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VA-Delta Kamchatka Salmon Fishery



MSC Certificate No: MSC-F-31265 (MRAG-F-0061)

4th Surveillance Report (revised)

Conformity Assessment Body (CAB)	MRAG Americas, Inc.
Assessment team	R Beamesderfer & D. Lajus
Fishery client	Vityaz-Avto Co, Ltd.; Delta Co, Ltd.; Kamber Co Ltd; Pymta Co Ltd
Assessment type	4 th Surveillance
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Date	December 29, 2020 (Revised December 28, 2021)

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1 Executive Summary

This report contains the findings of the 4th surveillance cycle in relation to the West Kamchatka Salmon fishery by Vityaz-Avto and Delta fishing companies. This surveillance also includes the Pymta and Kamber fishing companies which were subject to a scope extension in 2019. The 2020 surveillance audit was held concurrently with the re-assessment site visit for the VA-Delta Western Kamchatka fisheries, including Ozernaya sockeye, and Pymta river pink and chum salmon. This report was revised following non-conformances raised during an audit by Assurance Services International (ASI) related to leaving conditions 3, 5 and 6 open but deeming them on-target even though they were due to be closed this year. This revision includes updated rationales to close the previously open conditions and rescore the concomitant performance indicators. The performance of the fishery was and continues to be adequate to support closing of the conditions and they were previously left open only at the request of the client, to provide more of an impetus for cooperation by the relevant government scientists and managers to continue providing needed information on an annual basis.

Seven conditions were previously identified in this fishery. The client's responses to the conditions of certification were set out in the Client Action Plan (CAP). Progress associated with the actions set forth in the CAP was examined as a part of this surveillance audit. For each condition, the report sets out progress to date. This progress has been evaluated by MRAG Americas Audit Team (set out below as "Progress on Condition") against the commitments made in the CAP.

Conditions 1, 2, 4 and 7 were closed in 2019 and principle level scores were revised accordingly. The action plan for condition 5 was revised at the third surveillance based on current information per FCR 23.13.3. Conditions 3, 5, and 6 were assessed in 2020 and were closed as scheduled as all milestones were met.

MRAG concludes that the West Kamchatka Salmon fishery continues to meet the standards of the MSC and complies with the 'Requirements for Continued Certification.' MRAG recommends the continued use of the MSC certificate through to the end of this certificate cycle.

Condition	Performance Indicator	Status
1	1.1.1 Stock status	Closed in 3 rd surveillance
2	1.2.2 Reference points	Closed in 3 rd surveillance
3	1.2.3 Information & monitoring	Closed in 4 th surveillance
4	1.2.4 Assessment of stock status	Closed in 3 rd surveillance
5	2.1.3 Retained species information	Closed in 4 th surveillance
6	3.2.2 Decision-making processes	Closed in 4 th surveillance
7	3.2.3 Compliance & enforcement	Closed in 3 rd surveillance

2 Report Details

2.1 Surveillance Information

1	Fishery name	
	Vityaz-Avto Delta Kamchatka Salmon Fishery	
2	Unit(s) of Assessment (UoA)	
	Sockeye Salmon (<i>Oncorhynchus nerka</i>)—Ozernaya River only Pink Salmon (<i>Oncorhynchus gorbuscha</i>) Chum Salmon (<i>Oncorhynchus keta</i>) Coho Salmon (<i>Oncorhynchus kisutch</i>) – Kol River only	
3	Date certified	Date of expiry
	13 Sep 2016	22 Mar 2022
4	Surveillance level and type	
	Surveillance level 6, Remote surveillance audit Surveillance has changed from what was indicated in the previous surveillance report (on-site) due to circumstances of the current pandemic. MSC remote audit derogation was granted from March 27 to September 27 2020: https://www.msc.org/docs/default-source/default-document-library/stakeholders/covid-19-pandemic-derogation-march-2020.pdf?sfvrsn=c6dcdbe9_8	
5	Surveillance number	
	1st Surveillance	March 28 - 30, 2017
	2nd Surveillance	April 2 -4, 2018
	3rd Surveillance	July 3 – 5, 2019
	4th Surveillance	October 26-29, 2020
	Other (expedited etc)	
6	Surveillance team leader	
	<i>Ray Beamesderfer, M.Sc., Team Lead and responsible for P1 & P2 (shared)</i> Mr. Beamesderfer holds a bachelor's degree in Wildlife and Fisheries Biology from the University of California, Davis, and a Master's in Fishery Resources from the University of Idaho. As a consultant, Ray has completed a wide variety of projects in fishery management, biological assessment, and conservation/recovery planning. He is the author of numerous reports, biological assessments, management plans, and scientific articles on fish population dynamics, fish conservation, fishery, and hatchery management, sampling, and species interactions. Ray has served on MRAG and other	

	<p>fishery assessment teams for salmon fisheries in Alaska, Japan and Russia and brings perspective and harmonization between salmon fishery assessments in the Pacific. MRAG Americas confirms that Mr Beamesderfer meets the competency criteria in Annex PC for team leader as follows:</p> <ul style="list-style-type: none"> • He has an appropriate university degree and more than five years' experience in management and research in fisheries; • He has passed the MSC team leader training; • He has the required competencies described in Table PC1, section 2; • He has passed the MSC Traceability training module; • He meets ISO 19011 training requirements; • He has undertaken two fishery assessments as a team member in the last five years, and • He has experience in applying different types of interviewing and facilitation techniques and is able to effectively communicate with clients and other stakeholders. <p>In addition, he has the appropriate skills and experience required to serve as a Principle 1 and 2 assessor as described in FCP Annex PC table PC3, and MRAG Americas confirms that Mr. Beamesderfer has no conflicts of interest in relation to the fishery under assessment.</p>
7	<p>Surveillance team members</p> <p><i>Dimitry Lajus, Ph.D., Team Lead and responsible for P3 & P2 (shared)</i> Dr. Dmitry Lajus, Associate Professor in the Department of Ichthyology and Hydrobiology of St Petersburg State University. Dmitry holds a BS and MS from St. Petersburg University, and a PhD from the Zoological Institute of the Russian Academy of Sciences. Dr. Lajus has conducted multiple MSC pre-assessments and full assessments for a number of fisheries in the European and Asian parts of Russia. He also provides consultations to fisheries in their MSC certification projects in Russia and EU. Dmitry's research interests include population biology of marine fish and invertebrates, population phenogenetics, stress assessment, history of fisheries, fisheries management, historical ecology, and population dynamics. He authored numerous peer-reviewed research articles and book chapters.</p> <p>MRAG Americas confirms that Dr. Lajus meets the competency criteria in Annex PC for team members as follows:</p> <ul style="list-style-type: none"> • He has an appropriate university degree and more than five years' experience in management and research in fisheries; • He has undertaken at least two MSC fishery assessments or surveillance site visits in the last five years; • He is able to score a fishery using the default assessment tree and describe how conditions are set and monitored. <p>In addition, he has the appropriate skills and experience required to serve as a Principle 2 and 3 assessor as described in FCP Annex PC table PC3, and MRAG Americas confirms</p>

	he has no conflicts of interest in relation to the fishery under assessment. A discussion between team members regarding conflict of interest and biases was held and none were identified.
8	Audit/review time and location
	26-29 October 2020, offsite meetings were conducted by zoom conference
9	Assessment and review activities
	<p>The surveillance audit was conducted in accordance with MSC FCPV2.1 7.28.15 and included review of updated documentation on the fishery and interviews with key management and stakeholders, focusing on:</p> <ul style="list-style-type: none"> a. Changes to the fishery and its management; including: <ul style="list-style-type: none"> i. Any potential or actual changes in management systems. ii. Any changes or additions/deletions to regulations. iii. Any personnel changes in science, management or industry and their impact on the management of the fishery. iv. Any potential changes to the scientific base of information, including stock assessments. v. Any changes affecting traceability b. Performance in relation to any relevant conditions of certification; c. Any developments or changes within the fishery which impact traceability and the ability to segregate MSC from non-MSC products; and d. Any other significant changes in the fishery.
10	Stakeholder opportunities
	<p>Participate in the site visit: all team members were available to meet remotely (FCP v2.2 7.28.15.b).</p> <p>Provide input or comments to the team regarding the Surveillance Audit. Stakeholders must use the <u>MSC Template for Stakeholder Input into Surveillance Audits v1.0</u> (Ctrl+click to follow link).</p>

2.2 Background

Changes to Management systems: There were no major changes highlighted for the fishery or management system.

Changes to Relevant regulations: None identified.

Changes to personnel involved in science, management or industry: There have been no substantive changes to the organisations managing the fishery. Previously in 2019, Andrey Zdetovetsky replaced Vladimir Galitsyn as minister of fisheries of Kamchatka who became a head of a newly founded (April 2019) Association of salmon catchers of Kamchatka. The person responsible for administration of the certification program within Vityaz-Avto and Delta fishing companies, Andrei Bokov, has been in place for over four years.

Changes to scientific base of information – including stock assessments: No significant changes in the scientific base of information regarding this fishery were identified beyond information provided to address conditions. Stock assessments are conducted annually with results detailed in Appendix I.

Updates on enhanced fishery's position in relation to scope criteria: Not applicable

Any developments or changes within the fishery which impact traceability or the ability to segregate between fish from the Unit of Certification (UoC) and fish from outside the UoC (non-certified fish): None of the clients in the West Kamchatka region is using MSC logo in product labeling or marketing. The only claim by the Client is that the fishery is MSC certified and is a sustainable fishery. No unsupportable claims are made.

2.3 Version Details

Table 1. Fisheries program documents versions.

Document	Version number
MSC Fisheries Certification Process	2.2
MSC Fisheries Standard	2.01
MSC General Certification Requirements	2.4.1
MSC Surveillance Reporting Template	2.1

3 Results

3.1 Surveillance Results Overview

3.1.1 Summary of Assessment Conditions

Condition	Performance Indicator	Status	PI original score	PI revised score
1	1.1.1 Stock status	Closed in 3 rd surveillance	Pink: 70 Chum: 70 Coho: 70	Pink: 80 Chum: 80 Coho: 80
2	1.2.2 Reference points	Closed in 3 rd surveillance	Pink: 70 Chum: 70 Coho: 70	Pink: 85 Chum: 85 Coho: 85
3	1.2.3 Information & monitoring	Closed in the 4 th surveillance	Pink: 65 Chum: 65 Coho: 65	Pink: 80 Chum: 80 Coho: 80
4	1.2.4 Assessment of stock status	Closed in 3 rd surveillance	Pink: 75 Chum: 75 Coho: 75	Pink: 80 Chum: 80 Coho: 80
5	2.1.3 Retained species information	Closed in the 4 th surveillance	70	85
6	3.2.2 Decision-making processes	Closed in the 4 th surveillance	75	80
7	3.2.3 Compliance & enforcement	Closed in 3 rd surveillance	70	80

3.1.2 Total Allowable Catch and Catch Data

Table 2. Pink Salmon.

TAC	Year	NA ^a	Amount	--
UoA share of TAC	Year	NA ^a	Amount	--
UoC share of (UoA)	Year	2019	Amount	25% ^b
Total green weight catch by UoC	Year (most recent)	2019	Amount	13,895 mt
	Year (second most recent)	2018	Amount	80,007 mt

^a Not applicable: Fishery managed based on realized annual escapements rather than total allowable catch.

^b Based on West Kamchatka total.

Table 3. Chum Salmon.

TAC	Year	NA ^a	Amount	--
UoA share of TAC	Year	NA ^a	Amount	--
UoC share of (UoA)	Year	2019	Amount	15% ^b
Total green weight catch by UoC	Year (most recent)	2019	Amount	2,682 mt
	Year (second most recent)	2018	Amount	3,067 mt

^a Not applicable: Fishery managed based on realized annual escapements rather than total allowable catch.

^b Based on West Kamchatka total.

Table 4. Coho Salmon (Kol River only).

TAC	Year	NA ^a	Amount	--
UoA share of TAC	Year	NA ^a	Amount	--
UoC share of (UoA)	Year	2019	Amount	80%
Total green weight catch by UoC	Year (most recent)	2019	Amount	141.5 mt
	Year (second most recent)	2018	Amount	14 mt

^a Not applicable: Fishery managed based on realized annual escapements rather than total allowable catch.

Table 5. Sockeye Salmon (Ozernaya River only).

TAC	Year	NA ^a	Amount	--
UoA share of TAC	Year	NA ^a	Amount	--
UoC share of (UoA)	Year	2019	Amount	35%
Total green weight catch by UoC	Year (most recent)	2019	Amount	10,570 mt
	Year (second most recent)	2018	Amount	8,931 mt

^a Not applicable: Fishery managed based on realized annual escapements rather than total allowable catch.

3.1.3 Recommendations

None

3.2 Re-scoring Performance Indicators

Current scores as of 4th surveillance are given in the table below, following rescoring of three indicators due to conditions newly closed at the 4th surveillance audit.

Table 6. Principle-level scores.

Principle	Principle Scores			
	Sockeye	Pink	Chum	Coho
Principle 1 – Target Species	97.9	81.9 <u>86.6</u> <u>87.9</u>	81.9 <u>86.6</u> <u>87.9</u>	81.9 <u>86.6</u> <u>87.9</u>
Principle 2 – Ecosystem	85.7 <u>86.3</u>			
Principle 3 – Management System	81.9 <u>83.1</u> <u>83.7</u>			

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	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

	the harvest strategy.		environmental information), including some that may not be directly related to the current harvest strategy, is available.
Met?	1. Oz. Sockeye - Yes 2. KK Pink – Yes 3. WK Pink - Yes 4. KK Chum – Yes 5. WK Chum - Yes 6. SW Coho – Yes	1. Oz. Sockeye - Yes 2. KK Pink – Yes 3. WK Pink - Yes 4. KK Chum – Yes 5. WK Chum - Yes 6. KK Coho – Yes	1. Oz. Sockeye - Yes 2. KK Pink – No 3. WK Pink - No 4. KK Chum – No 5. WK Chum - No 6. KK Coho – No
Rationale			

SG60 –See SG80

SG80 – This standard is met for sockeye, pink, chum and Kamchatka-Kuril coho salmon. A large amount of relevant information is collected to support the harvest strategy. This includes extensive data on stock structure, stock productivity, fleet composition and other data on biological characteristics of the run, run timing, spawning distribution, and spawning escapement. Assessments also include direct estimates of natural stock productivity by salmon species.

Escapement of pink and chum salmon is currently estimated in index areas with basin-wide inferences based on historical distribution patterns. Historical information on catches and escapements in relation to abundance and passing days supports the effectiveness of the current harvest strategy. Passing days have been effectively shown to provide opportunities for significant spawning escapement sufficient to sustain yields under current conditions of high marine productivity which prevail for these salmon species. Therefore, the available assessments based on index stocks and historical distribution patterns are generally adequate for current management of these species.

See SG100 for further explanation regarding Ozernaya sockeye.

SG100 – This standard is met for Ozernaya sockeye. A comprehensive range of information including stock structure, productivity, fleet composition and other data is available to support the harvest strategy. Due to their fishery significance and the long-term operation of a research station at Kuril Lake, Ozernaya sockeye are among the most intensively monitored and studied salmon stocks in the world. Annual harvest of this stock is estimated in the offshore drift net fishery in the Pacific Ocean and Sea of Okhotsk, marine trap net fishery on the west coast of Kamchatka, and the freshwater fishery in the Ozernaya River. Biological data (age, sex, size) is collected from samples of the catch. Spawning escapement is estimated based on weir counts which provide a very high level of accuracy. Biological data is also collected from the escapement. Run timing and spawner distribution are assessed annually. Escapement and run size information is used to derive stock-recruitment production functions which provide of sound basis for establishing escapement targets and exploitation rates consistent with maximum sustained yield. Extensive information is collected on the juvenile life history, abundance, population dynamics, and environmental conditions in Lake Kuril which provides a very strong basis for understanding factors limiting and regulating productivity. Extensive data is also collected on the fishery sector

including in-river seine, coastal trap net and high seas drift gillnet fisheries. The available information has been very thoroughly documented in the scientific literature (Bugaev et al. 2009; Bugaev 2011).

The SG100 standard is not met for UoC pink, chum or coho salmon because recent reductions in aerial surveys of escapement mean that a majority of wild component populations are no longer represented. Stocks of west Kamchatka salmon are comprised of subcomponents including substocks (e. g., early and late runs), demographically-independent populations (e.g., species returning to home rivers or lakes), and with a spectrum of natural diversity expressed in run timing and spatial distribution. Stocks including major populations are well defined based on river system, run timing, and spawning distribution. Major substocks include five groups of pink salmon; summer and fall runs of chum salmon, and early and late coho runs. Substocks can be distinguished over the course of the fishing season based on run timing, size and sex ratio. Assessments are made of the major component stocks and management and include considerations for each. Assessments based on index stocks and historical distribution patterns may not be adequate for long-term management under conditions of changing fishery dynamics, fish productivity or fish distribution patterns.

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 sufficient frequency to support the harvest control rule.	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 robustness of assessment and management to this uncertainty.
	Met?	1. Oz. Sockeye - Yes 2. KK Pink – Yes 3. WK Pink - Yes 4. KK Chum – Yes 5. WK Chum - Yes 6. SW Coho – Yes	1. Oz. Sockeye - Yes 2. KK Pink – Yes 3. WK Pink - Yes 4. KK Chum – Yes 5. WK Chum - Yes 6. SW Coho – Yes	1. Oz. Sockeye - Yes 2. KK Pink – No 3. WK Pink - No 4. KK Chum – No 5. WK Chum - No 6. KK Coho – No
Rationale				

SG60 – Extensive information is collected on harvest in the commercial salmon fishery. Numbers are estimated multiple stages of the harvest and processing chain. Detailed records are required and kept by the fishery and the government. Changes in the management system over the previous decade ensure accuracy of catch reporting by removing incentives for inaccurate

accounting to avoid taxes or remain within a designated allocation. Catch data are reported on a real-time basis during the fishing season. Catch data are assessed in-season relative to historical levels which effectively provide for spawning escapement under the passing day system of management.

SG-80 – This standard is met for Ozernaya sockeye. Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule. Harvest, data, and biological data are collected daily and have been collected in a standardized manner for many years. This long-term data series provides a very robust basis for evaluation of status and limiting factors of this stock, as well as appropriate fishing strategies. There is good information on commercial fishery removals of this stock in the freshwater in the Ozernaya River fishery, the marine trapnet fishery along the west coast of Kamchatka, and in the offshore drift net fishery operating in the Russian EEZ. Historical data in offshore drift net fishery and illegal harvest in freshwater was likely incomplete but current numbers are reported by KamchatNIRO to be accurate with respect to Ozernaya sockeye. Shevlyakov 2013a reported that illegal harvest has been reduced to low levels in the last decade. The offshore drift gillnet fishery has been closed.

The SG80 standard for regular monitoring is also met for UoC pink, chum and coho. Support from fishing companies has restored aerial survey effort throughout West Kamchatka necessary to estimated spawning escapement used to guide management decisions. The effectiveness of the harvest strategy depends on adequate monitoring of spawning escapements. Surveys were previously reduced due to budget limitations. Annual escapements of all species are reported by KamchatNIRO to the fishing companies for index representative of each SMU. There is good information on commercial fishery removals of these stock in the freshwater and the marine trapnet fishery along the west coast of Kamchatka, and in the offshore drift net fishery operating in the Russian EEZ.

SG100 – This standard is met for Ozernaya sockeye. Related assessments previously identified management uncertainties introduced by the location of the fish counting weir well upstream from the fishery location. KamchatNIRO reports that a travel time of several days between the fishery and the counting weir can introduce uncertainty in fishery management in some years depending on migration patterns. As a result, optimum harvest efficiencies were not always realized. Fishery managers have now implemented an Alaska-style sonar counting system immediately upstream from the fishery to provide more real-time data. This advancement effectively addresses the related uncertainty.

The standard is not met for UoC pink, chum and coho. All information required by the harvest control rule is not monitored with high frequency and a high degree of certainty. While there is generally a good understanding of inherent uncertainties in the information [data], the robustness of assessment and management to this uncertainty is unclear. The current survey intensity may not be sufficient to identify any future changes in productivity or distribution patterns among index and non-index populations which might confound effective implementation of the harvest control rules.

C	Comprehensiveness of information
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	Guide post	There is good information on all other fishery removals from the stock.
	Met?	
Rationale		<div>1. Oz. Sockeye - Yes</div> <div>2. KK Pink – Yes</div> <div>3. WK Pink - Yes</div> <div>4. KK Chum – Yes</div> <div>5. WK Chum - Yes</div> <div>6. SW Coho – Yes</div>

1. Oz. Sockeye - Yes
2. KK Pink – Yes
3. WK Pink - Yes
4. KK Chum – Yes
5. WK Chum - Yes
6. SW Coho – Yes

SG 80 – This standard is met for UoC sockeye, pink, chum and coho salmon. Recreational and indigenous harvest is monitored. KamchatNIRO has also conducted extensive study on historical and current levels of salmon removals by illegal fishing in Kamchatka Rivers (Shevlyakov 2013; Shevlyakov et al. 2016). Illegal harvest has long been a significant problem in Kamchatka salmon fisheries, but the incidence has been greatly reduced by changes in the management system. KamchatNIRO has estimated that illegal harvest substantially reduced historical spawning escapements in many rivers. However, industrial levels of poaching have been largely eliminated by changes in the management system. In 2008, with introduction of the Olympic system, individual quotas disappeared. With that change, incentives to exceed the quota disappeared too, thus eliminating industrial illegal fishing which a significant problem before 2008. Illegal harvest remains a concern in areas with a significant local populace and reported abuses of the indigenous permitting system. This problem is most significant in rivers outside the UoC such as the Bolshaya due to its local population and road accessibility (the Bolshaya is not in the unit of assessment). Fishing companies, governmental agencies and environmental stakeholders all report that illegal harvest in this UoC has been largely controlled by current enforcement efforts. The unique situation of the Ozernaya, including lack of access to this remote area and protection of the spawning grounds by a national park, has made these efforts particularly effective. A consistent supply of salmon from legal fishing companies, current low prices for salmon, high costs of helicopter access, extensive enforcement activities, and penalties have effectively eliminated financial incentives for large scale illegal fishing for salmon in remote areas such as southwest Kamchatka.

Harvest of Kamchatka salmon also historically occurred outside the UoC in commercial drift gillnet fisheries in marine waters of the Russian Exclusive Economic Zone. These catches were subject to a reporting and monitoring system which estimated catch levels for high value species such as sockeye. Data were provided documenting estimates of high seas drift net harvest of Ozernaya sockeye in the Russian Exclusive Economic Zone fisheries from 2000 through 2014. The marine drift net fishery in Russian waters was permanently closed by the government in 2015. Interceptions of Ozernaya sockeye in marine trapnet fisheries north of the Ozernaya River are also assessed by the management system. Ozernaya sockeye comprise an increasing percentage of the sockeye harvest from the Bolshaya River southward.

