-resources as property right objects*" (**Article 2.2**). Besides TA C setting for industrial fishery, all categories of fisheries are regulated by so-called Fishing Rules "Pravila rybolovstva / Правила рыболовства", which are set separately for several major areas or basins. These Fishing Rules sets management measures to regulate the condition of fishery in particular areas and specify fishing closures, gear regulation, minimum allowable size of commercially caught specimens of particular species, and allowable bycatch of non-target species. The Law also gives a definition of a fishing unit area "rybolovnyy uchastok / Рыболовный участок" and sets general principles of their use (**Articles 18** of Federal Law). Compiling lists of fishing unit areas is delegated to regional authorities. The Fishing Rules for the Far Eastern Fisheries Basin (as amended on July 20, 2020) (Source: http://docs.cntd.ru/document/554767016; http://xn--b1a3aee.xn--p1ai/pravila-rybolovstva.html).

Supporting pieces of primary legislation to the Federal Law (2004), include:

The Law of the Russian Federation "**Federal Law of the Russian Federation on Wildlife (No. 52-FZ of 1995)**" (Source: https://www.ecolex.org/details/legislation/federal-law-of-the-russian-federation-on-wildlife-no-52-fz-of-1995-lex-faoc022375) stipulates that animal organisms inhabiting the territorial seas, the internal marine waters, the continental shelf and the EEZ of the Russian Federation, those migrating between two or more administrative regions, and those subject to international agreements, are federal property. Therefore, it is a responsibility of the federal institutions to manage, monitor and enforce marine fisheries. It also sets the general requirements for TAC setting to harvest the kinds of the Animal World are defined in this law. Also the law declares a conservation priority in case the fishery affects endangered species listed in the Red Book of the Russian Federation (Order of the Ministry of Natural Resources and Environment of the Russian Federation dated March 24, 2020 No. 162 "On approval of the List of wildlife objects included in the Red Book of the Russian Federation" - http://docs.cntd.ru/document/564578614; https://redbookrf.ru/).

The two Federal Laws "**On the Continental Shelf of the Russian Federation**" **(1995)** (Source: http://extwprlegs1.fao.org/docs/html/rus21902E.htm) and "**On the Exclusive Economic Zone of the Russian Federation**" EEZ **(1998)** (Source: https://www.ecolex.org/details/legislation/federal-law-no-191-fz-of-1998-on-the-exclusive-economic-zone-lex-faoc027457) set the principles of sovereign rights and jurisdiction of the Russian Federation over the aquatic biological resources found on the Continental Shelf and the EEZ of the Russian Federation, and provided general regulation for scientific research including the fishery research.

The Federal Law "**On Protection of the Environment**" **(2001)** (Source: https://rg.ru/2002/01/12/oxranasredy-dok.html) defines the legal basis for state policy in the field of environmental protection, ensuring a balanced solution of socio-economic tasks, maintaining a favourable environment, biological diversity and natural resources in order to meet the needs of present and future generations, strengthen the rule of law in the field of environmental protection and ecological safety. It has a number of articles related to fisheries impact on environment. The (**Article 5**) defines the procedure of state control and monitoring in the field of environmental protection on objects of economic activities (e.g. fishing), including cross-border environmental pollution that have a negative impact on the environment within the territory of the Russian Federation. The (**Article 15**) defines how the development of federal programs in the field of environmental protection of the Russian Federation should be based on the proposals of citizens and public organizations. Legal entities and individual entrepreneurs engaged in economic and other activities (e.g. fishing) that have a negative impact on the environment are required to plan, develop and implement measures for environmental protection in the manner prescribed by law.

The Fishing Rules for the Far Eastern Fisheries Basin (as amended on July 20, 2020) are found at (Source: http://docs.cntd.ru/document/554767016; http://xn--b1a3aee.xn--p1ai/pravila-rybolovstva.html). Further Federal laws can be found at the website of North-Eastern Territorial Administration of Federal Fisheries Agency (hereinafter North-Eastern TA of FFA, or in Russian: Северо-Восточное территориальное управление Федерального агенства по рыболовству – СВТУ ФАР) (Source: http://xn--b1a3aee.xn--p1ai/obrashcheniya-grazhdan/normativnaya-pravovaya-baza.html).

7.4.2 Rights and dispute resolution

In Russia, quota distribution for fish stocks that are shared with other countries, as well as for exclusively Russian stocks is a responsibility of Ministry of Agriculture and the FFA. Since 2019, fishing rights are allocated for 15 years, while previously they were given for 10 years. This extension was adapted to ensure stability for the fishing fleet and stimulate companies to invest in renewing ageing vessels. The allocation of quotas (fishing rights) in 2008 for a 10-year period was based on the historic catch of each applicant (fishing company) while the allocation in 2019 was based on the actual possession of the fishing rights (shares of fishing quotas) for stocks regulated with TACs at the moment of reallocation (both initially allocated fishing rights and acquired fishing rights in the period from allocation in 2008 to 2019). For stocks that are not regulated with TAC but with a Recommended Catch the fishing rights are provided on annual basis as part of agreements between fishing companies and the FFA.

Currently, this system is still used given fishing rights to companies or individuals with good credit history, i.e. those, with proven long-term commitment for sustainable fishing. Moreover, in order to reduce the marginal companies in the Russian fishing sector, a minimum threshold level was also introduced for different types of gears and category of vessels. Basically, if a company was not able to reach its corresponding quota it would be obligated to merge with another company, with a quota, aiming at achieving their threshold level and therefore to maintain their fishing right and access to the fishery. If not, the company would be obligated to auction off (under supervision of the FFA) its fishing rights (on the share of the quota) to other fishing companies.

In 2016, the Federal Law 2004 was amended (No. 349-FZ dated July 3, 2016) to introduce a new type of quota called – quota for investment objectives. The volume of quotas for investment objectives may be up to 20% from TAC approved for the current year. New quota types also were introduced to encourage fishing fleet renewal, development of at-sea and coastal resources processing and increase effectiveness of raw materials utilization. So, taking into account amendments to the Federal law 2004 the quota types are: 1) industrial (= commercial) quotas; 2) coastal quotas; 3) scientific quotas for scientific and research and monitoring purposes; 4) fishery quotas for educational and culturally educational purposes; 5) fishery quotas for aquaculture purposes; 6) amateur and sport (recreational) fishing quotas; 7) quotas for fishing in order to ensure the traditional life style and the implementation of traditional economic activities of the indigenous peoples of the North, Siberia and the Far East of the Russian Federation; 8) quotas in the areas of international treaties; 9) quotas in the Russian EEZ for foreign countries (intergovernmental agreements); 10) industrial (= commercial) quotas in domestic fresh water reservoirs; 11) quotas for investment objectives.

Total volume of all quota types should not exceed TAC level which is annually set based on biological justifications. TAC shall be distributed by fisheries types (quotas) by Ministry of Agriculture decree on FFA suggestion taking into account recommendations made by the Industry Council for Fishing Forecasting under the FFA (for more details see Section 7.4.4). Only some of quota types are applicable for Alaska (Walleye) pollock fishery.

The rights of fishing dependent communities are also explicitly stated in the Russian legislation. On October 1, 2020, the Ministry of Justice of the Russian Federation registered the Order of the Ministry of Agriculture of the Russian Federation of September 1, 2020 No. 522 "On approval of the Procedure for fishing in order to ensure the traditional way of life and the implementation of traditional economic activities of the indigenous peoples of the North, Siberia and the Far East of the Russian Federation." (Source: http://publication.pravo.gov.ru/Document/View/0001202010050066?index=0&rangeSize=1; https://rg.ru/2020/10/06/minselhoz-prikaz522-site-dok.html). The previous order of April 11, 2008 N 315 does not apply from 10/16/2020 on the basis of the order of the Federal Agency for Fishery of 09/01/2020 N 458. Other pieces of legislation that guarantee the rights of fishing for indigenous peoples include: Federal Law of April 30, 1999 No. 82-FZ "On Guarantees of the Rights of Indigenous Minorities of the Russian Federation" (Source: http://docs.cntd.ru/document/901732262), and Decree of the Government of the Russian Federation of March 24, 2000 No. 255 "On the Unified List of Indigenous Minorities of the Russian Federation" (Source: http://docs.cntd.ru/document/901757631). The Russian Association of Indigenous Peoples of the North (RAIPON) (Russian: Ассоциация коренных, малочисленных народов Севера, Сибири и Дальнего Востока Российской Федерации (АКМНССиДВ) is the Russian national umbrella organisation representing 41 indigenous small-numbered peoples of the North, Siberia and the Far East. Further information, including the catch reporting form, for indigenous people can be found at the website of North-Eastern TA of FFA (Source: http://xn--b1a3aee.xn--p1ai/informatsiya-dlya-kmns/vazhnoe.html; http://xn--b1a3aee.xn--p1ai/images/docs/Prikazi_2019/3110_forma.pdf). Alaska (Walleye) pollock quotas allocated for fishing dependent communities of indigenous people in 2020 by fishing zone are presented in Table 27.

Table 27 – Volume of Alaska (Walleye) pollock quotas allocated for fishing dependent communities in 2020, metric tons.

	Chukotka zone	Kamchatsko-Kuil subzone	West-Kamchatka subzone	Petropavlovsk-Komandor subzone	West-Bering Sea zone	Total
Fishing quotas, mt	10.00	56.90	62.00	158.18	16.55	303.63

Disputes at national level are solved at the court system. In Russia, a transparent court system mechanism is provided to avoid and resolve disputes and issues arising between the fishing companies and inspectors. According to the Federal Law of May 2, 2006 No. ФЗ-59 “On the Procedure for Considering Appeals of Citizens of the Russian Federation” citizens have the right to apply in person, as well as to submit individual and collective appeals to state bodies, local self-government bodies, and officials (Source: http://base.garant.ru/12146661/). The procedures for the reception and consideration of citizen’s proposals and the rules for submission of appeals are specified in the official website of the FFA (Source: http://fish.gov.ru/obrashcheniya-grazhdan/poryadok-priema-i-rassmotreniya-obrashchenij-grazhdan). For example, the North-Eastern TA of the FFA (see Section 7.4.3) provides the opportunity for citizen proposals and the submission of appeals in the Kamchatka region (Source: http://xn--b1a3aee.xn--p1ai/obrashcheniya-grazhdan/elektronnoe-obrashchenie.html). The results of the citizens’ appeals to the North-eastern TA in 2019 are shown in Table 28 (Source: http://xn--b1a3aee.xn--p1ai/obrashcheniya-grazhdan/elektronnoe-obrashchenie-2.html).

The court considers cases that can be regarded as serious violations (for example, overfishing or unauthorized by-catch). The results of any disputes in the court system can be consulted at the website of the Federal Arbitration Courts of the Russian Federation (Федеральные арбитражные суды Российской Федерации) (http://www.arbitr.ru) as well as for the territorial level, at the website of Arbitration Court of Kamchatka territory (Арбитражный суд Камчатского края) (https://kamchatka.arbitr.ru/). In addition, detailed information on non-compliance cases within the fishery investigated and reviewed in the court system is also publicly available at the special website called "Justice" (https://sudrf.ru/) that provides transparent information about all court cases including fisheries non-compliances. In practice, most of disputes are resolved through the management system, which includes extensive formal and informal opportunities for interaction between fishing companies and other stakeholders with the authorities (for example, to resolve disputes, disagreements and conflicts between users, as well as between users and authorities).

Table 28 – Report on the review of citizens' appeals to the North-Eastern TA of the FFA in 2019.

	1st quarter 2019	2nd quarter 2019	3rd quarter 2019	4th quarter 2019
Received letters	3	27	18	7
Accepted citizens' appeals	7	6	5	9
The effectiveness of the review of control letters in the office (structural unit) Including:	2	18	17	6
- decided positively	0	0	0	0
- measures taken	0	2	0	0
- explained	2	2	5	6
- denied	0	0	0	0
- left unanswered (anonymous)	0	0	0	0
- redirected by accessory	0	14	12	0

7.4.3 Roles and responsibilities

The roles and responsibilities of the Russian fisheries management organizations are presented below (Figure 46).

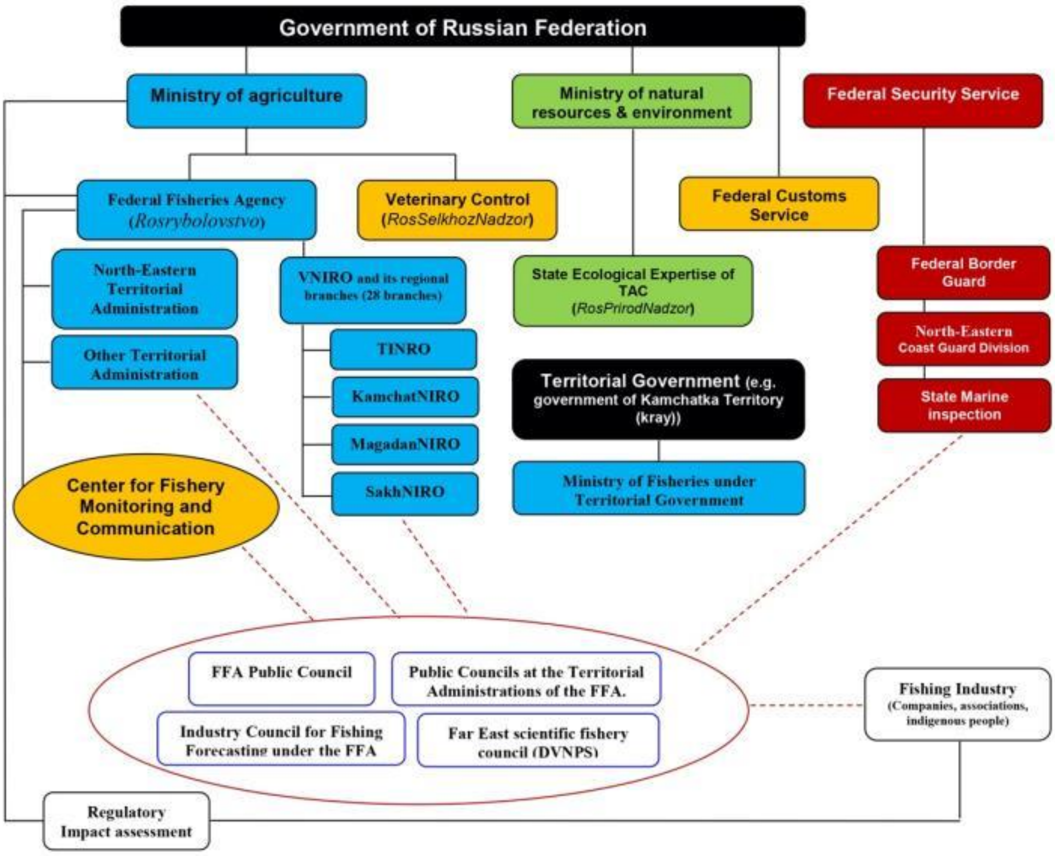


Figure 46 – Structure of the fishery management system in Russia.

