

## Tymlat-Karaginsky Bay Salmon Fishery



**MSC Certificate No: MSC-F-30023**

### **3rd Surveillance Report**

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Fishery client	Tymlatsky Rybokombinat Ltd. 30 Naberezhnaya str., v. Tymlat, Karaginskiy District, Kamchatsky Krai, 688710, Russian Federation
Assessment type	3 <sup>rd</sup> Surveillance
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## Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>3</b>
<b>2</b>	<b>Report Details.....</b>	<b>4</b>
2.1	Surveillance Information .....	4
2.2	Background.....	8
2.3	Version Details.....	8
<b>3</b>	<b>Results.....</b>	<b>9</b>
3.1	Surveillance Results Overview .....	9
3.1.1	<i>Summary of Assessment Conditions .....</i>	<i>9</i>
3.1.2	<i>Total Allowable Catch and Catch Data .....</i>	<i>10</i>
3.1.3	<i>Recommendations .....</i>	<i>11</i>
3.2	Re-scoring Performance Indicators.....	12
3.3	Conditions & Client Action Plan .....	25
<b>4</b>	<b>Evaluation Process and Techniques .....</b>	<b>37</b>
4.1	Site visits.....	38
4.2	Stakeholder participation .....	39
4.3	Stakeholder input .....	39
4.4	Surveillance Program.....	39
<b>5</b>	<b>Harmonised fishery assessments .....</b>	<b>40</b>
<b>6</b>	<b>Appendix - Surveillance Information .....</b>	<b>42</b>
6.1	KamchatNIRO Report.....	42
6.2	Tymlat Illegal Fishery Socio-anthropological study.....	75
6.3	Summary of Tymlat anti-poaching activities in 2021 .....	120
6.4	Federal Fisheries Agency Enforcement Report .....	123

## 1 Executive Summary

This report contains the findings of the 3<sup>rd</sup> surveillance cycle in relation to the East Kamchatka salmon fishery in Karaginsky Bay by the Tymlatsky Rybokombinat fishing company.

Five conditions were 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.

All conditions were assessed in 2022. Four of five conditions were closed as scheduled and the fifth was extended to the 4<sup>th</sup> surveillance under an MSC derogation regarding circumstances of the pandemic. MRAG concludes that this 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 <sup>rd</sup> surveillance
2	1.2.3 Information & monitoring	Closed in 3 <sup>rd</sup> surveillance
3	1.2.4 Assessment of stock status	Closed in 3 <sup>rd</sup> surveillance
4	3.2.2 Decision-making processes	Closed in 3 <sup>rd</sup> surveillance
5	3.2.3 Compliance and enforcement	Extended to 4 <sup>th</sup> surveillance

## 2 Report Details

### 2.1 Surveillance Information

<b>1</b>	<b>Fishery name</b>	
	Tymlat-Karaginsky Bay Salmon Fishery	
<b>2</b>	<b>Unit(s) of Assessment (UoA)</b>	
	Pink Salmon ( <i>Oncorhynchus gorbuscha</i> ) Chum Salmon ( <i>Oncorhynchus keta</i> ) Stocks spawning in Karaginsky Bay and rivers Tymlat, Kichiga, Ossora, Virovayam, Belaya, Paklavayam, Karaga, Dranka and Vytvirovayam FAO area 61 Coastal trap nets, beach seines Populations of salmon spawning along the coast of Karaginsky Bay and adjacent rivers	
<b>3</b>	<b>Date certified</b>	<b>Date of expiry</b>
	09 April 2019	08 October 2024
<b>4</b>	<b>Surveillance level and type</b>	
	Surveillance level 6, Hybrid surveillance audit Surveillance has changed from what was indicated in the previous surveillance report (on-site) due to circumstances of the current pandemic and other travel considerations.	
<b>5</b>	<b>Surveillance number</b>	
	1st Surveillance	26-29 October 2020
	2nd Surveillance	1-12 November 2021
	3rd Surveillance	31 August – 7 September 2022
	4th Surveillance	
	Other (expedited etc)	
<b>6</b>	<b>Surveillance team leader</b>	
	<b><i>Ray Beamesderfer, M.Sc., Team Lead and responsible for P1 &amp; P2 (shared)</i></b> 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"> <li>• He has an appropriate university degree and more than five years' experience in management and research in fisheries;</li> <li>• He has passed the MSC team leader training;</li> <li>• He has the required competencies described in Table PC1, section 2;</li> <li>• He has passed the MSC Traceability training module;</li> <li>• He meets ISO 19011 training requirements;</li> <li>• He has undertaken two fishery assessments as a team member in the last five years, and</li> <li>• He has experience in applying different types of interviewing and facilitation techniques and is able to effectively communicate with clients and other stakeholders.</li> </ul> <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>
<b>7</b>	<p><b>Surveillance team members</b></p> <p><b><i>Dimitry Lajus, Ph.D., P3 &amp; P2 (shared)</i></b>  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"> <li>• He has an appropriate university degree and more than five years' experience in management and research in fisheries;</li> <li>• He has undertaken at least two MSC fishery assessments or surveillance site visits in the last five years;</li> <li>• He is able to score a fishery using the default assessment tree and describe how conditions are set and monitored.</li> </ul> <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>

	<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.</p> <p><b><i>Michealene Corlett, B.Sc., Team Member</i></b></p> <p>Ms. Corlett joined MRAG Americas, Inc. in March 2018, where she currently works as the QMS and Fisheries Assessment Manager. She received a B.S. in Aquatic and Fishery Science with a minor in Quantitative Science from the University of Washington. Prior to joining MRAG Americas Michealene worked at the Washington State Department of Fish and Wildlife cooperating with inner agency and Tribal managers to monitor Pacific salmon populations in the Lake Washington basin. She has an extensive background in project management, and regulatory compliance and implementation. Her prior work as a project manager fostered strong client relations and the ability to work with a variety of stakeholders on sometimes contentious issues. Since joining MRAG, Michealene has provided support and collaborated on several fishery projects including Marine Stewardship Council and Responsible Fisheries Management assessments. As the quality systems manager she is responsible for the application and improvement of MRAG Americas' quality management system ensuring compliance with ISO certification requirements.</p> <p>MRAG Americas confirms that Ms. Corlett meets the competency criteria in Annex PC for team members as follows:</p> <ul style="list-style-type: none"> <li>• She has an appropriate university degree and more than three years' experience in management and research in fisheries;</li> <li>• She is able to score a fishery using the default assessment tree and describe how conditions are set and monitored;</li> <li>• She has passed the MSC's fishery team member training course.</li> </ul> <p>In addition, she has the appropriate skills and experience required to assist the assessment team with ongoing audit activities, and MRAG Americas confirms she has no conflicts of interest in relation to the fishery under assessment.</p>
<b>8</b>	<b>Audit/review time and location</b>
	<p>31 August – 7 September 2022, hybrid site visit conducted with the assessment team participating onsite and by Zoom conference</p> <p>The evidence gathering stage for the audit was completed 09 November 2022.</p>
<b>9</b>	<b>Assessment and review activities</b>
	<p>The surveillance audit was conducted in accordance with MSC FCPV2.2 7.28.15 and included review of updated documentation on the fishery and interviews with key management and stakeholders, focusing on:</p> <ol style="list-style-type: none"> <li>a. Changes to the fishery and its management; including: <ol style="list-style-type: none"> <li>i. Any potential or actual changes in management systems.</li> <li>ii. Any changes or additions/deletions to regulations.</li> <li>iii. Any personnel changes in science, management or industry and their impact on the management of the fishery.</li> </ol> </li> </ol>

	<ul style="list-style-type: none"> <li>iv. Any potential changes to the scientific base of information, including stock assessments.</li> <li>v. Any changes affecting traceability</li> </ul> <p>b. Performance in relation to any relevant conditions of certification;</p> <p>c. Any developments or changes within the fishery which impact traceability and the ability to segregate MSC from non-MSC products; and</p> <p>d. Any other significant changes in the fishery.</p>
<b>10</b>	<b>Stakeholder opportunities</b>
	<p>Stakeholders were invited to participate in the site visit: all team members were available to meet remotely (FCP v2.2 7.28.15.b).</p> <p>Stakeholders were invited to provide input or comments to the team regarding the Surveillance Audit. Stakeholders must use the <a href="#">MSC Template for Stakeholder Input into Surveillance Audits v1.0</a></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.

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 this fishery 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. The client has changed their chain of custody certification to group from multi-site in order to streamline the process as there are six sites (plants, vessels, office).

## 2.3 Version Details

**Table 1. Fisheries program documents versions.**

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



## 3 Results

### 3.1 Surveillance Results Overview

#### 3.1.1 Summary of Assessment Conditions

	Condition	PI	Status	PI original score	PI revised score
1	Demonstrate that Pink Salmon and Chum Salmon in the stock management unit (SMU) is at a level which maintains high production consistent with escapements at or fluctuating around its TRP.	1.1.1	Closed in 3rd surveillance	Pink: 70 Chum: 70	Pink: 80 Chum: 80
2	Regularly monitor spawning escapement of Pink and Chum Salmon in area rivers at a level of accuracy and coverage sufficient to ensure effective harvest controls.	1.2.3	Closed in 3rd surveillance	Pink: 75 Chum: 75	Pink: 80 Chum: 80
3	Estimate stock status of Pink and Chum Salmon in Karaginsky area rivers relative to reference points, clearly define stocks and populations of all species, and demonstrate that survey indicator streams are representative of other populations within the management unit.	1.2.4	Closed in 3rd surveillance	Pink: 70 Chum: 70	Pink: 80 Chum: 80
4	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.	3.2.2	Closed in 3rd surveillance	75	80
5	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.	3.2.3	Extended to 4th surveillance	75	

**Table 2. Revised Principle Level Scores.**

Principle	Salmon Species	
	Pink	Chum
Principle 1 – Target Species	<del>84.6</del> <u>87.5</u>	<del>84.6</del> <u>87.5</u>
Principle 2 – Ecosystem	87.3	
Principle 3 – Management System	<del>81.7</del> <u>82.3</u>	

### 3.1.2 Total Allowable Catch and Catch Data

Returns of Pink and Chum Salmon to East Kamchatka rebounded in 2021 from low levels in 2020.