An independent observer program was also previously implemented in cooperation with other fishing companies in this UoC, the WWF and the Kamchatka State Technical University. A pilot effort was conducted in 2013 and 2014 involving observers under the supervision of Denis

Semenov of the WWF. Two student observers participated in the program each year for two weeks during the peak of the fishing season. Students observed effort and catch by river nets, documented observations and prepared a report. The observer program continued in 2015 and 2016 with refinements in methodology (Semenov et al. 2016, KFF 2017). Information on current harvest in offshore driftnet and other nearshore coastal trapnet fisheries north of the Ozeraya area is adequate to meet the 80 scoring criteria for this indicator. The independent observer program confirmed a low incidence of unaccounted illegal harvest.

References

See Section 5.2.1 Principle I Species Background. Antonov et al. 2007, Bugaev 1991, 1995, 2011; Bugaev et al. 2001, 2009, 2019, 2020a, 2020b; Dubynin et al. 2007; Shevlyakov et al. 2013, 2016

Overall Performance Indicator score

1. Oz. Sockeye - 100
2. KK Pink – 80
3. WK Pink - 80
4. KK Chum – 80
5. WK Chum - 80
6. KK Coho – 80

Condition number (if relevant)

3

Evaluation Table for 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	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.

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		
			for main primary species.	
	Met?	Yes	No Yes	—No
	Justification	<p>SG60 - This standard is met. See SG80.</p> <p><u>SG80 - This standard is met.</u> A large amount of quantitative information is collected to support the harvest strategy. This includes extensive data on stock structure, stock productivity, fleet composition and other data on biological characteristics of the run, run timing, spawning distribution, and spawning escapement. Detailed information is collected on harvest in the commercial salmon fishery. Numbers are estimated multiple stages of the harvest and processing chain. Detailed records are required and kept by the fishery and the government. Changes in the management system over the previous decade ensure accuracy of catch reporting by removing incentives for inaccurate accounting to avoid taxes or remain within a designated allocation. Catch data are reported on a real time basis during the fishing season. Assessments also include direct estimates of natural stock productivity on a regional and population-specific. <u>The fishing companies have contracted with KamchatNIRO to provide logistical support for annual aerial spawning surveys of selected West Kamchatka streams. These efforts have restored stock assessment effort to levels adequate to quantify escapement of (non-Ozernaya) Sockeye and (non-Kol) Coho Salmon the impact of the UoA with respect to status.</u></p> <p>SG80 –However, continuing reductions in aerial survey effort which is the basis for inseason and post season stock assessment raises concern for the sufficiency of information on spawning escapements for a representative range of component populations in the future. The SG80 standard is not met due to reductions in the accuracy and precision of wild abundance estimates resulting from recent reductions in aerial survey efforts.</p> <p>SG100 - The standard is not met. All information required by the harvest control rule is not monitored with high frequency and a high degree of certainty. While there is generally a good understanding of inherent uncertainties in the information [data], the robustness of assessment and management to this uncertainty is unclear. The current survey intensity may not be sufficient to identify any future changes in productivity or distribution patterns among index and non-index populations which might confound effective implementation of the harvest control rules.</p>		
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

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		
				species with respect to status.
	Met?			Yes
	Justification	SG100 – Quantitative information on the effectiveness of commercial season closures for reducing catch of Chinook in the form of harvest reports. Spawning escapement data has demonstrated an increase in abundance following these measures. Recent reductions in aerial survey efforts will potentially reduce the accuracy and precision of escapement estimates if low survey efforts continue into the future. However, escapement continued to be assessed and will provide some quantitative information on status based on index area surveys.		
c		Information adequacy for management strategy		
	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
	Justification	SG60 – See SG80 SG80 - Information on harvest and escapement is generally adequate to support measures and a partial strategy for to manage main primary species. SG100 – SG100 is not met because future management abilities to regulate exploitation based on abundance to achieve established escapement goals with a high degree of certainty is jeopardized by reductions in aerial survey effort.		
References		See Section 3.4.1 Primary Species		
OVERALL PERFORMANCE INDICATOR SCORE:				<u>7085</u>
CONDITION NUMBER (if relevant):				
Condition 1. — Provide quantitative information on escapement of (non-Ozernaya) Sockeye and (non-Kol) Coho Salmon adequate to assess the impact of the UoA with respect to status.				

PI 3.2.2 – Decision-making processes

PI 3.2.2	The fishery-specific and associated enhancement 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 and enhancement objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific and enhancement objectives.	
Met?	Yes	Yes	
Rationale			
SG60 - See SG80			
SG80 - Well-established and formal decision-making processes result in measures and strategies to achieve the fishery-specific objectives. The Anadromous Fish Commission (AFC) is a central feature of the decision-making process. The AFC is responsible for the distribution of recommended yearly catch of salmon among users and identifying areas of commercial fishery, recreational fishing, and traditional fishery of the indigenous population. The AFC is chaired by the regional governor and consists of government, industry and interested stakeholders. These include representatives from Federal executive bodies, including the federal security and environment protection authorities, as well as representatives of the regional government, federal, public associations, consolidations of legal entities (associations and unions), and scientific organizations. Upon the request of fishing companies, the AFC sets up the recommended catch for a management unit area and accepts applications from the users, each of which cannot exceed the total recommended catch for management unit. In case of approaching recommended catch for some management unit, AFC can close fishing or increase the recommended catch following recommendations of KamchatNIRO. The AFC meets regularly before and over the course of the fishing season. The AFC's decisions are made through discussions and consultations with stakeholders. All meetings are open to the public. The SG80 level is met.			
b	Responsiveness of decision-making processes		
Guide post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, and	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a

	consultation, in a evaluation and transparent, timely and adaptive manner and take some account of the wider implications of decisions.	consultation, in a adaptive manner and take account of the wider implications of decisions.	
Met?	Yes	Yes	No

Rationale

SG60 - See SG80

SG80 - 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. KamchatNIRO uses relevant information to provide pre-season forecasts so that fishermen, buyers, processors, and the Anadromous Fish Commission can plan for the upcoming season. The Anadromous Fish Commission considers a wide range of issues regularly reported by federal and regional agencies and those brought up by stakeholders to make in-season decisions. All stakeholders have an opportunity to attend the Anadromous Fish Commission meetings. The SG80 level is met.

SG100 - It cannot be concluded that decision-making processes respond to all issues due to the lack of transparency regarding many internal decisions by Russian governmental agencies. For instance, information on run size, harvest by time and area, fishery management actions, and escapement is not typically reported outside the management system except in summary form in the case of serious and other important issues addressed during public processes. The SG100 level is not met.

c Use of precautionary approach

Guide post	Decision-making processes use the precautionary approach and are based on best available information.
Met?	Yes

Rationale

SG80 - The decision-making processes are compliant with the national legislation (Law “On protection of the environment” (2001)) requiring the priority conservation of resources and favorable environment and are based on best available information provided by research institute KamchatNIRO and territorial branch of FFA - SVTU. The use of diversified Spawner-Recruit models and testing of LRP demonstrate the precautionary approach. Information received in-season assures that the management system uses current information. The target reference point occurs approximately at the midpoint of the optimal escapement range. Higher levels of precaution would occur as the target moved toward the upper end of the range.

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

SG60. This standard is met. Some information on the fishery's performance and management action is generally available on request to stakeholders. This is achieved in open public meetings by the Anadromous Fish Commission, which meets once per several days during a fishing season. For instance, in 2018 the Commission carried out 34 meetings from 9 April to 25 October devoted to management of Pacific salmon and char fisheries. Decisions are available for all interested parties and immediate (usually within a few hours after the meeting) publication of its decisions at the SVTU website (<http://xn--b1a3aee.xn--p1ai/organizatsiya-rybolovstva/rybolovstvo-v-tsifrakh/komissiya-po-regulirovaniyu-dobychi-vylova-anadromnykh-vidov-ryb/protokoly-zasedaniya-komissii-po-kamchatskomu-krayu.html>). The protocols contain information about participants of the meeting, questions discussed, results of voting and decisions have been made accompanying by relevant information. Moreover, a significant amount of information about allocation, compliance and fisheries management decisions is available from the SVTU website. Occasional publications of related information (e.g., Shevlyakov 2013b) provide a historical perspective. Stakeholders never informed the Assessment Team about any subsidies. Thus, we conclude that they are absent. Between the fishing season, management of salmon fishing is discussed on meetings of KamchatNIRO and Far Eastern Commercial Fishing Council (FECFC).

SG80 - This standard is met. 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. Results of fishing season and effectiveness of management actions undertaken are discussed at the both management agencies such as AFC, SVTU and FFA, and also at Research Councils of fisheries institutes such as KamchatNIRO, TINRO-Center and VNIRO on a regular basis. Information on run size, harvest by time and area, fishery management actions, and escapement is not typically reported outside the management system. Fishing companies involved in MSC certifications regularly request and are provided with information on harvest, allocation and fishery stock assessments related to management actions,

enforcement and compliance activities. This issue was subject to a condition in the previous assessment which was closed in the fourth surveillance on the basis of detailed annual reports provided the government scientific agency, KamchatNIRO, in response to requests from the fishery client.

SG100 - This standard is not met. Comprehensive information is generally not formally reported on how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.

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 of 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

SG60, 80 – see SG100

SG100 – all stakeholders interested in salvation of disputes are able to appeal to the court. According to the judicial protocols for the legal challenges of the last years, which are available in the open access (<http://sudact.ru/regular/participant/nX2uCqjkPrYc/>), the client fishery acted proactively to avoid legal disputes. There were no cases of successful accusation of the client company delivered in the regional courts. Nevertheless, the company's position was always represented at the court meetings, there was no disrespect, and the disputes were resolved according to the national legislation, which provides the high probability for the readiness to implement necessary decisions. Based on open-access protocols, it is also unlikely that the company regularly repeats the violations of the same laws, which could have compromised the sustainability required in P1 and P2. Thus, the SG100 can be awarded.

References

Database with court decisions <http://sudact.ru/regular/participant/nX2uCqjkPrYc/>; Bugaev et al., 2019; Protocols of the Anadromous Fish Commission of North-East Territorial Administration of FFA, 2019.

Overall Performance Indicator score	85
Condition number (if relevant)	5 --

3.3 Conditions & Client Action Plan

3.3.1 Closed Conditions

Condition 1 - closed

Performance Indicator	1.1.1. Stock status - The stock management unit (SMU) is at a level which maintains high production and has a low probability of falling below its limit reference point (LRP)
Score	70 (all species except Ozernaya sockeye)
Justification	The SG 80 standard is not achieved because of uncertainty regarding stock status relative to TRPs due to the aggregate nature of the stock assessment to derive goals, reductions in annual assessments of spawning escapement due to recent funding constraints and system-specific differences in fishing intensity. Objective values may not be met in every system and every year and in some cases, may not have been identified. It is unclear whether objectives maximize sustained yield.
Condition	Condition 1. Demonstrate that the species management unit is at or fluctuating around its target reference point.
Condition start	2016
Condition deadline	2019
Milestones	<p>By the first annual surveillance (March 2017), the client must present evidence that a plan is in place to address this condition. No change in score anticipated at this stage.</p> <p>By the second annual surveillance (April 2018), the client must present evidence that the plan has been implemented. No change in score anticipated at this stage.</p> <p>By the third annual surveillance (June 2019), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.</p> <p>Recommendation: Annually report spawning escapements by species and river system in relation to an established escapement goal. Include goals for even and odd year pink salmon and other stocks as appropriate based on run timing.</p>
Client action plan	<p>The Client will provide an analysis of the relationship between historical escapement monitoring data to actual escapements during the first surveillance audit (see Condition 3). For example, are they estimates of total escapement abundance or are they relative indicators of abundance. If they are estimates, the analysis will include a description of how escapements are extrapolated from aerial surveys and why this is appropriate.</p> <p>The Client will also provide a justification for the revised escapement monitoring plan during the first surveillance audit. For example, if only select "indicator" streams/stream sections are surveyed, the analysis will include a</p>

	<p>rationale for why they are representative of unsurveyed streams in the unit of certification.</p> <p>Starting with the first surveillance audit, the Client will provide annual information on escapements compared to the relevant escapement targets, by species.</p>
Consultation on condition	<p>Client will work with KamchatNiro to provide the analysis of historical escapement monitoring and graphs of escapement compared to escapement targets. Client will work with their consultants (previously Ocean Outcomes, now ForSeaSolutions) and KamchatNiro to provide reporting of this information.</p>
Progress on Condition [Year 1]	<p>The fishing companies have contracted with ForSeaSolutions, a consulting company with expertise in Russian salmon fisheries, replaced Ocean Outcomes in this project, to prepare a work plan for the annual surveillance audits. This work plan was provided to the surveillance team. This work plan identifies specific actions planned and schedules to address milestones for conditions of the certification. Accordingly, information needed to address this condition has been requested from KamchatNiro and a contract has been entered with this agency for delivery.</p> <p>Conclusion - This action effectively addresses the first annual surveillance milestone that the client must present evidence that a plan is in place to address this condition.</p>
Progress on Condition [Year 2]	<p>A work plan was developed and implemented to address this condition. The fishing companies contracted with KamchatNIRO to report annual spawning escapements by species and river system in relation to an established escapement goal. Goals were included for even and odd year pink salmon and other stocks as appropriate based on run timing (See Appendix III).</p> <p>Conclusion - This action effectively addresses the second annual surveillance milestone.</p>
Progress on Condition [Year 3]	<p>KamchatNIRO provided a detailed report on stock status relative to goals. Over the last decade, the federal fishery scientific agency (KamchatNiro) has been refining the scientific basis for salmon management by developing productivity functions for stocks and populations throughout Kamchatka. With this work, KamchatNIRO has been formalizing estimation and application of quantitative reference points including optimum spawning levels and points of potential reproductive impairment. This information is currently being tested by the management systems but has not yet been fully incorporated, in part due to limitations in annual stock assessments which are addressed in PI 1.2.4. (Due to past reductions in aerial survey effort, data on spawning escapements in some rivers is lacking in some years and corresponding escapement are reported as low values by KamchatNIRO). This assessment reports results of recent estimates of spawning escapement relative to preliminary reference points identified by KamchatNIRO but these results are not the primary basis for scoring of the PI which places more emphasis on long term abundance and harvest trends under current fishing intensity. However, KamchatNIRO reports that spawning escapements consistent with optimum production levels are regularly achieved and the</p>

	<p>range of escapement values for the most species tends to or exceeds the target reference points (Shevlyakov et al. 2016; Bugaev et al. 2019).</p> <p>At the same time, fishery management intensity is scaled to the vast area of the region and the limitations of the available institutional resources for stock assessment and management. Stocks of each species are effectively managed as regional aggregates which is generally appropriate given the productivity of the habitat and the normal covariation among substocks resulting from shared freshwater and ocean productivity patterns. System-specific regulatory mechanisms are implemented based on local abundance and fishery dynamics. Potential improvements in population-specific management with population-specific escapement objectives are also being explored.</p> <p>Consistent high levels of Pink and Chum Salmon production over the last decade confirm that the management strategy based on target reference points has effectively maintained the reproductive capacity of the aggregate stock of each species. Fishing effort and strategies have been scaled based on historical information to ensure adequate spawning escapement during most years in most areas. Fishing effort may be scaled somewhat in-season based on annual stock assessments but the fishery is not intensively managed at a fine scale in order to maximize harvest in any given year. Given the demonstrated success of this approach it is not necessary to quantify river-specific escapement of every stock in every year.</p>
Status of Condition	Condition closed in the 3 rd surveillance

Condition 2 - closed

Performance Indicator	1.2.2. Harvest control rules and tools -There are well defined and effective harvest control rules (HCRs) in place
Score	70 (all species except Ozernaya sockeye)
Justification	<p>The SG80 standard is not met because it is unclear whether harvest control rules are sufficiently robust to maintain appropriate levels of escapement in the event of a prolonged period of reduced ocean productivity. HCR's appear to be generally effective in regulating exploitation rates during the current period of high salmon productivity in West Kamchatka corresponding to a period of favorable marine conditions. High productivity makes these stocks extremely resilient and capable of sustaining high harvests and harvest rates. Production remains high even in the face of periodic low escapements that sometimes occur among exploited salmon populations as a result of normal annual variability in returns and inexact forecast and assessment methods. However, high harvests create an expectation for continuing high harvest and a fishery infrastructure consistent with supporting demands. Pink salmon do not meet the SG80 standard because escapement goals do not distinguish odd and even years.</p>
Condition	Condition 2. Demonstrate that harvest control rules are likely to be robust to the main uncertainties regarding future marine productivity regimes for Pink, Chum and Coho Salmon of the

	<p>unit of certification. Demonstrate that well-defined harvest control rules are in place that ensure that the exploitation rate is reduced as the LRP is approached and are expected to keep the SMU fluctuating around a target level consistent with MSY for component populations in different rivers and stocks (e.g. distinguish even and odd year runs for pink salmon).</p>
Condition Start	2016
Condition deadline	2019
Milestones	<p>By the first annual surveillance (March 2017), the client must present evidence that a plan is in place to address this condition. No change in score anticipated at this stage.</p> <p>By the second annual surveillance (April 2018), the client must present evidence that the plan has been implemented. No change in score anticipated at this stage.</p> <p>By the third annual surveillance (June 2019), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.</p> <p>Recommendation: Need annual information on passing days, exploitation rates/index and escapements in response to run size. Need separate escapement goals for even and odd year pink runs.</p>
Client action plan	<p>The Client will provide an annual report summarizing management actions taken by the Anadromous Fish Commission (establishment and modification of passing days) relevant to the certified fisheries during the previous fishing season at each surveillance audit and identify steps to assure the harvest control rule is robust to main uncertainties. In addition, the report will include: the catch of salmon by the Client fisheries by species and river/fishing parcel; and escapement data by species and river. The report will include results of any independent observer program in place in this fishery. See action plan for conditions 1 and 3 regarding pink salmon escapement goals.</p>
Consultation on condition	Client will work with KamchatNiro to provide the necessary information.
Progress on Condition [Year 1]	<p>The fishing companies have contracted with ForSeaSolutions, a consulting company with expertise in Russian salmon fisheries, to prepare a work plan for the annual surveillance audits. This work plan was provided to the surveillance team. This work plan identifies specific actions planned and schedules to address milestones for conditions of the certification. Accordingly, information needed to address this condition has been requested from KamchatNiro and a contract has been entered with this agency for delivery.</p> <p>Protocols adopted by the Anadromous Fish Commission in 2016 were also provided. These actions are summarized in section 4.3 of this report. Related information may also be found in Appendices 8.5 (Summary of Kamchatka</p>

	<p>Krai government meeting of the regional fishery) and 8.6 (The 2016 results of “Red” fishing season according to SVTU).</p> <p>Conclusion - This action effectively addresses the first annual surveillance milestone that the client must present evidence that a plan is in place to address this condition.</p>
Progress on Condition [Year 2]	<p>A work plan was developed and implemented to address this condition. The fishing companies contracted with KamchatNIRO summarize information on actions taken by Anadromous Fish Catch Monitoring and Controlling Commission in Kamchatka krai (Protocols) in 2017 and justification of actions in certified West Kamchatka fisheries (See Appendix III). Passing days were established by the Anadromous Fish Commission prior to the fishing season by management subzone. A series of in-season modifications were subsequently adopted based on monitoring results to ensure that sustainable escapements were achieved. Conclusion - This action effectively addresses the second annual surveillance milestone.</p>
Progress on Condition [Year 3]	<p>KamchatNIRO provided a detailed report on stock status relative to goals in 2018. The main uncertainty affecting HCRs is annual variability in run strength and run timing. HCR's appear to be generally effective in regulating exploitation rates under conditions of normal annual variability during the current period of high salmon productivity in West Kamchatka in a period of favorable marine conditions. High productivity makes these stocks extremely resilient and capable of sustaining high harvests and harvest rates. Production remains high even in the face of periodic low escapements that sometimes occur among exploited salmon populations as a result of normal annual variability in returns and inexact forecast and assessment methods.</p> <p>Significant escapements of target stocks are consistently achieved and continuing high levels of salmon production provide evidence that harvest control rules are effective in producing appropriate exploitation rates. The fishery is managed on a daily basis using real time stock assessment information to regulate harvest consistent with escapement targets. Fisheries are restricted as appropriate based on actual run size and escapement. For instance, the harvest strategy has been revised to allow two passing days after every two fishing days to protect escapement for below average returns and harvesting has been suspended for the same reason during years of very poor runs (Shevlyakov et al. 2016).</p>
Status of Condition	Condition closed in the 3 rd surveillance

Condition 3--closed

Performance Indicator	<u>1.2.3. Information and monitoring</u> - Relevant information is collected to support the harvest strategy
Score	65 (all species except Ozernaya sockeye)
Justification	Concern for the sufficiency of information on spawning escapements for a representative range of component populations in the future is raised by the

	continuing reductions in aerial survey effort that is the basis for inseason and post season stock assessment, thereby not meeting SG80.
Condition	Condition 3. Provide sufficient information on wild spawning escapement for a representative range of wild Pink, Chum and Coho populations in the unit of certification to support the harvest strategy and demonstrate that wild abundance is regularly monitored at a level of accuracy and coverage consistent with the harvest control rule.
Condition Start	2016
Condition deadline	(2019) third annual surveillance
Milestones	<p>By the first annual surveillance (March 2017), the client must present evidence that a plan is in place to address this condition. No change in score anticipated at this stage.</p> <p>By the second annual surveillance (April 2018), the client must present evidence that the plan has been implemented. No change in score anticipated at this stage.</p> <p>By the third annual surveillance (June 2019), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.</p> <p>Recommendations for an alteration to the CAP to allow for ongoing reporting and also close this condition are provided in the "Status of condition" box.</p>
Client action plan	The Client will provide a plan to improve escapement monitoring during the first annual surveillance audit. The plan will include the methodology (e.g. aerial surveys, weir counts, etc.), approximate time period (e.g. mid-August to early September), frequency (e.g. weekly surveys), streams/stream sections for each species, and identify steps to provide sufficient information on wild spawning escapement to support the harvest strategy and demonstrate monitoring of abundance. Annual escapement data for the previous season will be provided during each audit.
Consultation on condition	Client will work with Ocean Outcomes and KamchatNiro to develop the plan. The plan presented during the first surveillance will include agreement with KamchatNIRO to provide information.
Progress on Condition [Year 1]	<p>The fishing companies have contracted with ForSeaSolutions, a consulting company with expertise in Russian salmon fisheries, replaced Ocean Outcomes in this project, to prepare a work plan for the annual surveillance audits. This work plan was provided to the surveillance team. This work plan identifies specific actions planned and schedules to address milestones for conditions of the certification. Accordingly, information needed to address this condition has been requested from KamchatNiro and a contract has been entered with this agency for delivery.</p> <p>The client has also completed an agreement with KamchatNIRO to provide logistical support for additional aerial spawning ground surveys. VA is affiliated with a helicopter transportation company and staff from the scientific agency will accompany regular helicopter flights and conduct spawning ground surveys. This activity is expected to substantially increase</p>