The Ministry of Agriculture of Russian Federation is responsible for developing policies on fisheries (Source: http://mcx.ru/), while the FFA act as its executive arm, in accordance with the Russian legislation, over the territory of Russia, the exclusive economic zone and continental shelf of Russia, as well as in those cases covered by Russia's international treaties, on the territory of foreign countries and international waters. The FFA has regional branches which implement fishery regulations in its own region. The FFA maintains a central administration to ensure coordination of regional fishery management processes. Communication between regional branches and the FFA is an integrated process of continuous informal and formal procedures (Source: http://fish.gov.ru/).

By decrees and amendments, the main functions and roles of the FFA are:

- To develop laws, orders, and rules related to fishery management, all of which are issued by the Ministry of Agriculture of Russia;
- To manage the protection, rational use, study and reproduction of aquatic biological resources and their habitats;
- To perform fisheries control and enforcement functions;
- To promote scientific research and surveys of resources;
- To ensure that TACs (total allowable catches) and PCs (possible (recommended) catches) are set for aquatic biological resources in Russian EEZ and internal waters;
- To deliver public services in the area of fisheries, conservation, sustainable use, study, preservation and reproduction of aquatic biological resources and their habitat;
- To arrange adequate observation and monitoring activities and manages the Centre for Fishery Monitoring and Communication (CFMC);
- To distribute TACs among various types of quota;
- To allocate quotas among fishing companies;
- To issue catch permits for companies and fishing vessels;
- To provide for safety and rescue operations on fishing grounds; and
- To coordinate activities related to ports and vessel maintenance.

Operational management and FFA functions are delivered by Territorial Administrations of the FFA located in Primorye, Kamchatka, Sakhalin, Magadan, etc. (in total there are 18 TAs across Russia). Depending on where the fishing company is registered, its fishing activity is controlled and managed by a FFA Territorial Administration. For instance, if a company is registered in Kamchatka, it reports to the FFA Kamchatka department. But regardless the area of registration, a company can operate (harvest) in any fishing zone across the whole Far East Fishery Basin (having a valid fishing permit). For example, the North-Eastern Territorial Administration of the Federal Fisheries Agency (In Russian: Северо-Восточное территориальное управление / Severo-Vostochnoye territorial'noye upravleniye) (hereinafter North-Eastern TA of the FFA) is the government branch subordinate to the Federal Fisheries Agency (Source: http://xn--b1a3aee.xn--p1ai/). It exercises the FFA roles including fisheries management in Kamchatka Region including the fishery under assessment.

The Federal state budgetary institution "Centre for Fishery Monitoring and Communications" (In Russian: Центр системы мониторинга рыболовства и связи) (CFMC) provides state monitoring of aquatic biological resources, and monitoring the activities of fishing vessels (Source: http://cfmc.ru/). At the federal level, the head monitoring centre is located in Moscow and carries out processing, storage and analysis of data received by the Industry Monitoring System (IMS; a synonym for VMS) from the regional centres. There are two regional monitoring centres - Western and Eastern, and 7 representative offices, including the Kamchatka, Vladivostok, Sakhalin offices (Source: https://cfmc.ru/filialy-i-otdely/), which ensure the functioning of the IMS in the region and the collection of data.

The Federal Security Service of the Russian Federation (hereinafter FSB) (In Russian: Федеральная служба безопасности России) through its Border Guard Department of the FSB of Russia (In Russian: Пограничная служба ФСБ России) is a control and enforcement body responsible for, within the limits of its authority and among other functions, the protection and safeguard of the border territory, the exclusive economic zone and the continental shelf of the Russian Federation, as well as state control in the field of protection of marine biological resources regarding transboundary fish species and highly migratory fish species in the open sea, in accordance with the existing treaties of the Russian Federation (Source: http://www.fsb.ru/ and http://ps.fsb.ru/). Duties and responsibilities of Coast Guard Inspectors, among other things, include:

- enforce and control compliance of the Fishing Rules and regulations;
- check catches of marine biological resources taken by fishing companies (during fishing, during trans-shipments, unloading in ports) in order to prevent overfishing above the approved limits;
- check VMS (satellite control equipment);
- inspect vessels (fishing and transport), inspect holds, check cargoes and products;
- check fishing gears and equipment;
- check fishing and processing logbooks, fishing permits, Daily Vessel Reports (DVR), other documentations and reporting;
- identify, prevent or eliminate violations of fishery regulations and Fishing Rules, and, where applicable, international fishery agreements;
- bring offenders to prosecution in accordance with law;
- inform state authorities, and their regional bodies, on catches taken by fishing companies, violations identified, penalties imposed and fees paid.

Federal Customs Service (In Russian: Федеральная таможенная служба) is responsible for, within the limits of its authority and among other functions, inspecting fish products landed in Russia waters and destined for export. Since 2009, all fish and fish products caught in the Russian EEZ must be delivered into the Russian ports for clearance (Based on the Federal Law No. 333-FZ of 6 December 2007 "On Amendments to Federal Law "On Fisheries and Aquatic Biological Resource Conservation" and Some Legislative Acts of Russian Federation"). Before 2009, it was allowed to trans-ship fish caught in the Russian EEZ at sea without clearing customs inspections. Therefore, the Federal Customs Service plays an important role in increasing traceability and cooperates with the FFA and FSB in controlling international transfer and shipping of Alaska (Walleye) pollock and other Russian fishery products.

Federal Service for Veterinary and Phytosanitary Surveillance (In Russian: Россельхознадзор / Rosselkhoznadzor) submits to the Ministry of Agriculture of the Russian Federation (Source: http://www.fsvps.ru/). It is the federal organ of executive power, carrying out functions on control and supervision in the field of veterinary science. Although it is not engaged into direct management of fisheries, however, it conducts sanitary veterinary inspections of landed fish products before they move into to domestic or export markets.

The Federal Service for Supervision of Nature Management (In Russian: Rosprirodnadzor / Росприроднадзор) is a federal government body whose main responsibilities are to ensure rational, uninterrupted and environmentally safe use. It monitors and battles violations and illegal actions causing negative effect on environment (Source: http://rpn.gov.ru/).

Furthermore, the All-Russian Research Institute of Fisheries and Oceanography (In Russian: Всероссийский научно-исследовательский институт рыбного хозяйства и океанографии) (VNIRO/ВНИРО) is the leading research institute of the fisheries industry that coordinates implementation of fishery research plans and programs ensuring the efficient operation of all fishery research organization in the Russian Federation (Source: http://www.vniro.ru/ru/). The Kamchatka branch of the FGBNU "VNIRO" (KamchatNIRO) (In Russian: Камчатский филиал Федерального государственного бюджетного научного учреждения "Всероссийский научно-исследовательский институт рыбного хозяйства и океанографии" (КамчатНИРО)) was founded in 1932, first as a branch of the Pacific Research Institute of Fisheries and Oceanography, and since 1995 - as an independent state institution. The branch is the scientific institution responsible for fisheries research and management studies in the Kamchatka region including the northern part of the Pacific Ocean, the Sea of Okhotsk, the Bering Sea, inland waters of Kamchatka (Source: http://www.kamniro.ru/). With regard to Alaska (Walleye) pollock fishery in the West Bering Sea, KamchatNIRO is the key designer of the mathematical model for assessment and forecasting of pollock stock. Similarly, TINRO-Center in Vladivostok (ТИНРО) (Source: http://tinro.vniro.ru/en/), SakhNIRO (СахНИРО) in Sakhalin (Source: http://www.sakhniro.ru/), and MagadanNIRO (МагаданНИРО) in Magadan (Source: http://magadan.vniro.ru/).

7.4.4 Consultation and participation mechanisms

Generally, all new federal regulations in Russia have to go through public consultations. The public are given 15–30 days to provide their comments on the draft proposal of any new regulation through the Federal portal for draft regulatory legal acts https://regulation.gov.ru, which is administered by the Ministry of Economic Development (In Russian: Министерство экономического развития Российской Федерации). Different governmental bodies, fishing sector, industry organizations and research institutions are involved in the management of Russian fisheries. The FFA supports the right for public participation in the fishery management process which is set out in the Federal Law on Fisheries "participation of citizens and public associations in resolving issues related to fishing and the preservation of aquatic biological resources, according to which citizens of the Russian Federation and public associations have the right to participate in the preparation of decisions,…" (Article 2.5) (Source: https://legalacts.ru/doc/federalnyi-zakon-ot-20122004-n-166-fz-o/). The procedure of handling stakeholders' requests is specified in the Federal Law of May 2, 2006 No ФЗ-59 (Source: http://base.garant.ru/12146661/). According to the article 12, all stakeholders' requests to the management authorities must be reviewed and responded within 30 days "*A written application received by a state body, local self-government body or an official in accordance with their competence shall be considered within 30 days from the date of registration of the written application*".

The main arena for the interaction between stakeholders is the advisory bodies, the so-called councils including: Public Council (In Russian: Общественный совет при Росрыболовстве), Fisheries Council (In Russian: Рыбохозяйственный совет) and Scientific-Fisheries Council (In Russian: Научно-промысловые советы). These councils provide three levels of participation in the fishery management process: the federal level, the basin level, and the regional level. Basin and regional level fishery councils have existed since Soviet times, while in 2004 the Federal Fisheries Act made their existence mandatory for all basins and regions located. In 2008, the rules and procedures for Basin Scientific and Fishery Councils in the Russian Federation were approved.

The Public Council under FFA (Общественный совет при Росрыболовстве) is a permanent advisory body of public control. Public Councils are formed in accordance with Federal Law of July 21, 2014 No. 212-FZ "On the Basics of Public Control in the Russian Federation". The purpose of the Public Council is to exercise public control over the activities of the government, including consideration of draft socially significant normative legal acts, participation in monitoring the quality of public services, implementation of control and oversight functions, the progress of anticorruption and personnel work, evaluating the effectiveness of public procurement, reviewing annual plans activities and reports on their implementation, as well as other issues provided by applicable law (Source: http://fish.gov.ru//otkrytoe-agentstvo/obshchestvennyj-sovet-pri-rosrybolovstve). To date, two meetings of the Public Council under FFA were held during 2021. For example, the last meeting was held at FFA on 31st of March, 2021. In this meeting, the members of the Public Council discussed the election of the chairman and the deputy chairman of the Public Council (Source: http://fish.gov.ru/files/documents/otkrytoe_agentsvto/obshestvennyi_sovet/protokol_obsh_sov_310321_2.pdf). The previous meeting was held at FFA on 25th of February, 2021, in which the members of the council discussed the following issues: 1) the increasing the efficiency of the fish protection authorities; 2) the renewal of contracts for the use of fishing grounds for recreational fishing; 3) the consideration of the joint - the Union "Chamber of Commerce and Industry of the Kamchatka Territory" and the "Union of Fishermen and Entrepreneurs of Kamchatka" - analysis, conclusions and expert opinion on the draft regulatory legal acts proposed by the Ministry of Transport of Russia on amendments to federal legislation (Source: http://fish.gov.ru/files/documents/otkrytoe_agentsvto/obshestvennyi_sovet/protokol_obsh_sov_250221_1.pdf).

The Fisheries Council (Рыбохозяйственный совет) is a consultative and advisory body for local ministry / government, which pay attention and try to find solutions for small narrow problems and coordination on local level (Source: http://base.garant.ru/9891762/5ac206a89ea76855804609cd950fcaf7/). It depends on the development of fishing in a particular region.

The Scientific-Fisheries Council (Научно-промысловые советы) is an advisory interregional body found on a basin level, in order to prepare proposals for the conservation of aquatic biological resources, including proposals for the allocation of quotas resources between regions, different type of fisheries, problems with legislations etc. Also to ensure the interaction of the regional governments in solving problems related to fisheries, taking into account public opinion, informing people and get their recommendations. The Council is working under the order of the Ministry of Agriculture of the Russian Federation of March 20, 2017 No. 135 "On approval of the Procedure for the Activities of Basin Scientific and Commercial Councils" (Source: http://publication.pravo.gov.ru/Document/View/0001201705180008). The Council consists of representatives of federal and regional executive bodies, control authorities, scientific organizations, public organizations and enterprises (not only fisheries). A prerequisite is the presence of representatives of all stakeholders included in the fisheries basin. Meetings of the Council are held at least twice per year. The Far Eastern Basin Scientific and Fishery Council (DVNPS) is of main relevance for the Alaska (Walleye) pollock fisheries. This Council is responsible for the discussion of management decisions taken in the Far East fisheries including Fishing Rules adjustment. The meetings minutes of the DVNPS can be found at http://fish.gov.ru/otraslevaya-deyatelnost/organizatsiya-rybolovstva/protokoly-komissij-i-nauchno-promyslovykh-sovetov.

For example, during the last meeting held at Vladivostok in 22th of October 2020, the members of the council discussed the following issues: 1) the results of the salmon fishing season in the Far Eastern fishery basin in 2020; 2) the implementation of the decisions of the DVNPS; 3) the distribution of the total allowable catches of aquatic biological resources by type of use for 2021; 4) the amendments to the rules of fishing for the Far Eastern fishery basin (Source: http://fish.gov.ru/files/documents/otraslevaya_deyatelnost/organizaciya_rybolovstva/protokoly_komissij_sovetov/protokol_dvnps_221020.pdf). After hearing and discussing the information, various recommendations were provided and outlined in the minutes.

Moreover, in the TAC and recommended catch setting process, the branches of the VNIRO (e.g. KamchatNIRO), within their area of responsibility, annually develop materials for the TAC or recommended catch for the next year based on their monitoring data (Figure 47). By June of each year, materials on the justification of the TAC or recommended catch are considered at a meeting of the Scientific Council of the VNIRO affiliates, which is responsible for organizing the relevant work and therefore these materials are submitted along with an extract from the minutes of the meeting to the central office of the VNIRO in Moscow. By August, the central office of the VNIRO examines the materials of the recommended catch received from the branches and, if any errors, incompleteness, inaccuracy, or non-compliance with the design requirements are detected, it sends comments and suggestions to the branch.

In this role, the central office of the VNIRO is entitled to request the information used in the development of the TAC or recommended catch materials available to the branch and therefore this branch should send the requested additional information, within 5 working days. By 10th October, VNIRO shall consider the materials of the recommended catch at an additional meeting of the Scientific Council.

By October 20th, based on the decision of the Scientific Council, the central office of VNIRO prepares a draft of the recommended catch volumes and sends it with an extract from the minutes of the additional meeting to the Industry Council for Fishery Forecasting at FFA (In Russian: Отраслевой совет по промысловому прогнозированию) for their consideration. The review of draft by this council should be ready before November 1st to be submitted to the FFA by November 20th. The review is also made by State Ecological Expertise (In Russian: Государственная экологическая экспертиза РФ) under the Ministry of Natural Resources and Environment. The final quotas for the fishing of aquatic biological resources are distributed by the executive authorities.