**Table 3. Pink Salmon.**

<b>TAC</b>	<b>Year</b>	<b>NA<sup>a</sup></b>	<b>Amount</b>	<b>--</b>
<b>UoA share of TAC</b>	<b>Year</b>	<b>NA<sup>a</sup></b>	<b>Amount</b>	<b>--</b>
<b>UoC share of (UoA)</b>	<b>Year</b>	<b>2021</b>	<b>Amount</b>	<b>25%<sup>b</sup></b>
<b>Total green weight catch by UoC</b>	<b>Year (most recent)</b>	<b>2021</b>	<b>Amount</b>	<b>51,750 mt</b>
	<b>Year (second most recent)</b>	<b>2020</b>	<b>Amount</b>	<b>3,238 mt</b>

<sup>a</sup> Not applicable: Fishery managed based on realized annual escapements rather than total allowable catch.

<sup>b</sup> Based on East Kamchatka total.

**Table 4. Chum Salmon.**

<b>TAC</b>	<b>Year</b>	<b>NA<sup>a</sup></b>	<b>Amount</b>	<b>--</b>
<b>UoA share of TAC</b>	<b>Year</b>	<b>NA<sup>a</sup></b>	<b>Amount</b>	<b>--</b>
<b>UoC share of (UoA)</b>	<b>Year</b>	<b>2021</b>	<b>Amount</b>	<b>16%<sup>b</sup></b>
<b>Total green weight catch by UoC</b>	<b>Year (most recent)</b>	<b>2021</b>	<b>Amount</b>	<b>1,867 mt</b>
	<b>Year (second most recent)</b>	<b>2020</b>	<b>Amount</b>	<b>959 mt</b>

<sup>a</sup> Not applicable: Fishery managed based on realized annual escapements rather than total allowable catch.

<sup>b</sup> Based on East Kamchatka total.

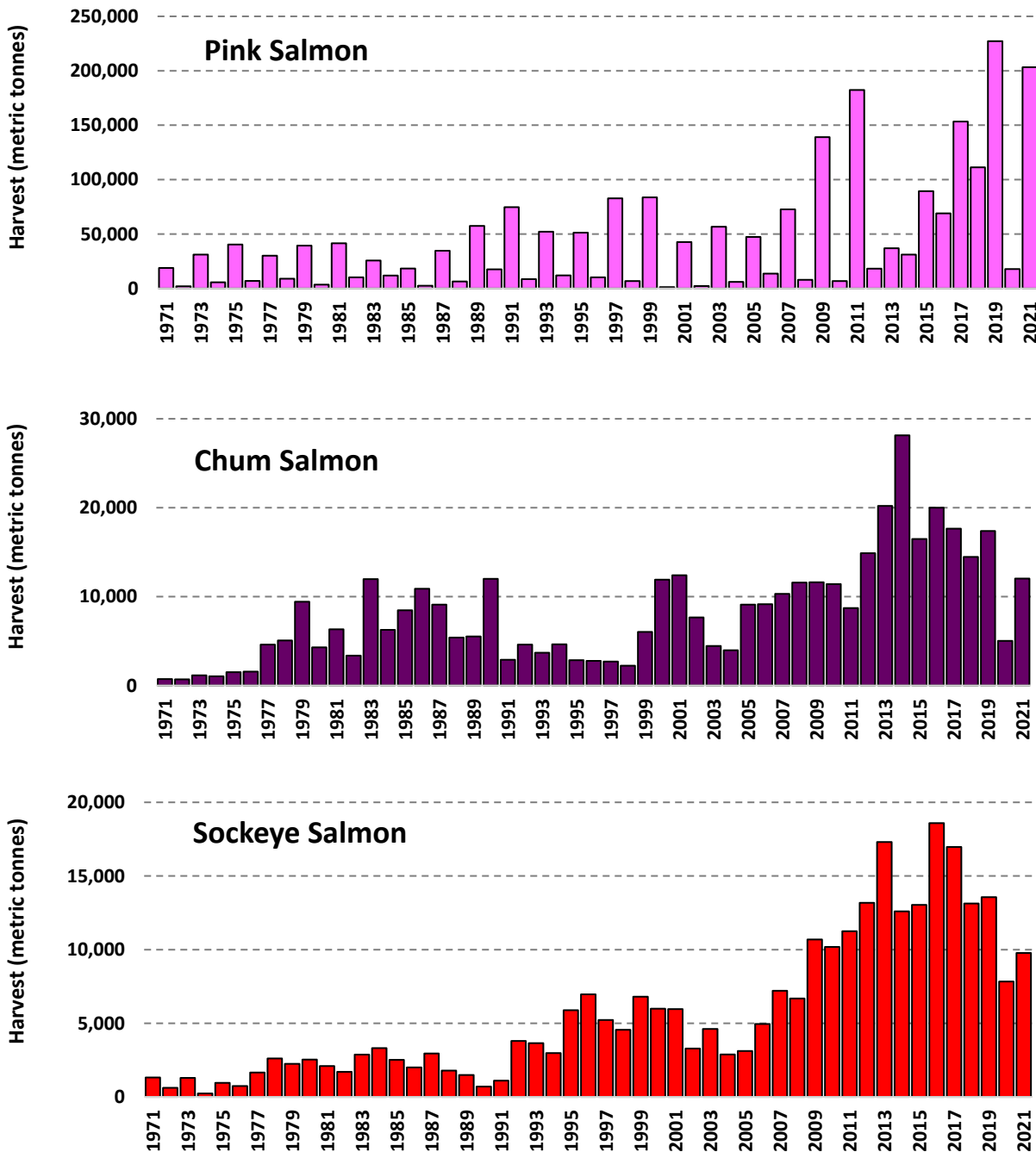


Figure 1. Annual harvest of salmon by species in East Kamchatka, 1971-2021. (Source: North Pacific Anadromous Fish Commission).

### 3.1.3 Recommendations

Continue to provide in future surveillances, annual catch of salmon in the fishery, spawning ground survey effort, numbers of fish on the spawning grounds and enforcement activities. The surveillance team has previously provided a list and template for the appropriate information to facilitate coordination with KamchatNIRO. This information will be necessary to identify any future changes in the fishery or the status of the fish stocks which might potentially affect the certification.

## 3.2 Re-scoring Performance Indicators

### 1.1.1 Stock status

PI 1.1.1		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)		
Scoring Issue		SG 60	SG 80	SG 100
A	Stock status			
	Guided post	It is <b>likely</b> that the SMU is above the limit reference point (LRP).	It is <b>highly likely</b> that the SMU is above the LRP.	There is a <b>high degree of certainty</b> that the SMU is above the LRP.
	Met?	Pink – Yes Chum – Yes	Pink – Yes Chum – Yes	Pink – No Chum – No
	Justification	<p>SG 60 – See SG80.</p> <p>SG80 – It is highly likely that the SMU is above the LRP because spawning escapements of both Pink and Chum Salmon fluctuate around MSY-based target levels and consistently produce high yields, therefore the SG80 is met. Quantitative data on long-term production trends and escapement provide strong evidence that Pink and Chum salmon are highly likely above the point where recruitment would be impaired by the current commercial fishery. Harvest has increased or remained at high levels over the last decade. Escapements have been sufficient to sustain continuing levels of harvest.</p> <p>Freshwater habitat conditions in eastern Kamchatka, with a few exceptions, are excellent for salmon production. Watersheds are virtually pristine and support tremendous diversity of aquatic systems including rivers, streams, lakes and wetlands which provide ideal conditions for salmon production. These conditions are conducive to high levels of salmon productivity and inherent resilience to harvest which in turn can sustain robust levels of fishery exploitation.</p> <p>An extended period of favorable ocean conditions throughout the northern Pacific has contributed to continuing high returns of Pink and Chum Salmon to east Kamchatka. Kamchatka salmon also have benefited by improvements in fishery management structures and enforcement which appear to have substantially reduced impacts of illegal and unreported harvest on spawning escapements.</p> <p>Optimum spawning levels have been identified relative to the point where recruitment would be impaired. KamchatNIRO reports that the range of escapement values for the most species tends to or exceeds the target reference points (KamchatNIRO 2017). Management for optimum spawning escapement provides a conservative standard for protecting populations from critical low levels that potentially reduce diversity, resilience and future production. Management for these target reference points provides an operational equivalent of a limit reference point in salmon management systems by effectively avoiding lower escapements to the extent that this is possible by regulating fisheries.</p> <p>KamchatNIRO (2017) has recently used stock-recruitment analysis to specify reference values for the point of recruitment impairment for Kamchatka River Pink and Chum Salmon. These values are characterized as limit reference points. Escapements of these both species are typically well above the values identified although lower escapement numbers are sometimes produced by incomplete escapement assessments.</p> <p>SG100 – A high degree of certainty is precluded for the SMU because explicit limit reference points have not yet been fully integrated into management practice. Certainty is also limited by incomplete stock assessment data in recent years due to funding reductions for aerial surveys. Application is complicated by overlap in run timing of salmon species, interannual variation in run sizes of different species, different fishing capacity and intensity in different systems, and a higher incidence of illegal, unaccounted, non-industrial fishing in some areas.</p>		