	<p>sampling which has been reduced by government cutbacks in recent years. The fishing companies intend to maintain their own records of this activity to supplement information that will be provided by KamchatNIRO.</p> <p>Conclusion - This action effectively addresses the first annual surveillance milestone that the client must present evidence that a plan is in place to address this condition.</p>
Progress on Condition [Year 2]	<p>A work plan was developed and implemented to address this condition. The fishing companies contracted with KamchatNIRO to provide logistical support for aerial spawning surveys of selected West Kamchatka streams (See Appendix III). This information was the basis for spawning escapement estimates reported by KamchatNIRO. Conclusion - This action effectively addresses the second annual surveillance milestone.</p>
Progress on Condition [Year 3]	<p>The work plan was implemented as planned and corresponding information was provided in a report by KamchatNIRO. The surveillance identified a continuing need for related information in light of the continuing development and application of species and river specific escapement goals.</p>
Progress on Condition [Year 4]	<p>The information was provided in a report by KamchatNIRO. This information was also reviewed with Alexander Bugaev of KamchatNIRO. This and similar information provided in previous surveillances meets all milestones for this condition. This information is sufficient for wild spawning escapement for a representative range of wild Pink, Chum and Coho populations in the unit of certification to support the harvest strategy and demonstrates that wild abundance is regularly monitored at a level of accuracy and coverage consistent with the harvest control rule. Therefore, the condition is met.</p>
Status of Condition	Closed in the 4 th surveillance

Condition 4 - closed

Performance Indicator	1.2.4. Assessment of stock status - There is an adequate assessment of the stock status of the SMU
Score	75 (all species, except Ozernaya sockeye)
Justification	<p>Current assessments also provide low resolution on major stock subcomponents and limited precision due to a reliance on peak escapement counts in selected index areas. Stock assessment has become increasingly reliant on indicator streams with the reduction in sampling rate but changing distribution pattern over time at different scales of abundance can confound interpretation of index samples. Reliance on index areas may not provide representative estimates for a full spectrum of strong and weak stock subcomponents within a system. Peak spawner counts from the most productive habitats may not be representative of the total stock under conditions of low productivity or declining returns. Further, escapement goals are generally based on production functions for aggregate stock and river populations of a species. Curves and goals thus represent an average stock and may be disproportionately driven by large strong stocks in the aggregate.</p>

Condition	Condition 4. Estimate stock status of Pink, Chum and Coho Salmon of the unit of certification relative to reference points that are appropriate to the SMU and demonstrate there is some evidence of coherence between the status of the indicator streams and the status of the other populations they represent within the management unit, including selection of indicator stocks with low productivity to match those of the representative SMU where applicable.
Condition Start	2016
Condition deadline	2019
Milestones	<p>By the first annual surveillance (March 2017), the client must present evidence that a plan is in place to address this condition. No change in score anticipated at this stage.</p> <p>By the second annual surveillance (April 2018), the client must present evidence that the plan has been implemented. No change in score anticipated at this stage.</p> <p>By the third annual surveillance (June 2019), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.</p> <p>Recommendation: Need description of the extrapolation methodology for escapement estimates. Why is it underestimated at low run sizes? How do escapements compare to the goals? Provide justification for selection of index areas. For instance, one stream each in north and south. Could include correlations in historical abundance to justify rationale for representative sampling. Peak sampling based on historical timing and sex ratio monitoring. The statistical basis for describing relationships and related applications should be included. Develop methodology of spawning escapement estimations based on sampling areas, where average estimates of spawners would not directly depend on intensity of aerial observations (recognizing that sampling error will probably increase with decrease of flight hours).</p>
Client action plan	<p>The Client will provide an analysis of the relationship between historical escapement monitoring data to actual escapements during the first surveillance audit. For example, are they estimates of total escapement abundance or are they relative indicators of abundance. If they are estimates, the analysis will include a description of how escapements are extrapolated from aerial surveys and why this is appropriate.</p> <p>The Client will also provide a justification for the revised escapement monitoring plan (Condition 2) during the first surveillance audit. For example, if only select “indicator” streams/stream sections are surveyed, the analysis will include a rationale for why they are representative of unsurveyed streams in the unit of certification.</p> <p>Starting with the first surveillance audit, the Client will annually provide information comparing annual escapements (for at least the previous 15 years) compared to the relevant escapement targets, by species, and identify steps to assure an estimate of stock status relative to reference points and</p>

	demonstrate coherence between the status of the indicator streams and the status of the other populations they represent.
Consultation on condition	Client will work with KamchatNiro to provide the analysis of historical escapement monitoring and graphs of escapement compared to escapement targets. Client will work with Ocean Outcomes and KamchatNiro to provide justification for the revised escapement monitoring plan.
Progress on Condition [Year 1]	<p>The fishing companies have contracted with ForSeaSolutions, a consulting company with expertise in Russian salmon fisheries, to prepare a work plan for the annual surveillance audits. This work plan was provided to the surveillance team. This work plan identifies specific actions planned and schedules to address milestones for conditions of the certification. Accordingly, information needed to address this condition has been requested from KamchatNiro and a contract has been entered with this agency for delivery.</p> <p>Conclusion - This action effectively addresses the first annual surveillance milestone that the client must present evidence that a plan is in place to address this condition.</p>
Progress on Condition [Year 2]	<p>A work plan was developed and implemented to address this condition. The fishing companies contracted with KamchatNIRO to assess spawning escapements relative to species and stream-specific escapement goals. Results are documented in Appendix III. Conclusion - This action effectively addresses the second annual surveillance milestone.</p>
Progress on Condition [Year 3]	KamchatNIRO provided an analysis of the coherence of between the status of the indicator streams and the status of the other populations they represent within the management unit (Shevliakov and Maslov 2011 as cited in the KamchatNIRO report attached herein).
Status of Condition	Condition was closed at the 3 rd surveillance

Condition 5--closed

Performance Indicator	<u>2.1.3. Primary species information</u> - 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
Score	70
Justification	<p>Primary species include coho salmon (in rivers except for Kol where they are a P1 species), sockeye salmon (in rivers except for Ozernaya), and Chinook salmon (all rivers). Assessments also include direct estimates of natural stock productivity on a regional and population-specific. Continuing reductions in aerial survey effort, which is the basis for inseason and post-season stock assessment, raise concern for the sufficiency of information on spawning escapements for a representative range of component populations in the future. The SG80 standard is not met due to reductions in the accuracy and precision of wild abundance estimates resulting from recent reductions in aerial survey efforts.</p>

Condition	Condition 5. Provide quantitative information on escapement of (non-Ozernaya) Sockeye and (non-Kol) Coho Salmon adequate to assess the impact of the UoA with respect to status.
Condition Start	2016
Condition deadline	2019 (third annual surveillance)
Milestones	<p>By the first annual surveillance (March 2017), the client must present evidence that a plan is in place to address this condition. No change in score anticipated at this stage.</p> <p>By the second annual surveillance (April 2018), the client must present evidence that the plan has been implemented. No change in score anticipated at this stage.</p> <p>By the third annual surveillance (June 2019), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.</p> <p>Recommendation: survey abundance and compare to goals (same info as in PI for other species).</p>
Client action plan	Starting with the first surveillance audit, the Client will annually provide graphs comparing annual escapements of Coho and Sockeye (for at least the previous 15 years) compared to the relevant escapement targets, by species.
Consultation on condition	Client will work with KamchatNiro to provide the necessary information.
Progress on Condition [Year 1]	<p>The fishing companies have contracted with ForSeaSolutions, a consulting company with expertise in Russian salmon fisheries, to prepare a work plan for the annual surveillance audits. This work plan was provided to the surveillance team. This work plan identifies specific actions planned and schedules to address milestones for conditions of the certification. Accordingly, information needed to address this condition has been requested from KamchatNiro and a contract has been entered with this agency for delivery.</p> <p>Conclusion - This action effectively addresses the first annual surveillance milestone that the client must present evidence that a plan is in place to address this condition.</p>
Progress on Condition [Year 2]	A work plan was developed and implemented to address this condition. The fishing companies contracted with KamchatNIRO to provide logistical support for aerial spawning surveys of selected West Kamchatka streams (See Appendix III). In 2017, this funding allowed resumption of escapement surveys for Sockeye in the Opala/Golygina and Vorovskaya rivers. Addition efforts are in development for Coho assessments. Conclusion - This action effectively addresses the second annual surveillance milestone.
Progress on Condition [Year 3]	The fishing companies contracted with KamchatNIRO to continue to provide logistical support for aerial spawning surveys of selected West Kamchatka streams. This funding allowed resumption of escapement surveys for Sockeye in the Opala/Golygina and Vorovskaya rivers. Addition efforts are in development for Coho assessments.

Progress on Condition [Year 4]	The fishing companies contracted with KamchatNIRO to continue to provide logistical support for aerial spawning surveys of selected West Kamchatka streams. Results were documented in a report by KamchatNIRO. Similar information was provided in previous surveillances. These reports provide quantitative information on escapement of (non-Ozernaya) Sockeye and (non-Kol) Coho Salmon adequate to assess the impact of the UoA with respect to status. Milestones for this condition have been achieved and the condition is met.
Status of Condition	Closed in the 4 th surveillance

Condition 6--closed

Performance Indicator	3.2.2. Decision-making processes - The fishery-specific and associated enhancement 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.
Score	75
Justification	Monitoring of decision making for the fishery is limited by the inconsistent availability of information outside the local governmental management system. Results of fishing season and effectiveness of management actions undertaken are discussed at the both management agencies such as AFC, SVTU and FAR, and also at Research Councils of fisheries institutes such as KamchatNIRO, TINRO-Center and VNIRO on a regular basis. However, information on run size, harvest by time and area, fishery management actions, and escapement is not typically reported outside the management system except in rare cases. Occasional publications of related information (e.g. Shevliakov 2013b) provide a historical perspective but are not sufficient to allow tracking action associated with findings and relevant recommendations.
Condition	<p>Condition 6. Demonstrate that information on fishery 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.</p> <p>Recommendation: The client report should include information used to make decisions plus the final outcome such as final spawning escapements and harvests in the watersheds, and age of chum and coho salmon.</p>
Condition Start	2016
Condition deadline	2020 (fourth annual surveillance)
Milestones	By the first annual surveillance (March 2017), the client must present evidence that a plan is in place to address this condition. No change in score anticipated at this stage.

	<p>By the second annual surveillance (April 2018), the client must present evidence that the plan has been implemented. No change in score anticipated at this stage.</p> <p>By the third annual surveillance (June 2019), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.</p> <p>Recommendation: Annual report to assessment team summarizing management actions and rationales based on fishery data.</p>
Client action plan	<p>Beginning with the first surveillance audit, the Client will provide annual reports documenting the rationale behind fishery management actions taken the previous fishing season affecting the unit of certification. In addition to reporting on Anadromous Fish Commission protocols establishing opening dates, initial passing days, modifications to passing days, season closures, etc., the report will provide rationale for the actions. For example, pre-season run forecasts, inseason catch/escapement information may have been used to set or modify passing days based on projected run strength. The report will include results of any independent observer program in place in this fishery regarding regulatory compliance.</p>
Consultation on condition	<p>Client will work with KamchatNiro to provide the necessary information.</p>
Progress on Condition [Year 1]	<p>The fishing companies have contracted with ForSeaSolutions, a consulting company with expertise in Russian salmon fisheries, to prepare a work plan for the annual surveillance audits. This work plan was provided to the surveillance team. This work plan identifies specific actions planned and schedules to address milestones for conditions of the certification. Accordingly, information needed to address this condition has been requested from KamchatNiro and a contract has been entered with this agency for delivery. Related information may also be found in Appendices 8.5 (Summary of Kamchatka Krai government meeting of the regional fishery) and 8.6 (The 2016 results of “Red” fishing season according to SVTU).</p> <p>Conclusion - This action effectively addresses the first annual surveillance milestone that the client must present evidence that a plan is in place to address this condition.</p>
Progress on Condition [Year 2]	<p>A work plan was developed and implemented to address this condition. The fishing companies contracted with KamchatNIRO summarize information on fishery harvests, spawning escapements, and actions taken by Anadromous Fish Catch Monitoring and Controlling Commission in Kamchatka krai (Protocols) in 2017 and justification of actions in certified West Kamchatka fisheries (See Appendix III). Conclusion - This action effectively addresses the second annual surveillance milestone.</p>
Progress on Condition [Year 3]	<p>A work plan was developed and implemented to address this condition. The fishing companies contracted with KamchatNIRO summarize information on fishery harvests, spawning escapements, and actions taken by Anadromous Fish Catch Monitoring and Controlling Commission in Kamchatka krai (Protocols) in 2018 and justification of actions in certified West Kamchatka fisheries.</p>

Progress on Condition [Year 4]	A comprehensive report was provided by the client by contract with KamchatNIRO (See Appendix). Similar reports have been provided in each of the four annual surveillances in this certification. This clearly demonstrates that information on fishery 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. Milestones for this condition have been achieved. Therefore, this condition is met.
Status of Condition	Condition is closed in the 4 th surveillance.

Condition 7 - closed

Performance Indicator	3.2.3. Compliance and Enforcement - Monitoring, control and surveillance mechanisms ensure the management measures in the fishery and associated enhancement activities are enforced and complied with.
Score	70
Justification	Effective enforcement is only possible with considerable funding and cooperation among companies fishing companies depending on local fish resources. The chronic nature of this problem indicates that the monitoring, control and surveillance system has not demonstrated a complete ability to enforce relevant rules throughout the system. Enforcement cannot be considered comprehensive because the notable level of illegal fishing is apparently still significant.
Condition	Condition 7. Demonstrate that a monitoring, control and surveillance system has been implemented in the fishery and associated enhancement activities and has demonstrated an ability to enforce relevant management measures, strategies and/or rules, and that sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.
Condition Start	2016
Condition deadline	2019
Milestones	By the first annual surveillance (March 2017), the client must present evidence that a plan is in place to address this condition. No change in score anticipated at this stage. By the second annual surveillance (April 2018), the client must present evidence that the plan has been implemented. No change in score anticipated at this stage. By the third annual surveillance (June 2019), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.
Client action plan	The Client will provide a detailed plan for assessing the magnitude of illegal fishing in the unit of certification by the first surveillance audit. In addition, to independent fishery observer reports, enforcement activities, and media reports, the plan will include some methodology to evaluate the relative

	<p>quantity of fish illegally harvested. For example, this may include anthropological/sociological studies of local communities to assess the types and scale of different illegal activities, potential trade routes, and strategies for reducing incentives for these activities.</p> <p>The Client will present evidence that the plan has been implemented during the second surveillance audit. A final report on the results demonstrating an effective monitoring, control, and surveillance system will be provided during the third surveillance audit.</p>
Consultation on condition	<p>Client will work with Ocean Outcomes and academic consultants to develop and implement the plan. The Plan provided at the first surveillance will include agreement with relevant contractors to collect and analyse information.</p>
Progress on Condition [Year 1]	<p>The fishing companies have contracted with ForSeaSolutions, a consulting company with expertise in Russian salmon fisheries, to prepare a work plan for the annual surveillance audits. This work plan was provided to the surveillance team. This work plan identifies specific actions planned and schedules to address milestones for conditions of the certification. For this condition, the work plan reported that the client will work with consultants and/or academics to develop a plan. The plan will include an agreement with consultants/academics to collect and analyse information. Accordingly, the client is considering alternatives for conduct of this work.</p> <p>A plan for socio-anthropological research of Illegal salmon fishing in Western Kamchatka has been prepared by Veronika Simonova of Sociological Institute of the Russian Academy of Science. The proposal called for work to be conducted from April 2017 – March 2019. The main goal of the project is to study role of illegal fishing in social life and in Western Kamchatka and obtain information about amount of Pacific salmon illegally fished in the region. In the Western Kamchatka, as well as in other regions of the Russian Far East, illegal fisheries are one of main subsistent strategies and relationships with the environment relevant for local populations.</p> <p>The project will describe patterns of illegal fishing, characterize people, involved in illegal activities, assess significance of illegal fishing in local economy and provide information to assess amount of Pacific salmon removed illegally. The basic project method stands upon social anthropology and its main technics: in depth interviews, ethnographic observations, diaries. The project will also employ theoretical background of related disciplines such as ecological and economic anthropology, history, and sociology. It will also address historical sources such as archival documents and local press in order to have a historical perspective on social memory of the practice and its ongoing life. The distant analysis of illegal fishing in Western Kamchatka will be done to prepare for field work in order to have a better view over discourses concerning to illegal fisheries and informal economies of the target region. The project result will be not only a detailed analysis of the problem, but also will represent a better version of original method of figuring out and analysis of the impact of illegal fisheries on local eco-cultural system but will allow the Client company to reduce potential financial and other risks. Finally, the project shall contribute to local sustainable development and understanding of local community where the Client company runs its businesses.</p>

	<p>The client is also exploring alternatives with the Kamchatka State University. The surveillance team recommends that a study plan be provided for review upon availability.</p> <p>Conclusion - This action effectively addresses the first annual surveillance milestone that the client must present evidence that a plan is in place to address this condition.</p>
Progress on Condition [Year 2]	<p>A project of socio-anthropological research of Illegal salmon fishing in Western Kamchatka was initiated by Veronika Simonova of Sociological Institute of the Russian Academy of Science with funding by the fishing companies. A preliminary report of year 1 activities and findings was provided to the surveillance team (attached in Appendix III). Subsequent phases of this research are planned to continue. Conclusion - This action effectively addresses the second annual surveillance milestone.</p>
Progress on Condition [Year 3]	<p>Socio-anthropological research of Illegal salmon fishing in Western Kamchatka by Veronika Simonova of Sociological Institute of the Russian Academy of Science continued for a second year with funding by the fishing companies. A preliminary report of year 2 activities and findings was provided to the surveillance team (attached in Appendix III). This report presents initial findings though more study is needed for conclusive results regarding quantification of poaching/illegal harvesting activity in Kamchatka. However, it is clear that the rivers fished by Vityaz-Avto and the subject of this certification are low risk for significant levels of poaching relative to other areas of Kamchatka (e.g. Bolshya and Kamchatka Rivers), as fishing and processing sites (other than Ozernaya River which is tightly patrolled) are remote with little to no means of transportation overland. Therefore, this sociological/anthropological study will continue and will be refined in order to get better information on poaching in areas where it is most prevalent, but the initial results allow this condition as pertains to the VA-Delta fishery and associated rivers, to be closed.</p>
Status of Condition	Condition was closed at the 3 rd surveillance

3.3.2 Progress against Conditions

All conditions that were open at the start of the 4th audit have now been closed and are addressed in section 3.3.1, above.

4 Evaluation Process and Techniques

The surveillance audit process as defined in the MSC Fishery Certification Process v2.2 was followed in this audit.

Information supplied by the clients and management agencies was reviewed by the assessment team ahead of the on-site meeting, and discussions with the clients and management agencies centered on the content within the provided documentation. In cases where relevant documentation was not provided in advance of the meeting, it was requested by the assessment team and subsequently supplied during or shortly after the meeting.

Discussions covered all issues as laid out in Section 7.28 of the MSC Certification Process, including the principal changes occurring to the fishery since the previous surveillance and the outcomes as outlined in the Client Action Plan (CAP) against the conditions set. The assessors drew from referenced material (emails, notices, research submissions, published and draft documents and personal communications) to support the findings in the report.

As part of the annual surveillance process, the fishing companies are expected to provide (or arrange for provision by KamchatNIRO) the following information:

1. Description of any substantive changes in management systems, regulations, fishing sites, personnel involved in science, management or industry, or the scientific base of information.
2. Dates of passing days in the river and sea for the fishery.
3. Harvest in metric tons by each client fishing company of sockeye salmon, pink salmon, chum salmon, coho salmon and char by fishing parcel in the fishing season.
4. Annual estimates of aerial survey effort and spawning escapement by species and river.
5. Summary of fishery enforcement activities including level of effort, nature of activities, and any violations identified.

New documents provided to the surveillance team at this audit included:

- Harvest numbers in 2019 of salmon by the fishing companies for the unit of certification (spreadsheet tables) and total salmon harvest in Kamchatka by species and subdistrict.
- REPORT (Contract No. 58- / 20- NIR dated 17.02.2020) Pacific salmon stock and fishery management analysis of West Kamchatka fisheries in Ozernaya river (sockeye salmon, chum salmon, pink salmon), Koshegochek river (chum, pink salmon), Golygina river (chum, pink salmon), Vorovskaya river (chum, pink salmon), Pymta river (chum, pink salmon) and Kol river (chum, pink salmon, coho salmon) for Vityaz-Avto LLC salmon fishery certification to MSC standards). Bugaev, A.V., and six coauthors.
- Related Anadromous Fisheries Commission Protocols for 2019.

Selected documents are included as appendices to this report.

4.1 Site visits

The surveillance audit was held remotely by zoom conference from October 26-29, 2020 with individuals in Petropavlovsk-Kamchatsky, St. Petersburg, Seattle, and Portland. Participants were in attendance are identified in Table 7. The surveillance team consisted of Ray Beamesderfer (team leader) accompanied by Dr. Dmitry Lajus, both of whom were members of the assessment team. A meeting with government scientific agency KamchatNIRO and with the leader of the region commercial fishery industry group.

Table 7. Surveillance meetings, 2020.

Имя / Name	Организация / Organization	Должность / Title
Aleks Ramanauskas	VA-Delta	General Director
Andrei Bokov	VA-Delta	Chief Technologist

Roman Onofryichuk	Kamber-Pymta	General Director
Larisa Graber	Kamber-Pymta	
Natalia Novikova	ForSea Solutions	Founder and Director
Randy Ericksen	ForSea Solutions & RP Ericksen Consulting	Fisheries Advisor
Dmitry Lajus	MRAG, St. Petersburg State University	Independent Consultant and MSC Assessment Team
Ray Beamesderfer	MRAG, Fish Science Solutions	Sr. Fish Scientist and MSC Assessment Team
Alexander Bugaev	KamchatNIRO	Deputy Director of Research
Vladimir Galitsyn	Kamchatka Association of Salmon Fishermen	Head

4.2 Stakeholder participation

Thirty days prior to the surveillance audit, all stakeholders from the full assessment and previous surveillance audits were informed of the meeting and the opportunity to provide information to the auditors in advance of, or during, the meeting. The notification of the surveillance audit was also published on the MSC website on 24 September 2020.