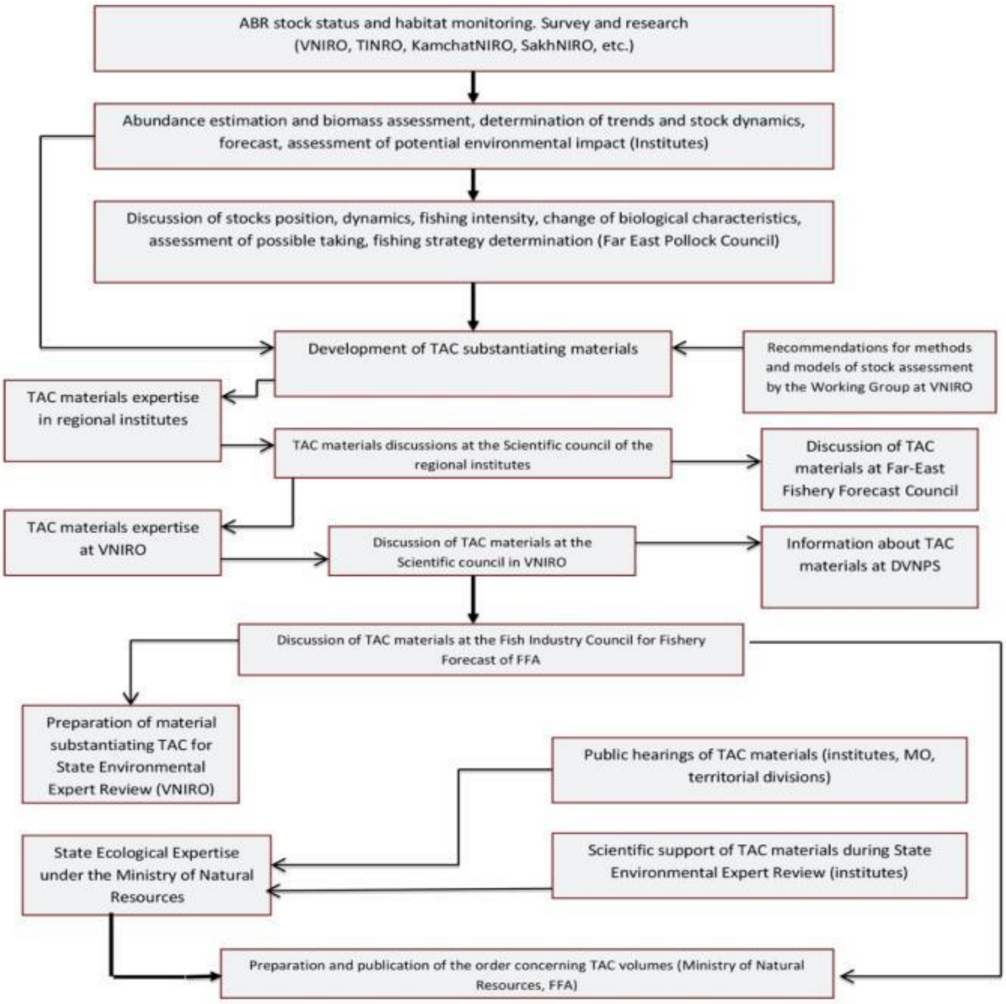


Figure 47 – TAC decision-making process flow chart in the Russian Federation.

7.4.5 Long-term objectives

In Russia, also the long-term objectives for the development of the fisheries complex are found at three levels:

- on the Federal (State or Government) level — for the all fishery complex within Russian Federation;
- on the regional level (e.g. Far East Federal region) — for the fishery complex of all territorial entities within one Federal region;
- on the territorial, municipal level (e.g. Kamchatka Territory (kray)) — for only one territorial entities of Russian Federation.

The long-term objective of fisheries management system in Russia is stated in the **Federal law "On Fishery and Protection of Aquatic Biological Resources" (2004)** (Source: https://legalacts.ru/doc/federalnyi-zakon-ot-20122004-n-166-fz-o/) as: "Conservation and maintenance of aquatic biological resources or their recovery to the levels at which maximum sustainable extraction (catch) of aquatic biological resources and their biological diversity can be ensured, through the implementation of measures on the basis of scientific data for the study, protection, reproduction, rational use of water biological resources and protection of their habitat" (**Article 1.7**). Moreover "The priority of conservation of aquatic biological resources and their rational use before their use as an object of ownership and other rights, according to which possession, use and disposal of aquatic biological resources are carried out by the owners freely, if this does not damage the environment and the state of aquatic biological resources" (**Article 2.2**). There is a similarity between the 'Protection and rational use' mentioned in these articles and the sustainability concept. It also put emphasis on the long-term and sustainable use of the biological resource, the priority of their conservation, based on scientific research and for socio-economic purposes. It is noteworthy that the priority of conservation of aquatic biological resources based on the scientific data and knowledge bears resemblance to the requirements of the precautionary despite that it is not mentioned explicitly in the Federal Fisheries Act. Moreover, the Russian federation has signed on a number of international agreements which adopt the precautionary approach, including the 1995 UN Straddling Stocks Agreement.

A new long-term strategy for the development of the Russian fisheries complex until 2030 (In Russian: Стратегия развития рыбохозяйственного комплекса Российской Федерации на период до 2030 года) was presented for the first time in September 2017 and approved in the 26th of November 2019 by the Decree No. 2798-r "On approval of the development strategy of the fishery complex of the Russian Federation for the period until 2030 and an action plan for its implementation". The strategy includes five large-scale integrated programs, the implementation of which will require over 600 billion rubles in investments (Source: http://fish.gov.ru/files/documents/files/proekt-strategiya-2030.pdf;_http://fish.gov.ru/files/documents/press-centr/vystavki/mrf2017/p_6-1.pdf). The strategy defines priorities, objectives and targets aimed at ensuring the dynamic development of the fisheries sector, updating production assets, avoiding the export orientation of raw materials by stimulating the production of products with a high share of added value, creating favourable conditions for doing business and attracting investments in the industry.

The expected outcomes, according to the authors, of the strategy are: doubling the annual contribution of the fishery complex to Russia's gross domestic product (GDP), with an average annual growth rate of at least 5 percent, an increase in the production of aquatic biological resources from 4.7 million t to 5.5 million t, an increase in aquaculture production from 180,000 t to 700,000 t, an update of at least half the capacity of fishing fleet vessels, a gradual increase in the proportion of products with high added value in total production - up to 40 percent, the creation of 25,000 new jobs.

One of the main tools of the strategy, capable of giving the greatest economic effect in the industry, is the non-waste processing of fish, which today accounts for 30 percent of the total fish production. According to the new strategy, in order to obtain fishing quotas, companies should invest in the construction of fishing vessels and the development of deep processing, which allows them to export products with high added value, rather than cheap raw materials.

The strategy is planned to be implemented in two stages: the first - until 31st of December 2025, and the second - from 1st of January 2026 to 31st of December 2030.

The state program "Development of the fishery complex" (as amended on March 31, 2020) (In Russian: государственной программы Российской Федерации "Развитие рыбохозяйственного комплекса"), approved by the Decree of the Government of the Russian Federation dated April 15, 2014 No. 314 - has more widely strategic goals of development of the fishery complex in Russia (Source: http://docs.cntd.ru/document/499091766 ; https://mcx.gov.ru/activity/state-support/programs/fish-development/).

At regional level, the long-term goals of the Far East region are stated at the "National program of socio-economic development of the Far East of the Russian Federation for the period up to 2024 and for the future until 2035", approved by the order of the Government of the Russian Federation dated September 24, 2020 No. 2464-r - (Source: https://www.garant.ru/products/ipo/prime/doc/74587526/).

7.4.6 Fisheries-Specific Management

The specific short-term (annual) objectives that tries to maintain the main target species within sustainable levels and therefore are consistent with the MSC Principles 1 are based on and specified by the annual TAC and recommended catch setting process. Quotas are reviewed annually based on surveys and clearly show an adaptive management system to current stock levels (see Section 7.4.4). On the other hand, short-term objectives including management measures (e.g. gear's technical characteristics, area closures etc.) are also consistent with the MSC Principles 2 and are explicitly specified in the Fishing Rules for the Far Eastern Fisheries Basin (as amended on July 20, 2020) (Source: http://docs.cntd.ru/document/554767016). The Fishing Rules for the commercial (industrial) fisheries are specified in the second section (from articles 8 to article 47). Other sections provide Fishing Rules for other type of fishing (e.g. recreational). General requirements for the conservation of aquatic biological resources are outlined from article 8 to article 25. Areas prohibited for the fishing in internal sea waters, territorial seas, continental shelf and EEZ of the Russian Federation are specified from article 23 to article 25, while for inland water bodies in articles 26 and 27. Similarly, periods of fishing ban for internal sea waters, territorial seas, continental shelf and EEZ of the Russian Federation are specified in from articles 28 and 29, while for inland water bodies in article 30. Also, types of aquatic biological resources (species) prohibited for fishing (article 31). In addition, technical measures such as types of forbidden fishing gears and methods (articles 32 and 33), mesh size and design of fishing gears (from article 34 to 39). Finally, rules regarding the by-catch of certain species (from article 40 to 47).

For example, in regards to the Alaska (Walleye) pollock fishery under assessment, Article 22.10. prohibits the excess of the rate of output of raw pollock roe in all types of production of fish and other products in all areas of production (catch). Article 24 prohibits the catch of certain species in certain areas using certain fishing gears. The clause (24.1.) specifies areas where and gears (including trawls) by which the fishing of pollock is prohibited. Similarly, Article 28 prohibits the catch of certain species in certain periods using certain fishing gears, in which clause (28.1.) specifies rules for pollock. Article 32.4. specifies the technical characteristics of gears to be used in commercial pollock fishery in all areas. Article 36 outlines in table 2 (of the Fishing Rules) the Minimum Landing Sizes (MLS) of different species caught in commercial fisheries in coastal areas, in which pollock MLS is set at 35 cm. Moreover, Article 38 details the percentage of allowed by-catch of less than the MLS, in which for commercial trawl pollock fishery (article 38.1.) is 20% of total catch in each trawl fishing set.

7.4.7 Monitoring, Control and Surveillance (MCS)

MCS Implementation. The state Monitoring, Control and Surveillance (MCS) functions are divided into five main elements; 1) maintenance of ongoing analytical monitoring of fishery; 2) visual monitoring of fishing vessels activities; 3) obligatory trans-shipment control; 4) offshore inspections with boarding a fishing vessel; 5) port control. These elements interconnect various management and control authorities, in which FFA and its territorial offices cooperate with the Federal Security Service (FSB), the Center of Fishery Monitoring and Communications (CFMC), and Costumes Services.

In this role, the FFA maintains a MCS system and supports the CFMC that collects, stores, processes, and distributes all fishery data. It includes daily statistics about the volumes of biological resources harvested, processed, trans-shipped, and transported by individual vessels. It provides real-time vessel position and allows authorities to spot distortions suggesting illegal activities. While the FSB conducts enforcement and inspections at-sea and in-port in cooperates with FFA to share data through the CFMC. The FFA also register and review the amount of fish that each vessel and company (in Russia: quotas are allocated to companies, not to vessels) caught at any time, based on daily reports (logbooks) and reports accumulated every 15 days of all fishing vessels.

The CFMC monitors and controls vessels activity; validates the technical control facilities (TCF) (In Russian: Технические средства контроля или ТСК / Technicheskie sredstva kontrolya or TSK) for fishing vessels providing continuous automatic transfer of information about vessels location; analyses these monitoring data to detect any violation of fisheries regulation. Satellite tracking of both Russian and foreign vessels in the EEZ takes place and also for Russian vessels fishing in other waters.

The TCF is special equipment that ensures continuous automatic transfer of a vessel's coordinates into VMS. Also, on a daily basis a daily vessel report (DVR) (In Russian: Суточные судовые донесения или ССД / Sutochnye sudovye doneseniya or SSD) about fishing activity of the vessel is prepared on the fishing vessel in a specific format and communicated via satellite. Branches of CFMC (e.g. Kamchatka office) collect, process, store and provision database with automatically transferred data about location of the Russian and foreign vessels equipped with TCF.

When the report on the vessel's position is not submitted, the branch contacts with the vessel by any means and requests to fix the TCF and request data on their position over telephone, fax or telex. If the equipment is not fixed within 48 hours the vessel should proceed to the port. This is allowed only once during the whole period of the vessel's operation. If this occurs once more, the vessel proceeds to the port for the equipment repair or replacement. According to the regulations, shutting down the TCF operation for 48 hours without getting approval leads to quota termination.

Recently, the CFMC has completed the development and testing of electronic fishing logbook tool. At the moment, this system is installed and being used on different 192 vessels of the Far Eastern basin, of which 140 vessels are engaged in Alaska (Walleye) pollock fishing in the Far Eastern basin. It is expected that electronic fishing logbook tool will be obligatory by 2021.

Beside FFA, its territorial offices and CFMC, other control and management authorities also have access to these information: Border Directorate of the Federal Security Service of Russia; sea port administrations (state port control); Fishing companies; scientific institutes.

The Coast Guard Inspection carries out analytical monitoring of fishing and trans-shipment activities. In addition to its internal resources (e.g. aircraft, patrol vessels, and radar surveillance), the FSB/Coast Guard has access to both VMS position system and DVR databases held by the CFMC and also to fishing permit database held by the Territorial FFA Department.

Being on board, the Coast Guard inspectors observe trawling operations before discarding with respect to the Fishing Rules compliance (such as gear requirements, by-catch rules for TAC and Recommended (possible) catch species, juveniles, marine mammals and seabirds interaction, bottom interaction (sea ground samples or bottom species)), proper recording of by-catch and catches. After inspection the Coast Guard inspectors fill in a special form called Catch Check Act. Foreign vessels harvesting Alaska (Walleye) pollock in the Russian EEZ within international agreements (for example, South Korean and Chinese vessels in the West Bering Sea Zone) are allowed to catch fish only having Coast Guard inspector on board.

Across the whole country FSB Coastguard operates 294 vessels of different types. The Russian Far East Coastguard departments operate 77 vessels, including 24 border guard cruiser, 27 border guard boats, 5 supply vessels, 4 border patrol cruisers, 14 border patrol vessels, 3 border patrol boats. These numbers do not include vessels operated in the Amur River region (44 units used in inland waters of the Russian Far East regions, mainly on Russian-Chinese border). More information on coastguard vessels' types and numbers can be found at http://russianships.info/bohr/.

Indeed, not all of these vessels (especially large-size cruisers that are primary used for border protection) are used for fisheries control and enforcement. Kamchatka coastguard department constantly operates a group of 6-8 vessels for fisheries control, however, the number of vessels can be easily increased from the reserve or outsourced from other coastguard departments of Sakhalin or Primorye. Coastguard departments of different regions regularly arrange mutual control activities or inspections. Kamchatka coastguard (or officially Coastguard department of north artic area) is responsible for control and enforcement of two key pollock fisheries: Sea of Okhotsk and West Bering Sea fisheries, as well as pollock fishery in the Petropavlovsk-Kommandorsky subzone. Enforcement in the North Kuril zone is executed by Sakhalin coast guard department. Coastguard departments do not disclose information on the exact number of vessels they are planning to deploy or currently use for fisheries enforcement.