		The management system has developed a methodology for identifying precautionary limit reference points for the UoA and it is expected that the applicability and utility of these reference points will be further evaluated in coming years.	
B	Stock status in relation to target reference point (TRP, e.g., target escapement goal or target harvest rate)		
	Guidepost		The SMU is at or fluctuating around its TRP.
			There is a <b>high degree of certainty</b> that the SMU has been fluctuating around its TRP, or has been above its target reference point over recent years.
	Met?		Pink – <del>No</del> <u>Yes</u> Chum – <del>No</del> <u>Yes</u>
			Pink – No Chum – No
	Justification	<p>SG80 – This standard is not met for Pink Salmon because it is unclear whether escapements in some area rivers (Figure 17) consistently achieve target levels (Table 5). This standard is not met for Chum Salmon because escapements in some area rivers (Dranka and Karaga) consistently fall below target levels. Chum salmon escapements in the Tymlat and Kichiga-Belaya Rivers appear to be fluctuating around targets. The standard is met.</p> <p>Salmon are managed for optimum levels of spawning escapement identified for each species by KamchatNIRO. Historical practices of managing for spawning escapement observed to sustain continuing high harvests have more recently been formalized with the identification of optimum escapement objectives (KamchatNIRO 2017). Objectives are based on production functions defined by stock-recruitment curves relating spawner numbers with adults produced in the next generation of return.</p> <p>Quantitative stock assessments indicate that Pink and Chum Salmon in the Unit of Assessment are achieving spawning escapements that consistently produce high levels of fishery yields under the current management system adopted in 2008. Historical spawning escapement estimates have demonstrated that numbers have been generally fluctuating around target production levels for an extended period under harvest control rules and existing levels of fishing effort. While escapement survey intensity has been reduced in recent years, historical data indicates that harvest control rules based on the passing day strategy are generally adequate to control exploitation rates and ensure significant escapement in most years (as long as stock productivity, fishing effort or fishery efficiency are comparable which they appear to be in the short term).</p> <p><del>However, population-specific escapement goals have only recently been formally quantified. Population-specific escapements of Pink and Chum Salmon are highly variable and strongly correlated from year to year. Many populations appear to consistently achieve objective levels but others appear to consistently fall below targets. A high degree of certainty in escapement estimation is also precluded in recent years by reductions in annual assessments of spawning escapement due to budget limitations. The client contracted with KamchatNIRO for information related to this condition, which was detailed in Bugaev et al. (2019, 2020, 2021, 2022). The reports reviewed the methodology for identifying pink and chum salmon spawning escapement objectives based on stock-recruitment analysis of data for index rivers, historical distribution of spawners among area rivers, statistical model parameters and corresponding reference values, and spawning escapement estimates in seven control rivers. This information indicated that pink salmon escapement objectives were met in aggregate for Karaginsky district rivers in recent years since 2016 since comprehensive aerial surveys were restored except for 2020 when the return was uncharacteristically low. Escapements fluctuated around the target range throughout this period and consistently exceeded target levels in both even and odd years. Chum salmon similarly met or exceeded target levels for most years in the Karaginsky district.</del></p>	
	Status of component populations		

C	Guidepost			The <b>majority</b> of component populations in the SMU are within the range of expected variability
	Met?			Pink – No Chum – No
	Justification	The Karaginsky region supports multiple populations of each salmon species returning to specific areas. Management generally seeks to meet spawning escapement objectives throughout the available habitat. While the majority of the component populations are within the range of expected variability under the aggregate stock assessment approach, it cannot be concluded that target reference points provide a standard sufficient to meet the 100-scoring guidepost without explicit consideration of population-specific escapement goals derived independently for each species.		
References		See Section 3.3.3 Target Species <u>Bugaev et al. 2019, 2020, 2021, 2022</u>		
Stock Status relative to Reference Points				
	Type of reference point	Value of reference point	Current stock status relative to reference point	
Reference point used in scoring stock relative to PRI (SIa)	Proxy values for LRPs are Identified for the purposes of this assessment as 50% of low bound of the escapement goal range as per guidance in CR2.0 GSC2.7 in cases where LRPs are not defined.	Pink Salmon: 4,670,000 Chum Salmon: 132,000 [Numbers based on aggregate goal for control rivers in Karaginsky Bay]	Pink Salmon: Avg. 37,050,000, LRP exceeded in 100% of years Chum Salmon: Avg. 481,000, LRP exceeded in 100% of years [Based on 2016-2021 period where aerial survey effort was fully restored]	
Reference point used in scoring stock relative to MSY (SIb)	TRPs based on spawning escapements estimated to produce maximum or consistent high levels of sustained yield (Bugaev et al. 2022).	Pink Salmon: 9,340,000 – 29,290,000 Chum Salmon: 132,000 – 263,000 [Numbers based on aggregate goal for control rivers in Karaginsky Bay]	Pink Salmon: Avg. 37,050,000, TRP met or exceeded in 83% of years Chum Salmon: Avg. 481,000, TRP met or exceeded in 83% of years [Based on 2016-2021 period where aerial survey effort was fully restored]	
OVERALL PERFORMANCE INDICATOR SCORE:			Pink – <del>70</del> <u>80</u> Chum – <del>70</del> <u>80</u>	
CONDITION NUMBER (if relevant):				
Condition 1. Demonstrate that Pink and Chum Salmon in the stock management unit (SMU) is at a level which maintains high production consistent with escapements at or fluctuating around its TRP.				

### 1.2.3 Information & 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			
	Guidepost	Some relevant information related to SMU structure, SMU production and fleet composition is available to support the harvest strategy. Indirect or direct information is available on some component populations.	Sufficient relevant information related to SMU structure, SMU production, fleet composition and other data is available to support the harvest strategy, including harvests and spawning escapements for a representative range of wild component populations.	A <b>comprehensive range</b> of information (on SMU structure, SMU production, fleet composition, SMU abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available, including estimates of the impacts of fishery harvests on the SMU and the majority of wild component populations.
	Met?	Pink – Yes Chum – Yes	Pink – Yes Chum – Yes	Pink – No Chum – No
	Justification	SG60 – See SG80  SG80 – This standard is met for Pink and Chum. 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 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.  SG100 – This standard is not because recent reductions in aerial surveys of escapement mean that a majority of wild component populations are no longer represented. 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			
	Guidepost	SMU wild abundance and UoA removals are monitored and at <b>least one indicator</b> is available and monitored with sufficient frequency to support the harvest control rule.	SMU wild abundance and UoA removals are <b>regularly monitored</b> 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.	<b>All information</b> 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.

	<b>Met?</b>	Pink – Yes Chum – Yes	Pink – <del>No</del> Yes Chum – <del>No</del> Yes	Pink – No Chum – No
	<b>Justification</b>	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 – The standard is met. The continuing effectiveness of the harvest strategy will depend also on monitoring of spawning escapements. The SG80 standard for regular monitoring is not met because recent reductions in aerial survey intensity have substantially reduced the accuracy and precision of spawning escapement estimates used to guide management decisions. Surveys have been reduced due to budget limitations. The current survey intensity likely provides sufficient precision to distinguish large and small runs but lack the resolution to avoid estimation bias due to differences in run timing or fish distribution. Historical assessments have generally been sufficient to support the current harvest strategy but current survey frequency may not be sufficient to identify any future changes in productivity or distribution patterns which might confound effective implementation of the harvest control rules. The fishing companies contracted with KamchatNIRO for information related to this condition, which was detailed in Bugaev et al. (2019, 2020, 2021, 2022). These reports document recent aerial survey efforts to assess spawning escapements and details of the survey methodology. Substantial increases in flight time were accomplished in beginning in 2018 with contributions of the fishing companies including Tymlatsky Rybokombinat. About 50 hours of flight time were allocated annually for the survey of salmon spawning grounds on the northeast coast of Kamchatka since 2018. From 2012-2015, effort was 20-30 hours per year. Inspection of spawning grounds in the control (reference) rivers (Tymlat, Kichiga, Belaya, Paklavayam, Dranka, Vitvirovayam) is now carried out annually. Non-control rivers (Ossora, Viroviam and Karaga) are assessed periodically as time allows.		
C	Comprehensiveness of information			
	<b>Guidepost</b>		There is good information on all other fishery removals from the SMU.	
	<b>Met?</b>		Pink – Yes Chum – Yes	
	<b>Justification</b>	SG 80 – KamchatNIRO has 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 very 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.  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. This fishery has now been closed.		



		Illegal harvest has been substantially reduced from historical levels and current levels in the Karaginsky area are limited to low levels by the remoteness of the area (KamchatNIRO 2017). Therefore, this standard is met.
<b>References</b>	See section 3.3.4 Management <u>Bugaev et al. 2019, 2020, 2021, 2022</u>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		Pink – <del>75</del> <u>80</u> Chum – <del>75</del> <u>80</u>
<b>CONDITION NUMBER (if relevant):</b> <del>Condition 2. Regularly monitor spawning escapement of Pink and Chum Salmon in Karaginsky area rivers at a level of accuracy and coverage sufficient to ensure effective harvest controls.</del>		

### 1.2.4 Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status of the SMU		
Scoring Issue		SG 60	SG 80	SG 100
A	Appropriateness of assessment to stock under consideration			
	Guidepost		The assessment is <b>appropriate</b> for the SMU and for the harvest control rule.	The assessment <b>takes into account</b> the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Pink – Yes Chum – Yes	Pink – No Chum – No
	Justification	SG 80 - The assessment includes in-season estimation of harvest, catch per effort, biological characteristics, timing and distribution of harvest and returns, and spawning escapement. Spawning escapement is estimated with aerial surveys supplemented in some cases with sonar and ground surveys. This information is used to design and make in-season adjustments of harvest control rules intended to ensure escapement sufficient to sustain future production. Annual spawning escapement is estimated for representative samples of stock management units for each species. Adequacy of harvest control rules relative to escapement has been assessed over time and the assessment has been used to refine control rules. The identification of escapement-based reference points has been formalized in recent years based on analysis of historical production patterns using stock-recruitment analyses.  SG100 – Not all major features of stock structure are fully addressed by the stock assessment. While some consideration is given to component stocks (particularly for Sockeye), assessments are generally based on species aggregates rather than component stocks.		
B	Assessment approach			
	Guidepost	The assessment estimates stock status relative to generic reference points appropriate to salmon.	The assessment estimates stock status relative to reference points that are appropriate to the SMU and can be estimated.	The assessment estimates with a high level of confidence both stock status and reference points that are appropriate to the SMU and its wild component populations.
	Met?	Pink – Yes Chum – Yes	Pink – <del>No</del> <u>Yes</u> Chum – <del>No</del> <u>Yes</u>	Pink – No Chum – No
	Justification	SG 60 - Stock status is estimated from aerial surveys of escapement by species and sometimes major substocks based on index surveys and distribution patterns. These estimates are evaluated relative to spawner objectives identified for each species based on historical values that were shown over time to sustain high returns and fishery harvests. In recent years, the management system has also explored development of more explicitly defined escapement goals for each species based on spawner-recruit analyses (KamchatNIRO 2017). Management for escapement-based reference points is a standard and effective practice in salmon fisheries throughout the Pacific.  <del>SG80 – The SG80 standard is not met for this performance indicator due to the generic nature of historical application of reference points and questions regarding their application in specific areas of the region. This fishery historically estimated stock status relative to aggregate escapement goals based on annual index area surveys. Escapements were generally compared to historical values that were shown over time to sustain high returns and fishery harvests. However, goals were not always explicitly defined in historical practice and comparisons of specific escapement values with defined goals are not always available. In recent years, the management system has also explored development of goals based on population specific analyses. However, population specific goals have not yet been fully incorporated into management and effective application may be limited due to recent</del>		