4.3 Stakeholder input

No stakeholder input was received.

4.4 Surveillance Program

Based on the guidelines as set out in CR v2.0, the team has set Surveillance at Level 6 (Table 8). Initially the Year 4 annual surveillance audit was to be normal and on site. However, the surveillance was changed to remote for 2020. The MSC September 2020 Covid-19 Pandemic Derogation allowed CABs to conduct assessment site visits as off-site when national or local travel restrictions that impact the assessment team or certificate holder are in effect. At the time of the surveillance audit, the Government of Russia Federation banned the entry of foreign nationals.

Table 8. Fishery surveillance program.

Surveillance Level	Year 1	Year 2	Year 3	Year 4 (2020)
Level 6	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	Remote surveillance audit & reassessment^a

^a as per MSC guidance under circumstances of the pandemic.

Appendix – Report by KamchatNIRO regarding Conditions



ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО РЫБОЛОВСТВУ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ НАУЧНОЕ УЧРЕЖДЕНИЕ
«ВСЕРОССИЙСКИЙ НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ИНСТИТУТ
РЫБНОГО ХОЗЯЙСТВА И ОКЕАНОГРАФИИ»
Камчатский филиал ФГБНУ «ВНИРО» («КамчатНИРО»)

Head of Kamchatka branch
Federal State Budgetary Institution
"VNIRO"

_____ N.Yu. Shpigalskaya

" _____ " _____ 2020

REPORT (Contract No. 58- ПДД / 20- NIR dated 17.02.2020)

Subject: "Pacific salmon stock and fishery management analysis of West Kamchatka fisheries in Ozernaya river (sockeye salmon, chum salmon, pink salmon), Koshegochek river (chum, pink salmon), Golygina river (chum, pink salmon), Vorovskaya river (chum, pink salmon), Pymta river (chum, pink salmon) and Kol river (chum, pink salmon, coho salmon) for Vityaz-Avto LLC salmon fishery certification to MSC standards)

Project leader:
Deputy Director of Research,
Doctor of Science (Biology)

A.V. Bugaev

Petropavlovsk-Kamchatskiy, 2020

Prepared by:

Project leader:	A.V. Bugaev
Deputy Director of Research, Doctor of Science (Biology)	General guidance and edition
Head the laboratory	O.V. Zikunova Chapters 1 , 7
Head of the sector	N.B. Artyukhina Chapters: 4 , 5
Senior Researcher, Ph.D.	M . R . Feldman Chapters: 4, 6
Senior Researcher	S.V. Shubkin Chapters: 2 , 3, 8

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INTRODUCTION

In relation to the certification of Vityaz-Avto salmon fishery to the standards of the Marine Stewardship Council (MSC), the required information on Pacific salmon stock and fishery management of West Kamchatka fisheries in Ozernaya, Koshegochek, Golygina, Vorovskaya, Pymta and Kol was prepared. In addition, the report also provides information on fish conservation measures and reported cases of IUU fishing in the area where Vityaz-Avto fishery is located.

MSC Manual for issuing bodies states that the certification unit is “Fisheries or fish stocks (biologically distinctive unit) in combination with their fishing method (fishing tools, industry practice and management infrastructure)”.

Therefore, within the framework of MSC assessment, Vityaz-Avto Co., LTD fishery is defined as follows: 1) Target fish species: pink salmon *Oncorhynchus gorbuscha*, chum salmon *Oncorhynchus keta*, sockeye salmon *Oncorhynchus nerka* and coho salmon *Oncorhynchus kisutch*; 2) The geographical area (fishing area): the south-western coast of Kamchatka (rivers Ozernaya, Koshegochek, Golygina, Vorovskaya, Pymta, Kol), the Sea of Okhotsk, as well as the administrative zone - Kamchatka-Kuril subzone - 61.05.4 and West Kamchatka subzone - 61.05.2 (Ust-Bolsheretsky and Sobolevsky districts of Kamchatka Krai; 3) Fish stocks (fishing units): populations (local herds) of four species of Pacific salmon (pink salmon, chum salmon, sockeye salmon, and coho salmon) reproduced in the basins of above mentioned rivers.

Research goal — Pacific salmon stock and fishery management analysis in rivers Ozernaya (sockeye salmon, chum, pink salmon), Koshegochek (chum, pink), Golygina (chum, pink), Vorovskaya (chum, pink), Pymta (chum, pink), and Kol (chum, pink, coho) in 2019.

Tasks:

- 1) Description of any changes in fishery management system, in fishing areas and fishing plots, science and fishing industry management systems in 2019
- 2) Pacific salmon target escapement goals to evaluate efficiency of fishery management in the region
- 3) Provide data on escapement of Pacific salmon for MSC certified rivers in 2019
- 4) Update Appendix A (Table ‘Sockeye salmon spawning in Ozernaya river in 2019’)
- 5) Annual report on fishery management actions taken by Anadromous Fish Commission in 2019

6) Report on monitoring improvement measures in 2019 for sockeye salmon (excluding sockeye salmon harvest in Ozernaya river) and coho salmon, caught by Vityaz-Avto. Sockeye and coho salmon escapement data in the certified rivers

7) Law enforcement measures by SVTU and fishing companies to combat illegal fishing, including the scope of work and any violations in 2019

8) Aerovisual survey data on coho salmon and sockeye salmon escapement conducted in 2019, comparative analysis with the data of aerovisual surveys in 2016–2018

Chapter 1. Description of any changes in fishery management system, in fishing areas and fishing plots, science and fishing industry management systems in 2019

In 2019 the most significant changes in the legislation (the current Russian fishing rules) that determine fishery terms in Kamchatka, were as follows:

1. Order of the Ministry of Agriculture of the Russian Federation from 25/7/2019 № 442 "On the conclusion of contracts on use of fishing plots in accordance with Articles 61, 63 - 65 of the Federal Law of 20 December 2004 of № 166-ФЗ " On fishery and preservation of aquatic biological resources " the term "fish catching plot (RPU)" was replaced by "fishing plot (RLU)";
2. Restrictions on the use of gillnets in the catch of Pacific salmon in Kamchatka, which were included in the current Fishing Rules for the Far Eastern Fisheries Basin (Order No. 267 of 05/23/2019) (hereinafter referred to as the Fishing Rules) by the Order of the Russian Ministry of Agriculture dated 06/04/2018 № 228, are currently valid.

At the same time, new Fishing Rules were adopted in 2019, which introduced a number of changes to the existing Fishing Rules, regulated by order of the Ministry of Agriculture of the Russian Federation No. 385 of 10.21.2013. Table 1.1 shows these changes, in terms of the fishing of Pacific salmon within the Kamchatka Territory.

As the new Fishing Rules were tested, many fishery owners and the citizens using the fish resources of the Russian Federation had a number of suggestions and comments on the revision of this document. Table 1.2 summarizes the current proposals for updating the new Fishing Rules approved at the KamchatNIRO Scientific Council in 2019–2020. In this case, a set of measures is considered to further improve legislation in the field of use and protection of salmon resources, both within the Kamchatka Territory and the Russian Far East as a whole.

In the field of scientific management of salmon fishing in Kamchatka, there were no significant changes in 2019. Federal control in this direction continues to be carried out by the Kamchatka branch of the Federal State Budget Scientific Institution VNIRO (KamchatNIRO).

Table 1.1 - Changes in the terms of the Pacific salmon catch that were added in the Fishing Rules for the Far East fishery basin within the boundaries of the Kamchatka Territory in 2019 (included in the existing rules approved by Order of the Ministry of Agriculture of the Russian Federation № 267 from 05.23.2013)

Paragraph, subparagraph, "Fishing Rules"	Edited version of the current Rules	Revision of the Rules, by order of the Ministry of Agriculture of the Russian Federation №385 from 10.21.2013	Changes
II. Fishing regulations for the industrial and (or) coastal fisheries in the inland sea waters of the Russian Federation, in the territorial sea of the Russian Federation, on the continental shelf of the Russian Federation and in the exclusive economic zone of the Russian Federation, as well as industrial fishing inland waters Russian Federation, excluding domestic sea waters of the Russian Federation (hereinafter referred to as inland water bodies)			
A.13.7	to record the harvest and catch of pink salmon, chum salmon, sockeye salmon, chinook salmon, coho salmon, and masou (hereinafter - Pacific salmon) using any of the following methods: a) direct weighing of catches on a special equipment for weighing catches of aquatic biological resources;	9.7 to record the catch and delivery of Pacific salmon by any of the following methods: direct weighing of the catch;	Types of salmon were clarified, and the requirement for the instruments/facilities for weighing catches of aquatic biological resources were specified.
P.22 p.p. 22.16	22. When carrying out industrial and (or) coastal fishing, it is prohibited: 22.16. to harvest (catch) Pacific salmon on rivers located in the Kamchatka Territory (with the exception of the rivers of Bering Island from the group of the Komandorski Islands and the Ozernaya River, which flows into the Sea of Okhotsk, as well as in cases where fishing plots located on one water body, only one user has the right to harvest (catch) Pacific salmon at a distance of less than 1 km: a) between fishing plots; b) between fishing plots and estuaries;	31. When fishing is prohibited: 31.15. to harvest (catch) Pacific salmon at a distance of less than 1 km (with the exception of the fishing areas where they are caught according to the principle "one user per one water body", the rivers of Bering Island from the Commander group Islands and the Ozernaya River, which flows into the Sea of Okhotsk): between the fish catching plots ; between fish catching and estuaries;	"Fish catching plot" was replaced by "fishing plot"
P. 32 p.p. 32.3	32. When catching aquatic biological resources, it is prohibited to:	41. It is prohibited: b) to use:	An exception is established for beach seines in the sea fishing plots

	32.3. use active fishing (catch) tools at a distance of less than one nautical mile from fixed seines, with the exception of: beach seines in the internal sea waters of the Russian Federation and the territorial sea of the Russian Federation adjacent to the Kamchatka Territory and the Magadan Region;	active fishing (catch) tools at a distance of less than one nautical mile from fixed seines and line-meshing fishing gear (except for beach seines);	
Pp. 32.24	32.24. to harvest (catch) Pacific salmon by fixed nets in the fishing plots in the territorial sea of the Russian Federation adjacent to the territory of Kamchatka Krai and inland sea waters of the Russian Federation in the Petropavlovsk-Komandorsky subzone (except for the water area of Avacha Bay and Kronotsky Bay), in the Karaginsky subzone, the West Bering Sea zone, the Kamchatka-Kuril subzone;	18.22. to catch Pacific salmon with fixed nets in fishing areas located in the territorial sea of the Russian Federation and inland sea waters of the Russian Federation in the Petropavlovsk-Komandorsky subzone (except for the water area of Avacha Bay and Kronotsky Bay), in Karaginsky subzone, West Bering Sea zone, the Kamchatka-Kuril subzone (within the borders of the Kamchatka Territory), the West Kamchatka subzone (within the borders of the Kamchatka Territory, south of 54 ° N);	Technical revision
III. Fishing rules for recreational fishing of aquatic biological resources			
P. 48, paragraph 3	48. Citizens are prohibited from using nets in recreational fishing of aquatic biological resources in fish-farming sites,	57. Citizens are prohibited from catching aquaculture resources within the boundaries of fish-farming sites without the consent of fish-farming units	It is forbidden to use nets by citizens to catch fish in fish-farming sites
P. 52.1 c)	52.1. recreational fishing: c) with the use of explosive, chemical , toxic and narcotic drugs (substances), weapons	61.1.3. with the use of explosive, toxic and narcotic drugs (substances), guns	Chemicals are added

P. 52.5 b), c)	52.5. use: b) nets , without identifying their position with the help of identification buoys or signs, with the following information: the name of the user, the permit number for aquatic biological resources catch c) tied nets ;	61.7. use: nets , without indicating their position using identification buoys or signs with the following information: the name of the user, the permit number for aquatic biological resources catch (as amended by Order of the Ministry of Agriculture of Russia dated 10.10.2015 No. 510) tied nets ;	Net tools are specified
64.2 d)	64.2. permits: e) in water bodies located in the Kamchatka Territory, as well as in the internal sea waters of the Russian Federation and the territorial sea of the Russian Federation adjacent to their territories: the catch of chinook salmon and coho salmon with the permit to catch aquatic biological resources with the help of fishing gear is allowed using not more than one fishing gear per one user ;	This paragraph is missing.	New paragraph is added.
VII. Fishing rules to ensure a traditional lifestyle and the implementation of traditional economic activities of indigenous peoples of the North, Siberia and the Far East of the Russian Federation			
Sec. 88.2 b)	88.2. in case of catch without the use of vessels which are not subject to state registration, as well as small vessels, they must: a) put records in the fishing logbook; b) submit to the appropriate territorial authority of the Federal Agency for Fisheries information on the catch of aquatic biological resources: in the case of catch without permission to harvest (catch) aquatic biological resources : annually, no later than January 20 of the year following the reporting year;	b) submit to the territorial bodies of the Federal Agency for Fisheries information on the catch of aquatic biological resources: - in the case of catch without providing a fishing plot : - annually, no later than January 20 of the year following the reporting year.	Change in reporting requirements.

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P.91 c) new	91. In traditional fishing, the use of all fishing gears is prohibited, with the exception of: f) line fishing gears ;	91. In traditional fishing, the use of all fishing gears is prohibited, with the exception of: Beach seines; nets overlapping no more than 2/3 of the width of the river bed, and the deepest part of the bed should remain free.	Line-fishing gears are added.
P.93	93. When performing traditional fishing with the provision of fishing plots (except for fishing on the Amur River), one net is allowed per one user - a member of the community of indigenous peoples of the North, Siberia and the Far East of the Russian Federation or an individual belonging to indigenous peoples of the North, Siberia and the Far East of the Russian Federation , with a length of not more than 120 m and a height	for traditional fishing with the provision of a fishing plot (except for fishing on the Amur River) - one net is allowed no longer than 120 meters and a height	The number of fishing gears for traditional fishing has been clarified.
IX. Responsibility for Fishing Rules violation			
	absent.	93. Users who harvest (catch) aquatic biological resources who are guilty of violating the Fishing Rules are held liable in accordance with the legislation of the Russian Federation.	Item excluded.

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Table 1.2 – Suggestions by Kamchatka Branch FGBNU "VNIRO" for making additional amendments in new fishing regulations for Far East fishery basin (approved by order of the Ministry of Agriculture from May 23, 2019 № 267)

Paragraph, subparagraph, paragraph of the rules fisheries	Current edition	Proposed Edition	Justification for amendments	Decision
Section II. Fishing Rules in the implementation of industrial and (or) coastal fishing of aquatic biological resources				
Item 13.6	<p>13. When carrying out industrial and (or) coastal fishing, users, with the exception of citizens, must:</p> <p>.....</p> <p>13.6. indicate:</p> <p>a) in places of catch of aquatic biological resources:</p> <p>records of fishing gears and fishing places (district, subarea, fishing zone, fishing subzone, coordinates, fishing plot) in the fishing logbook and other reporting documents;</p> <p>separate record of the catch per species and indicate weight (size) ratio of species in the fishing logbook and other reporting documents (with the</p>	<p>13. When carrying out industrial and (or) coastal fishing, users, with the exception of citizens, must:</p> <p>.....</p> <p>13.6. indicate:</p> <p>a) in places of catch of aquatic biological resources:</p> <p>records of fishing gears and fishing places (district, subarea, fishing zone, fishing subzone, coordinates, fishing plot) in the fishing logbook and other reporting documents;</p> <p>separate record of the catch per species and indicate weight (size) ratio of species in the fishing logbook and other reporting documents (with the exception of fishing, including catches at the places of delivery and unloading);</p>	<p>In accordance with the recommendations of the Far Eastern Fishery Scientific Council held on February 21, 2020, it is proposed to amend the Fishing Rules in this paragraph proposed earlier by KamchatNIRO (decision No. 28 of KamchatNIRO dated 12.12.2019).</p> <p>Justification by KamchatNIRO:</p> <p>Based on a literal interpretation of the provisions of the Fishing Rules for the Far Eastern Fisheries Basin, approved by Order of the Ministry of Agriculture of Russia dated 05.23.2019 No. 267 (hereinafter referred to as the Fishing Rules), the catches of Pacific salmon should be assorted by species and recorded (with the records in the fishing logbook) in the places of their harvest (in the fishing plot).</p> <p>At the same time, the Fishing Rules require separate record of catches of Pacific salmon in one of the following ways: by direct weighing of the catch; volumetric weight method; unit-by-unit calculation followed by the calculation of average</p>	<p>Extract from the minutes of the meeting of the CA "KamchatNIR O" dated 12.12.2019, No. 29 - to approve</p>

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<p>exception of fishing, including catches at the places of delivery and unloading);</p> <p>b) at the places of delivery and unloading specified in clause 10 of the Fishing Rules, after the completion of each voyage, including catches at the places of delivery and unloading:</p> <p>separate record of the catch per species and indicate weight (size) ratio of species, total harvested (caught) for the entire period of the voyage, in the fishing logbook and other reporting documents;</p>	<p>when harvesting (catching) anadromous fish species in fishing areas, it is allowed:</p> <p>total record of the catch without specifying the weight (size) ratio of species in the logbook and other reporting documents;</p> <p>subsequent corrections of the total catch weight calculated during unloading, with amendments in the logbook and other reporting documents no later than 12 hours 00 minutes following the days in which anadromous fish were caught;</p> <p>indication of the weight (size) ratio of species in the catch (without changing the total weight of the catch calculated at the places of unloading in the logbook and other reporting documents no later than 12 hours 00 minutes after the days in which anadromous fish were caught.</p> <p>b) at the places of delivery and unloading specified in clause 10 of the Fishing Rules, after the completion of each voyage, including catches at the places of delivery and unloading:</p> <p>separate record of the catch per species, an indication of the weight (size) ratio of species, total harvested (caught) for the entire period of the voyage, in the fishing logbook and other reporting documents;</p>	<p>weight of the fish. If the calculation of total catch weight (without taking into account the factor of the loss of an enormous amount of time) is not particularly difficult, but to determine the species composition in a multi-species fishery requires a complete sorting of the catch.</p> <p>At the same time, such sorting is impossible without the use of special technological schemes, the use of a large number of personnel and the use of manual labor, requires the presence of a specially equipped area on the fishing site, the availability of tanks (stationary or mobile bins), equipment specially allocated for these purposes, etc. This is not to mention the problem with transportation of catches from sea fishing plot, which is actually impossible from the point of view of the current version of the Fishing Rules, when the exact weight and catch composition is also impossible to determine.</p> <p>During the main run of anadromous fish, when catches are estimated in hundreds and thousands of tons per day, preliminary sorting of the catch in order to determine its species composition and weighing will lead at least to a significant underperformance of the allocated volumes, a loss in the quality of raw fish, and an increase in catch costs.</p> <p>Moreover, the feasibility of preliminary determination of the exact weight and species composition of catches of anadromous species at catching places is highly controversial for the following reasons:</p> <p>1) the existing procedure for organizing and conducting salmon fishing season and distribution of volumes is an "Olympic system" in which the concealment of catches (or the creation of "air" volumes of catch and products) is not economically justified;</p>
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		<p>2) the "Mercury" system, in which all operations (transactions) related to catching, transportation, processing, storage, transshipment, transfer of ownership, etc., are mandatory to record, it allows to track fishing activity online. It creates an insurmountable barrier for any kind of fraud with catches of anadromous species and products made from them;</p> <p>3) the loss of raw material quality, fishery underperformance and increased costs of processing and production are inevitable.</p> <p>The list of main issues that need to be addressed in the proposed amendments to the Fishing Rules:</p> <p>1) In case of fishing anadromous species in the fishing plots, allow to indicate in the logbook and other reporting documents the total catch weight without specifying the weight (size) ratio of species in the catch, with the possibility of subsequent adjustment of the total weight of the catch calculated during unloading, with further changes in the logbook and other reporting documents no later than 12 hours 00 minutes of the day following the days in which anadromous species were caught. In this case, a deviation from the previously declared total weight of the catch of anadromous fish species within 10 percent in one direction or another is allowed. An error of 10% is established by clause 14.3 of the fishing rules for the Northern Fisheries Basin.</p> <p>2) Allow to indicate the weight (size) ratio of species in the catch (without changing the total catch weight calculated at the places of unloading) in the logbook and other reporting documents no later than 12 hours 00 minutes following the days in which the catch was carried out.</p>	
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Paragraph 22.4, subparagraph "d" (new)	<p>22. When carrying out industrial and (or) coastal fishing, it is prohibited:</p> <p>22.4. keep records and provide information on the catch of aquatic biological resources with a distorted actual size of the catch, its species composition, used catching gears, terms, fishing methods, as well as without specifying the area of catch or indicating the wrong name of the area of catch, while it is allowed:</p> <p>Is absent</p>	<p>22. When carrying out industrial and (or) coastal fishing, it is prohibited:</p> <p>22.4. keep records and provide information on the catch of aquatic biological resources with a distorted actual size of the catch, its species composition, used catching gears, terms, fishing methods, as well as without specifying the area of catch or indicating the wrong name of the area of catch, while it is allowed:</p> <p>d) deviation from the previously declared total weight of the catch of anadromous fish species within 10 percent in one direction or another.</p>	<p>In accordance with the recommendations of the Far Eastern Fishery Council, held on February 21, 2020, it is proposed to amend the Fishing Rules in this paragraph, previously proposed by KamchatNIRO (decision of the KamchatNIRO DC dated 12.12.2019 No. 29).</p> <p>See the rationale for clause 13.6</p>	<p>Extract from the minutes of the meeting of the CA "KamchatNIRO" dated 12.12.2019, No. 29 - approve</p>
Paragraph 22.16	<p>22. When carrying out industrial and (or) coastal fishing, it is prohibited:</p> <p>22.16. to harvest (catch) Pacific salmon on rivers located in the Kamchatka Territory (with the exception of the rivers of Bering Island from the group of the Komandorski Islands and the Ozernaya River, which flows into the Sea of Okhotsk, as well as in cases where fishing plots located on one water body, only one user has the right to harvest (catch) Pacific salmon at a distance of less than 1 km:</p> <p>a) between fishing plots;</p>	<p>22. When carrying out industrial and (or) coastal fishing, it is prohibited:</p> <p>22.16. to harvest (catch) Pacific salmon on rivers located in the Kamchatka Territory (with the exception of the rivers of Bering Island from the group of the Komandorski Islands and the Ozernaya River, which flows into the Sea of Okhotsk, as well as in cases where fishing plots located on one water body, only one user has the right to harvest (catch) Pacific salmon at a distance of less than 1 km:</p> <p>a) between places of setting fishing gears</p> <p>b) between the places of setting fishing gears and river mouths;</p>	<p>The current version of the Fishing Rules for the Far Eastern Fisheries Basin bans the harvest (catch) of Pacific salmon in the cases provided for in clause 22.16 of the Fishing Rules, according to which it is prohibited to harvest (catch) Pacific salmon in rivers located in the Kamchatka Territory salmon at a distance of less than 1 kilometer between fishing plots. At the same time, the earlier revision of the Fishing Rules prohibited fishing at a distance of less than 1 kilometer between fish catching plots. Fishing catching plot was a place on the fishing site, where fishing was actually carried out (where fishing gears were set).</p> <p>With this regulation, a number of users lost this right. These are those users who were engaged in fishing in certain rivers of the peninsula, including the main fishing rivers, such as Kamchatka, Bolshaya and Vorovskaya, who obtained the right to use fishing plots in the manner established by law, the distance</p>	<p>Extract from the minutes of the meeting of the CA "KamchatNIRO" dated 12.12.2019, No. 29 - to approve</p>