In case of non-compliance with Fishing Rules or other regulations occur, inspector has a right to suspend a trawler from fishing, instruct it to go to the port for further investigation. Suspension depends on a gravity of violation. Furthermore, fines can be imposed if there is any evidence that the gear has been in contact with the seabed (e.g. significant benthic animals in the catch). Statistics of violations detected (e.g. on pollock fishing in the Sea of Okhotsk) is regularly reported to FFA and fishing companies during weekly meetings of the coordinating group. Coast Guard Service notifies of the violations detected, carries out explanatory and preventive work, and pays attention of fishing companies to the aspects that shall be addressed to. Besides, the results of monitoring activities of pollock fishing in the Sea of Okhotsk are reported at the spring meeting of DVNPS.

In addition, among other duties, the Federal Customs Service inspects fish products landed in Russian waters and destined for export. The procedures include provision for an advance notification of port calls. Customs clearance will not be required in case of vessels leaving for fishing in the EEZ or on continental shelf without calls to any foreign port. Also, these vessels will not be subject to customs control when returning to ports with fish catches on-board destined for the domestic markets.

Also, quality / health inspections of landed fishery products before transferring them to domestic or export markets are responsibility of the Ministry of Agriculture which coordinates the work of the Federal Service for Sanitary and Veterinary Inspection (RosSelkhozNadzor).

Sanctions. Both the "Code of the Russian Federation on Administrative Offenses" 30.12.2001 No. 195-FZ and the "The Criminal Code of the Russian Federation" 13.06.1996 No. 63-FZ define the sanctions for violating the rules regulating fishing in Russian Federation. Table 29shows the sanctions corresponding to each type of violation according to fishing regulations or rules.

Table 29 – The sanctions corresponding to each type of violation according to fishing regulations or rules.

Type of violation/offences	Corresponding sanction/fine
"Code of the Russian Federation on Administrative Offenses" 30.12.2001 No. 195-FZ	
Article 8.16 (2). Failure to comply with the rules for maintaining ship documents	Administrative penalty - from 5 to 10 thousand rubles.
Article 8.17 (2). Violation of regulatory requirements or conditions of activity in inland sea waters, in the territorial sea, on the continental shelf, in the exclusive economic zone of the Russian Federation or in the open sea	Administrative penalty: - for citizens from ½ to 1 of the costs of biological resources, with or without confiscation of a vessel and fishing gear; - for executives from 1 to 1.5 of the costs of biological resources, with or without confiscation of a vessel and fishing gear; - for enterprises from 2 to 3 of the costs of biological resources, with or without confiscation of a vessel and fishing gear;
Article 8.37 (2). Violation of hunting rules, rules governing fishing and other uses of wildlife	Administrative penalty: - for citizens from 1 to 5 thousands rubles, with or without confiscation of a vessel and fishing gear; - for executives from 20 to 30 thousands rubles, with or without confiscation of a vessel and fishing gear; - for enterprises from 100 to 200 thousands rubles, with or without confiscation of a vessel and fishing gear.
Article 8.38. Violation of the rules for the protection of aquatic biological resources	Administrative penalty: - for citizens from 2 to 3 thousand rubles; - for executives from 10 to 15 thousand rubles;

	- for entrepreneurs from 10 to 15 thousand rubles or ban for activity up to 90 days; - for enterprises from 100 to 200 thousand rubles or ban for activity up to 90 days;
Article 8.39. Violation of the rules for the protection and use of natural resources in specially protected natural territories	Administrative penalty: - for citizens from 3 to 4 thousand rubles, with or without confiscation of a vessel and fishing gear and illegal productions; - for executives from 15 to 20 thousand rubles, with or without confiscation of a vessel and fishing gear and illegal productions; - for enterprises from 300 to 500 thousand rubles, with or without confiscation of a vessel and fishing gear and illegal productions.
"The Criminal Code of the Russian Federation" 13.06.1996 No. 63-FZ	
Article 256. Illegal fishery (catch) of aquatic biological resources	(1) Penalty for illegal fishery from 300 to 500 thousand rubles, or salary (income) for 2-3 years, or obligatory work up to 480 hours, or correctional work up to 2 years, or prison up to 2 years.
	(3) If illegal fishery committed by a person using his official position or by a group of persons in a preliminary conspiracy or by an organized group or persons who have caused particularly serious damage are punishable by penalty from 500 to 1000 thousands rubles, or salary (income) for 3-5 years, or prison 2-5 years with the deprivation of the right to occupy certain positions or engage in certain activities for a period of up to 3 years or without it.
Article 257. Violation of the rules for the protection of aquatic biological resources	Penalty up to 200 thousand rubles, or salary (income) 18 moths, or deprivation of the right to occupy certain positions or engage in certain activities for a period of up to 3 years, or obligatory work up to 480 hours, or correctional work up to 2 years.

Compliance. A compliance summary was requested by the assessment team and the client made an official request to management authorities. The following information was provided (Table 30):

Table 30 – Summary of non-compliance detected and fines imposed (2016-2020) to the FSA Vessels.

Item no.	Case No.	State body, conducting the case	Essence of the case	Result	Action taken
1.		FSB (the Border Department) of the Eastern Arctic region	Administrative proceedings on the fact of committing an administrative offense, liability for which is provided for by Part 2 of Art. 8.17 of the Administrative Code (Pollock catch in the restricted area on August 23 and 24, 2016 by KBZ-Donka LLC on MRS-150-136)	A resolution was issued to impose a fine of 392,700 rubles. (paid)	An unscheduled test of the knowledge of the captain of the vessel of the current legislation on fishing was carried out. It is indicated that such violations in the future are inadmissible.

2.		FSB (the Border Department) of the Eastern Arctic region	Administrative proceedings on the fact of committing an administrative offense, liability for which is provided for by Part 2 of Art. 8.17 of the Administrative Code (Pollock catch in the restricted area on August 23 and 24, 2016 by KBZ-Donka LLC on RS Triton	February 27, 2017 A resolution was issued to impose a fine in the amount of 530,376 rubles. (paid)	An unscheduled test of the knowledge of the captain of the vessel of the current legislation on fishing was carried out. It is indicated that such violations in the future are inadmissible.
3.		FSB (the Border Department) of the Eastern Arctic region	Administrative proceedings on the fact of committing an administrative offense, liability for which is provided for by Part 2 of Art. 8.17 of the Administrative Code (Pollock catch in the restricted area on August 23 and 24, 2016 by KBZ-Donka LLC at the Paradny RS)	A resolution was issued to impose a fine of 563,742 rubles. 40 kopecks. (paid)	An unscheduled test of the knowledge of the captain of the vessel of the current legislation on fishing was carried out. It is indicated that such violations in the future are inadmissible.
4.	5-1342/2017	FSB (the Border Department) of the Eastern Arctic region/ Petropavlovsk-Kamchatsky City Court	An administrative offense, liability for which is provided for in Part 2 of Art. 8.17 Administrative Code (self-procurement of pink salmon and chum salmon)	December 25, 2017 A resolution was issued to pay a fine of 25,792.64 rubles. The fine has been paid.	An unscheduled test of the knowledge of the captain of the vessel of the current legislation on fishing was carried out. It is indicated that such violations in the future are inadmissible.
5.	7-184/2017	FSB (the Border Department) of the Eastern Arctic region	An administrative offense, liability for which is provided for in Part 2 of Art. 8.17 Code of Administrative Offenses (Cod catch with a trawl not named in the permit)	November 29, 2017 decision the proceedings were terminated due to insignificance.	An unscheduled test of the knowledge of the captain of the vessel of the current legislation on fishing was carried out. It is indicated that such violations in the future are inadmissible.
6.	2459/1844-18	Border Directorate of the Primorsky Territory of the FSB	An administrative offense, the responsibility for which is provided for by Part 2 of Art. 8.17 of the Code of Administrative Offenses of the Russian Federation (unaccounted for fish products were found during unloading in the settlement of Vladivostok with TR "Tornado")	23.10.2018 The determination was made on the initiation of blood pressure and the conduct of the AU. On April 17, 2019, the Frunzensky District Court ruled to reduce the amount of the fine to 81,850 rubles. The fine is paid.	An unscheduled test of the knowledge of the captain of the vessel of the current legislation on fishing was carried out. It is indicated that such violations in the future are inadmissible.

7.	2459/038-19	FSB (the Border Department) of the Eastern Arctic region	An administrative offense, the responsibility for which is provided for by Part 2 of Art. 8.37 of the Code of Administrative Offenses of the Russian Federation (unaccounted for fish products were found during unloading in the settlement of Vladivostok with TR "Tornado")	The resolution was issued on 01/31/2019. The fine is 105,000 rubles. The fine has been paid.	An unscheduled test of the knowledge of the captain of the vessel of the current legislation on fishing was carried out. It is indicated that such violations in the future are inadmissible.

7.4.8 Monitoring and Evaluation

The fishery has mechanisms to internally evaluate and review key parts of the management system on a regular basis. In Russia the management authorities (e.g. the FFA) receive feedback from the interested stakeholders including NGOs through the different councils found at federal, basin and regional levels (see Section 7.4.4). Moreover, the FFA reviews the performance of its regional offices regularly. In this matter, the recommendations of Regional Fisheries Council are taken into account in the FFA regional office's feedback to the federal office. In the TAC-setting process, the scientific advice from local institutes (e.g. KamchatNIRO) is peer reviewed by the VNIRO, and then forwarded to FFA and the federal natural resources monitoring agency Rosprirodnadzor for comments.

The fishery-specific management system is also subject external review. The State Ecological Expertise in Russia, which is under the Federal Service, in contrast to the FFA which is under the Ministry of Agriculture, is responsible for the Supervision of Natural Resources, and review of the Russian management system. Also, at Federal level, Melnychuk, etc., (2016) analysed characteristics of fisheries management systems of 28 major fishing nations. A Fisheries Management Index was calculated, integrating; research, management, enforcement, and socioeconomic attributes. Out of these 28 fishing nations, the Russian fisheries management system has been ranked #4 after the US, Iceland, and Norway, which highlights its effectiveness.

7.4.9 Principle 3 Performance Indicator scores and rationales

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: - Is capable of delivering sustainability in the UoA(s); - Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

The fishery is totally under the jurisdiction of the Russian Federation and managed at national level and therefore only the Russian's fisheries management system should be considered.

The fisheries management system in Russia has well-developed legal system which has all the necessary tiers for effective management based on binding procedures dictated in administrative legislation, ordinances and decrees. The main legal framework governing fisheries in Russia is the Federal Law "On Fishery and Protection of Aquatic Biological Resources" which signed in 2004, continuously revised and updated (last amendments to be entered into force on 14th of June 2020). Russia also signed up to international fisheries laws and conventions, such as the 1982 Convention on the Law of the Sea and the 1995 Agreement on Straddling Stocks.

All categories of fisheries are regulated by so-called Fishing Rules "Pravila rybolovstva / Правила рыболовства", which are set separately for several major areas or basins. These Fishing Rules set management measures to regulate the condition of fishery in particular areas and specify fishing closures, gear regulation, minimum allowable size of commercially caught specimens of particular species, and allowable bycatch of non-target species. The Fishing Rules for the Far Eastern Fisheries Basin (as amended on July 20, 2020) are found at (Source: http://docs.cntd.ru/document/554767016; http://xn--b1a3aee.xn--p1ai/pravila-rybolovstva.html). Further Federal laws can be found at the website of North-Eastern Territorial Administration of Federal Fisheries Agency (hereinafter North-Eastern TA of FFA, or in Russian: Северо-Восточное территориальное управление Федерального агенства по рыболовству – СВТУ ФАР) (Source: http://xn--b1a3aee.xn--p1ai/obrashcheniya-grazhdan/normativnaya-pravovaya-baza.html).

Taking into account that outputs of the Russian legal framework, and the other international agreements are binding to deliver management outcomes consistent with MSC Principles 1 and 2, therefore this scoring issue meets SG100.

b	Resolution of disputes			
	Guide	The management system incorporates or is subject by law to a **mechanism** for the	The management system incorporates or is subject by law to a **transparent**	The management system incorporates or is subject by law to a **transparent**

	post	resolution of legal disputes arising within the system.	**mechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the UoA.	**mechanism** for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
	Met?	**Yes**	**Yes**	**No**

Rationale

In Russia, a transparent court system mechanism is provided to avoid and resolve disputes and issues arising between the fishing companies and inspectors. According to the Federal Law of May 2, 2006 No. Ф3-59 "On the Procedure for Considering Appeals of Citizens of the Russian Federation," citizens have the right to apply in person, as well as to submit individual and collective appeals to state bodies, local self-government bodies, and officials (Source: http://base.garant.ru/12146661/). The procedure for the reception and consideration of citizen's proposals and the rules for submission of appeals are specified in the official website of the FFA (Source: http://fish.gov.ru/obrashcheniya-grazhdan/poryadok-priema-i-rassmotreniya-obrashchenij-grazhdan). Also at territorial level, the North-eastern TA (see Section 7.4.3) provides the opportunity for citizen proposals and the submission of appeals in the Kamchatka region (Source: http://xn--b1a3aee.xn--p1ai/obrashcheniya-grazhdan/elektronnoe-obrashchenie.html). Table 28 shows the review of citizens' appeals to the North-eastern TA of FFA in 2019.

The court considers cases that can be regarded as serious violations (for example, overfishing or unauthorized by-catch). The results of any disputes in the court system can be consulted at the website of the Federal Arbitration Courts of the Russian Federation (Федеральные арбитражные суды Российской Федерации) (http://www.arbitr.ru) as well as for the territorial level, for example (e.g. depending on the territory) at the website of Arbitration Court of Kamchatka territory (Арбитражный суд Камчатского края) (https://kamchatka.arbitr.ru/). In addition, detailed information on non-compliance cases within the fishery investigated and reviewed in the court system is also publicly available at the special website called "Justice" (https://sudrf.ru/) that provides transparent information about all court cases including fisheries non-compliances. In practice, most of disputes are resolved through the management system, which includes extensive formal and informal opportunities for interaction between fishing companies and other stakeholders with the authorities, (for example, to resolve disputes, disagreements and conflicts between users, as well as between users and authorities). Therefore, SG80 is met.

However, it remains unclear whether the mechanism is proven to be effective under a full spectrum of tests. Therefore, SG100 is met.

c	Respect for rights			
	Guide post	The management system has a mechanism to **generally respect** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

The rights of fishing dependent communities are explicitly stated in the Federal Fisheries law 2004 "*taking into account the interests of the people living in coastal areas, including the indigenous peoples of the North, Siberia and the Far East of the Russian Federation, according to which they must be given access to aquatic biological resources to guarantee the vital activity of the population*" (**Article 2.1**). More in details, (**Article 25**) ensures the traditional way of life and the implementation of traditional economic activities, including fishing, of the indigenous peoples of the North, Siberia and the Far East of the Russian Federation. Other pieces of legislation that guarantee the rights of fishing for indigenous peoples include: Federal Law of April 30, 1999 N 82-FZ "On Guarantees of the Rights of Indigenous Minorities of the Russian Federation" and Decree of the Government of the Russian Federation of March 24, 2000 N 255 "On the Unified List of Indigenous Minorities of the Russian Federation". The Russian Association of Indigenous Peoples of the North (RAIPON) (In Russian: Ассоциация коренных, малочисленных народов Севера, Сибири и Дальнего Востока Российской Федерации (АКМНССиДВ) is the Russian national umbrella organisation representing 41 indigenous small-numbered peoples of the North, Siberia and the Far East. Alaska (Walleye) pollock quotas allocated for fishing dependent indigenous communities in 2020 by fishing zone are presented in Table 27.