		reductions in aerial survey coverage of a range of representative populations and time periods for each species. Reduced surveys provide low resolution on major stock subcomponents and will limit the effective development and application of population-specific reference points. The standard is met. The client contracted with KamchatNIRO for related information, which was detailed in Bugaev et al. (2019, 2020, 2021, 2022). The reports reviewed the methodology for identifying pink and chum salmon spawning escapement objectives based on stock-recruitment analysis of data for index rivers, historical distribution of spawners among area rivers, statistical model parameters and corresponding reference values, and annual spawning escapement estimates in seven control rivers.		
C	Uncertainty in the assessment			
	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Pink – Yes Chum – Yes	Pink – Yes Chum – Yes	Pink – No Chum – No
	Justification	SG60 - The stock assessment has identified major sources of uncertainty including normal environmentally-driven variability in productivity; normal annual variability in run timing and distribution; and heterogeneity in productivity of major stock subcomponents.  SG80 – Major uncertainties are taken into account in management. Harvest is controlled in-season based on real-time data on spawning escapement in aerial spawning ground surveys as well as numbers and characteristics of fish entering the fishery. In-season assessments allow fisheries to be regulated based on normal annual variability in productivity and run timing. Assessments incorporate spatial patterns which address heterogeneity in major stock subcomponents. The management system is also exploring more-explicit quantification of goals based on stock-recruitment analyses. These analyses have been provided by KamchatNIRO (2017) for Pink and Chum. These goals include explicit precautionary safety factors based on statistical analysis of uncertainty.  SG100 - Uncertainty in escapement estimates has not been quantified. Stock status is not evaluated relative to reference points in a probabilistic way (although probabilistic analyses are beginning to be incorporated into analyses of management effectiveness (KamchatNIRO 2017), hence the SG100 is not met.		
D	Evaluation of assessment			
	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			Pink – No Chum – No
	Justification	A rigorous exploration of alternative hypotheses and approaches has not been reported.		
E	Peer review of assessment			
	Guidepost		The assessment of SMU status, including the choice of indicator populations and methods for evaluating wild salmon in enhanced fisheries is subject to peer review.	The assessment, including design for using indicator populations and methods for evaluating wild salmon in enhanced fisheries, has been internally and externally peer reviewed.

	Met?		Pink – Yes Chum – Yes	Pink – No Chum – No
	Justification	SG80 - The stock assessment is subject to extensive peer review within the management system. KamchatNIRO scientists regularly review and improve assessment methodologies and results which are subject to additional review by the regional scientific institute (VNiro). In-season assessment information receives extensive review as part of the annual management process overseen by the Anadromous Fish Commission.  SG100 - External peer review is limited hence the SG100 is not met.		
F	Representativeness of indicator populations			
	Guidepost	Where indicator stocks are used as the primary source of information for making management decisions on SMUs, there is <b>some scientific basis</b> for the indicators' selection.	Where indicator stocks are used as the primary source of information for making management decisions on SMUs, there is <b>some evidence of coherence</b> 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 (i.e., those with a higher conservation risk) to match those of the representative SMU where applicable.	Where indicator stocks are used as the primary source of information for making management decisions on SMUs, the status of the indicator streams are <b>well correlated</b> with other populations they represent within the management unit, including stocks with lower productivity (i.e., those with a higher conservation risk).
	Met?	Pink – Yes Chum – Yes	Pink – <del>No</del> <u>Yes</u> Chum – <del>No</del> <u>Yes</u>	Pink – No Chum – No
	Justification	SG60 – The stock assessment historically surveyed representative areas of most river systems for each salmon species. Index reaches were selected for their representative nature based on analysis of a fuller complement of historical survey areas.  <del>SG80 – The SG 80 guidepost is not met. It is unclear whether current assessments now fully represent the less-productive populations in the management unit in light of recent reductions in stock assessment effort. Stock assessment has become increasingly reliant on indicator streams with the reduction in sampling rate but changing distribution patterns over time at different scales of abundance and productivity can confound interpretation of index samples. Reliance on index areas may also 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. This problem is even worsening due to reduction of aerial surveys. Resulting reductions in the accuracy and precision of stock assessments can impair management effectiveness in the event of changing stock productivity and distribution or fishery patterns. Reduced surveys also provide low resolution on major stock subcomponents and will limit the effective development and application of population-specific reference points. 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. The standard is met. Historical information on the distribution of spawners among rivers shows that the index rivers account for a large portion of the total spawning escapement in the region. The control rivers account for approximately 60% of the pink salmon and 70% of the chum salmon escapement in the Karaginsky Gulf portion of the Karaginsky subzone. These results are consistent with previous analysis by KamchatNIRO of</del>		

		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).		
g	Definition of Stock Management Units (SMUs)			
	Guidepost	The majority of SMUs are defined with a clear rationale for conservation, fishery management and stock assessment requirements.	The SMUs are <b>well-defined</b> and include definitions of the major populations with a clear rationale for conservation, fishery management and stock assessment requirements.	There is an <b>unambiguous description</b> of each SMU that may include the geographic location, run timing, migration patterns, and/or genetics of component populations with a clear rationale for conservation, fishery management and stock assessment requirements.
	Met?	Pink – Yes Chum – Yes	Pink – <del>No</del> <u>Yes</u> Chum – <del>No</del> <u>Yes</u>	Pink – No Chum – No
	Justification	SG60 –Each species is comprised of a hierarchy of subcomponents including stocks (e. g., early and late runs) and demographically-independent populations (e.g., species returning to home rivers or lakes). Major stocks of each species are defined based on run timing, and spawning distribution. This stock structure is considered in conservation, fishery management and stock assessment requirements.  <del>SG80 – This standard is not met because structure is not well defined at the substock or population level. The fishery in the sea and river mainstem operates on a complex of overlapping species, stocks and population. As a result, stock-specific information on harvest, exploitation and escapement is limited for some species. This standard is met. Stocks of east 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. 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.</del>		
References		See sections 3.3.1 Pink Salmon, 3.3.2 Chum Salmon <u>Bugaev et al. 2019, 2020, 2021, 2022</u>		
OVERALL PERFORMANCE INDICATOR SCORE:				Pink – <del>70</del> <u>80</u> Chum – <del>70</del> <u>80</u>
CONDITION NUMBER (if relevant):				
<del>Condition 3. — Estimate stock status of Pink and Chum Salmon in Karaginsky area rivers relative to reference points, clearly define stocks and populations of all species, and demonstrate that survey indicator streams are representative of other populations within the management unit.</del>				

### 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			
	Guidepost	There are <b>some</b> decision-making processes in place that result in measures and strategies to achieve the fishery-specific and enhancement objectives.	There are <b>established</b> decision-making processes that result in measures and strategies to achieve the fishery-specific and enhancement objectives.	
	Met?	Yes	Yes	
	Justification	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.		
b	Responsiveness of decision-making processes			
	Guidepost	Decision-making processes respond to <b>serious issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to <b>serious and other important issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to <b>all issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Yes	Yes	No
	Justification	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.		

		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.		
c	Use of precautionary approach			
	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Yes	
	Justification	SG80 - Decision-making processes use the precautionary approach and are based on best available information by KamchatNIRO and SVTU. The use of optimum spawning escapement as both target and limit reference points demonstrates a precautionary element to decision making. 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			
	Guidepost	Some information on fishery performance and management action is generally available on request to stakeholders.	<b>Information on fishery performance and management action is available on request</b> , 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 <b>provides comprehensive information on fishery performance and management actions</b> and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Yes	<del>No</del> <u>Yes</u>	No
	Justification	SG60. Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. This is achieved by transparent decision-making in the Anadromous Fish Commission, which gathers for meetings 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 few hours after the meeting) publication of its decisions at the SVTU website ( <a href="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">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</a> ). The protocols contain information about participants of the meeting, questions discussed, results of voting and decisions have been made accompanying by relevant information. Moreover, significant amount of information about current situation is available from the SVTU website. SG80 - <del>At the same time, 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. Shevlyakov 2013b) provide a historical</del>		

		<p>perspective but are not sufficient to allow tracking action associated with findings and relevant recommendations.</p> <p>Inconsistent availability of annual fish run and fishery information outside the local governmental management system limits the availability of information for actions or lack of action associated with findings and relevant recommendations; therefore, the fishery does not score 80. The standard is met. 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. 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 provide a historical perspective but are not sufficient to allow tracking action associated with findings and relevant recommendations.</p> <p>The fishing companies contracted with KamchatNIRO to summarize information on fishery harvests, spawning escapements, and actions taken by Anadromous Fish Catch Monitoring and Controlling Commission in Kamchatka krai (Protocols) and justification of actions in certified West Kamchatka fisheries. This information is detailed in Bugaev et al. 2019, 2020, 2021. This demonstrates that the appropriate information is available upon request.</p>		
e	Approach to disputes			
	Guidepost	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Yes	Yes	Yes
	Justification	SG60 - See SG100 SG80 - See SG100 SG100 - The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges. The previous assessment of the same Client, which received MSC certificate for Ozernaya River Sockeye in June 2012, provides a good example of such disputes investigated in a court of Kamchatka Kray <a href="http://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/ozernaya_river_Sockeye_salmon/assessment-downloads-1/PCDR.pdf">http://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/ozernaya_river_Sockeye_salmon/assessment-downloads-1/PCDR.pdf</a> . This dispute is directly relevant for this certification as well. After the court procedures, this conflict has been resolved. The example demonstrates that the management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenge, thus deserving SG100 for this element.		
References		See Section 3.5 Bugaev et al. 2019, 2020, 2021, 2022		
OVERALL PERFORMANCE INDICATOR SCORE:				75 80
CONDITION NUMBER (if relevant):				
<del>Condition 4. 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.</del>				