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	b) between fishing plots and estuaries;		<p>between which is less than 1 kilometers (most often located on opposite banks of the river) and engaged legally in fishing in these areas over the past ten years.</p> <p>A classic example is the situation when two long industrial plots (a kilometer or more) and also an industrial plot + an amateur fishing plot, as well as an industrial plot + a traditional fishing plot are located closer than a kilometer apart, while fishing operations were implemented without the violation of Rules within the boundaries of such plots at a distance of more than a kilometer from the actual fishing plots (places for setting fishing gear).</p> <p>The aforementioned users of aquatic biological resources annually caught fish within the limits established by fisheries science, showing high efficiency in the use of fishing plots, providing jobs primarily to the local population and citizens coming from other regions of the Russian Federation, supplying the domestic market with fresh and high-quality products, providing social assistance to the population and substantial assistance and support to regulatory and law enforcement agencies in the fight against poaching relevant water bodies.</p> <p>In order to protect the rights of users to engage in industrial fishing in the fishing plots provided for use in the established legal manner, we propose amendments to paragraph 22.16 of the Rules to allow users in the Kamchatka Territory to continue fishing in the fishing plots, replacing the restrictions related to the distance between fishing plots to restrictions related to the distance between the places of setting the fishing gears.</p> <p>Currently, the term "places for setting up fishing (catch) tools" is used in Order No. 170 of the Ministry of Agriculture of the Russian Federation dated 08.13.2013 "On Approving the Procedures for the</p>	
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			Activities of the Commission on the Regulation of Anadromous Fish Species Catch".	
Item 32.24	<p>32. When catching aquatic biological resources, it is prohibited to:</p> <p>.....</p> <p>32.24. to harvest (catch) Pacific salmon by fixed nets in fishing plots in the territorial sea of the Russian Federation adjacent to the territory of Kamchatka Krai and inland sea waters of the Russian Federation in the Petropavlovsk-Komandorsky subzone (except for the water area of Avacha Bay and Kronotsky Bay), in the Karaginsky subzone, the West Bering Sea zone, the Kamchatka-Kuril subzone;</p>	<p>32. When catching aquatic biological resources, it is prohibited to:</p> <p>.....</p> <p>32.24. to harvest (catch) Pacific salmon by fixed nets in fishing plots in the territorial sea of the Russian Federation adjacent to the territory of Kamchatka Krai and inland sea waters of the Russian Federation in the Petropavlovsk-Komandorsky subzone (except for the water area of Avacha Bay and Kronotsky Bay), in the Karaginsky subzone, the West Bering Sea zone, the Kamchatka-Kuril subzone;</p> <p>b) in the territorial sea of the Russian Federation adjacent to the territory of the Sakhalin Region and the internal sea waters of the Russian Federation in the Kamchatka-Kuril subzone and the North Kuril zone;</p>	<p>Clause 32.24 of the Fishing Rules in almost all fishing areas adjacent to the Kamchatka Peninsula, including in the Kamchatka-Kuril Subzone, prohibits the use of line-meshing gear when harvesting (catching) Pacific salmon.</p> <p>Also, in the Kamchatka Territory, strict measures are implemented to regulate catch in order to ensure the escapement of Pacific salmon spawners to spawning grounds, and their sustainable reproduction.</p> <p>Annually, according to the recommendations of fisheries science, the main fishing on the western coast of Kamchatka is allowed no earlier than the second half of July, the regime of passing days 2-3 days a week is introduced in all fishing plots, in some cases bans are established for industrial and other types of fishing.</p> <p>Mass spawning migrations of sockeye, chum, pink and pink salmon, which reproduce in the rivers of Western Kamchatka, happen through the coastal waters and straits of the Northern Kuril Islands.</p> <p>Since the mesh size of the nets is selected based on the biometric characteristics of the fish, other species with similar sizes are caught by the nets. Therefore, it becomes impossible to regulate the catch of Pacific salmon by selecting net parameters. Fish caught by the net will inevitably die.</p> <p>Thus, the use of line-meshing gear (fixed nets) set up at sea fishing plots in the Northern Kuril Islands leads to the situation when during the fishery all of the available salmon species are caught, including which are few in Western Kamchatka and need protection.</p> <p>In recent years, the possible catch of chinook salmon in Western Kamchatka has decreased 5.5 times - from 170 tons in 2008 to today's 30 tons. Despite the</p>	<p>Extract from the minutes of the meeting of the CA "KamchatNIRO" dated 12.12.2019, No. 29 - to approve</p>

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			<p>fact that the total allowed catch of chinook salmon in the Kamchatka Territory has been allocated only for amateur fishing for several years already, and the state fish hatchery is working on its artificial reproduction in the Bolshaya river basin, the number of chinook salmon is steadily declining.</p> <p>It is necessary to cease using fixed nets in the region of the Northern Kuril Islands, on the migration routes of Western Kamchatka chinook salmon to spawning sites.</p> <p>Also, the issue of fishing by gillnets in the coastal waters and narrow straits of the Northern Kuril Islands has still not been addressed yet. In the indicated fishing area, there were several cases when unmarked nets ("lost fixed nets") were found without owners, which indicate the widespread practice of fishing outside the fishing plots with prohibited fishing gear and suggests the systematic violation of the Fishing Rules.</p> <p>According to the information of the Border Directorate of the Federal Security Service of the Russian Federation for the eastern Arctic region, the recommendations on allowing officers of the Border Service of the FSB of Russia on fishing vessels in the Northern Kuril Islands, made during the meeting "On the preparations for the salmon catch season in 2019" by the Federation Council Committee on agricultural and food policy and nature management dated 05/22/2019 were left without results. The reason is that the users of aquatic biological resources refuse to take inspectors on their vessels.</p> <p>The current situation contradicts the protocol of the meeting with the Deputy Minister of Agriculture of the Russian Federation - Head of the Federal Fisheries Agency dated 01.29.2015 No. 44, which decided to replace driftnet fisheries with fixed seines (without anchoring to the shore) for 3 years and beach seines.</p>	
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Section III. Fishing rules for recreational fishing of aquatic biological resources				
Paragraph 48, paragraphs 4-12 (new)	<p>48. Citizens have the right to carry out recreational fishing in public water bodies freely and free of charge in accordance with the Fishing Rules.</p> <p>.....</p> <p>are absent</p>	<p>48. Citizens have the right to carry out recreational fishing in public water bodies freely and free of charge in accordance with the Fishing Rules.</p> <p>.....</p> <p>During recreational fishing with net fishing gear it is prohibited:</p> <p>To fish in water bodies, in water protection zone and coastal protective strips of water bodies with net fishing gear not registered in the territorial bodies of the Federal Fishery Agency and not having mandatory per-piece marking;</p> <p>To fish in water bodies, water protection zone and coastal protective strips of water bodies with net fishing gear during periods when their use is prohibited by fishing rules, as well as in places where their use is prohibited by fishing rules;</p> <p>To fish in water bodies, water protection zone and coastal protective strips of water bodies with net fishing gear, registered in the territorial bodies of the Federal Fishery Agency and having mandatory per-piece marking, outside fishing areas designated for recreational fishing, if their number exceeds the limit allowed for use by fishing rules;</p> <p>To fish in water bodies, water protection zone and coastal protective</p>	<p>In order to bring the Fishing Rules in line with the norms included in the Decree of the Government of the Russian Federation dated November 16, 2019 No. 1462 and dated November 21, 2019 No. 1482, taking into account the terms proposed by the Department for Control, Supervision and Fish Protection of the Russian Fisheries, it is proposed to amend paragraph 48 of Section III of the Fishing Rules (recreational fishing) on the introduction of provisions governing the use of net fishing (catch) tools.</p>	<p>Extract from the minutes of the meeting of the Presidency of KamchatNIRO No. 01 dated 30.01.2020 - approve</p>

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		<p>lanes of water bodies with gillnets that are registered in the territorial bodies of the Federal Fishery Agency and have mandatory per-piece marking outside areas designated for recreational fishing, without identification documents of the person who carried out the registration and labeling of these gill nets;</p> <p>To use gillnets without an identity document of the person who use them;</p> <p>To transfer gillnets by a person who has recorded and marked gill nets outside areas designated for the amateur fishing to other persons;</p> <p>To leave gill nets unsupervised;</p>		
P. 49, paragraph 2	49....Citizens engaged in recreational fishing at fishing plots provided (allocated) for these purposes must have a permit and an identity document with them. At the end of a fishing operation (catch) by a citizen engaged in recreational fishing at fishing plots provided (allocated) for these purposes, information on the catch of aquatic biological resources shall be entered in the permit.	49. ...Citizens engaged in recreational fishing at fishing plots provided (allocated) for these purposes must have a permit and an identity document with them. At the end of a fishing operation (catch) by a citizen engaged in recreational fishing at fishing plots provided (allocated) for these purposes, information on the catch of aquatic biological resources, the date of export (transportation) from the fishing plot shall be entered in the permit and shall be certified by the user of a fishing plot	This norm has been expanded to exclude the legalization of the export of Pacific salmon caught by poaching under the guise of recreational fishing, and will allow the prevention of uncontrolled fishing of Pacific salmon.	Extract from the minutes of the meeting of the CA "KamchatNIRO" No. 23 dated 08/22/2019 - approve

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P. 51, b)	<p>51. When organizing recreational fishing on the basis of a contract for the use of a fishing plot or an agreement on the provision (allocation) of a fishing plot, users (except citizens) must:</p> <p>a) issue permits to citizens within the limits of volumes or quotas allocated for the catch of aquatic biological resources;</p> <p>b) ensure separate record of the catch of aquatic biological resources by species, volume and areas (places) of catch of aquatic biological resources in the fishing logbook;</p>	<p>51. When organizing recreational fishing on the basis of a contract for the use of a fishing plot or an agreement on the provision (allocation) of a fishing plot, users (except citizens) must:</p> <p>a) issue permits to citizens within the limits of volumes or quotas allocated for the catch of aquatic biological resources;</p> <p>b) ensure separate record of the catch of aquatic biological resources by species, volume and areas (places) of catch of aquatic biological resources in the fishing logbook;</p> <p>and also certify the catch data in the issued permit in accordance with the terms, allowed quantities; this data is recorded in the permit and the fishing logbook, together with a daily catch summary;</p>	This norm has been expanded to streamline the organization and implementation of recreational fishing in fishing areas assigned to users. This allows to evaluate TAC harvest rate and control over the issuance of permits, both by the user of the fishing site, and by citizens engaged in recreational fishing.	Extract from the minutes of the meeting of the CA "KamchatNIRO" No. 23 dated 08/22/2019 - approve
P. 52.1 d)	<p>52. Users of fishing plots allocated for the recreational fishing, as well as citizens are not entitled to:</p> <p>52.1. recreational fishing:</p> <p>e) by the method of chasing, gaffing and stunning;</p>	<p>52. Users of fishing plots allocated for the recreational fishing, as well as citizens are not entitled to:</p> <p>52.1. recreational fishing:</p> <p>e) by the method of chasing, gaffing (including hooking) and stunning;</p>	It is proposed to expand subparagraph e) to include, as in the previous fishing rules, the clarification of one of the types of gaffing - a hooking method that has become actively used under the guise of amateur fishing for the catch of Pacific salmon, after this clarifying concept had been excluded from the new Fishing Rules. This method causes numerous damage to Pacific salmon that spawn, and its use is not at all connected with recreational fishing in order to satisfy personal needs, under the guise of which commercial fishing of Pacific salmon and roe production is carried out.	Extract from the minutes of the meeting of the KamchatNIRO CA dated August 22, 2019 No. 23 - approve
Paragraph 62, subpara	<p>62. In recreational fishing it is prohibited:</p> <p>.....</p> <p>is absent</p>	<p>62. In recreational fishing it is prohibited:</p> <p>.....</p>	In accordance with the requirements of Art. 65 of the Federal Law of December 20, 2004 No. 166-ФЗ "On Fisheries and the Conservation of Aquatic Biological Resources", agreements on the	Extract from the minutes of the meeting of the Presidency of

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graph "k" (new)		j) the use of fixed nets, floating nets and beach seines in inland water bodies of the Kamchatka Territory in fishing plots with a length of more than 1,500 meters, with the exception of fishing plots within the borders in accordance with Appendix No. 11.	<p>provision of a fishing plot for amateur and sport fishing are subject to renewal by January 1, 2020. They are to be changed to the agreement on the use of the fishing plots for the rest of the term of the previously concluded agreement on the provision of a fishing plot.</p> <p>The List of fishing plots in the Kamchatka Territory previously provided restrictions on fishing gear used in fishing plots.</p> <p>Out of 82 fixed fishing plots in inland water bodies, the use of nets and beach seines was allowed in 22 plots, it was forbidden in 60 plots (created at the request of tourism companies in the region, often of considerable length (there are sections over 100 km long in the region) and, as a rule, far from settlements). In turn, most of the "net" sites in the Kamchatka Territory are up to 1,500 m long, located near settlements and have important social significance, as they are intended for citizens to access the organized Pacific salmon fishing for personal consumption.</p> <p>Since the form of the concluded agreement on the use of the fishing plot does not contain obligations regarding the use of fishing gear in the fishing plots, from 2020 it will be possible to use all fishing gear permitted by the Fishing Rules (including fixed nets, floating nets and beach seines) at any fishing plot, intended for recreational fishing, including those previously intended exclusively for line-fishing. The implementation of amateur fishing by fixed and floating nets, as well as by beach seines in additional 60 sites of considerable length will significantly increase the fishing pressure on Pacific salmon stocks, will cause difficulties in conducting fish conservation measures, and, due to the remoteness of the sites from settlements, it will not carry a social burden providing the population with aquatic biological resources.</p>	KamchatNIRO dated 12.12.2019, No. 29 - to approve
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			<p>To correct the situation, it is proposed to prohibit the use of fixed and floating nets in the inland water bodies in the Kamchatka Territory, as well as beach seines in fishing plots with a length (length) of more than 1.5 km, with the exception of socially significant fishing plots No. 689 (Vorovskaya river, the channels of Lyubkin and Feshkin), 694 (Udova River), 838 (Kamchatka River), 849 (Kamchatka River), 1049 (Apuka River), where net fishing was permitted earlier by the agreement on the use of the fishing plot and the length of which is more than 1500 m. Description of the boundaries of fishing plots, where it is allowed to use gill nets, floating nets and beach seines are suggested to include in Appendix 11 to the Rules for fishing Far East fishery basin.</p>	
P. 64.2. n / a e) paragrap h 2	<p>64.2. with permits: e) in water bodies located on the territory of the Kamchatka Territory, as well as in the internal sea waters of the Russian Federation and the territorial sea of the Russian Federation adjacent to their territories: in the catch of chinook salmon and coho salmon with the help of line fishing gear - not more than one line fishing gear per one citizen;</p>	<p>64.2. with permits: e) in water bodies located on the territory of the Kamchatka Territory, as well as in the internal sea waters of the Russian Federation and the territorial sea of the Russian Federation adjacent to their territories: in the catch of chinook salmon and coho salmon with the help of line fishing gear - not more than one line fishing gear per one citizen; with one lure or wobbler or other artificial bait without flavorings and natural bait (bait) per one citizen;</p>	<p>This norm was expanded after the law enforcement practice of the current Fishing Rules, which entered into force in 2019, had been analyzed. It showed that under the guise of hook-and-line fishing of Pacific salmon species, the most valuable ones are caught: chinook salmon and coho salmon, for which the number of fishing gears is limited to one, an unlimited number of line fishing gears for all others. Thus, when a citizen conducts fishing (catching) simultaneously using several fishing (catch) tools, while claiming that he uses one fishing (catch) tool for chinook salmon or coho salmon, and others, for example, for masou, etc. ., it allows to evade responsibility in case of non-compliance with paragraph 64.2. d) (second paragraph).</p> <p>Also, in order to enhance the intensity of fishing, aromatic and natural baits are used, which give almost one hundred percent result when using a large number of line-fishing gear.</p>	<p>Extract from the minutes of the meeting KamchatNIRO dated 08/22/2019 No. 23.- approve</p>

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				Thus, these restrictions will allow avoiding commercial catch of chinook salmon and coho salmon under the guise of amateur fishing.							
P. 72	72. The daily catch rate of aquatic biological resources (unless the permanent or temporary prohibition of harvest (catch) is established for such aquatic biological resources in recreational fishing) for one citizen in recreational fishing within the borders of the Kamchatka Territory, as well as inland sea waters and territorial sea are indicated in table 6: Table 6	72. The daily catch rate of aquatic biological resources (unless the permanent or temporary prohibition of harvest (catch) is established for such aquatic biological resources in recreational fishing) for one citizen in recreational fishing within the borders of the Kamchatka Territory, as well as inland sea waters and territorial sea are indicated in table 6: Table 6	<table><tr><td>Types of aquatic biological resources</td><td>Daily catch rate (inland sea waters of the Russian Federation, territorial sea of the Russian Federation), units</td><td>Daily catch rate of (inland water bodies), units</td></tr><tr><td>Smelt in the Petropavlovsk-Komandorskiy and Karaginskiy Subzones</td><td>-</td><td>200</td></tr></table>	Types of aquatic biological resources	Daily catch rate (inland sea waters of the Russian Federation, territorial sea of the Russian Federation), units	Daily catch rate of (inland water bodies), units	Smelt in the Petropavlovsk-Komandorskiy and Karaginskiy Subzones	-	200	<p>In accordance with the recommendations of the Far Eastern Far East Scientific and Industrial Council held on February 21, 2020, it is proposed to revise the daily catch rate of Pacific salmon proposed earlier by KamchatNIRO (decision of the KamchatNIRO CA dated August 22, 2019 No. 23).</p> <p>It is proposed to establish this norm in order to ensure control and supervision of recreational fishing of Pacific salmon and smelt. In order to avoid situations when a citizen harvests (catches) simultaneously on several permits using several fishing (catch) tools, which allows, under the guise of amateur fishing, to harvest (catch) Pacific salmon and smelt at the industrial fishing level, it is proposed to establish a daily catch rate of Pacific salmon when implementing recreational fishing per one citizen in the national inland water bodies within the boundaries Kamchatsky Kray and in its inner sea waters and territorial sea, as well as smelt in Karaginskaya subzone.</p> <p>Based on the real status of the regional Pacific salmon stocks, as well as the available data on the recommended annual per capita consumption of fish products, we propose to determine the following daily catch rates of Pacific salmon in the sea and inland waters of the Kamchatka Territory: pink salmon - 20 fishes, chum salmon - 5 fishes, sockeye salmon - 5 fishes, coho salmon - 3 fishes, chinook salmon - 1 fish, masou - 3 fishes. Given this quantitative distribution of salmon species, their total maximum daily catch may be 37 fishes. This level of amateur catch will provide the population with fish products for the winter and fall period.</p>	Extract from the minutes of the meeting of the CA "KamchatNIRO" dated 12.12.2019, No. 29 - to approve
Types of aquatic biological resources	Daily catch rate (inland sea waters of the Russian Federation, territorial sea of the Russian Federation), units	Daily catch rate of (inland water bodies), units									
Smelt in the Petropavlovsk-Komandorskiy and Karaginskiy Subzones	-	200									

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	Smelt in the Petropavlovsk-Komandorskiy Sub zone	-	200	<table><tr><td>Chinook salmon</td><td>1</td><td>1</td></tr><tr><td>Red salmon</td><td>5</td><td>5</td></tr><tr><td>Chum</td><td>5</td><td>5</td></tr><tr><td>Coho salmon</td><td>3</td><td>3</td></tr><tr><td>Sima</td><td>3</td><td>3</td></tr><tr><td>Pink salmon</td><td>20</td><td>20</td></tr></table>	Chinook salmon	1	1	Red salmon	5	5	Chum	5	5	Coho salmon	3	3	Sima	3	3	Pink salmon	20	20	In the near future, the anthropogenic impact on the stock of Asian smelt in the Karaginsky subzone will only increase, as the number of this species in water bodies of the Petropavlovsk-Komandorsky subzone decreases. Therefore, we propose to introduce daily catch rates for this species within the Karaginsky subzone at the level of 200 fishes for 1 person. This norm is fully consistent with a similar restriction for the Petropavlovsk-Komandorskiy subzone.	
	Chinook salmon	1	1																					
	Red salmon	5	5																					
	Chum	5	5																					
	Coho salmon	3	3																					
	Sima	3	3																					
	Pink salmon	20	20																					
A	Is absent		<p>Appendix No. 11 to the Fishing Rules for the Far Eastern fishery basin</p> <p>FISHING PLOTS IN DOMESTIC WATER BASINS IN KAMCHATKA KRAI, IN THE BOUNDARIES OF WHICH FIXED NETS, FLOATING NETS AND BEACH SEINES ARE PERMITTED</p> <p>Sobolevsky municipal district:</p> <p>1. The Vorovskaya river, the channels of Lyubkin and Feshkin. The boundaries of the plot: the lower border is the confluence of the Lubkin and Feshkin channels with the main channel of the Vorovskaya river, the upper border - along the Lubkin channel - 2500 m,</p>	See the rationale for subparagraph "k" of paragraph 62.	Extract from the minutes of the meeting of the CA "KamchatNIRO" dated 12.12.2019, No. 29 - to approve																			

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		<p>along the Feshkin channel - 3000 m, both banks The length of the plot - 5500 meters;</p> <p>2. The river Udova. The boundaries of the plot: the lower boundary is the mouth of the Udova River, the upper boundary is 500 m downstream from the stationary bridge to the Ustievoe settlement, both banks. The length of the plot is 3500 meters.</p> <p>Ust-Kamchatsky municipal district:</p> <p>1. The Kamchatka River. The boundaries of the plot: the lower boundary is the mouth of the Lugovitsa canal, the upper boundary is 6000 m upstream from the mouth of the Lugovitsa channel, both banks. The length of the plot is 6000 meters;</p> <p>2. The Kamchatka River, the fishing plot "Ulovo Kolkhoznoe". The boundaries of the plot: the lower boundary is the western end of the village of Kozyrevsk, the upper boundary is 2000 m upstream from the western end of the village of Kozyrevsk, both banks. The length of the plot is 2000 meters;</p> <p>Olyutorsky municipal district:</p> <p>Apuka River. The boundaries of the site: the lower boundary is 6000 m upstream from the mouth of the</p>		
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		<p>Apuka River, the upper boundary is 8000 m upstream from the mouth of the Apuka River, both banks. The length of the plot is 2000 meters.</p>		
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Chapter 2. Pacific salmon target escapement goals to evaluate the efficiency of fishery management in the region

The target reference points for optimal escapement level of Pacific salmon in the Kamchatka Territory are determined by mathematical modeling of the regularities found in stable returns of spawners provided there is a sustainable fishing (Feldman et al., 2018, 2019). The time period of observations is long enough to calculate the variability of fluctuations in the salmon stock under the increased fishing pressure - 1990–2016 .