Therefore, this scoring issue meets SG100.

References

- Arbitration Court of Kamchatka territory.
- Decree of March 24, 2000 No. 255 "On the Unified List of Indigenous Minorities… ".
- Federal Law, 2004 No. 166-ФЗ "On Fishery and Protection... ".
- Federal Arbitration Courts of the Russian Federation.
- Federal Law of May 2, 2006 No. 59-ФЗ "On the Procedure for Considering Appeals… ".
- Federal Law of 30.04.1999 No.82-FZ. "On guarantees of the rights of the indigenous peoples… ".
- Procedure for the reception and consideration of citizens.
- Russian Association of Indigenous Peoples of the North (RAIPON).
- Submission of appeals in the Kamchatka region.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	
Condition number (if relevant)	**N/A**

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood**.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for all areas** of responsibility and interaction.
	Met?	**Yes**	**Yes**	**No**
Rationale				
The Russian management system clearly defines the main organizations and stakeholders involved in the management process. The functions, roles and responsibilities specific to each organization are well defined in their own websites. The fisheries management system is organized and coordinated through the Federal Fisheries Agency (FFA or Rosrybolovstvo), which reports to the Ministry of Agriculture as the fisheries enforcement agency. The rest of functions, roles and responsibilities of organisations involved in the management are described in (section 7.4.3). Bearing in mind that the functions, roles and responsibilities of the main management organisations are explicitly defined and integrated into the national institutional framework, and it seems to be well-understood, therefore the fishery meets SG80. However it is difficult to guarantee, at least at ACDR stage, that these functions, roles and responsibilities are well understood for "all" areas, so SG100 is not met for a precautionary scoring purpose.				
b	Consultation processes			
	Guide post	The management system includes consultation processes that **obtain relevant information** from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
	Met?	**Yes**	**Yes**	**No**
Rationale				
Generally, all new federal regulations in Russia have to go through public consultations. The public are given 15–30 days to provide their comments on the draft proposal of any new regulation through the website (https://regulation.gov.ru) which is administered by the Ministry of Economic Development. Different governmental bodies, fishing sector, industry organizations and research institutions are involved in the management of Russian fisheries. The FFA supports the right for public participation in the fishery management process which is set out in the Federal Law on Fisheries “participation of citizens and public associations in resolving issues related to fishing and the preservation of aquatic biological resources, according to which citizens of the Russian Federation and public associations have the right to participate in the preparation of decisions, …” (Article 2.5). The main arena for the interaction between stakeholders is the advisory bodies, the so-called councils including: Public Council (In Russian: Общественный совет), Fisheries Council (In Russian: Рыбохозяйственный Совет) and Scientific-Fisheries Council (In Russian: Научно-промысловые советы). There are three levels of				

participation in the fishery management process: the federal level, the basin level, and the regional level. Basin and regional level fishery councils have existed since Soviet times, while in 2004 the Federal Fisheries Act made their existence mandatory for all basins and regions located on their territory. In 2008, the rules and procedures for Basin Scientific and Fishery Councils in the Russian Federation were approved. To date, two meetings of the Public Council under FFA were held during 2021. For example, the last meeting was held at FFA on 31st of March, 2021. In this meeting, the members of the Public Council discussed the election of the chairman and the deputy chairman of the Public Council (Source: http://fish.gov.ru/files/documents/otkrytoe_agentsvto/obshestvennyi_sovet/protokol_obsh_sov_310321_2.pdf). The previous meeting was held at FFA on 25th of February, 2021, in which the members of the council discussed the following issues: 1) the increasing the efficiency of the fish protection authorities; 2) the renewal of contracts for the use of fishing grounds for recreational fishing; 3) the consideration of the joint - the Union "Chamber of Commerce and Industry of the Kamchatka Territory" and the "Union of Fishermen and Entrepreneurs of Kamchatka" - analysis, conclusions and expert opinion on the draft regulatory legal acts proposed by the Ministry of Transport of Russia on amendments to federal legislation (Source: http://fish.gov.ru/files/documents/otkrytoe_agentsvto/obshestvennyi_sovet/protokol_obsh_sov_250221_1.pdf).

The Far Eastern Basin Scientific and Fishery Council (DVNPS) is of main relevance for the Alaska (Walleye) pollock fishery. This Council is responsible for the discussion of management decisions taken in the Far East fisheries including Fishing Rules adjustment. For example, during the last meeting held at Vladivostok in 22nd of October 2020, the members of the council discussed the following issues: 1) the results of the salmon fishing season in the Far Eastern fishery basin in 2020; 2) the implementation of the decisions of the DVNPS; 3) the distribution of the total allowable catches of aquatic biological resources by type of use for 2021; 4) the amendments to the rules of fishing for the Far Eastern fishery basin (Source: http://fish.gov.ru/files/documents/otraslevaya_deyatelnost/organizaciya_rybolovstva/protokoly_komissij_sovetov/protokol_dvnps_221020.pdf). After hearing and discussing the information, various recommendations were provided and outlined in the minutes.

Moreover, the TAC and recommended catch setting process is a good example for the consultation in the Russian management system (see Section 7.4.4 and Figure 47).

The management system takes into account the information obtained by consultation with the stakeholders and the opinion of the user groups, and therefore the SG80 is met. Despite that the procedure of handling stakeholders' requests is specified in the Federal Law of May 2, 2006 No. Ф3-59 (Source: http://base.garant.ru/12146661/) and that according to the article 12, all stakeholders' requests to the management authorities must be reviewed and responded within 30 days, there is no written evidence, at least at ACDR stage, that the management system has consistently explained how it uses / did not use the information gathered through its consultation processes, and therefore SG100 is not met.

c	Participation			
	Guide post		The consultation process **provides opportunity** for all interested and affected parties to be involved.	The consultation process provides **opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
	Met?		**Yes**	**No**

Rationale

As previously explained, Russian management system gives the opportunity and encourages all stakeholders to participate in the management process. The Assessment Team was able to verify that stakeholders are provided opportunities to participate in the management process through the protocols of the meetings of the Public Council of the FFA and the Far Eastern Basin Scientific and Fishery Council (DVNPS). Therefore, the SG80 is met.

However, to be a member of the FFA public council, the candidate stakeholder should comply with some requirements specified in the website of the FFA prior to undergoing a selection process. For this reason, it is not clear, at the ACDR stage, that fishing companies also had the opportunity to participate in the consultation process. Therefore, SG100 is not met.

References

- Federal Law, 2004 N 166-ФЗ "On Fishery and Protection... ".
- Minutes of the Public Council under FFA.
- Minutes of the last meeting of Far Eastern Basin Scientific and Fishery Council (DVNPS).

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	**≥80**
Information gap indicator	**More information sought to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	
Condition number (if relevant)	**N/A**

PI 3.1.3 – Long term objectives

PI 3.1.3		**The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach**		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are **implicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are **explicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The long-term objective of fisheries management system in Russia is stated in the **Federal law “On Fishery and Protection of Aquatic Biological Resources” (2004)** as: “Conservation and maintenance of aquatic biological resources or their recovery to the levels at which maximum sustainable extraction (catch) of aquatic biological resources and their biological diversity can be ensured, through the implementation of measures on the basis of scientific data for the study, protection, reproduction, rational use of water biological resources and protection of their habitat” (**Article 1.7**). Moreover “The priority of conservation of aquatic biological resources and their rational use before their use as an object of ownership and other rights, according to which possession, use and disposal of aquatic biological resources are carried out by the owners freely, if this does not damage the environment and the state of aquatic biological resources” (**Article 2.2**).

There is a similarity between the ‘Protection and rational use’ mentioned in these articles and the sustainability concept. It also put emphasis on the long-term and sustainable use of the biological resource, the priority of their conservation, based on scientific research and for socio-economic purposes. It is noteworthy that the priority of conservation of aquatic biological resources based on the scientific data and knowledge bears resemblance to the requirements of the precautionary despite that it is not mentioned explicitly in the Federal Fisheries Act. Moreover, the Russian federation has signed on a number of international agreements which adopt the precautionary approach, including the 1995 UN Straddling Stocks Agreement.

The long-term strategy for the development of the Russian fisheries complex until 2030 (In Russian: Стратегия развития рыбохозяйственного комплекса до 2030 года) defines priorities, objectives and targets aimed at ensuring the dynamic development of the fisheries sector, updating production assets, avoiding the export orientation of raw materials by stimulating the production of products with a high share of added value, creating favourable conditions for doing business and attracting investments in the industry.

Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within management policy of Russia, and therefore the SG100 is met.

References

- Federal Law, 2004 N 166-ФЗ "On Fishery and Protection... ".
- Long-term strategy for the development of the Russian fisheries complex until 2030.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	
Condition number (if relevant)	**N/A**

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific management system.	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.
	Met?	**Yes**	**Yes**	**Partial**

Rationale

The specific short-term (annual) objectives that tries to maintain the main target species within sustainable levels and therefore are consistent with the MSC Principles 1 are based on the annual TAC and recommended catch setting process. Quotas are reviewed annually based on surveys and clearly show an adaptive management system to current stock levels (see Section 7.4.4). On the other hand, short-term objectives including effort restrictions (e.g. number of fishing permits, gear's technical characteristics, etc.) and other management measures (e.g. area closures) are also consistent with the MSC Principles 2 and are explicitly specified in the Fishing Rules for the Far Eastern Fisheries Basin (as amended on July 20, 2020) (Source: http://docs.cntd.ru/document/554767016). The Fishing Rules for the commercial (industrial) fisheries are specified in the second section (from articles 8 to article 47). Other sections provide Fishing Rules for other type of fishing (e.g. recreational). General requirements for the conservation of aquatic biological resources are outlined from article 8 to article 25. Areas prohibited for the fishing in internal sea waters, territorial seas, continental shelf and EEZ of the Russian Federation are specified from article 23 to article 25, while in inland water bodies in articles 26 and 27. Similarly, periods of fishing ban for in internal sea waters, territorial seas, continental shelf and EEZ of the Russian Federation are specified in from articles 28 and 29, while in inland water bodies in article 30. Also, types of aquatic biological resources (species) prohibited for fishing (article 31). In addition, technical measures such as types of forbidden fishing gears and methods (articles 32 and 33), mesh size and design of fishing gears (from article 34 to 39). Finally, rules regarding the by-catch of certain species (from article 40 to 47).

For example, in regards to the Alaska (Walleye) pollock fishery under assessment, Article 22.10. prohibits the excess of the rate of output of raw pollock roe in all types of production of fish and other products in all areas of production (catch). Article 24 prohibits the catch of certain species in certain areas using certain fishing gears. The clause (24.1.) specifies areas where and gears (including trawls) by which the fishing of pollock is prohibited. Similarly, Article 28 prohibits the catch of certain species in certain periods using certain fishing gears, in which clause (28.1.) specifies rules for pollock. Article 32.4. specifies the technical characteristics of gears to be used in commercial pollock fishery in all areas. Article 36 outlines in table 2 the Minimum Landing Sizes (MLS) of different species caught in commercial fisheries in coastal areas, in which pollock MLS is set at 35 cm. Moreover, Article 38 details the percentage of allowed by-catch of less than the MLS, in which for commercial pollock fishery (article 38.1.) is 20% of total catch in each trawl fishing set.

Overall, information indicates that the SG80 is met. However, while the short-term objectives are considered explicit, well defined and measurable (e.g. status of stock through stock assessments), the long-term objectives are not; therefore, SG100 is only partially met.

References

- Fishing Rules for the Far Eastern fishery basin (as amended on July 20, 2020).

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	
Condition number (if relevant)	**N/A**

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are **some** decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	**Yes**	**Yes**	
Rationale				
The decision-making process of the fisheries management system is clear and based on scientific data as well as on comprehensive consultation at regional and national levels as explained in the previous sections. This process results in measures and strategies to achieve the fishery-specific objectives. For example, at regional and Federal levels, the TAC-setting process includes all available information to be evaluated and reviewed by regional scientific institutes (e.g. KamchatNIRO) and at federal level VNIRO, followed by the State Ecological Expertise in Moscow and FFA (see Section 7.4.4 and Figure 47). Overall, information indicates that the SG80 is met.				
b	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to **serious issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	**Yes**	**Yes**	**No**
Rationale				
The decision-making process is based on updated scientific data (e.g. catch statistics, monitoring and survey results) and stakeholder's consultation at least on an annual basis. The decision-making process responds to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner. For example, the organised meetings of fisheries councils provide up to date recommendations for the management authorities which later are reflected in the TAC and Recommended catch as well as in the new Fishing Rules. Taking into account that the decision-making processes respond to serious and other important issues, therefore SG80 is met. However, it cannot be considered that it responds to "all" issues in timely and adaptive manner as is required for SG100.				
c	Use of precautionary approach			
	Guide Post		Decision-making processes use the precautionary approach and are based on best available information.	

	Met?		**Yes**	

Rationale

As previously stated, the decision making is based on the most updated scientific data and available information. For example, catches are checked daily in addition to the scientific surveys conducted by regional scientific institutes in the Far East (e.g. KamchatNIRO) and therefore provide the best information available on fishing mortality. Also measures specified in the Fishing Rules such as closed areas and seasonal fishing ban are based on the latest scientific information and tries to avoid any harmful impact on target, primary, secondary and ETP species, and associated habitats. The process can be considered, implicitly precautionary but not explicitly.

Overall, information indicates that the SG80 is met.

d	Accountability and transparency of management system and decision-making process			
	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	**Information on the fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	**Yes**	**Yes**	**No**

Rationale

Some information regarding the performance of the fishery and its management is available for interested stakeholders. The websites of the FFA and North-eastern TA provide some information on the fishery's performance and management action (e.g. some protocols of the meetings of some of the Fisheries Councils). Further information on fishery management performance (including compliance) and management action is generally available upon the request of interested parties. This has been clear as the client and management authorities responded by providing the majority of information (e.g. stock assessments, impacts on by-catch species and habitats) requested by the Assessment Team for this report. Therefore, the SG80 is met.