### 3.3 Conditions & Client Action Plan

#### Condition 1

<b>Performance Indicator</b>	<b>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)</b>
<b>Score</b>	Pink – <del>70</del> 80 Chum – <del>70</del> 80
<b>Rationale</b>	This standard is not met for Pink Salmon because it is unclear whether escapements in some area rivers consistently achieve target levels. This standard is not met for Chum Salmon because escapements in some area rivers (Dranka and Karaga) consistently fall below target levels. Chum salmon escapements in the Tymlat and Kichiga-Belaya Rivers appear to be fluctuating around targets.
<b>Condition</b>	Demonstrate that Pink Salmon and Chum Salmon in the stock management unit (SMU) is at a level which maintains high production consistent with escapements at or fluctuating around its TRP.
<b>Condition start</b>	April 2019
<b>Condition deadline</b>	2022. By surveillance 3.
<b>Milestones</b>	By the first annual surveillance (2020), the client must present evidence that a plan is in place to address this condition.  By the second annual surveillance (2021), the client must present evidence that the plan has been implemented.  By the third annual surveillance (2022), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.
<b>Client action plan</b>	The Client will work with KamchatNIRO to develop a plan to improve Pink Salmon and Chum Salmon escapement monitoring within Karaginsky Bay that will facilitate better in-season management of the fishery. The Client will participate in AFC meetings during the fishing season and advocate for management measures that allow Chum salmon to meet escapement targets in the UoA. By the first annual surveillance, the Client will provide a written plan for improving Chum salmon escapement monitoring. Further annual reports will contain Pink salmon and Chum salmon escapement information collected during the previous season.
<b>Consultation on condition</b>	The Client will work with KamchatNIRO, AFC and other stakeholders.
<b>Progress on condition (year 1)</b>	The client contracted with KamchatNIRO for information related to this condition, which was detailed in two reports (Bugaev et al. 2019, 2020). The reports reviewed the methodology for identifying pink and chum salmon spawning escapement objectives based on stock-recruitment analysis of data for index rivers, historical distribution of spawners among area rivers, statistical model parameters and corresponding reference values, and spawning escapement estimates for 2018 and 2019 in seven control rivers.  This information indicated that pink salmon escapement objectives were met in aggregate for Karaginsky district rivers in each year since 2011. Escapements fluctuated around the target range throughout this period and consistently exceeded target levels in both even and odd years since 2015. Chum salmon similar met or exceeded target

	<p>levels for 2015-2019 in the Karaginsky district. Chum escapement objectives for Karaginsky District control river were exceeded in both 2018 and 2019.</p> <p>Progress on this condition effectively addresses year one milestones.</p>
<b>Progress on condition (year 2)</b>	<p>The client contracted with KamchatNIRO for information related to this condition, which was detailed in three reports (Bugayev et al. 2019, 2020, 2021). The reports reviewed the methodology for identifying pink and chum salmon spawning escapement objectives based on stock-recruitment analysis of data for index rivers, historical distribution of spawners among area rivers, statistical model parameters and corresponding reference values, and spawning escapement estimates for 2018-2020 in seven control rivers.</p> <p>This information indicated that the poor 2020 pink salmon run generally produced escapements below target levels for Karaginsky district rivers in 2020. Chum salmon met or exceeded target levels for 2015-2020 in the Karaginsky district.</p> <p>Progress on this condition effectively addresses year two milestones.</p>
<b>Progress on condition (year 3)</b>	<p>The client contracted with KamchatNIRO for information related to this condition, which was detailed in Bugayev et al. (2019, 2020, 2021, 2022). The reports reviewed the methodology for identifying pink and chum salmon spawning escapement objectives based on stock-recruitment analysis of data for index rivers, historical distribution of spawners among area rivers, statistical model parameters and corresponding reference values, and spawning escapement estimates for 2018-2021 in seven control rivers.</p> <p>This information indicated that pink salmon escapement objectives were met in aggregate for Karaginsky district rivers in recent years since 2016 since comprehensive aerial surveys were restored except for 2020 when the return was uncharacteristically low. Escapements fluctuated around the target range throughout this period and consistently exceeded target levels in both even and odd years. Chum salmon similarly met or exceeded target levels for most years in the Karaginsky district.</p> <p>Progress on this condition effectively addresses year three milestones. Therefore, this condition is closed as scheduled.</p>
<b>Status of condition</b>	Closed in the 3 <sup>rd</sup> surveillance
<b>Additional Information</b>	<p>Bugayev, A.V., and four coauthors. 2019. Assessment of Pacific Salmon (Pink Salmon (<i>Oncorhynchus gorbuscha</i>), Chum Salmon (<i>Oncorhynchus keta</i>) and Sockeye salmon (<i>Oncorhynchus nerka</i>) stock status and fishery management system in specific water bodies of the Karaginsky District of Eastern Kamchatka (Rivers Tymlat, Kichiga, Ossora, Virovayam, Belaya, Paklavayam, Karaga, Dranka, and Vytvirovayam) done as a scientific research support for audit of "Tymlatsky Rybokombinat" LLC (Tymlatsky Fish Factory) fishing practices for conformity with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 44/18-HIP dated December 19, 2018. KamchatNIRO. Petropavlovsk-Kamchatsky.</p> <p>Bugayev, A.V., and four coauthors. 2020. Assessment of Pacific salmon (pink salmon, chum salmon) stock status and fishery management system in the Karaginsky subzone (water bodies: Karaginsky Gulf, Tymlat river, Kichiga river, Ossora river, Virovayam river, Belaya river, Paklavayam river, Karaga river, Dranka river, Vytvirovayam river) in the framework of scientific research support for audit of "Tymlatsky Rybokombinat" LLC (Tymlatsky Fish Factory) fishing practices for conformity with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 142-PDD/20-NIR dated 04/22/2020. KamchatNIRO. Petropavlovsk-Kamchatsky. (See previous surveillance report)</p> <p>Bugayev, A.V., and four coauthors. 2021. Assessment of the stock and analysis of the harvest (fishing) regulation with respect to Pacific salmon (pink salmon, chum</p>

	<p>salmon) in the Karaginsky Gulf (Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka and Dranka rivers) as part of the scientific support of the audit conducted in accordance with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 219-ПД/21-НИР of June 4, 2021. (See previous surveillance report)</p> <p>Bugaev, A.V., O. V. Zikunova, N. B. Artyukhina and S. V. Shubkin. 2022. REPORT (Contract 208-PDD / 22-NIR dated 06/06/2022) Subject: Data for the annual MSC audit of certified salmon fisheries in the North-East Kamchatka (Karagin subzone) for the following stock units: pink salmon, chum salmon, sockeye salmon (Karagin Bay - rivers Khai-Anapka, Anapka, Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam , Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Khailyulya, Istyk, Nachiki, Uka, Malamvayam, Konskaya; Korf Bay - rivers Vyvenka, Tnakhivnytvayam, Lingenmyvayam, Gatymynvayam). KamchatNIRO. Petropavlovsk-Kamchatsky.</p>
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## Condition 2

<b>Performance Indicator</b>	<b>1.2.3. Information and monitoring - Relevant information is collected to support the harvest strategy</b>
<b>Score</b>	Pink – <del>75</del> 80 Chum – <del>75</del> 80
<b>Rationale</b>	The continuing effectiveness of the harvest strategy will depend also on monitoring of spawning escapements. The SG80 standard for regular monitoring is not met because recent reductions in aerial survey intensity have substantially reduced the accuracy and precision of spawning escapement estimates used to guide management decisions.
<b>Condition</b>	Regularly monitor spawning escapement of Pink and Chum Salmon in area rivers at a level of accuracy and coverage sufficient to ensure effective harvest controls.
<b>Condition start</b>	April 2019
<b>Condition deadline</b>	2022. By surveillance 3.
<b>Milestones</b>	By the first annual surveillance (2020), the client must present evidence that a plan is in place to address this condition.  By the second annual surveillance (2021), the client must present evidence that the plan has been implemented.  By the fourth annual surveillance (previously 3 <sup>rd</sup> surveillance audit: around July/August 2023 as per Derogation 3), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.
<b>Client action plan</b>	The Client will provide a written plan to improve escapement monitoring sufficient to identify the status of Pink and Chum salmon in relation to harvest in the UoA during the first annual surveillance. 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. bi-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. The plan will be implemented prior to the second surveillance audit. Information on survey effort and distribution and escapement results from the previous season will be provided during each audit.
<b>Consultation on condition</b>	The Client will work with KamchatNIRO, AFC and other stakeholders.
<b>Progress on condition (year 1)</b>	The client contracted with KamchatNIRO for information related to this condition, which was detailed in two reports (Bugaev et al. 2019, 2020). The reports documented recent aerial survey efforts to assess spawning escapements and details of the survey methodology. Substantial increases in flight time were accomplished in 2018 and 2019 with contributions of the fishing companies including Tymlatsky Rybokombinat. About 50 hours of flight time were allocated annually for the survey of salmon spawning grounds on the northeast coast of Kamchatka in 2018 and 2019. From 2012-2015, effort was 20-30 hours per year. Inspection of spawning grounds in the control (reference) rivers (Tymlat, Kichiga, Belaya, Paklavayam, Dranka, Vitvirovayam) is now carried out annually. Non-control rivers (Ossora, Viroviam and Karaga) are assessed periodically as time allows.  Progress on this condition effectively addresses year one milestones.