Within the Kamchatka Territory, the number of escaped salmon spawners to spawn in the majority of water bodies is counted mainly using aerovisual surveys on helicopters. The high cost of helicopters determines the selective nature of aerovisual surveys. In this regard, experts from KamchatNIRO have developed a method of aerovisual surveys for target water reservoirs, whose spawning stock is key factor in the formation of regional stocks of Pacific salmon herds (Shevlyakov Maslow, 2011). Accordingly, many water bodies fall out from observations. Therefore, salmon stocks are mainly estimated as general (aggregated) for a separate administrative fisheries subzone or for a specific coast of the peninsula.

In this report a similar stock assessment method is used for pink salmon, chum salmon and coho salmon, as well as sockeye salmon of minor herds on the southwestern coast of Kamchatka. In this case, we are talking about the complex of the rivers Koshegochek, Golygina, Vorovskaya, Pymta and Kol. The exception is the stock of sockeye salmon in the r. Ozernaya (lake Kurilskoe, wherein the escapement level is evaluated using fish counting gear (RUZ) and sonar system « BioSonics »). RUZ is located at the source of the river Ozernaya in close proximity to the KamchatNIRO stationary observation post. Hydroacoustic sonar is installed annually in the middle courses of the river Ozernaya. Both methods complement each other in order to maximize the accuracy in counting spawners escaped to the Kuril Lake.

Thus, for the indicated water bodies (except for Ozernaya River), the escapement target goals are determined based on the ratio between their average long-term escapements and the total escapement level for the aggregated stock in the western coast of Kamchatka. In accordance with the precautionary approach paradigm and Pacific salmon reproduction characteristics, reference points for stock management are divided into three classes: S_{buf} — buffer, S_{msy} — escapement at the maximum sustainable catch, S_{max} — precautionary assessment of S_{msy} . The target escapement range should preferably be between S_{buf} and S_{max} and in the long-term average, correspond to S_{msy} .

Pink salmon

The escapement reference points for pink salmon in the studied rivers of Western Kamchatka are presented in Table 2.1. Dynamics of the aggregated number of spawners in 2005–2019, relative to specific target reference points shown in Figure 2.1. Similar graphs for each studied water body are presented in Figure 2.2.

Table 2.1 – Reference points for pink salmon fishery management in the studied rivers of Western Kamchatka, thousand spawners

Water	Buffer (S_{buf})	Target (S_{msy})	Maximum (S_{max})
<i>The total in West Kamchatka</i>	9000	17000	31000
R. Vorovskaya	803	1573	2894
R. Kol	611	1198	2204
R. Pymta	696	1363	2507
Cluster rivers Opala- Golygina	1111	2177	4005
R. Koshegochek	187	366	673
R. Oznaya	210	411	756

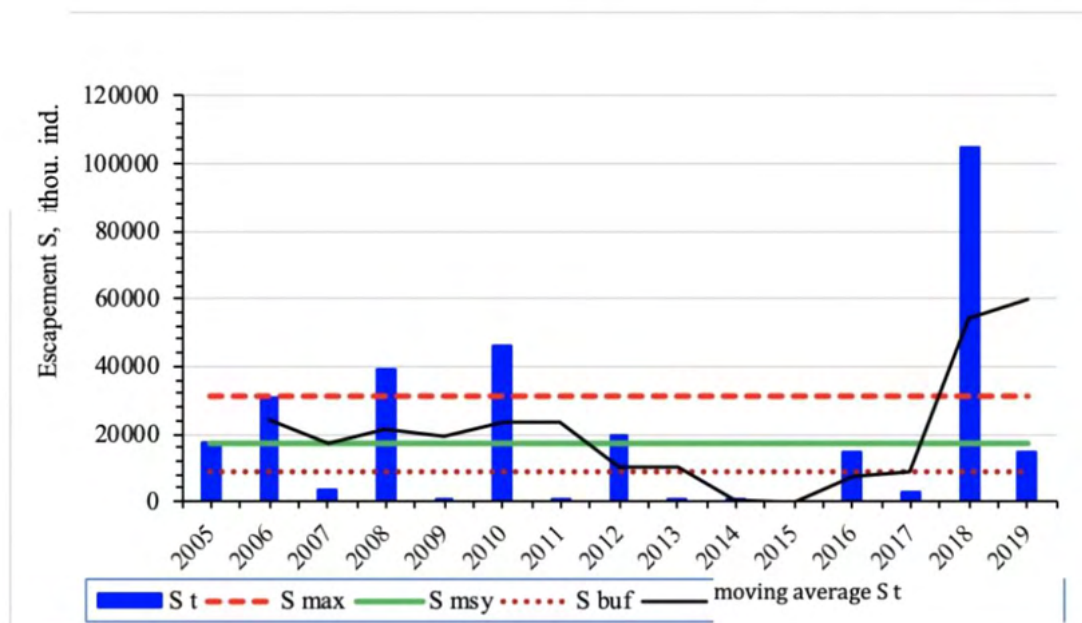


Figure 2.1 - Dynamics of aggregated escapements of pink salmon in the spawning grounds of the Western Kamchatka against target reference points over the past 15 years

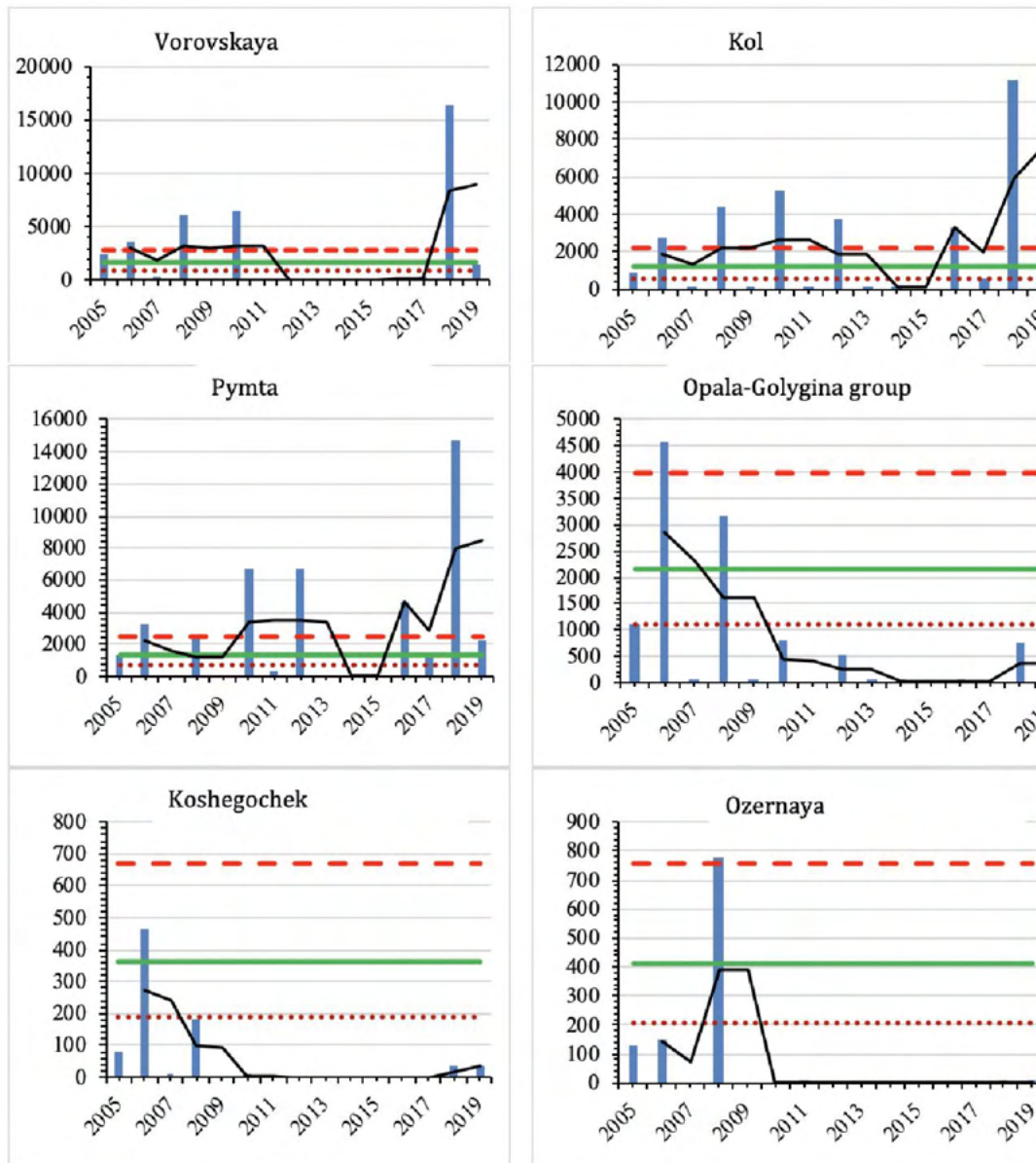


Figure 2.2 - Dynamics of pink salmon escapements in the spawning grounds of studied rivers of the Western Kamchatka against target reference points over the past 15 years, thousands of spawners

We should note that the West Kamchatka region is characterized by a numerical predominance of the even-year reproduction lines. Until the 2010s based on economic feasibility, aerovisual counting surveys were carried out mainly in even years, and in odd years they were carried out only to count chum or sockeye salmon.

A sufficient amount of counting for the odd reproduction line was carried out only in the last two cycles of 2017 and 2019. At the same time, this line in the period 2007–2017 was in the depressed state, and only in the last reproduction cycle it reached the target escapement level. It should be noted that pink salmon escapement is not

sufficiently estimated both in odd and even years in the rivers south of the river Bolshaya (Opala and Golygina rivers), and even farther south (Koshegochek and Ozernaya rivers) the counts were often not carried out at all .

Chum

Target escapement goals for chum salmon in the spawning grounds of Western Kamchatka are shown in Table 2.2. Dynamics of the aggregated number of spawners in 2005–2019 relative to specific target values in the West Kamchatka and Kamchatka-Kuril subzones are shown in Figure 2.3 and 2.4. Similar graphs for each studied water body are presented in Figure 2.5.

Table 2. 2 – Reference points for chum salmon fishery management in the studied rivers of Western Kamchatka, thousand spawners

Water	Buffer (<i>S_{buf}</i>)	Target (<i>S_{msy}</i>)	Maximum (<i>S_{max}</i>)
<i>Total in the West Kamchatka Subzone</i>	255	338	471
R. Vorovskaya	22	29	41
<i>Total in the Kamchatka-Kuril subzone</i>	172	300	373
R. Kol	23	40	50
R. Pymta	25	44	55
Cluster rivers Opala- Golygina	43.5	76	94
R. Koshegochek	3,5	6.2	7.7
R. Ozernaya	5.1	8.8	11

It should be noted that the level of regional escapements of the West Kamchatka chum spawners has decreased in recent years. At the same time, there is a tendency of sufficient escapement level in even years, and on the contrary, insufficient – in odd years. Most likely, this is due to a decrease in industrial pressure on this species during the years of abundant runs of pink salmon of even-year line .

By analogy with the pink salmon, aerovisual surveys to assess the escapement level of chum salmon in rivers Koshegochek and Ozernaya were not conducted almost over the past 10 years. However, we should note that chum salmon escapement decrease in recent years is an objective trend. When analyzing the dynamics of chum salmon escapement in each rivers, it is clear that a relatively high level of escapement is characteristic of the river Vorovskaya and cluster rivers Opala-Golygina.

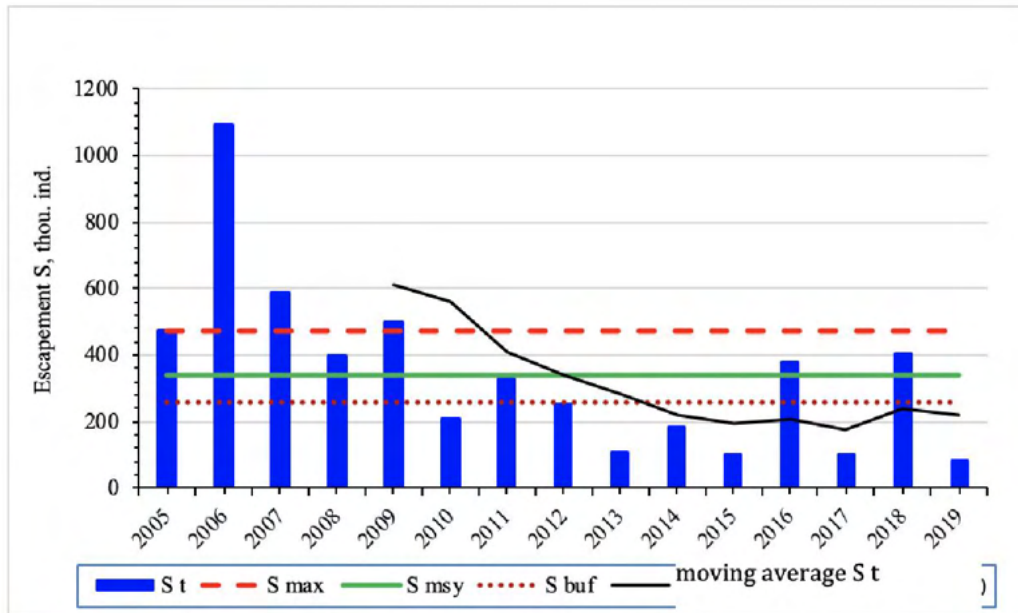


Figure 2.3 - Dynamics of aggregated chum salmon escapements in the spawning grounds of the West Kamchatka subzones against target reference points over the past 15 years

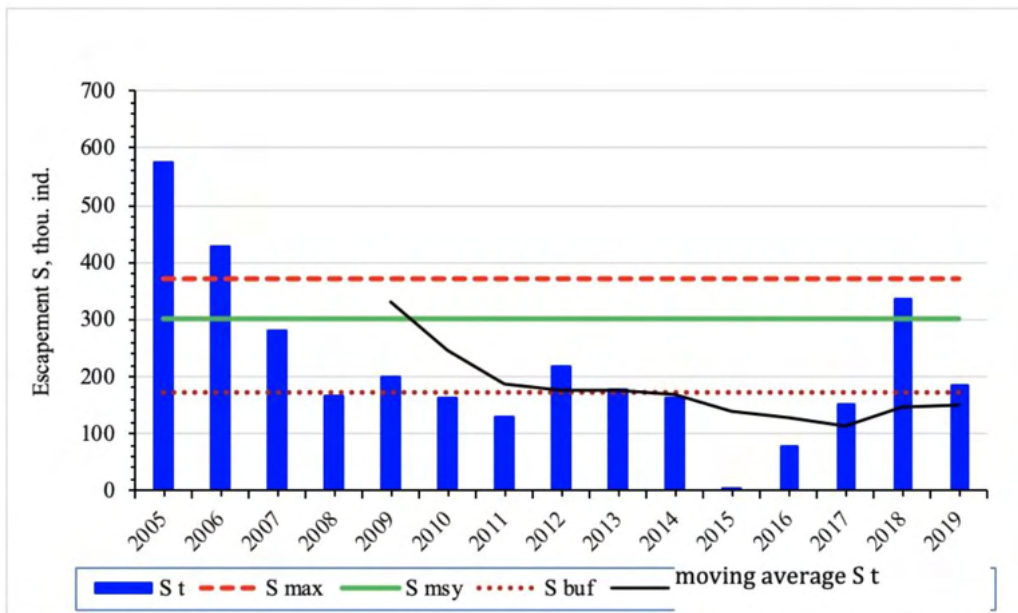


Figure 2.4 - Dynamics of aggregated chum salmon escapements in the spawning grounds of the Kamchatka-Kurilskoy subzones against target reference points over the past 15 years

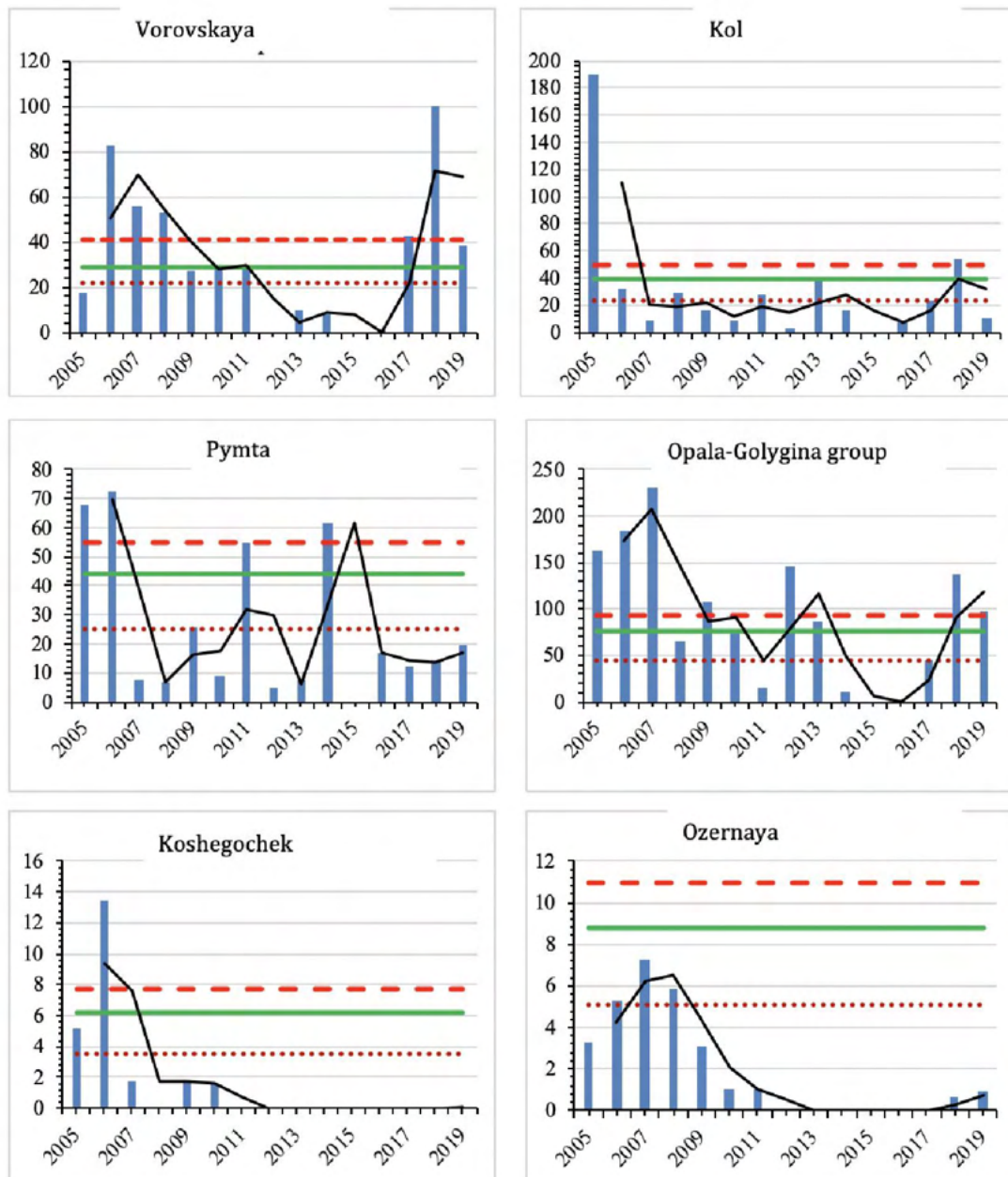


Figure 2. 5 – Dynamics of chum salmon escapement level in the spawning grounds of Western Kamchatka rivers against target reference points over the past 15 years, thousands of spawners

Sockeye salmon

Data on escaped sockeye salmon in the r. Ozernaya are one of the most reliable, because its total escapement level is assessed annually. This stock is at a consistently high level of abundance (Fig. 2.6). Reference points for sockeye salmon management are shown in Table 2.3.