In addition, no formal reporting to all interested stakeholders takes place as required by SG100. Also it is not clear whether the reporting is comprehensive enough in 'describing' how the management system responded to findings and relevant recommendations by scientists and stakeholders; as such, SG100 is not met.

e	Approach to disputes			
	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

Both the management system and the fishing sector try to resolve disputes and issues arise regarding the compliance to avoid judicial trials. Thanks to the well-established consultation system, most of cases are solved either directly between user groups and the government or by consultation with user groups through fisheries councils (see Section 7.4.4). Internal fisheries offenses are processed by the enforcement agencies, while fishermen and ship-owners have the opportunity to take their case to court system instead of accepting a fine. The fishery inspectorate has the power to issue administrative penalties for minor infringements. Only the most serious cases go to prosecution by the fishery inspectorate and may transfer to the judicial system. When occasionally the dispute is taken to court by fishing companies, the management authority complies with the judicial decision in a timely manner. The average time of judicial decisions in Russia, for the first arbitral instance is about 2-3 months depending on case complexity (corporate cases with multiple parties up to 8 months – very rare), and for appeal is usually 2 months (up to 6 months in some special cases), while for ordinary court trial is usually 1-2 months.

Since the management system acts proactively to avoid legal disputes and rapidly implements judicial decisions, information indicates that the fishery meets SG60, SG80 and SG100.

References

- Fishing Rules for the Far Eastern fishery basin (as amended on July 20, 2020).
- Minutes of the Public Council under FFA.
- Minutes of the last meeting of Far Eastern Basin Scientific and Fishery Council (DVNPS).
- Procedure for the reception and consideration of citizens.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	**≥80**
Information gap indicator	**More information sought to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	
Condition number (if relevant)	**N/A**

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		**Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with**		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

The state Monitoring, Control and Surveillance (MCS) functions are divided into five main elements; 1) maintenance of ongoing analytical monitoring of fishery; 2) visual monitoring of fishing vessels activities; 3) obligatory trans-shipment control; 4) offshore inspections with boarding a fishing vessel; 5) port control. These elements interconnect various management and control authorities, in which FFA and its territorial offices cooperate with the Federal Security Service (FSB), the Center of Fishery Monitoring and Communications (CFMC), and Costumes Services.

In this role, the FFA maintains a MCS system and supports the CFMC that collects, stores, processes, and distributes all fishery data. It includes daily statistics about the volumes of biological resources harvested, processed, trans-shipped, and transported by individual vessels. It provides real-time vessel position and allows authorities to spot distortions suggesting illegal activities. While the FSB conducts enforcement and inspections at-sea and in-port in cooperates with FFA to share data through the CFMC. The FFA also register and review the amount of fish that each vessel and company (in Russia: quotas are allocated to companies, not to vessels) caught at any time, based on daily reports (logbooks) and reports accumulated every 15 days of all fishing vessels.

The CFMC exercises technical control over the transfer of information from the VMS on the vessel, either through the land-based station (for Inmarsat currently) or through the Russian Gonets communication complex. Inmarsat provides positional fixes per vessel once every 2 h, and Gonets a positional fix once every 10 minutes. Vessel reports on activity and production are received daily either directly or through the satellite system. The received information (vessel location and position accuracy, activity, catch, production and form, stock already in the hold) is processed, stored and shared as required with other agencies, namely the Fishing Federal Agency and its territorial divisions (in the case of Pollock, the one in Petropavlovsk-Kamchatskiy for the Far East Basin), the Border Directorate of the FSB (the Coastguard), State port control, fishing companies and representative organizations, and scientific institutes and centers.

In case of non-compliance with Fishing Rules or other regulations occur, inspector has a right to suspend a trawler from fishing, instruct it to go to the port for further investigation. Suspension depends on a gravity of violation. Furthermore fines can be imposed if there is any evidence that the gear has been in contact with the seabed (e.g. significant benthic animals in the catch). Statistics of violations detected (e.g. on pollock fishing in the Sea of Okhotsk) is regularly reported to FFA and fishing companies during weekly meetings of the coordinating group. Coast Guard Service notifies of the violations detected, carries out explanatory and preventive work, and pays attention of fishing companies to the aspects that shall be addressed to. Besides, the results of monitoring activities of pollock fishing in the Sea of Okhotsk are reported at the spring meeting of DVNPS.

In addition, among other duties, the Federal Customs Service inspects fish products landed in Russian waters and destined for export. The procedures include provision for an advance notification of port calls. Customs clearance will not be required in case of vessels leaving for fishing in the EEZ or on continental shelf without calls to any foreign port. Also, these vessels will not be subject to customs control when returning to ports with fish catches on-board destined for the domestic markets.

Also, quality / health inspections of landed fishery products before transferring them to domestic or export markets are responsibility of the Ministry of Agriculture which coordinates the work of the Federal Service for Sanitary and Veterinary Inspection (RosSelkhozNadzor).

A monitoring, control and surveillance system has been implemented in the fishery and shows an ability to enforce relevant management measures, strategies and/or rules, which is reflected in the compliance data (see Section 7.4.7, Table 30), therefore SG100 is met.

b	Sanctions			
	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

Sanctions are provided to address non-compliance within the fisheries management system in Russia. In the fishery, the authority draws extensively on administrative fines and sends only unsolved cases to the judicial system. Both the "code of the Russian Federation on Administrative Offenses" 30.12.2001 No. 195-FZ and the "The Criminal Code of the Russian Federation" 13.06.1996 No. 63-FZ define the sanctions for violating the rules regulating fishing in Russian Federation (see Table 29).

According to the inspection and compliance data (see Section 7.4.7, Table 30) made available to the Assessment Team by the client, there are evidences that sanctions to deal with non-compliance exist, and are consistently applied. Also, considering the low level of non-compliance cases it can be concluded that sanctions provide effective deterrence, therefore SG100 is met.

c	Compliance			
	Guide post	Fishers are **generally thought** to comply with the management system for the fishery under assessment,	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including,	There is a **high degree of confidence** that fishers comply with the management system under assessment,

		including, when required, providing information of importance to the effective management of the fishery.	when required, providing information of importance to the effective management of the fishery.	including, providing information of importance to the effective management of the fishery.
	Met?	**Yes**	**Yes**	**No**

Rationale

The fishery is subject to a comprehensive MCS system, as well as to an effective sanctions scheme that has already shown to be effective in overlapping fisheries, as has been highlighted by previous Pollock fisheries assessments in the Russian FAR East. Therefore it is generally thought that fishers comply with the management system, thus SG60 is met.

According to the compliance data (see Section 7.4.7, Table 30) made available to the Assessment Team by the client, the fishery (UoC) targeting the Pollock stock in this area show a very low level of non-compliance cases, with only 7 cases in the last few years (2016-2020). The provided information explains clearly the type of non-compliance cases and the imposed penalty for each case. Therefore such evidence confirms that fishers comply with as required by SG80.

However, in the absence of data about the number of inspection activities conducted in this fishery, it is unknown whether the low number of non-compliance cases resulted from low level of inspection or from good attitude and compliance of the fishers. At the ACDR stage, with the absence of more evidence, it cannot be considered with a high degree of confidence that fishers comply with the management system, and therefore SG100 is not met.

d	Systematic non-compliance			
	Guide post		There is no evidence of systematic non-compliance.	
	Met?		**Yes**	

Rationale

There is no evidence of systematic non-compliance in the fishery. The Assessment Team did not find any information indicating that this is not the case.

Therefore, information indicates that the SG80 is met.

References

- Code of the Russian Federation on Administrative Offenses.
- Criminal Code of the Russian Federation.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	**≥80**
Information gap indicator	**More information sought to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	
Condition number (if relevant): All UoAs	**N/A**

PI 3.2.4 – Monitoring and management performance evaluation

<table>
<tr><th colspan="2">PI 3.2.4</th><th colspan="3">There is a system of 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</th></tr>
<tr><td colspan="2">Scoring Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td colspan="4">Evaluation coverage</td></tr>
<tr><td>Guide post</td><td>There are mechanisms in place to evaluate some parts of the fishery-specific management system.</td><td>There are mechanisms in place to evaluate key parts of the fishery-specific management system.</td><td>There are mechanisms in place to evaluate all parts of the fishery-specific management system.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="5">Rationale</td></tr>
<tr><td colspan="5">The fishery has mechanisms to internally evaluate and review key parts of the management system on a regular basis. The management authorities (e.g. the FFA) receive feedback from the interested stakeholders including NGOs through the different councils found at federal, basin and regional levels (see Section 7.4.4). Moreover, the FFA reviews the performance of its regional offices regularly. In this matter, the recommendations of Regional Fisheries Council are taken into account in the FFA regional office's feedback to the federal office. In the TAC-setting process, the scientific advice from regional scientific institutions in the Far East (e.g. KamchatNIRO) is peer reviewed by the VNIRO, and then forwarded to FFA and the federal natural resources monitoring agency Rosprirodnadzor for comments (see Section 7.4.4).

The fishery-specific management system is also subject to external review. The State Ecological Expertise in Russia, which is under the Federal Service, in contrast to the FFA which is under the Ministry of Agriculture, is responsible for the Supervision of Natural Resources, and review of the Russian management system. Also, at Federal level, Melnychuk, etc., (2016) analysed characteristics of fisheries management systems of 28 major fishing nations including Russia. A Fisheries Management Index was calculated, integrating; research, management, enforcement, and socioeconomic attributes. Out of these 28 fishing nations, the Russian fisheries management system has been ranked #4 after the US, Iceland, and Norway, which highlights its effectiveness. In addition, the Auditing Chamber performs audit of the FFA overall performance. The recent report of FFA audit in 2019 is available at: https://ach.gov.ru/upload/pdf/budget/РОСРЫБОЛОВСТВО.pdf. Review of FFA performance is also conducted by the Office of the General Prosecutor.

This SI tries to assess the extent of the review and evaluation mechanisms and its coverage to the parts of the fishery-specific management system. Information indicates that "most" parts of the fishery-specific management system are reviewed by these mechanisms, and therefore SG80 is met. However, it is challenging to claim that "all" parts of a fisheries management system are subject to review, especially when other overlapping fisheries do not meet the SG100 for this scoring issue. Therefore, SG100 is not met.</td></tr>
<tr><td rowspan="3">b</td><td colspan="4">Internal and/or external review</td></tr>
<tr><td>Guide post</td><td>The fishery-specific management system is subject to occasional internal review.</td><td>The fishery-specific management system is subject to regular internal and occasional external review.</td><td>The fishery-specific management system is subject to regular internal and external review.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="5">Rationale</td></tr>
<tr><td colspan="5">The fishery has mechanisms to evaluate and review key parts of the management system on a regular basis as explained above in PI 3.2.4 SIa. Internal reviews include the received feedback from the interested stakeholders such as NGOs through the different councils found at federal, basin and regional levels as well as the FFA reviews over the performance of its regional offices. Also the TAC-setting process includes the scientific reviews by regional scientific institutions in the Far East (e.g. KamchatNIRO), VNIRO, FFA and the federal natural resources monitoring agency Rosprirodnadzor. In addition to the reviews by the scientific paper and reports cited above, the reviews by the State Ecological Expertise in Russia are totally external to the management system.</td></tr>
</table>

This SI tries to assess the frequency and regularity of the internal and external review mechanisms of the parts of the fishery-specific management system. The available information indicates that the SG80 is met.

Although the reviews by the State Ecological Expertise is regular (annually), it reviews only one element of the management system such as TAC allocation. Meanwhile, the external review by scientific researchers is occasional. Therefore the fishery-specific management system as a whole is not subject to regular external review, thus SG100 is not met.

References

- Federal Law of November 23, 1995 No. 174-ФЗ “On Environmental Expertise”.
- Melnychuk *et al.* (2017).
- Minutes of the Public Council under FFA.
- Minutes of the last meeting of Far Eastern Basin Scientific and Fishery Council (DVNPS).
- Fishing Rules for the Far Eastern fishery basin (as amended on July 20, 2020).

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	**≥80**
Information gap indicator	**More information sought to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	
Condition number (if relevant)	**N/A**

7.4.10 Principle 3 references

All-Russian Research Institute of Fisheries and Oceanography (In Russian: Всероссийский научно-исследовательский институт рыбного хозяйства и океанографии) (VNIRO/ВНИРО) (Source: http://www.vniro.ru/ru/).

"Code of the Russian Federation on Administrative Offenses" dated 30.12.2001 No. 195-FZ (as amended on 31.07.2020) (as amended and supplemented, entered into force on 11.08.2020) (In Russian: "Кодекс Российской Федерации об административных правонарушениях" от 30.12.2001 N 195-ФЗ (ред. от 31.07.2020) (с изм. и доп., вступ. в силу с 11.08.2020)) (Source: http://www.consultant.ru/document/cons_doc_LAW_34661/).

"Criminal Code of the Russian Federation" dated 13.06.1996 No. 63-FZ (as amended on 31.07.2020) (In Russian: "Уголовный кодекс Российской Федерации" от 13.06.1996 N 63-ФЗ (ред. от 31.07.2020)) (Source: http://www.consultant.ru/document/cons_doc_LAW_10699/ ; https://www.wipo.int/edocs/lexdocs/laws/en/ru/ru080en.pdf).

Decree of the Government of the Russian Federation of March 24, 2000 N 255 "On the Unified List of Indigenous Minorities of the Russian Federation" (as amended on May 26, 2020) (In Russian: О Едином перечне коренных малочисленных народов Российской Федерации (с изменениями на 26 мая 2020 года)) (Source: http://docs.cntd.ru/document/901757631).

Federal Law of October 15, 2020 N 331-F3 "On Amendments to the Federal Law" On Fishing and Conservation of Aquatic Biological Resources "in terms of improving the legal regulation of certain types of fishing" (Source: https://rg.ru/2020/10/20/o-rybolostve-dok.html).

Federal Law of the Russian Federation of December 20, 2004 N 166-ФЗ “On Fishery and Protection of Aquatic Biological Resources” (In Russian: Федеральный закон Российской Федерации от 20 декабря 2004 г. N 166-ФЗ О рыболовстве и сохранении водных биологических ресурсов) (Source: https://legalacts.ru/doc/federalnyi-zakon-ot-20122004-n-166-fz-o/).

Federal Law “On the Continental Shelf of the Russian Federation” (1995) (Source: http://extwprlegs1.fao.org/docs/html/rus21902E.htm).

Federal Law of November 23, 1995 No. 174-ФЗ “On Environmental Expertise” (as amended on December 17, 2009) (In Russian: Федеральный закон от 23.11.1995 № 174-ФЗ «Об экологической экспертизе» (в ред. от 17.12.2009)) (source: http://www.consultant.ru/document/cons_doc_LAW_8515).

Federal Law “On the Exclusive Economic Zone of the Russian Federation” EEZ (1998) (Source: https://www.ecolex.org/details/legislation/federal-law-no-191-fz-of-1998-on-the-exclusive-economic-zone-lex-faoc027457).

Federal Law of 30.04.1999 No.82-FZ. “On guarantees of the rights of the indigenous peoples of the Russian Federation (as amended on February 6, 2020) (In Russian: О гарантиях прав коренных малочисленных народов Российской Федерации (с изменениями на 6 февраля 2020 года)) (Source: http://docs.cntd.ru/document/901732262).

Federal Law “On Protection of the Environment” (2001) (Source: https://rg.ru/2002/01/12/oxranasredy-dok.html).