<b>Progress on condition (year 2)</b>	<p>The client contracted with KamchatNIRO for information related to this condition, which was detailed in Bugaev et al. (2019, 2020, 2021). The reports documented recent aerial survey efforts to assess spawning escapements and details of the survey methodology. Substantial increases in flight time were accomplished in since 2018 with contributions of the fishing companies including Tymlatskiy Rybokombinat.</p> <p>Progress on this condition effectively addresses year two milestones.</p>
<b>Progress on condition (year 3)</b>	<p>The client contracted with KamchatNIRO for information related to this condition, which was detailed in Bugaev et al. (2019, 2020, 2021, 2022). The reports documented recent aerial survey efforts to assess spawning escapements and details of the survey methodology. Substantial increases in flight time were accomplished in since 2018 with contributions of the fishing companies including Tymlatsky Rybokombinat.</p> <p>Progress on this condition effectively addresses year three milestones. Therefore, this condition is closed as scheduled.</p>
<b>Status of condition</b>	Closed in the 3 <sup>rd</sup> surveillance
<b>Additional Information</b>	<p>Bugaev, A.V., and four coauthors. 2019. Assessment of Pacific Salmon (Pink Salmon (<i>Oncorhynchus Gorbuscha</i>), Chum Salmon (<i>Oncorhynchus Keta</i>) and Sockeye Salmon (<i>Oncorhynchus Nerka</i>) stock status and fishery management system in specific water bodies of the Karaginsky District of Eastern Kamchatka (Rivers Tymlat, Kichiga, Ossora, Virovayam, Belaya, Paklavayam, Karaga, Dranka, and Vytvirovayam) done as a scientific research support for audit of “Tymlatsky Rybokombinat” LLC (Tymlatsky Fish Factory) fishing practices for conformity with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 44/18-HIP dated December 19, 2018. KamchatNIRO. Petropavlovsk-Kamchatsky.</p> <p>Bugaev, A.V., and four coauthors. 2020. Assessment of Pacific salmon (pink salmon, chum salmon) stock status and fishery management system in the Karaginsky subzone (water bodies: Karaginsky Gulf, Tymlat river, Kichiga river, Ossora river, Virovayam river, Belaya river, Paklavayam river, Karaga river, Dranka river, Vytvirovayam river) in the framework of scientific research support for audit of “Tymlatsky Rybokombinat” LLC (Tymlatsky Fish Factory) fishing practices for conformity with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 142-PDD/20-NIR dated 04/22/2020. KamchatNIRO. Petropavlovsk-Kamchatsky. (See previous surveillance report)</p> <p>Bugaev, A.V., and four coauthors. 2021. Assessment of the stock and analysis of the harvest (fishing) regulation with respect to Pacific salmon (pink salmon, chum salmon) in the Karaginsky Gulf (Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka and Dranka rivers) as part of the scientific support of the audit conducted in accordance with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 219-ПДД/21-НІР of June 4, 2021 (See previous surveillance report)</p> <p>Bugaev, A.V., O. V. Zikunova, N. B. Artyukhina and S. V. Shubkin. 2022. REPORT (Contract 208-PDD / 22-NIR dated 06/06/2022) Subject: Data for the annual MSC audit of certified salmon fisheries in the North-East Kamchatka (Karagin subzone) for the following stock units: pink salmon, chum salmon, sockeye salmon (Karagin Bay - rivers Khai-Anapka, Anapka, Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Khailyulya, Istyk, Nachiki, Uka, Malamvayam, Konskaya; Korf Bay - rivers Vyvenka, Tnakhivnytvayam, Lingenmyvayam, Gatymynvayam). KamchatNIRO. Petropavlovsk-Kamchatsky.</p>

### Condition 3

<b>Performance Indicator</b>	<b><u>1.2.4. Assessment of stock status</u> - There is an adequate assessment of the stock status of the SMU</b>
<b>Score</b>	Pink – <del>70</del> 80 Chum – <del>70</del> 80
<b>Rationale</b>	The SG80 standard is not met for this performance indicator. This fishery historically estimated stock status relative to generally-defined escapement goals based on annual index area surveys. More-explicit quantitative escapement goals have recently been defined but the degree to which they have been incorporated into management practice is unclear. Further, aerial survey effort has been substantially reduced in recent years due to budget issues. This reduction: 1) reduces the accuracy and precision of stock assessments; 2) can reduce management effectiveness in the event of changing stock productivity and distribution or fishery patterns; and 3) will limit the effective development and application of stock-specific reference points.
<b>Condition</b>	Estimate stock status of Pink and Chum Salmon in Karaginsky area rivers relative to reference points, clearly define stocks and populations of all species, and demonstrate that survey indicator streams are representative of other populations within the management unit.
<b>Condition start</b>	April 2019
<b>Condition deadline</b>	2022. By surveillance 3.
<b>Milestones</b>	By the first annual surveillance (2020), the client must present evidence that a plan is in place to address this condition.  By the second annual surveillance (2021), the client must present evidence that the plan has been implemented.  By the third annual surveillance (2022), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.  <i>Recommendation: Include a clear definition of stocks and populations for all species.</i>
<b>Client action plan</b>	By the first surveillance, the Client will provide a written report detailing escapement goals that are actually used to manage Pink and Chum salmon in the UoA. The report will detail which rivers (or river sections) are annually surveyed and how this information is used to evaluate escapements relative to the goals. It will also include an analysis of how the surveyed rivers are representative of unsurveyed rivers in the UoA.  By the second surveillance, that Client will provide a written report to demonstrate that survey indicator rivers continue to be representative of populations throughout the unit of certification, including documentation of methodology by which survey counts are expanded so that spawning escapement can be directly compared with the spawning escapement goals.
<b>Consultation on condition</b>	The Client will work with KamchatNIRO.
<b>Progress on condition (year 1)</b>	The client contracted with KamchatNIRO for information related to this condition, which was detailed in two reports (Bugaev et al. 2019, 2020). The reports reviewed the methodology for identifying pink and chum salmon spawning escapement objectives based on stock-recruitment analysis of data for index rivers, historical distribution of

	<p>spawners among area rivers, statistical model parameters and corresponding reference values, and spawning escapement estimates for 2018 and 2019 in seven control rivers.</p> <p>Historical information on the distribution of spawners among rivers shows that the index rivers account for a large portion of the total spawning escapement in the region. The control rivers account for approximately 60% of the pink salmon and 70% of the chum salmon escapement in the Karaginsky Gulf portion of the Karaginsky subzone. These results are consistent with previous analysis by KamchatNIRO 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).</p> <p>Assessment methods were also reviewed with Dr. Bugaev in a meeting during the surveillance.</p> <p>Progress on this condition effectively addresses year one milestones.</p>
<b>Progress on condition (year 2)</b>	<p>The client contracted with KamchatNIRO for information related to this condition, which was detailed by Bugaev et al. (2019, 2020, 2021). The reports reviewed the methodology for identifying pink and chum salmon spawning escapement objectives based on stock-recruitment analysis of data for index rivers, historical distribution of spawners among area rivers, statistical model parameters and corresponding reference values, and annual spawning escapement estimates in seven control rivers.</p> <p>Assessment methods were also reviewed with Dr. Bugaev in a meeting during the surveillance. This meeting clarified application of escapement goals in odd and even pink salmon run years. Different goals are used for weak and strong run years which effectively recognizes differences in productivity of even and odd year brood cycles. Goals are not specific to brood cycle years but rather based on run forecasts and inseason run size updates. Goals for low run years are based on long-term average production functions in an effort to build from low run sizes. Goals for high run years are based on productive brood years in an effort to maintain high levels of production.</p> <p>Progress on this condition effectively addresses year two milestones.</p>
<b>Progress on condition (year 3)</b>	<p>The client contracted with KamchatNIRO for information related to this condition, which was detailed by Bugaev et al. (2019, 2020, 2021, 2020). The reports reviewed the methodology for identifying pink and chum salmon spawning escapement objectives based on stock-recruitment analysis of data for index rivers, historical distribution of spawners among area rivers, statistical model parameters and corresponding reference values, and annual spawning escapement estimates in seven control rivers. Assessment methods were also reviewed with Dr. Bugaev during the annual surveillance meetings. These discussions clarified application of escapement goals in odd and even pink salmon run years.</p> <p>Progress on this condition effectively addresses year three milestones. Therefore, this condition is closed</p>
<b>Status of condition</b>	Closed in the 3 <sup>rd</sup> surveillance
<b>Additional Information</b>	<p>Bugaev, A.V., and four coauthors. 2019. Assessment of Pacific Salmon (Pink Salmon (<i>Oncorhynchus Gorbuscha</i>), Chum Salmon (<i>Oncorhynchus Keta</i>) and Sockeye Salmon (<i>Oncorhynchus Nerka</i>)) stock status and fishery management system in specific water bodies of the Karaginsky District of Eastern Kamchatka (Rivers Tymlat, Kichiga, Ossora, Virovayam, Belaya, Paklavayam, Karaga, Dranka, and Vytvirovyam) done as a scientific research support for audit of "Tymlatsky Rybokombinat" LLC (Tymlatsky Fish Factory) fishing practices for conformity with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 44/18-HMP dated December 19, 2018. KamchatNIRO. Petropavlovsk-Kamchatsky.</p>

	<p>Bugaev, A.V., and four coauthors. 2020. Assessment of Pacific salmon (pink salmon, chum salmon) stock status and fishery management system in the Karaginsky subzone (water bodies: Karaginsky Gulf, Tymlat river, Kichiga river, Ossora river, Virovayam river, Belaya river, Paklavayam river, Karaga river, Dranka river, Vytvirovayam river) in the framework of scientific research support for audit of “Tymlatsky Rybokombinat” LLC (Tymlatsky Fish Factory) fishing practices for conformity with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 142-PDD/20-NIR dated 04/22/2020. KamchatNIRO. Petropavlovsk-Kamchatsky. (See previous surveillance report)</p> <p>Shevlyakov, E. A., and A. V. Maslov. 2011. The rivers determining reproduction of pacific salmons in Kamchatka as indicators of spawning grounds filling. Izv. TINRO 164:114-139.</p> <p>Bugaev, A.V., and four coauthors. 2021. Assessment of the stock and analysis of the harvest (fishing) regulation with respect to Pacific salmon (pink salmon, chum salmon) in the Karaginsky Gulf (Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka and Dranka rivers) as part of the scientific support of the audit conducted in accordance with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 219-ПДД/21-НИР of June 4, 2021 (See previous surveillance report)</p> <p>Bugaev, A.V., O. V. Zikunova, N. B. Artyukhina and S. V. Shubkin. 2022. REPORT (Contract 208-PDD / 22-NIR dated 06/06/2022) Subject: Data for the annual MSC audit of certified salmon fisheries in the North-East Kamchatka (Karagin subzone) for the following stock units: pink salmon, chum salmon, sockeye salmon (Karagin Bay - rivers Khai-Anapka, Anapka, Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam , Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Khailyulya, Istyk, Nachiki, Uka, Malamvayam, Konskaya; Korf Bay - rivers Vyvenka, Tnakhivnytvayam, Lingenmyvayam, Gatymynvayam). KamchatNIRO. Petropavlovsk-Kamchatsky.</p>
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#### Condition 4

<b>Performance Indicator</b>	<b>3.2.2. Decision-making processes</b> – 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.
<b>Score</b>	75
<b>Rationale</b>	<p>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. Shevlyakov 2013b) provide a historical perspective but are not sufficient to allow tracking action associated with findings and relevant recommendations.</p> <p>Inconsistent availability of annual fish run and fishery information outside the local governmental management system limits the availability of information for actions or lack of action associated with findings and relevant recommendations; therefore, the fishery does not score 80.</p>
<b>Condition</b>	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.
<b>Condition start</b>	April 2019
<b>Condition deadline</b>	4 <sup>th</sup> surveillance audit – 2023 (as extended from 2022 due to the COVID derogation for management conditions)
<b>Milestones</b>	<p>By the first annual surveillance (2020), the client must present evidence that a plan is in place to address this condition.</p> <p>By the second annual surveillance (2021), the client must present evidence that the plan has been implemented.</p> <p>By the fourth annual surveillance (previously 3<sup>rd</sup> surveillance audit; around July/August 2023 as per Derogation 3), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.</p>
<b>Client action plan</b>	Annually the Client will provide a written report explaining management actions taken during the previous fishing season that were relevant to the fishery. The report will identify initial passing days, modifications to passing days, and season closures as well as clearly refer to the Anadromous Fish Commission protocols for the fishery area which adopt the relevant decisions. The report may also include relevant information on the fishery management adopted from other management agencies and institutes.
<b>Consultation on condition</b>	The Client will work with SVTU, Kamchatka Ministry on Fisheries, and KamchatNIRO.
<b>Progress on condition (year 1)</b>	The client contracted with KamchatNIRO for information related to this condition, which was detailed in two reports (Bugayev et al. 2019, 2020). The reports described the rationale for fishery management actions taken in 2018 and 2019. The client also