Table 2.3 - Reference points for Ozernaya sockeye salmon fishery management, million spawners

Waterbody	Buffer (S_{buf})	Target (S_{msy})	Maximum (S_{max})
R. Ozeraya	0.75	1.14	1.9

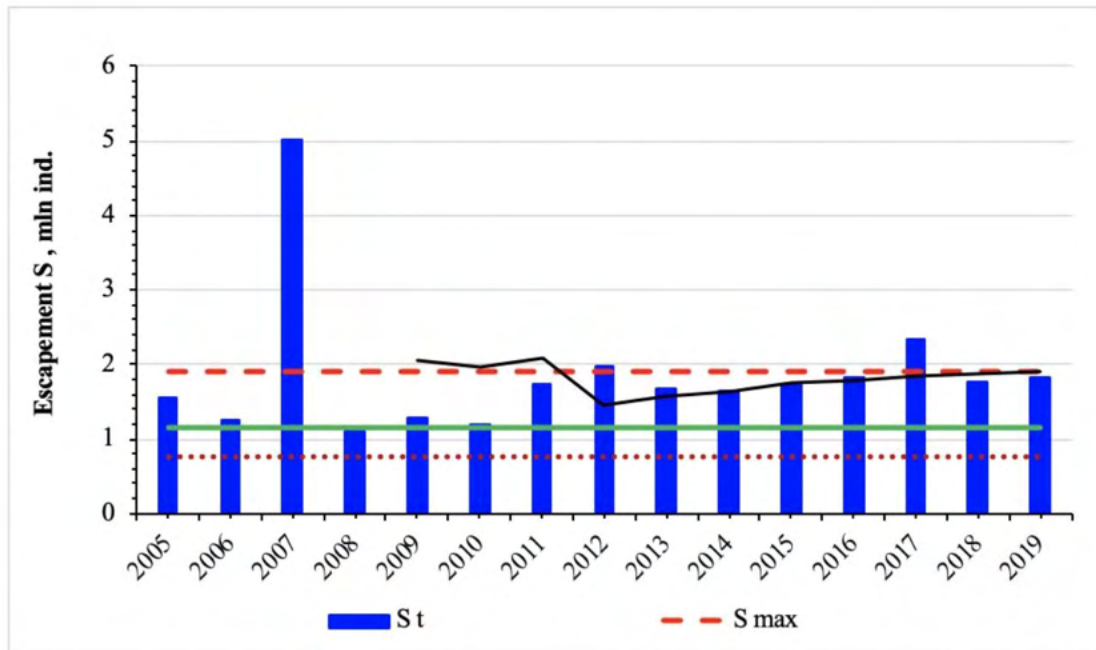


Figure 2. 6 - Dynamics of sockeye salmon escapement level in spawning grounds of the Kuril lake against the target reference points for the past 15 years

Coho salmon

Imposed by biology peculiarities, an aerovisual count of coho salmon spawners at spawning grounds is carried out later than for all other species of Pacific salmon. Unfortunately, funding of these surveys is often provided by a residual principle that is particularly characteristic of the last years and clearly shown in Figures 2.7 and 2.8. Meanwhile, it cannot be argued that coho salmon stocks are in a depressed state, as on the one hand, catches of this species remain stable, and on the other hand, by the time of the main spawning run of coho salmon, the industrial catch is already closed (Table 2.4).

Table 2.4 - Reference points for Kol coho salmon fishery management, thousand spawners

Water	Buffer (S_{buf})	Target (S_{msy})	Maximum (S_{max})
<i>Total in the Kamchatka-Kuril subzone</i>	84	128	223

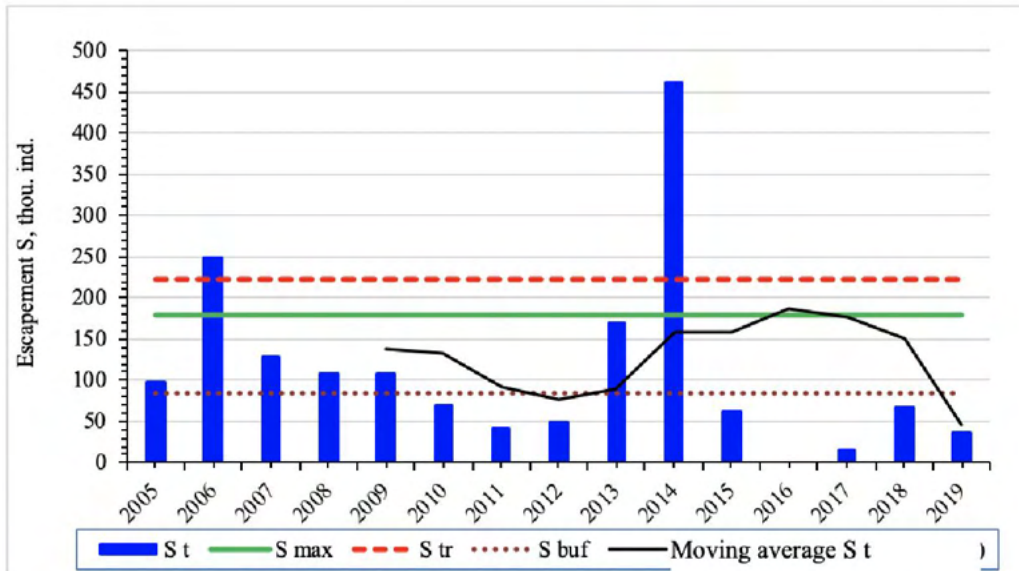


Figure 2.7 - Dynamics of aggregated coho salmon escapements in Kamchatka Kuril subzones against target reference points over the past 15 years

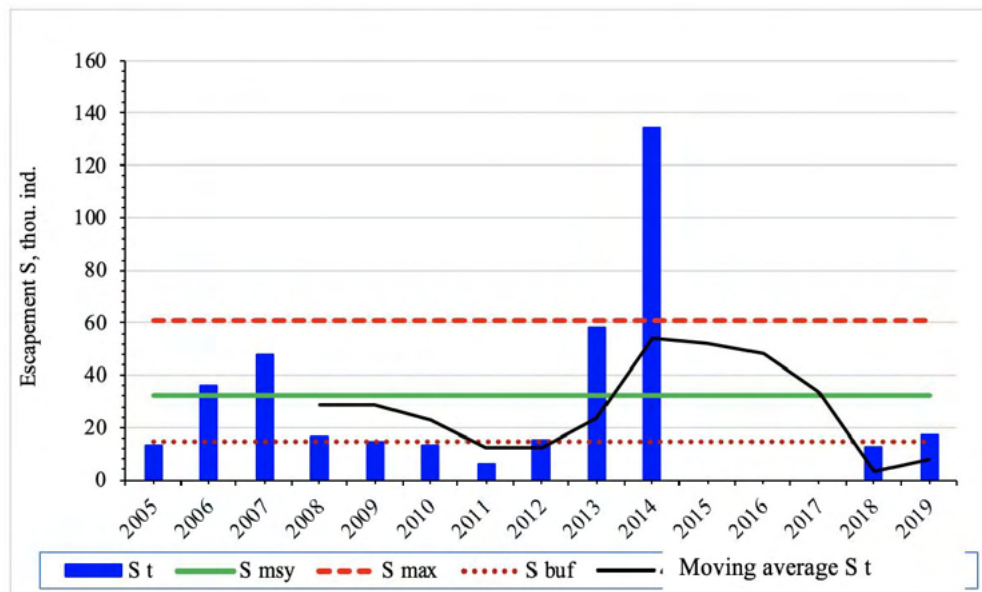


Figure 2.8 - Dynamics of coho escapement level in spawning grounds of Kol river relative to targets reference points over the past 15 years

Chapter 3. Provide data on escapement of Pacific salmon for MSC certified rivers in 2019

Pink salmon

In 2019, the escapement of pink salmon to the rivers of Western Kamchatka exceeded 20 million spawners. The analysis of the distribution of catches and the escapement level in spawning grounds along the coast shows that the most abundant runs of pink salmon to the coast were observed on a site from the river Kolpakova to the river Kihchik. To the south and north of the specified zone, within the boundaries of the river Bolshaya to the river Icha, the intensity of the runs markedly decreased. South of the river Bolshaya the number of pink salmon in the rivers did not exceed 0.54 million fish (Fig. 3.1).

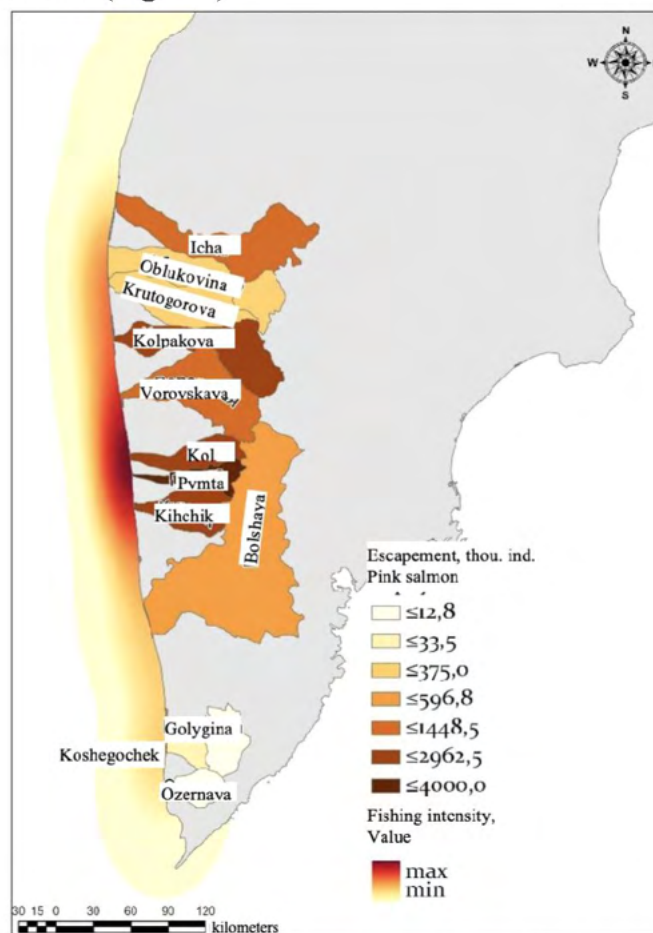


Figure 3.1 - Distribution of pink salmon spawners in the rivers of the western coast of Kamchatka and the intensity of pink salmon fishing in 2019.

In the zone of high runs, where target rivers are located, the maximum pressure on spawning grounds is recorded in the river Pymta, the recorded number of spawners

amounted to about 4 million fish. In the river Kol number of pink salmon estimated at 2.2 million fish, in the river. Vorovskaya - 1.4 million fish.

The number of pink salmon in target rivers belonging to the southwestern river complex totaled almost 53.8 thousand spawners. The greatest number is recorded in the river Koshegochek - 33.5 thousand fish (Fig. 3.1 and 3.2). In total, the number of pink salmon in the target rivers amounted to 7.7 million fish.

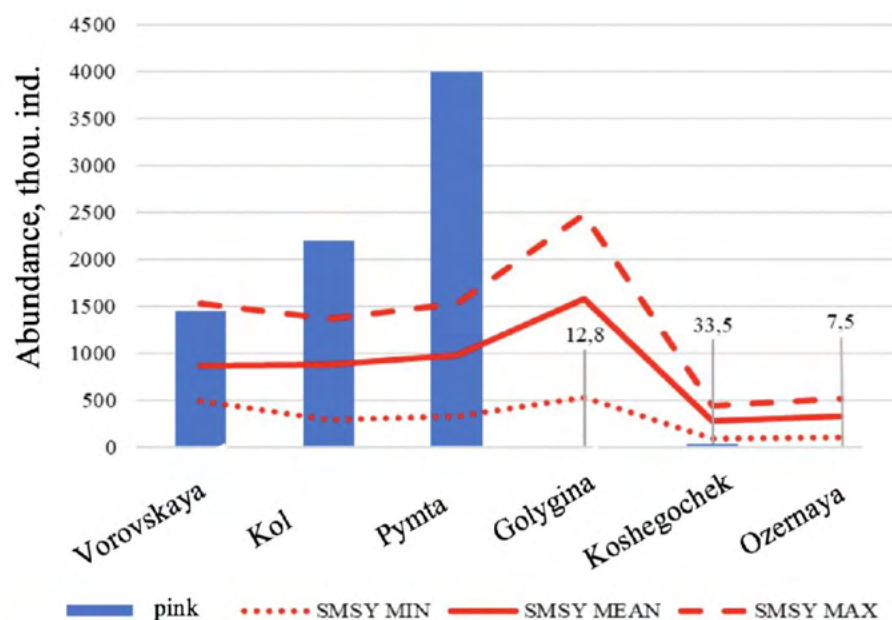


Figure 3.2 - Escapements of pink salmon spawners to the target rivers in 2019 and target reference points calculated for them

The criterion that determines the required escapement level is the target reference point, defined for each salmon species, the achievement of which provides the most stable catch (MSY), while the population remains at a biologically stable level.

Based on fishery regulation rules for pink salmon, a three-level system for assessing spawning stock is used, ranging from depressive to highly productive, which implies that, in terms of escaped spawners, it is necessary to strive for upper stratum indicators (Fig. 3.2). Thus, target reference points for target rivers are calculated in the range from 1.8 million to 7.9 million fish, which characterizes spawning as abundant. The escapement level of pink salmon relative to the target escapement level (in the upper stratum) corresponds to 98%. However, if the summarized data on the escapement level in the target rivers allow to confirm the abundant status of the spawning stock of pink salmon, then when assessing the dynamics of fish run separately by watercourses, there is a shortage of spawners in

some spawning grounds. This applies to the group of rivers located in the southwestern part of the peninsula: Golygina, Koshegochek and Ozernaya (Fig. 3.2).

We should note that in recent years there has been a decrease in the runs to river mouths located south of the river Bolshaya, and this trend is characteristic of both generative lines. Even in the year of maximum abundance (2018), when the escapement level on the coast exceeded 105 million fish, the pink salmon run in the Ozernaya and Koshegochek rivers did not exceed 40 thousand fish. And the run of pink salmon spawners into the Opala – Golygina river cluster slightly exceeded the optimum calculated for depressed generations of pink salmon (0.528 million fish), and amounted to 0.750 thousand fish .

Chum

On the western coast of Kamchatka aerovisual monitoring of spawning rivers took place in three stages. Given the relatively long period of spawning migration of chum salmon, the main task was to assess the number of fish throughout the spawning run with a time interval that precludes the second counting of spawners in spawning grounds. Thus, in the period from August to September, three flights were conducted with an interval of more than 20 days, assuming that the change of chum generations in the spawning grounds occurs in a period of not more than 20 days.

The survey results showed that chum salmon in the rivers of the west coast was amounted for 520 thousand spawners. Regarding the target reference point of 638 thousand spawners, the spawning is estimated at the level of suboptimal values. With the resulting ratio, the escapement level is 82%.

166.9 thousand spawners were counted in the target rivers, which is lower than the target reference point calculated in the range from 204 thousand to 258 thousand spawners. Optimal escapement level in spawning grounds was assessed in Opala - Golygina river cluster and in the r. Vorovskaya, where the spawning abundance of chum salmon was 98 thousand and 38 thousand spawners, respectively (Fig. 3.3 and 3.4) . Relatively low escapement rates were recorded for Kol and Pymta rivers, where 19.5 thousand and 10.3 thousand fish were recorded respectively. We believe that with regard to the indicated rivers, the spawners might be underestimated due to unfavorable weather conditions during the flight period. This circumstance forced to reduce the amount of work in the lower and partially middle courses of the rivers.

In the rivers Koshegochek and Ozernaya, target reference points are calculated in the range from 15 to 19 thousand spawners. According to the counting statistics, the average long-term escapement values for these watercourses are 11 thousand spawners, but in some years the escapement level exceeded 20 thousand fish (Fig. 3.5). As can be seen from the graph, the spawning abundance of chum salmon did not exceed the value of the lower stratum of the target escapement level since 2007. It is

assumed that the decrease in abundance observed in earlier years is caused by both ongoing population processes and decrease in aerovisual monitorings, which to a greater extent were focused on salmon counting in river basins located north of these rivers, which could also lead to some underestimation.

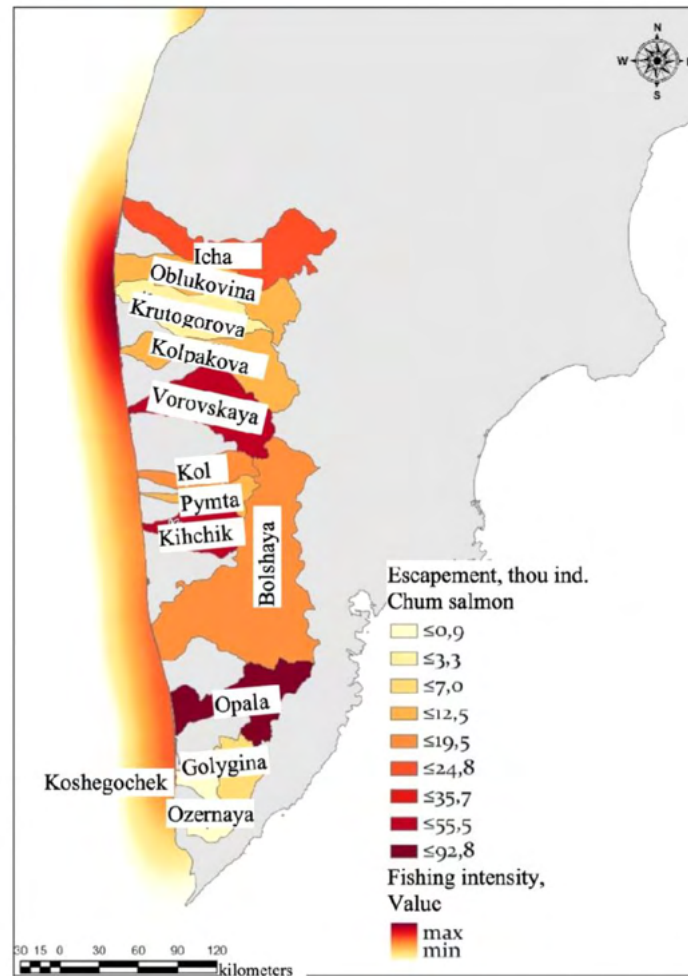


Figure 3.3 - Distribution of chum salmon spawners in the rivers of the western coast of Kamchatka and the intensity of chum salmon fishery in 2019.

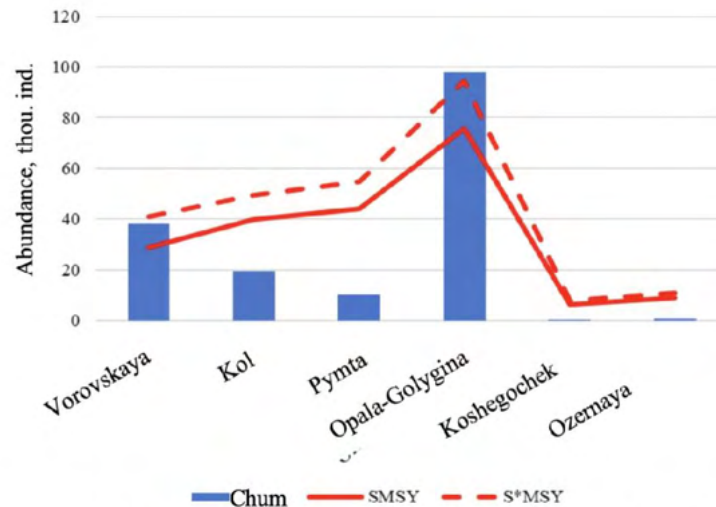


Figure 3.4 – Escapement level of chum salmon spawners in the target rivers in 2019 and target reference points calculated for them

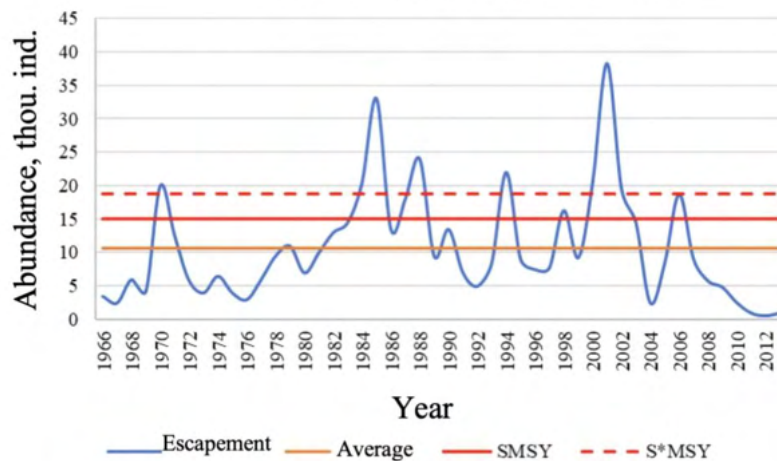


Figure 3.5 – Escapement dynamics and calculated target reference points for chum salmon spawners in the rivers Koshegochek and Ozernaya

Coho salmon

In 2019, the number of coho salmon migrated to spawning grounds amounted to 35.8 thousand. The maximum number of spawners counted in Kol river - 17.5 thousand fish, 10 thousand spawners in Pymta, 8 thousand fish - in Vorovskaya river, 1.9 thousand fish in Opala – Golygina river cluster. In the first ten days of September when there is a mass run of coho salmon, the adverse weather conditions made it impossible to carry out planned aerovisual surveys. As a rule, during this period, these estimates average up to 50 % of the total counted number of coho salmon spawners. In Vorovskaya, Kol and Pymta rivers, the dynamics of the spawners distribution is similar to the target escapement level, which indicates the reliability of the assessments (Fig.

3.6). In the southwestern group of target rivers, a detailed survey of coho salmon spawning grounds was not carried out.

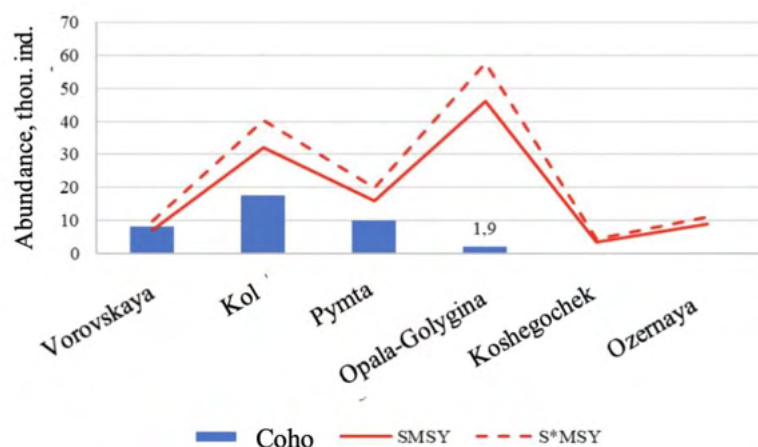


Figure 3.6 – Escapement level of coho salmon spawners in the target rivers in 2019 and target reference points for escapement

Sockeye salmon

Aerovisual surveys of sockeye salmon in target rivers (with the exception of the Ozernaya River) was carried out in a reduced format. The recorded number of sockeye was registered in third decade of August, that corresponds to the initial phase of spawning. The number of counted spawners amounted to: Opala - Golygina (51.65 thousand fish) r. Vorovskaya (1.45 thousand fish), Pymta (1.0 thousand fish), Kol (0.05 thousand fish). It should be noted that severe weather conditions in the first half of September impeded the implementation of planned aerovisual surveys during the mass spawning of sockeye salmon. The next survey of spawning grounds took place at the end of September; during this period, sockeye salmon spawners were not seen. The obtained data showed that the optimum escapement level in the spawning grounds was met only in Opala – Golygina river cluster, where the target was calculated in the range from 31.2 thousand to 67.3 thousand fish.