Federal Law of May 2, 2006 No. ФЗ-59 “On the Procedure for Considering Appeals of Citizens of the Russian Federation” (In Russian: Федеральный закон от 2 мая 2006 г. N 59-ФЗ "О порядке рассмотрения обращений граждан Российской Федерации") (Source: http://base.garant.ru/12146661/).

Federal Arbitration Courts of the Russian Federation (In Russian: Федеральные арбитражные суды Российской Федерации) (http://www.arbitr.ru).

Federal state budgetary institution "Centre for Fishery Monitoring and Communications" (In Russian: Центр системы мониторинга рыболовства и связи) (CFMC) (Source: http://cfmc.ru/).

Federal Security Service of the Russian Federation (hereinafter FSB) (In Russian: федеральной службы безопасности) (Source: http://www.fsb.ru/ and http://ps.fsb.ru/).

Federal Service for Veterinary and Phytosanitary Surveillance (In Russian: Rosselkhoznadzor / Россельхознадзор) submits to the Ministry of Agriculture of the Russian Federation (Source: http://www.fsvps.ru/).

Federal Service for Supervision of Nature Management (In Russian: Rosprirodnadzor / Росприроднадзор) (Source: http://rpn.gov.ru/).

Federal portal for draft regulatory legal acts (In Russian: ФЕДЕРАЛЬНЫЙ ПОРТАЛ ПРОЕКТОВ НОРМАТИВНЫХ ПРАВОВЫХ АКТОВ) (Source: https://regulation.gov.ru).

Fishing Rules for the Far Eastern Fisheries Basin (as amended on July 20, 2020) (Source: http://docs.cntd.ru/document/554767016; http://xn--b1a3aee.xn--p1ai/pravila-rybolovstva.html).

Information, including the catch reporting form, for indigenous people at the website of North-eastern TA (Source: http://xn--b1a3aee.xn--p1ai/informatsiya-dlya-kmns/vazhnoe.html; http://xn--b1a3aee.xn--p1ai/images/docs/Prikazi_2019/3110_forma.pdf).

Kamchatka branch of the FGBNU "VNIRO" (KamchatNIRO) (In Russian: Камчатский филиал Федерального государственного бюджетного научного учреждения "Всероссийский научно-исследовательский институт рыбного хозяйства и океанографии" (КамчатНИРО)) (Source: http://www.kamniro.ru/).

Long-term strategy for the development of the Russian fisheries complex until 2030 (In Russian: Стратегия развития рыбохозяйственного комплекса Российской Федерации на период до 2030 года) (Source: http://fish.gov.ru/files/documents/files/proekt-strategiya-2030.pdf; http://fish.gov.ru/files/documents/press-centr/vystavki/mrf2017/p_6-1.pdf).

Meetings of the Public Council (Source: http://www.fish.gov.ru/territorialnye-upravleniya/15-otkrytoe-agentstvo/obshchestvennyj-sovet-pri-rosrybolovstve).

Melnychuk, M. C., Peterson, E., Elliott, M., & Hilborn, R. 2017. Fisheries management impacts on target species status. Proceedings of the National Academy of Sciences, 114(1), 178-183.

Ministry of Agriculture of Russian Federation (Source: http://mcx.ru/).

Minutes of the meetings of the Public Council at FFA (Source: http://www.fish.gov.ru/territorialnye-upravleniya/15-otkrytoe-agentstvo/obshchestvennyj-sovet-pri-rosrybolovstve).

Minutes of the Public Council under FFA (Общественный совет при Росрыболовстве) meeting held at FFA on 25th of February, 2021 (Source: http://fish.gov.ru/files/documents/otkrytoe_agentsvto/obshestvennyi_sovet/protokol_obsh_sov_250221_1.pdf).

Minutes of the Public Council under FFA (Общественный совет при Росрыболовстве) meeting held at FFA on 31st of March, 2021 (Source: http://fish.gov.ru/files/documents/otkrytoe_agentsvto/obshestvennyi_sovet/protokol_obsh_sov_310321_2.pdf).

Minutes of the last meeting (held at Vladivostok in 22nd of October 2020) of Far Eastern Basin Scientific and Fishery Council (DVNPS) (Source: http://fish.gov.ru/files/documents/otraslevaya_deyatelnost/organizaciya_rybolovstva/protokoly_komissij_sovetov/protokol_dvnps_221020.pdf).

"National program of socio-economic development of the Far East of the Russian Federation for the period up to 2024 and for the future until 2035", approved by the order of the Government of the Russian Federation dated September 24, 2020 No. 2464-r - (Source: https://www.garant.ru/products/ipo/prime/doc/74587526/).

North-Eastern Territorial Administration of the Federal Fisheries Agency (In Russian: Северо-Восточное территориальное управление Федерального агентства по рыболовству / Severo-Vostochnoye territorial'noye upravleniye Federalnogo agentstva po rybolovstvu) (hereinafter North-Eastern TA of the FFA) is the government branch subordinate to the Federal Fisheries Agency (Source: http://xn--b1a3aee.xn--p1ai/).

Order of the State Committee for Ecology of the Russian Federation of December 19, 1997 No. 569 (as amended on April 28, 2011) "On the approval of lists of objects of the animal world listed in the Red Book of the Russian Federation and excluded from the Red Book of the Russian Federation" approves the lists of the Red Book lists (Source: http://base.garant.ru/2156180).

Order of the Ministry of Agriculture of the Russian Federation of March 20, 2017 No. 135 "On approval of the Procedure for the Activities of Basin Scientific and Commercial Councils" (Source: http://publication.pravo.gov.ru/Document/View/0001201705180008).

Order of the Ministry of Agriculture of the Russian Federation of September 1, 2020 No. 522 "On approval of the Procedure for fishing in order to ensure the traditional way of life and the implementation of traditional economic activities of the indigenous peoples of the North, Siberia and the Far East of the Russian Federation." (Source: http://publication.pravo.gov.ru/Document/View/0001202010050066?index=0&rangeSize=1; https://rg.ru/2020/10/06/minselhoz-prikaz522-site-dok.html).

Order concerning the establishment of a fisheries council and the adoption of fisheries council regulations. 2011 September 6 No. 3D-672 / D1-678 (Source: https://www.e-tar.lt/portal/lt/legalAct/TAR.98B4B1E88272/asr).

Procedure for the reception and consideration of citizen’s proposals and the rules for submission of appeals are specified in the official website of the FFA (Source: http://fish.gov.ru/obrashcheniya-grazhdan/poryadok-priema-i-rassmotreniya-obrashchenij-grazhdan).

Public Council at the Federal Fisheries Agency (In Russian: Общественный совет при Федеральном агентстве по рыболовству) (Source: http://fish.gov.ru//otkrytoe-agentstvo/obshchestvennyj-sovet-pri-rosrybolovstve).

Results of the citizens' appeals to the North-Eastern TA of the FFA in 2019 (Source: http://xn--b1a3aee.xn--p1ai/obrashcheniya-grazhdan/elektronnoe-obrashchenie-2.html).

Russian Association of Indigenous Peoples of the North (RAIPON) (In Russian: Ассоциация коренных, малочисленных народов Севера, Сибири и Дальнего Востока Российской Федерации (АКМНССиДВ) (Source: http://www.raipon.info).

State program "Development of the fishery complex" (as amended on March 31, 2020) (In Russian: государственной программы Российской Федерации "Развитие рыбохозяйственного комплекса"), approved by the Decree of the Government of the Russian Federation dated April 15, 2014 No. 314 (Source: http://docs.cntd.ru/document/499091766 ; https://mcx.gov.ru/activity/state-support/programs/fish-development/).

Submission of appeals in the Kamchatka region (Source: http://xn--b1a3aee.xn--p1ai/obrashcheniya-grazhdan/elektronnoe-obrashchenie.html).

Territorial administrations of the FFA in the Russian Federation (Source: http://fish.gov.ru/territorialnye-upravleniya).

8 Appendices

8.1 Assessment information

8.1.1 Small-scale fisheries

To help identify small-scale fisheries in the MSC program, the CAB should complete the table below for each Unit of Assessment (UoA). For situations where it is difficult to determine exact percentages, the CAB may use approximations, e.g. to the nearest 10%.

The FSA Western Bering Sea Walleye midwater trawl pollock fishery is not a small-scale fishery (Table 31) because fishing activity is completed outside 12 nautical miles of shore on the large and middle tonnage vessels with total length more than 15 m.

Table 31 – Small-scale fisheries

Unit of Assessment (UoA)	Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore
1	0%	0%

8.2 Evaluation processes and techniques

8.2.1 Site visits

The CAB shall include in the report:

- An itinerary of site visit activities with dates.
- A description of site visit activities, including any locations that were inspected.
- Names of individuals contacted.

Reference(s): FCP v2.2 Section 7.16

8.2.2 Stakeholder participation

The CAB shall include in the report:

- Details of people interviewed: local residents, representatives of stakeholder organisations including contacts with any regional MSC representatives.
- A description of stakeholder engagement strategy and opportunities available.

Reference(s): FCP v2.2 Section 7.16

The stakeholder organisations and individuals having relevant interest in the assessment were identified and notified, via e-mail, of the surveillance process. This highlighted the potential process for engagement in the surveillance, if desired. In addition, the interest of others not appearing on this list was solicited through the postings on the MSC website.

8.2.3 Evaluation techniques

1. Public Announcements

At this time, UCSL publicly announced the full assessment and the assessment site visit dates and location, as well as the assessment team. This was done according to the process requirements in MSC's Fisheries Certification Process v2.2, and in the MSC Fisheries Standard 2.01. These media presented the announcement to a wide audience representing industry, agencies, and other stakeholders. Meetings calls held during the site visit will constitute the main tool in guaranteeing the participation of relevant stakeholders.

2. Information gathering

The assessment team reviewed documents sent by the client ahead of the onsite visit. The team supplemented the information provided with publicly available scientific and grey literature. At the site visit discussions with the clients and management agencies will centre on the content within the provided documentation and information gaps identified in the ACDR. In cases where relevant documentation cannot be provided in advance of the meeting, it will be requested by the assessment team and subsequently supplied during, or shortly after the meeting. The MSC allow 30-days from the last day of the site visit for information to be provided. Any information not publicly available on or before this date cannot be used to justify scoring changes in the assessment. The assessment team and the clients will set up meetings with all the relevant stakeholders during the site visit, as per MSC FCP v2.2, Section 7.16.

3. Scoring

Scoring at the CPRDR stage will be performed according to the procedure established in MSC FCP v2.2 7.17. In the Fisheries Standard v2.01 default assessment tree used for this assessment, the MSC has 28 PIs, six in Principle 1, 15 in Principle 2, and seven in Principle 3. The PIs are grouped in each principle by 'component.' Principle 1 has two components, Principle 2 has five, and Principle 3 has two. Each PI consists of one or more 'scoring issues;' a scoring issue is a specific topic for evaluation. 'Scoring Guideposts' define the requirements for meeting each scoring issue at the 60 (conditional pass), 80 (full pass), and 100 (state of the art) levels.

Note that some scoring issue may not have a scoring guidepost at each of the 60, 80, and 100 levels; in the case of the example above, scoring issue (b) does not have a scoring issue at the SG 60 level. The scoring issues and scoring guideposts are cumulative; this means that a PI is scored first at the SG 60 levels. If not all of the SG scoring issues meet the 60 requirements, the fishery fails, and no further scoring occurs. If all of the SG 60 scoring issues are met, the fishery meets the 60 level, and the scoring moves to SG 80 scoring issues. If no scoring issues meet the requirements at the SG 80 level, the fishery receives a score of 60. As the fishery meets increasing numbers of SG 80 scoring issues, the score increases above 60 in proportion to the number of scoring issues met; PI scoring occurs at 5-point intervals. If the fishery meets half the scoring issues at the 80 level, the PI would score 70; if it meets a quarter, then it would score 65; and it would score 75 by meeting three-quarters of the scoring issues. If the fishery meets all of the SG 80 scoring issues, the scoring moves to the SG 100 level. Scoring at the SG 100 level follows the same pattern as for SG 80. Principle scores result from averaging the scores within each component, and then from averaging the component scores within each Principle. If a Principle averages less than 80, the fishery fails. Scoring for this fishery will follow a consensus process in which the assessment team discussed the information available for evaluating PIs to develop a broad opinion of performance of the fishery against each PI.

The assessment team will hold preliminary scoring meetings along the site visit where the Performance Indicators of the fishery were evaluated jointly by the team in order to assess whether there was still information needs to be communicated to the client. After the site visit, each team member will be assigned their relevant section in the report to complete before proceeding to a joint evaluation of every PI and the pertaining scoring systems and rationales through scoring meetings which may take place via conference calls. Team members are responsible for completely their relevant scoring tables and providing a provisional score. The necessary harmonisation procedure is already described in a relevant section.

5. Use of the RBF

At this ACDR stage, the Risk-Based Framework is triggered for Secondary species outcome (PI 2.2.1) and ETP species outcome (PI 2.3.1) for these reasons:

The main secondary species identified thus far, Laysan albatross, Fulmar, Short-tailed shearwater, Black-legged kittiwake, Red-legged kittiwake, do not have biologically- based limits available, derived either from analytical stock assessment or using empirical approaches. As per Table 3 (FCP2.2), the RBF is therefore triggered for Secondary species outcome.

During the site visit, stakeholders will be invited to participate in identifying the likely seabird species encountered by the fishery, taking into account the information already provided in the observer reports. Unless additional evidence is provided in the meantime (as discussed above), any relevant information will be provided in an RBF information pack prior to the site visit. A second aim of the RBF process will be to gain stakeholder's input to score the Susceptibility attributes which form part of the MSC's RBF Productivity Susceptibility Analysis (PSA). This PSA analysis should be carried out for any of the main Secondary species identified and for which biologically-based limits are not available.

The use of the RBF was announced followed the MSC's procedure outlined in the FCP v2.2, Annex PF, Section PF2.1.

At Announcement Comment Draft report stage, if the use of the RBF is triggered for this assessment, the CAB shall include in the report:

- The plan for RBF activities that the team will undertake at the site visit.
- The justification for using the RBF, which can be copied from previous RBF announcements, and stakeholder comments on its use.
- The RBF stakeholder consultation strategy to ensure effective participation from a range of stakeholders including any participatory tools used.
- The full list of activities and components to be discussed or evaluated in the assessment.

At Client Draft Report stage, if the RBF was used for this assessment, the CAB shall include in the report:

- A summary of the information obtained from the stakeholder meetings including the range of opinions.
- The full list of activities and components that have been discussed or evaluated in the assessment, regardless of the final risk-based outcome.

The stakeholder input should be reported in the stakeholder input appendix and incorporated in the rationales directly in the scoring tables.

Reference(s): FCP v2.2 Section 7.16, FCP v2.2 Annex PF Section PF2.1

6. IPI Requirements

No IPI stocks have been identified.