	<p>provided detailed documentation for corresponding actions by the Far-Eastern Scientific and Fishery Council and the Anadromous Fish Commission (see Appendix).</p> <p>Progress on this condition effectively addresses year one milestones.</p>
<b>Progress on condition (year 2)</b>	<p>The client contracted with KamchatNIRO for information related to this condition, which was detailed in Bugaev et al. (2019, 2020, 2021). The reports described the rationale for annual fishery management actions. The client also provided detailed documentation for corresponding actions by the Far-Eastern Scientific and Fishery Council and the Anadromous Fish Commission (see Appendix).</p> <p>Progress on this condition effectively addresses year two milestones.</p>
<b>Progress on condition (year 3)</b>	<p>The client contracted with KamchatNIRO for information related to this condition, which was detailed in Bugaev et al. (2019, 2020, 2021, 2022). The reports described the rationale for annual fishery management actions. The client also provided detailed documentation for corresponding actions by the Far-Eastern Scientific and Fishery Council and the Anadromous Fish Commission. Progress on this condition effectively addresses year three milestones. Therefore, this condition is closed as scheduled.</p>
<b>Status of condition</b>	<p>Closed in the 3<sup>rd</sup> surveillance.</p>
<b>Additional Information</b>	<p>Bugaev, A.V., and four coauthors. 2019. Assessment of Pacific Salmon (Pink Salmon (<i>Oncorhynchus Gorbuscha</i>), Chum Salmon (<i>Oncorhynchus Keta</i>) and Sockeye Salmon (<i>Oncorhynchus Nerka</i>)) stock status and fishery management system in specific water bodies of the Karaginsky District of Eastern Kamchatka (Rivers Tymlat, Kichiga, Ossora, Virovayam, Belaya, Paklavayam, Karaga, Dranka, and Vytvirovayam) done as a scientific research support for audit of “Tymlatsky Rybokombinat” LLC (Tymlatsky Fish Factory) fishing practices for conformity with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 44/18-HIP dated December 19, 2018. KamchatNIRO. Petropavlovsk-Kamchatsky.</p> <p>Bugaev, A.V., and four coauthors. 2020. Assessment of Pacific salmon (pink salmon, chum salmon) stock status and fishery management system in the Karaginsky subzone (water bodies: Karaginsky Gulf, Tymlat river, Kichiga river, Ossora river, Virovayam river, Belaya river, Paklavayam river, Karaga river, Dranka river, Vytvirovayam river) in the framework of scientific research support for audit of “Tymlatsky Rybokombinat” LLC (Tymlatsky Fish Factory) fishing practices for conformity with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 142-PDD/20-NIR dated 04/22/2020. KamchatNIRO. Petropavlovsk-Kamchatsky.</p> <p>Bugaev, A.V., and four coauthors. 2021. Assessment of the stock and analysis of the harvest (fishing) regulation with respect to Pacific salmon (pink salmon, chum salmon) in the Karaginsky Gulf (Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka and Dranka rivers) as part of the scientific support of the audit conducted in accordance with the standards of the Marine Stewardship Council (MSC). REPORT UNDER AGREEMENT No. 219-ПДД/21-HIP of June 4, 2021. KamchatNIRO. Petropavlovsk-Kamchatsky.</p> <p>Bugaev, A.V., O. V. Zikunova, N. B. Artyukhina and S. V. Shubkin. 2022. REPORT (Contract 208-PDD / 22-NIR dated 06/06/2022) Subject: Data for the annual MSC audit of certified salmon fisheries in the North-East Kamchatka (Karagin subzone) for the following stock units: pink salmon, chum salmon, sockeye salmon (Karagin Bay - rivers Khai-Anapka, Anapka, Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Khailyulya, Istyk, Nachiki, Uka, Malamvayam, Konskaya; Korf Bay - rivers Vyvenka, Tnakhivnytvayam, Lingenmyvayam, Gatymynvayam). KamchatNIRO. Petropavlovsk-Kamchatsky.</p>

## Condition 5

<b>Performance Indicator</b>	<b>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.</b>
<b>Score</b>	75
<b>Rationale</b>	This standard is not met because the available information shows that illegal fishing is still active in the area. Recently, in several settlements located in the UoC there were found significant (few metric tonnes) storages of illegal caviar which demonstrates presence of well-organised distributional networks despite on increasing level of enforcement. Moreover, very high level of anti-poaching activities performed by companies and state agencies, when multiple infringements are reported, reflects high significance of the problem of IUU fishing. 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 in some areas of Kamchatka 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 in some areas.
<b>Condition</b>	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.
<b>Condition start</b>	April 2019
<b>Condition deadline</b>	Originally 2022. By surveillance 3. Due to the MSC's COVID derogation for management-related conditions, the new deadline is 2023, 4 <sup>th</sup> surveillance.
<b>Milestones</b>	<p>By the first annual surveillance (2020), the client must present evidence that a plan is in place to address this condition.</p> <p>By the second annual surveillance (2021), the client must present evidence that the plan has been implemented.</p> <p>By the fourth annual surveillance (previously the 3<sup>rd</sup> surveillance audit; around July/August 2023 as per Derogation 3), the client must demonstrate that the condition has been met, at which time the fishery will rescore at least 80.</p>
<b>Client action plan</b>	<p>The Client will provide a detailed plan for assessing the effectiveness of the monitoring, control and surveillance system in the unit of certification by the first surveillance audit. In addition, to documenting enforcement activities undertaken by SVTU and the fishing companies, and media reports, the plan will include some methodology to evaluate the relative effectiveness of enforcement activities. 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 is implementing 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>
<b>Consultation on condition</b>	The Client will work with SVTU, KamchatNIRO, and academic consultants to develop and implement the plan.
<b>Progress on condition (year 1)</b>	To address this condition, the client is contracting for a sociological survey to assess the magnitude of illegal fishing in Karaginsky Bay. The study proposal which details the approach is included in the appendices. The study is two-stage, combines desk and field methods. The desk studies stage is reduced to remote methods of obtaining information and consists in its collection from various sources, verification and analysis. At the field stage, anthropological and sociological methods (interviews,

	<p>surveys, observation) are used, which allow obtaining factual information that is not captured by statistics.</p> <p>Progress on this condition effectively addresses year one milestones.</p>
<b>Progress on condition (year 2)</b>	<p>A sociological survey to assess the magnitude of illegal fishing in Karaginsky Bay is underway. For the surveillance, the client provided a detailed report covering Stage 1 of the study, written in March (Abramov et al. 2021a) and a summary of the field trip in August (Abramov 2021a).</p> <p>The stage 1 report elaborated a methodology for illegal salmon fishery investigation for next fieldwork on the project «Quantitative and qualitative illegal salmon fishing assessment in the Karaginsky Bay. Work included: 1) Preparing historiography in the field of illegal salmon fishery (studying of related published materials, relevant issues in mass media, websites of the government of Kamchatsky Krai and territorial departments of federal authorities). 2) Seeking experts in the field of salmon fishery, and likewise fishermen, officials, members of territorial adjacent communities by means of social networks, in media publications etc. To make interview arrangements (not less than 20), conduct interviews in case of trip to Petropavlovsk-Kamchatsky. 3) Analyzing cartographic materials and creating a map of fishing camps in the Karaginsky Bay. 4) Put forward a hypothesis explaining illegal fishery in the Karaginsky Bay, and plan the process of fieldwork. 5) To create preliminary interview guide and questionnaire.</p> <p>The team of anthropologists worked in the Karaginsky district from August 4 to August 26, including 16 days in settlements located in the catch zone of the Tymlat fish processing plant. Work included visits and observations of settlements of the Karaginsky Bay, fish processing at a plant, collective harvesting of salmon with nets by indigenous people in village and remote camps and a river raid with the security staff of the Tymlatsky Rybokombinat plant to learn about the effectiveness of anti-poaching monitoring. Work also included meetings with the chairmen of several fishing communities of Koryaks receiving the salmon catch quota.</p> <p>Progress on this condition effectively addresses year two milestones.</p>
<b>Progress on condition (year 3)</b>	<p>A sociological survey to assess the magnitude of illegal fishing in Karaginsky Bay continued. Project phase 2 results were reported based on field work conducted in the Karaginsky region in winter 2021-22. An update on progress was reported to the surveillance team in a meeting with Dr. Abramov on 7 September 2022. However, project progress was challenged by travel complications associated with the pandemic.</p>
<b>Status of condition</b>	Open and extended to 4 <sup>th</sup> surveillance (2023)
<b>Additional Information</b>	<p>Sociological survey methods to assess magnitude of illegal fishery in Karaginsky Bay PROPOSAL submitted by Ilya Abramov &amp; Artemy Pozanenko. Jul 3, 2020</p> <p>Abramov, I. and three coauthors. 2021a. RESEARCH REPORT "Sources and methods of studying illegal salmon fishing in the Karaginsky Bay" within MSC certification of "Tymlatsky Rybokombinat Ltd." Institute of History and Archaeology, RAS, Ural branch, Ekaterinburg RU.</p> <p>Abramov, I. and two coauthors. 2021b. Summary of the socio-anthropological study of illegal salmon fishing in the Karaginsky district. First field stage, August 2021. Institute of History and Archaeology, RAS, Ural branch, Ekaterinburg RU.</p> <p>Abramov, I. N. Babenkova, E. Solonenko and A. Pozanenko. 2022. Report on socio-anthropological field research Assessment of illegal salmon fishery in "Tymlatsky Rybokombinat Ltd" fishing zone in Karaginsky Bay: intermediate stage. Institute of History and Archaeology, RAS, Ural branch, Ekaterinburg RU.</p>

## 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 hybrid audit 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. Additional evidence requested during the site visit was provided by the fishery's representative on 09 November 2022.