The counted number of sockeye salmon in the basin of the river Ozernaya is estimated at 1,830 thousand fish. Data on Ozernaya sockeye salmon escapement is described in more detail in Chapter 4.

Chapter 4. Update Appendix A (Table ‘Sockeye salmon spawning in Ozernaya river in 2019’)

The total number of sockeye salmon spawning runs in 2019 in Ozernaya river amounted to 12, 83 6 million spawners (Table 4.1). According to the Northeastern Federal Fisheries Agency (hereinafter referred to as SVTU), 26,337 tons (10.616 million fish) of sockeye salmon were caught by fixed nets in Ozernaya river. 1.830 million spawners escaped to spawn in the Kuril lake (Ozernaya River), which exceeds the optimum by 30 thousand spawners. In the sea near the Northern Kuril Islands in 2019 , 1336 tons of sockeye salmon were caught . It is believed that the annual catch of sockeye salmon reproducing in the northern Kuril Islands is 200 tons. Therefore, the rest of the sockeye salmon was transit and belonged to herds from rivers on the western coast of Kamchatka. The total catch of sockeye salmon at the western coast of Kamchatka in 2019 was 30.943 thousand tons, 26.338 thousand tons of which belonged to the herd of the river Ozernaya. Thus, 0.967 thousand tons of sockeye salmon from Ozernaya river were caught near the Northern Kuril Islands, or with an average weight of sockeye salmon of 2.48 kg from this herd in industrial catches in 2019 - 390 thousand fish. Thus, the total catch of sockeye salmon from Ozernaya river in 2019 amounted to 11.006 (10.616 + 0.390) million fish.

Table 4.1. Data on reproduction of sockeye salmon herd in Ozernaya river in 2019, million spawners

Year	Spawning	Sea catch	Coastal catch	Total catch
2019	1.830	-	11.006	11.006

Until recently, a significant number of Pacific salmon, including sockeye salmon, were caught by drift nets in the open sea. However, on June 29, 2015 , Federal Law No. 208-Φ3 “ On Amending the Federal Law “ On Fisheries and the Conservation of Aquatic Biological Resources ” was issued. This law prohibited the use of drift nets in the industrial fishing and fishing for scientific research and monitoring purposes, and coastal fishing for anadromous fish species in the inland waters of the Russian Federation, in the territorial sea of the Russian Federation and in the exclusive economic Russian zone. The law entered into force on January 1, 2016 . Accordingly, the sockeye salmon was not harvested in the seas in the EEZ of the Russian Federation in 2019.

Chapter 5. Annual report on fishery management actions taken by Anadromous Fish Commission in 2019

Recommendations for the salmon fishing season in 2019 were based on scientific materials, analysis of the dynamics and results of previous fishing season. The main fisheries in the western coast of Kamchatka are pink salmon of even year reproduction line, late chum salmon and sockeye salmon and, in recent years, coho salmon. The main stocks of pink salmon, chum salmon and coho salmon are concentrated in the Sobolevsky and Ust-Bolsheretsky districts in relatively close water bodies, which allows them to be considered as a single stock for each species, for which similar fishing control measures are applied.

In general, it can be noted that West Kamchatka salmon stocks are relatively high for all mass species. However, despite the regional stability of stocks, in some water bodies there is a tendency in salmon stock decrease of some species, which requires fishing regulation, both in river and marine fishing plots.

Fishing regulation measures. Since the reproduction of salmon is limited by the area of spawning grounds, the rational for salmon fishing is to ensure sufficient number of escaped spawners in the spawning grounds, and the harvest of the rest number of spawners. However, the spawners cannot escape and fill the spawning grounds at once in one of the phases of run, but should escape to the spawning grounds during the run, providing access to spawning grounds for all epigenetic groups of spawners. As salmon moves to spawning grounds, they overcome sea coastal spaces, estuaries of the river, and only then reach spawning habitats. Thus, the restrictions on fishing should first be made for sea coastal waters, and then in the river fishing plots. One of the ways to do so is to set passing days for salmon spawners.

Relatively high runs of pink salmon were expected in the salmon fishing season of 2019 in the western coast of Kamchatka, despite the fact that the return was ensured by the spawners of the low-harvest (odd year) reproduction line. Accordingly, the fishery management and regulation was carried out taking into account this forecast. The forecast of the stock status of other mass species of Pacific salmon (late sockeye salmon and chum salmon) potentially indicated that their abundance was close to the long-term average.

It should be noted that the main stocks of sockeye salmon are concentrated locally in the coastal areas adjacent to the Ozernaya and Palana rivers, as well as in the river basins themselves, and must be separately regulated. River sockeye salmon and chum salmon are caught together with pink salmon. Long-term practice shows that with high runs of pink salmon, species caught together are under much less fishing pressure than

during low-harvest years. This is explained by redistribution of the fishing load between species.

The use of special regulatory measures is recommended for Ozernaya river fishing plots and sea fishing plots (№№ 189-209), located on the migration routes of sockeye salmon to the river.

The recommended 2019 Pacific salmon and char fishing regime in Kamchatka fishing plots was as follows.

Fishing season started:

- in the basin of river Ozernaya from June 20, in the adjacent sea from fishing plot # 189 (inclusive) to the south to fishing plot # 209 from July 21;
- in other river and sea fishing plots of the Ust-Bolsheretsky region from July 11 .

At the same time, for all types of fishing (with the exception of sport and recreational fishing using line-fishing gear, fishing for scientific research and reproduction purposes), the following passing day regime was recommended:

- sea fishing plot in the West Kamchatka sub-zone from the beginning of the fishing season until July 25 and from August 26 until the end of fishing - Monday, Tuesday, Wednesday each week.
- sea fishing plot in the Kamchatka-Kurile subzone, except the waters of the fishing plots # 189 (inclusive) in the south to the fishing plot # 209 (inclusive) in the period from the beginning of the fishing until July 25 and from August 26 until the end of fishing - Monday, Tuesday weekly.

At inland water bodies:

- in the rivers and lakes of Western Kamchatka, with the exception of the Bolshaya and Ozernaya (western) river basins, from the start of fishing until July 25 and from August 26 to the end of fishing - Monday, Tuesday, Wednesday weekly, from July 26 to August 25 - Monday, Tuesday weekly;
- in the basin of Ozernaya river (western) passing days were set in the regime of two passing days after two days of fishing.

Fisheries regulatory measures taking into account the actual salmon runs in 2019

In relation to fishing plots in the basin of Ozernaya river and adjacent water areas the fishing regulation was targeted at maintaining stocks of sockeye salmon. Sockeye salmon escapement in the Kuril lake as of July 29, 2019, according to the fish counting gear (RUZ), amounted to more than 986 thousand spawners. In this connection, according to the Minutes No. 16 of the Commission for catch of anadromous fish species in the Kamchatka Territory dated July 29, 2019 and No. 19 dated August 6, 2019, the passing days on July 29 (from 2 p.m.) were canceled , 01, August 02, 05, 06, 09 and 10.

When the escapement of sockeye salmon in the Kuril Lake reached the lower limit of the optimum, the previously established regime of passing days on the river fishing plot in Ozernaya river (Minutes No. 5 dated 05/21/2019) was changed. It was recommended to cancel the regime 2 fishing days – 2 passing days and to establish the following regime of passing days - Monday, Tuesday, weekly (Minutes No. 20 dated August 9, 2019).

Based on the timely information received in the fishing season of 2019, changes were made to the previously established passing days regime (Minutes No. 11 of July 15, 2019, No. 12 of July 18, 2019 and No. 18 of August 5, 2019):

- to cancel passing days on July 16, July 17 on sea fishing plots of industrial, traditional fishing in the West Kamchatka subzone;

- to set the passing days in the basin of the river Koshegochek - from July 22 to August 25 - Thursday, Friday weekly, from August 26 to the end of fishing - Thursday, Friday, Saturday;

- to cancel the passing day on July 23 in sea fishing plots of industrial, traditional fishing in the Kamchatka-Kuril subzone;

- cancel the passing day on August 5 from 15:00 and passing days 06 of August, 12 August and 13 August in the RLN Kikhchik rivers, Pymta, Kol.

The decision to ban the industrial and traditional fishing of Pacific salmon and char in the West Kamchatka and Kamchatka-Kuril subzones from September 23 was adopted at a meeting of the Commission on September 17, 2019 (Protocol No. 27)

Chapter 6. Report on monitoring improvement measures in 2019 for sockeye salmon (excluding sockeye salmon harvest in Ozernaya river) and coho salmon, caught by Vityaz-Avto. Sockeye and coho salmon escapement data in the certified rivers

The methodology of aerovisual monitoring surveys developed in the second half of the XX century by specialists “Kamchatka NIRO “ has not changed significantly until now (Ostroumov, 1962). Though technical equipment was upgraded: aircrafts of new models, satellite navigation, unmanned aerial vehicles (UAVs), cartographic programs and geographic information systems.

Over the previous two decades, with the rapidly growing cost of aircraft, the issue of optimizing aerovisual counting works caused by a funding shortage has become urgent. As a result, the methodology of aerovisual studies was supplemented with a list of rivers based on their contribution to the reproduction of different species of Pacific salmon in Kamchatka (Shevlyakov and Maslov, 2011). Nevertheless, the basic approach to organizing and conducting aerovisual monitoring works remained the same.

Aerovisual survey improvements should be evaluated from the standpoint of the flight time amount which is one of the necessary criteria for the objective assessment, expressed in the coverage of the surveyed area.

Such species of Pacific salmon as pink salmon, chum salmon and sockeye salmon are estimated fairly objectively due to the fact that period of spawning migration of these species largely overlap. This allows to conduct up to three aerovisual surveys for each species. For small species such as chinook and coho, taking into account the period of their spawning migration, it is necessary to organize separate flights. However, the reduced funding does not always make it possible. Therefore, more often the stock assessment of chinook salmon is carried out according to the residual principle, and as far as coho salmon is concerned, fish of early run are counted. This kind of assessments are inevitable, since they are carried out during counting of sockeye salmon, chum salmon, and pink salmon, and accordingly, the validity of the obtained assessments is low.

The consistent decrease in research funding over the past decade has affected the volume of aerovisual surveys, reaching its minimum in 2015 (Fig. 6.1). After that, with the financial aid from some fishing companies, the volume of arovisual studies was gradually restored, and by 2019 reached the level of 2010, which allowed expanding the geography of flights to count the Pacific salmon in the rivers of the western coast of Kamchatka. Starting in 2018, the Golygin, Koshegochek, and Ozernaya rivers were included in the air monitoring program (spawning grounds in the river fishing plots). The amount of flight time allocated for the examination of river systems on the

western coast of Kamchatka increased from 18 hours (2015) to 73 hours (2018). In 2019, the amount of flight time in the west decreased slightly and amounted to 69 hours, which led to a reduction in survey scope (Fig. 6.1). This circumstance is caused by adverse weather conditions in the first half of September. This explains the underestimation of spawners of chum, coho and salmon.

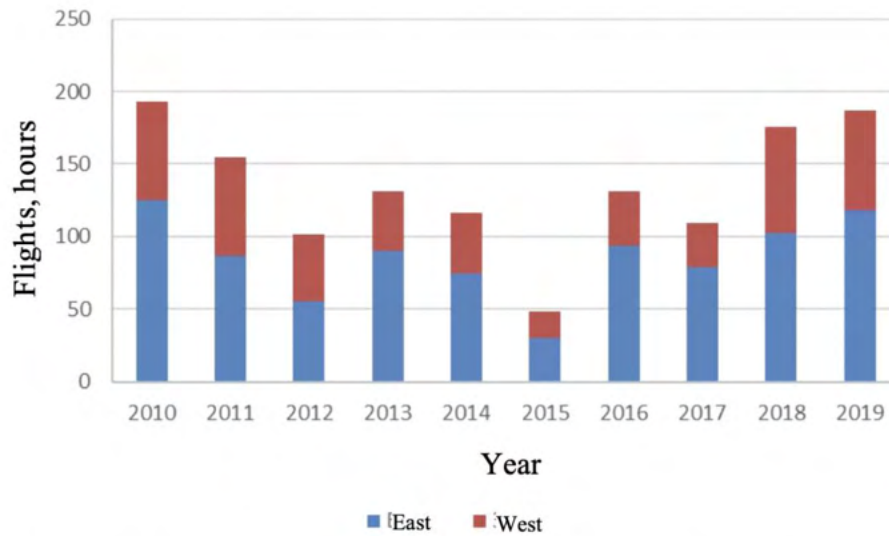


Figure 6.1 - Distribution of flight time allocated for the survey of spawning rivers in the rivers of Western and Eastern Kamchatka

Data on the number of escaped sockeye salmon spawners and coho in 2019, in certified rivers are presented in more details in Chapter 8 (Table 8.2).

Chapter 7. Law enforcement measures by SVTU and fishing companies to combat illegal fishing, including the scope of work and any violations in 2019

In 2019 officials of the North-Eastern Territorial Department of the Federal Fishery Agency (SVTU) in Kamchatsky kray revealed 272 violations in terms of illegal harvest (catch) of Pacific salmon in inland waters. The biomass of seized salmon was 132 145 kg (Table 7.1).

Table 7.1 - Detected violations regarding illegal harvest (catch) of Pacific salmon in inland waters of Kamchatka in 2019

District of Kamchatka Territory	Number of detected violations	Pacific salmon, kg
Yelizovsky and Ust-Bolsheretsky districts	182	6800.5
Milkovsky, Sobolevsky and Bystrinsky districts	38	3220.9
Ust-Kamchatsky district	45	1316.8
Koryak district	7	1876.3
<i>Total</i>	<i>272</i>	<i>13214.5</i>

As part of SVTU cooperation with law enforcement and regulatory authorities during the Salmon fishing season - 2019, during joint control and surveillance inspections in the inland waters of the Kamchatka Territory, 189 cases of illegal harvesting (catching) of Pacific salmon were identified, 12,996 kg were seized.

Moreover, in order to identify and combat transportation of illegally obtained biological resources during the fishing season, SVTU together with law enforcement officers organized 6 day-and-night stationary posts. In total, 20 offenses were revealed, 49215 kg of fish products were seized.

The Border Service of the FSB for the eastern Arctic region in the fishing areas of the Kamchatka Territory in 2019 revealed 55 offenses related to the illegal harvesting (catch) of Pacific salmon. The biomass of seized salmon was 28903 kg (Table 7.2).

Table 7.2 - Detected violations of the illegal harvesting (catch) of Pacific salmon in the fishing areas of the Kamchatka Territory in 2019

Zone, subzone	Number of violations detected	Pacific salmon, kg
West Bering Sea	9	202
Karaginsky subzone	7	76
Petropavlovsk-Komandorsky subzone	23	28447
West Kamchatka and Kamchatka-Kuril subzones	16	178
Total	55	28903

Chapter 8 Aerovisual survey data and coho salmon and sockeye salmon escapement surveys conducted in 2019, comparative analysis with the data of aerovisual surveys in 2016–2018

Figure 8.1 shows flight routes for counting the number of Pacific salmon spawners conducted in 2019, including routes in target river basins. In the rivers of the west coast, work was carried out from July 22 to October 13.

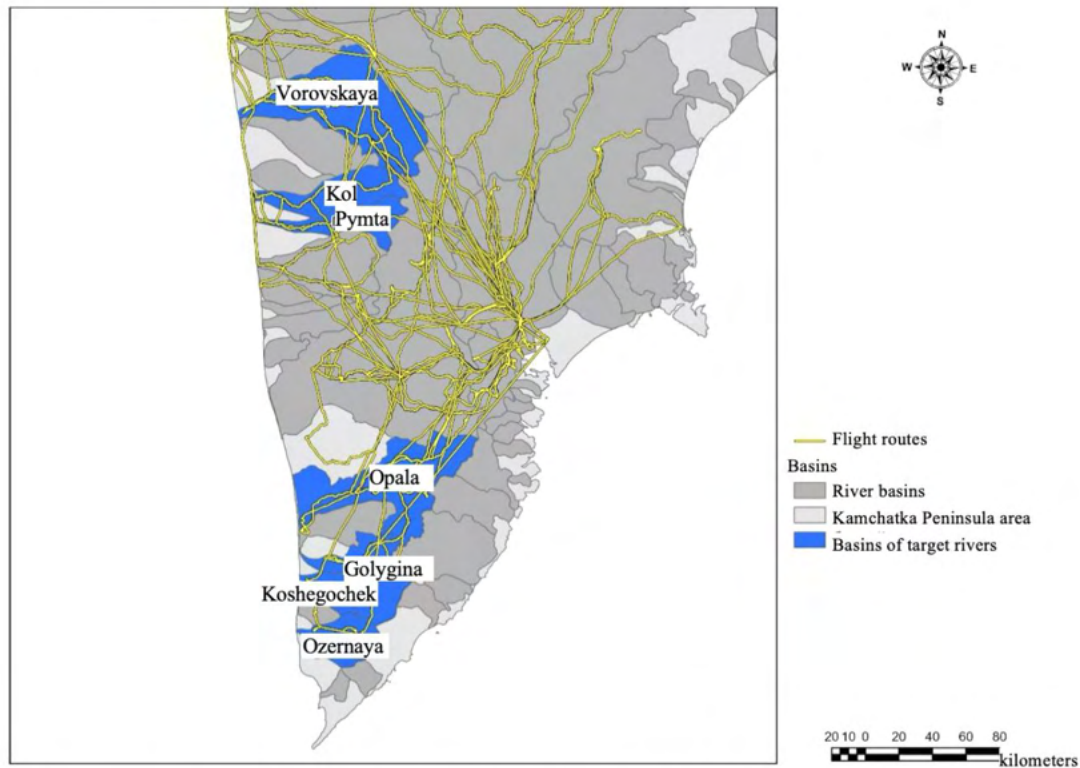


Figure 8.1 - Flight routes for counting Pacific salmon stock in 2019

Table 8.1 - Timeline for aerovisual surveys of Pacific salmon in target rivers in 2019

Date	River	View
14.07	Pymta	chinook salmon, masou
14.07	Kol	chinook salmon, masou
15.07	Vorovskaya	chinook salmon, masou
25.07	Opala	Chinook salmon, chum salmon
05.08	Opala	Chinook salmon, chum salmon
05.08	Vorovskaya	Chinook salmon, sockeye salmon, chum salmon

05.08	Kol	Chinook salmon, sockeye salmon, chum salmon
05.08	Pymta	Chinook salmon, sockeye salmon, chum salmon
23.08	Opal	sockeye salmon, chum salmon, pink salmon
23.08	Golygina	sockeye salmon, chum salmon, pink salmon
23.08	Koshegochek	sockeye salmon, chum salmon, pink salmon
23.08	Ozernaya	sockeye salmon, chum salmon, pink salmon
28.08	Kol	sockeye salmon, chum salmon, pink salmon
28.08	Pymta	sockeye salmon, chum salmon, pink salmon
30.08	Vorovskaya	sockeye salmon, chum salmon, pink salmon
18.09	Ozernaya	sockeye salmon, chum salmon, pink salmon
29.09	Pymta	sockeye salmon, coho salmon
29.09	Kol	sockeye salmon, coho salmon
29.09	Vorovskaya	sockeye salmon, coho salmon
12.10.	Opal	sockeye salmon, coho salmon
12.10.	Golygina	sockeye salmon, coho salmon

Table 8.2 - The number of Pacific salmon spawners escaped to the target rivers in 2016–2019. thousand spawners

River	PINK				CHUM			
	2016	2017	2018	2019	2016	2017	2018	2019
VOROVSKAYA	100	231.1	16400	1448.5	0.5	42.6	100	38.1
KOL	3300	625	11185	2200	7.5	23.5	54	19.5
PYMTA	4650	1200	14750	4000	17	12	14.5	10.25
OPALA GOLYGINA	no data	no data	749.75	12.8	no data	44.6	138.76	98
KOSHEGOCHEK	no data	no data	33.5	33.5	no data	no data	no data	0.1

OZERNAYA	no data	no data	2.75	7.5	no data	no data	0.6	0.9
	COHO				SOCKEYE			
VOROVSKAYA	no data	no data	5	8	no data	5,875	no data	1.45
KOL	no data	no data	13	17.5	0.55	no data	no data	0.05
PYMTA	no data	no data	16	10	3.8	7.5	no data	1
OPALA GOLYGINA	no data	no data	10.5	1.9	no data	1.9	25,305	51.65
KOSHEGOCHEK	no data	no data	no data	no data	no data	no data	no data	no data
OZERNAYA	no data	no data	no data	no data	1826	2350	1778.5	1830

CONCLUSION

The analysis of stocks status and Pacific salmon fishery management in some rivers of the south-western coast of Kamchatka (r. Ozernaya Koshegochek, Golygina, Vorovskaya, Pymta and Kol) conducted under the agreement with LLC "Vityaz-Avto " (scientific support for MSC audit of Pacific salmon fishery) allowed us to evaluate current trends in the development of fisheries and to determine the basic principles of rational management of salmon stocks in this region .

A significant increase of pink salmon stock of low harvest line up to a highly productive level is one of the most important trends in Pacific salmon stock changes in the rivers of the south-west of Kamchatka in 2019. Spawning stock of sockeye salmon in the r. Ozernaya is at a stable high level, exceeding the escapement targets. The data on chum, sockeye salmon (secondary herds) and coho salmon is most indicative only for target water bodies (r. Golygina, Vorovskaya, Pymta and Kol). In all cases, escapement levels in them are close to the target reference points. In other water bodies (Ozernaya, Koshegochek rivers), data on escapement level in the spawning grounds is insufficient. Undercount is possible. However, given the geographical proximity of the studied water bodies, it can be assumed that the total regional dynamics of salmon stock in them has a similar tendency toward stock stabilization or increase.

In general, the research results indicate that the existing Vityaz-Avto fishery does not have a negative impact on the stocks of Pacific salmon reproduced in the studied rivers of Western Kamchatka .

In addition, it should be noted that Vityaz-Avto LLC made a significant contribution to the organization of monitoring of Pacific salmon stocks in Western Kamchatka, carried out annually by the Kamchatka branch of VNIRO FSBI in this region. First of all, this is financing a significant flight time for conducting aerovisual count of salmon spawners in the spawning grounds of the target rivers of the Ust-Bolsheretsky and Sobolevsky administrative regions. In addition, the company purchased a sonar system “ BioSonics ”, which allows counting sockeye salmon in the basin of the river Ozernaya on the spawning migrations to the Kuril lake. At the same time, Vityaz-Avto LLC also provided support for the employees of the KamchatNIRO stationary observation post, located in the middle courses of the river Ozernaya, where sonar recording is carried out.

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