8.3 Peer Review reports

To be drafted at Public Comment Draft Report stage

The CAB shall include in the report unattributed reports of the Peer Reviewers in full using the relevant templates. The CAB shall include in the report explicit responses of the team that include:

- Identification of specifically what (if any) changes to scoring, rationales, or conditions have been made; and,
- A substantiated justification for not making changes where Peer Reviewers suggest changes, but the team disagrees.

Reference(s): FCP v2.2 Section 7.14

8.4 Stakeholder input

To be drafted at Client and Peer Review Draft Report stage

The CAB shall use the ‘MSC Template for Stakeholder Input into Fishery Assessments’ to include all written stakeholder input during the stakeholder input opportunities (Announcement Comment Draft Report, site visit and Public Comment Draft Report). Using the ‘MSC Template for Stakeholder Input into Fishery Assessments’, the team shall respond to all written stakeholder input identifying what changes to scoring, rationales and conditions have been made in response, where the changes have been made, and assigning a ‘CAB response code’.

The ‘MSC Template for Stakeholder Input into Fishery Assessments’ shall also be used to provide a summary of verbal submissions received during the site visit likely to cause a material difference to the outcome of the assessment. Using the ‘MSC Template for Stakeholder Input into Fishery Assessments’ the team shall respond to the summary of verbal submissions identifying what changes to scoring, rationales and conditions have been made in response, where the changes have been made, and assigning a ‘CAB response code’.

Reference(s): FCP v2.2 Sections 7.15, 7.20.5 and 7.22.3

8.5 Conditions

To be drafted at Client and Peer Review Draft Report stage

The CAB shall document in the report all conditions in separate tables.

Reference(s): FCP v2.2 Section 7.18, 7.30.5 and 7.30.6

Table X – Condition 1	
Performance Indicator	
Score	*State score for Performance Indicator.*
Justification	*Cross reference to page number containing scoring template table or copy justification text here.*
Condition	*State condition.*
Condition deadline	*State deadline for the condition.*
Exceptional circumstances ☐	*Check the box if exceptional circumstances apply and condition deadline is longer than the period of certification (FCP v2.2 7.18.1.6). Provide a justification.*
Milestones	*State milestones and resulting scores where applicable.*
Verification with other entities	*Include details of any verification required to meet requirements in FCP v2.2 7.19.8.*
Complete the following rows for reassessments.	
Carried over condition ☐	*Check the box if the condition is being carried over from a previous certificate and include a justification for carrying over the condition (FCP v2.2 7.30.5.1.a).* *Include a justification that progress against the condition and milestones is adequate (FCP v2.2 7.30.5.2). The CAB shall base its justification on information from the reassessment site visit.*
Related condition ☐	*Check the box if the condition relates to a previous condition that was closed during a previous certification period but where a new condition on the same Performance Indicator or Scoring Issue is set.* *Include a justification – why is a related condition being raised? (FCP v2.2 7.30.6 & G7.30.6).*
Condition rewritten ☐	*Check the box if the condition has been rewritten. Include a justification (FCP v2.2 7.30.5.3).*

8.6 Client Action Plan

To be drafted at Public Comment Draft Report stage

The CAB shall include in the report the Client Action Plan from the fishery client to address conditions.

Reference(s): FCP v2.2 Section 7.19

8.7 Surveillance

To be drafted at Client and Peer Review Draft Report stage

The CAB shall include in the report the program for surveillance, timing of surveillance audits and a supporting justification.

Reference(s): FCP v2.2 Section 7.28

Table X – Fishery surveillance program

Surveillance level	Year 1	Year 2	Year 3	Year 4
e.g. Level 5	e.g. On-site surveillance audit	e.g. On-site surveillance audit	e.g. On-site surveillance audit	e.g. On-site surveillance audit & re-certification site visit

Table X – Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
e.g. 1	e.g. May 2018	e.g. July 2018	e.g. Scientific advice to be released in June 2018, proposal to postpone audit to include findings of scientific advice

Table X – Surveillance level justification

Year	Surveillance activity	Number of auditors	Rationale
e.g.3	e.g. On-site audit	e.g. 1 auditor on-site with remote support from 1 auditor	e.g. From client action plan it can be deduced that information needed to verify progress towards conditions 1.2.1, 2.2.3 and 3.2.3 can be provided remotely in year 3. Considering that milestones indicate that most conditions will be closed out in year 3, the CAB proposes to have an on-site audit with 1 auditor on-site with remote support – this is to ensure that all information is collected and because the information can be provided remotely.

8.8 Risk-Based Framework outputs

To be drafted at Client and Peer Review Draft Report stage

8.8.1 Productivity Susceptibility Analysis (PSA)

The CAB shall include in the report an MSC Productivity Susceptibility Analysis (PSA) worksheet for each Performance Indicator where the PSA is used and one PSA rationale table for each data-deficient species identified, subject to FCP v2.2 Section PF4. If species are grouped together, the CAB shall list all species and group them indicating which are most at-risk.

Reference(s): FCP v2.2 Annex PF Section PF4

Table X – PSA productivity and susceptibility attributes and scores		
Performance Indicator		
Productivity		
Scoring element (species)		
Attribute	Rationale	Score
Average age at maturity		**1 / 2 / 3**
Average maximum age		**1 / 2 / 3**
Fecundity		**1 / 2 / 3**
Average maximum size Not scored for invertebrates		**1 / 2 / 3**
Average size at maturity Not scored for invertebrates		**1 / 2 / 3**
Reproductive strategy		**1 / 2 / 3**
Trophic level		**1 / 2 / 3**
Density dependence Invertebrates only		**1 / 2 / 3**
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	*Insert list of fisheries impacting the given scoring element (FCP v2.2 Annex PF 7.4.10)*	
Attribute	Rationale	Score

Areal Overlap	*Insert attribute rationale. Note specific requirements in FCP v2.2 Annex PF4.4.6.b, where the impacts of fisheries other than the UoA are taken into account*	**1 / 2 / 3**
Encounterability	*Insert attribute rationale. Note specific requirements in FCP v2.2 Annex PF4.4.6.b, where the impacts of fisheries other than the UoA are taken into account*	**1 / 2 / 3**
Selectivity of gear type		**1 / 2 / 3**
Post capture mortality		**1 / 2 / 3**
Catch (weight) Only where the scoring element is scored cumulatively	*Insert weights or proportions of fisheries impacting the given scoring element (FCP v2.2 Annex PF4.4.4)*	**1 / 2 / 3**

Table X – Species grouped by similar taxonomies (if FCP v2.2 Annex PF4.1.5 is used)			
Species scientific name	Species common name (if known)	Taxonomic grouping	Most at-risk in group?
e.g. Genus species subspecies		Indicate the group that this species belongs to, e.g. *Scombridae, Soleidae, Serranidae, Merluccius spp.*	Yes / No

8.9 Harmonised fishery assessments

Harmonisation is required in cases where assessments overlap, or new assessments overlap with pre-existing fisheries.

If relevant, in accordance with FCP v2.2 Annex PB requirements, the CAB shall describe in the report the processes, activities and specific outcomes of efforts to harmonise fishery assessments. The report shall identify the fisheries and Performance Indicators subject to harmonisation.

Reference(s): FCP v2.2 Annex PB

Table 32 – Overlapping fisheries

No	Fishery name	Certification status, date and Standard Version (v)	Performance Indicators to harmonise
1	FSA Western Bering Sea Walleye Pollock midwater trawl	ACDR, June 2021 v2.01	P1: All PIs (Note that 1.2.1f was not harmonised in the present ACDR because it could potentially refer to a different UoA, more information will be requested during the site visit) P2: All PIs P3: All PIs
2	Western Bering Sea Pollock https://fisheries.msc.org/en/fisheries/western-bering-sea-pollock/@@view	PCDR, April 2021 v2.01	P1: All PIs P2: All PIs P3: All PIs
3	BSAI and GOA Alaska pollock	Certified, December 2020 v2.01	PI 2.2.1 (a)
4	East Kamchatka Alaska (Walleye) pollock mid-water trawl https://fisheries.msc.org/en/fisheries/east-kamchatka-alaska-walleye-pollock-mid-water-trawl	ACDR, December 2020 v2.01	PI: 2.3.1 (a) P3: All PIs
5	Kuril Islands Pelagic Trawl and Danish Seine Pollock https://fisheries.msc.org/en/fisheries/kuril-islands-pelagic-trawl-and-danish-seine-pollock-fishery	PCDR, April 2021 v2.01	PI: 2.3.1 (a) P3: All PIs
6	Vityaz-Avto Danish Seine Walleye Pollock fishery https://fisheries.msc.org/en/fisheries/vityaz-avto-danish-seine-walleye-pollock-fishery	Certified, April 2021 v2.01	PI: 2.3.1 (a) PI: 3.1.1-3.1.3
7	FSA Sea of Okhotsk pollock fishery https://fisheries.msc.org/en/fisheries/fishery-shipowners-association-fsa-russia-sea-of-okhotsk-pollock	ACDR, March 2021 v2.01	PI: 2.2.1 (a) PI: 2.3.1 (a) PI: 3.1.1-3.1.3

8	Western Bering Sea Pacific Cod and Pacific halibut longline https://fisheries.msc.org/en/fisheries/western-bering-sea-pacific-cod-and-pacific-halibut-longline	Certified, October 2019 v2.0	PI: 2.2.1 (a) PI: 2.4.2 (a,b,d) PI: 3.1.1-3.1.3
9	KZB-herring Western Bering Sea and East Kamchatka Pacific cod bottom longline https://fisheries.msc.org/en/fisheries/kzb-herring-jsc-western-bering-sea-and-east-kamchatka-pacific-cod	ACDR, April 2021 v2.01	PI: 2.2.1 (a) PI: 2.4.2 (a,b,d) PI: 3.1.1-3.1.3

Table 33 – Overlapping fisheries information

Supporting information	
- Describe any background or supporting information relevant to the harmonisation activities, processes and outcomes.	
Was either FCP v2.2 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?	**Yes / No**
Date of harmonisation meeting	**DD / MM / YY**
If applicable, describe the meeting outcome	
- e.g. Agreement found among teams or lowest score adopted.	

Table 34 – Scoring differences

Performance Indicators (PIs)	Fishery number from Table 32								
	1	2	3	4	5	6	7	8	9
1.1.1	≥80	90	100	≥80	90	100	≥80	-	-
1.1.2	NA	NA	NA	NA	NA	NA	NA	-	-
1.2.1	60-79	100	100	60-79	85	95	≥80	-	-
1.2.2	≥80	85	100	≥80	80	85	≥80	-	-
1.2.3	≥80	90	100	≥80	80	90	≥80	-	-
1.2.4	≥80	90	100	≥80	85	85	≥80	-	-
2.1.1	≥80	100	100	≥80	100	80	≥80	85	≥80
2.1.2	≥80	85	100	≥80	85	80	<60	80	≥80
2.1.3	≥80	85	100	≥80	100	80	≥80	75	60-79
2.2.1	RBF	85	100	≥80	80	85	RBF	95	≥80
2.2.2	60-79	75	95	60-79	80	80	≥80	85	≥80
2.2.3	RBF	75	90	60-79	80	70	RBF	75	60-79

2.3.1	RBF	80	95	≥80	80	85	RBF	80	≥80
2.3.2	60-79	75	90	≥80	75	90	≥80	80	≥80
2.3.3	RBF	70	90	≥80	70	70	RBF	80	≥80
2.4.1	≥80	80	90	≥80	90	85	≥80	100	≥80
2.4.2	≥80	80	100	≥80	80	70	≥80	80	≥80
2.4.3	≥80	80	80	≥80	85	75	≥80	80	≥80
2.5.1	≥80	100	100	≥80	80	80	≥80	100	≥80
2.5.2	≥80	80	100	≥80	80	80	≥80	80	≥80
2.5.3	≥80	85	100	≥80	90	90	≥80	90	≥80
3.1.1	≥80	95	100	≥80	95	100	≥80	100	≥80
3.1.2	≥80	95	100	≥80	95	95	≥80	95	≥80
3.1.3	≥80	100	100	≥80	100	100	≥80	100	≥80
3.2.1	≥80	90	90	≥80	90	90	≥80	90	≥80
3.2.2	≥80	80	100	≥80	85	85	≥80	75	≥80
3.2.3	≥80	95	85	60-79	95	75	≥80	95	≥80
3.2.4	≥80	80	90	≥80	80	80	≥80	90	≥80

Note. Cells with the scores which must be harmonized are highlighted in green.

Table 35 – Rationale for scoring differences

If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.2 Annex PB1.3.6).
If exceptional circumstances apply, outline the situation and whether there is agreement between or among teams on this determination.

8.10 Objection Procedure – delete if not applicable

To be added at Public Certification Report stage

The CAB shall include in the report all written decisions arising from the Objection Procedure.

Reference(s): MSC Disputes Process v1.0, FCP v2.2 Annex PD Objection Procedure

Table 36 – List of vessels in UoA as of June 2021

Vessel name	Length (m)	IMO number	Owner company
Kapitan Oleynichuk	114	8625961	JSC "TURNIF"
Vladivostok	104	9060429	
Pioner Nikolaeva	104	7942180	
Porfiriy Chanchibadze	104	8228684	
Mys Basargina	104	8423557	
Borodino	104	8831649	JSC "INTRAROS"
Berezina	104	8878116	
Novouralsk	104	7943184	LLC "Vostokrybprom"
Geroi Shironintsy	104	7832945	
Ivan Kalinin	104	8721179	LLC "Sovgavanryba"
Pavel Batov	104	8721090	JSC "DMP-RM"
Pavel Panin	94	7703998	LLC "RMD-UVA 1"
Vladimir Limanov	108	9860867	LLC Vostokrybprom

АСРФ

Ассоциация судовладельцев рыбопромыслового флота

Fishery Shipowners Association

ул. Трубная 12
г. Москва, Россия, 107045
Тел. 495 787 16 27
Эл. адрес: info@fsarf.ru

27.05.2021 № 01-2/2021-47

На № ________ от ________

UCSL
United Certification Systems
Limited

We, the "Fishery Shipowners Association", on behalf of our members JSC TURNIF, LLC Sovgavanryba, LLC Vostokrybprom, JSC INTRAROS, JSC DMP-RM, LLC RMD UVA 1 hereby state that there were no cases of losing fishing trawls by the above mentioned companies' vessels in the Western Bering Sea zone in 2016-2020.

Association president A. Osintsev

Figure 48 – FSA letter stating no cases of gear loss in 2016-2020.

9 Template information and copyright

This document was drafted using the ‘MSC Reporting Template v1.2’.

Template version control		
Version	Date of publication	Description of amendment
1.0	17 December 2018	Date of first release
1.1	29 March 2019	Minor document changes for usability
1.2	25 March 2020	Release alongside Fisheries Certification Process v2.2

A controlled document list of MSC program documents is available on the MSC website (msc.org).

Marine Stewardship Council

Marine House

1 Snow Hill

London EC1A 2DH

United Kingdom

Phone: + 44 (0) 20 7246 8900

Fax: + 44 (0) 20 7246 8901

Email: standards@msc.org