Discussions covered all issues as laid out in Section 7.23.12 of the MSC Certification Requirements, 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. 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:

Bugaev, A.V., O. V. Zikunova, N. B. Artyukhina and S. V. Shubkin. 2022. REPORT (Contract 208-PDD / 22-NIR dated 06/06/2022) Subject: Data for the annual MSC audit of certified salmon fisheries in the North-East Kamchatka (Karagin subzone) for the following stock units: pink salmon, chum salmon, sockeye salmon (Karagin Bay - rivers Khai-Anapka, Anapka, Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam , Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Khailyulya, Istyk, Nachiki, Uka, Malamvayam, Konskaya; Korf Bay - rivers Vyvenka, Tnakhivnytvayam, Lingenmyvayam, Gatymynvayam). KamchatNIRO. Petropavlovsk-Kamchatsky.

Harvest numbers in 2021 of salmon by the fishing companies for the unit of certification.

Abramov, I. N. Babenkova, E. Solonenko and A. Pozanenko. 2022. Report on socio-anthropological field research Assessment of illegal salmon fishery in "Tymlatsky Rybokombinat Ltd" fishing zone in Karaginsky Bay: intermediate stage. Institute of History and Archaeology, RAS, Ural branch, Ekaterinburg RU.

Summary of Tymlatsky Rybokombinat anti-poaching activities in 2021.

## Federal Fisheries Agency Enforcement Report

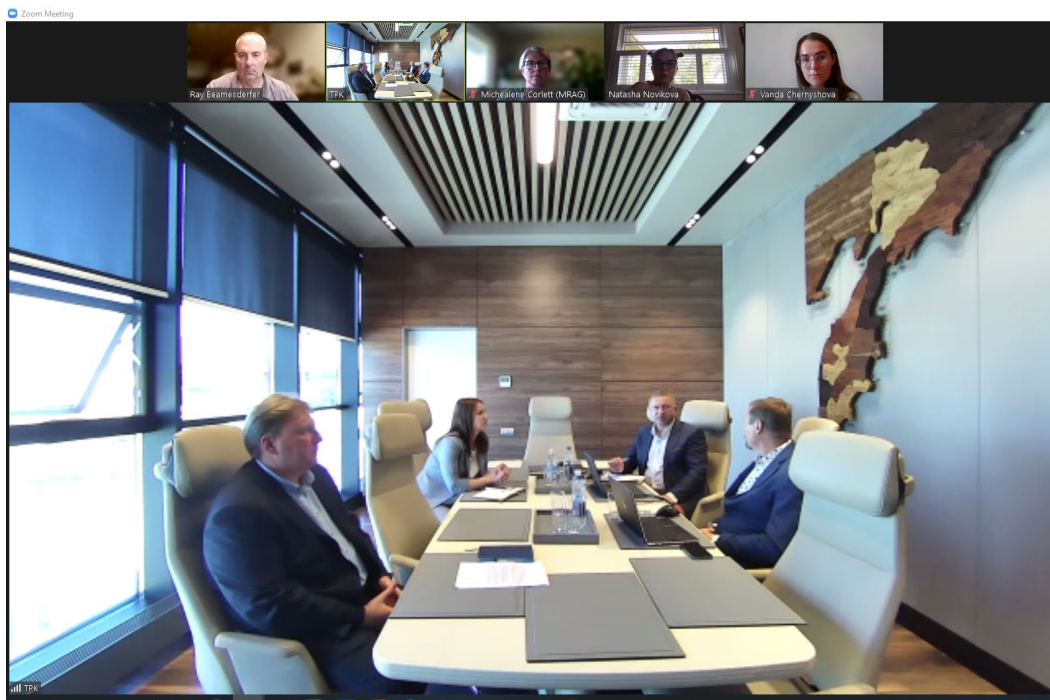
Related documents are included as appendices to this report.

### 4.1 Site visits

The surveillance audit was held August 31 – September 7, 2022 by hybrid site visit with the assessment team participating onsite and by Zoom conference. 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. Meetings were also held with government scientific agency KamchatNIRO, with the leader of the region commercial fishery industry group, and with scientists conducting the sociology study. Additional evidence requested during the site visit was provided by the fishery's representative 09 November 2022.

**Table 5. Surveillance meetings, 2022.**

Имя / Name	Организация / Organization	Должность / Title
Roman Pivovarov	Tymlatsky Rybokombinat Ltd.	Head of Production & group manager for chain of custody
Elvira Balabay	Tymlatsky Rybokombinat Ltd.	Deputy Director of Production
Alexander Potapov	Tymlatsky Rybokombinat Ltd.	Head of Security Services
Natalia Novikova	ForSea Solutions	Founder and Director
Randy Ericksen	ForSea Solutions & RP Ericksen Consulting	Fisheries Advisor
Vanda Chernyshova	ForSea Solutions	Program Administrator
Michealene Corlett	MRAG Americas	Conformity Assessment Body
Dmitry Lajus	MRAG, St. Petersburg State University	Independent Consultant and MSC Audit Team
Ray Beamesderfer	MRAG, Fish Science Solutions	Sr. Fish Scientist and MSC Audit Team
Alexander Bugaev	KamchatNIRO	Deputy Director of Research
Vladimir Galitsyn	Kamchatka Association of Salmon Fishermen	Head
Ilya Abramov	Institute of History and Archaeology, RAS, Ural Branch (Yekaterinburg)	Research fellow, ethnographer, geographer
Artemy Pozanenko	School of Politics and Governance, Faculty of Social Sciences, HSE University (Moscow)	Lecturer, analyst



**Figure 2. Screen shot of 2022 surveillance meeting attendees.**

## 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 27 July 2022.

## 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 3 annual surveillance audit was to be normal and on site. However, the surveillance was changed to a hybrid meeting for 2022 due to the continuing pandemic situation and other travel considerations.

**Table 6. Fishery surveillance program.**

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 6	On-site surveillance <u>Remote surveillance</u> audit	On-site surveillance <u>Remote surveillance</u> audit	<del>On-site surveillance audit</del> Hybrid surveillance audit with the assessment team participating onsite and by Zoom conference <sup>a</sup>	On-site surveillance audit & reassessment

<sup>a</sup> as per the variation request submitted 07 July 2022 and approved 21 July 2022.

## 5 Harmonised fishery assessments

**Table 7. Overlapping fisheries –Kamchatka Salmon**

	Fishery name	Certification status & date	PIs to harmonise
East Kamchatka	Delfin Olyutorskiy Bay	Certified 2018	P3
	Delta Fish Kamchatka River	Certified 2018	P3
	Kolkhoz im. Bekereva Ukinskiy, Liman &Belorechensk-Vyvenskoe Karaginsky Bay	Certified 2020	P1, P2, P3
	Kolkhoz Udanik Karaginsky Gulf Karaga Bay and Litke Strait pacific salmon	Certified 2021	P1, P2, P3
	<b>Tymlat Karaginsky Bay</b>	<b>Certified 2019</b>	--
	Vostochny Bereg Maksimovsy, Koryakmoreproduct, Nachikinskoe, Severo Vostochnaya Karaginsky Bay	Certified 2020	P1, P2, P3
West Kamchatka	FTP Comandor JSC Sea of Okhotsk and Bolshaya River	Certified 2022	P3
	Narody Severa, Bolsheretsk	Certified 2018	P3
	Ozernovsky RKZ No. 55	Certified 2020	P3
	Vityaz-Avto-Delta	Certified 2016	P3
	Zarya-Kolpakovsky Sobeleva	Certified 2020	P3

**Table 8. Overlapping fisheries**

Supporting information	
Information to harmonize the overlapping fisheries was collected in the recent reports posted on the MSC website. No meetings have been necessary during the surveillance audit.	
Was either FCP v2.2 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?	<b>No</b>
Date of harmonisation meeting	<b>No meetings were held during the surveillance audit regarding harmonization.</b>
If applicable, describe the meeting outcome	
NA	



**Table 9. Scoring differences**

Fishery		P1 - Target Spp.					P2	P3
		Pink	Chum	Coho	Sockeye	Chinook	Ecosystem	Mgmt. System
East Kamchatka	Olyutorskiy Bay - Delfin	86.6 <sup>a</sup>	86.6 <sup>a</sup>	-	86.6 <sup>a</sup>	--	87.3	83.5
	Kamchatka River - Delta Fish	--	84.6 <sup>a</sup>	84.1 <sup>a</sup>	85.0 <sup>a</sup>	84.1 <sup>a</sup>	85.0 <sup>a</sup>	81.5 <sup>a</sup>
	Kolkhoz im. Bekereva Ukinskiy, Liman & Belorechensk-Vyvenskoe Karaginsky Bay	82.5	82.5	--	83.7	--	85.3	81.7
	Kolkhoz Udanik Karaginsky Gulf Karaga Bay and Litke Strait pacific salmon	82.5	82.5	--	--	--	83.0	80.4
	Tymlat Karaginsky Bay	84.6	84.6	--	--	--	87.3	81.7
	Vostochny Bereg Maksimovsy, Koryakmoreproduct, Nachikinskoe, Severo Vostochnaya Karaginsky Bay	82.5	82.5	--	--	--	85.3	81.7
West Kamchatka	FTP Comandor JSC Sea of Okhotsk and Bolshaya River	81.9	80.0	--	--	--	81.3	80.8
	Narody Severa, Bolsheretsk	86.6 <sup>a</sup>	83.3 <sup>a</sup>	--	--	--	85.3 <sup>a</sup>	83.7 <sup>a</sup>
	Ozernovsky RKZ No. 55	84.4	84.4	--	98.1		87.0	84.8
	Vityaz-Avto--Delta	84.4	85.0, 84.4	84.4	98.7		84.0	85.8
	Zarya-Kolpakovsky Sobeleva	83.1	83.1	--	--	--	83.7	81.0

<sup>a</sup> Based on 2022 surveillance audit.

**Table 10. Rationale for scoring differences**

If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.2 Annex PB1.3.6)

Scores and conditions among assessments were reconciled to the extent possible recognizing specific circumstances in different rivers and additional or new information that has become available between assessments. In several cases, differences in scores reflect new information available to the assessment team. Scoring differences for P1 are caused by some differences in stock status of target species (spawning escapement, coverage of information on escapement). Some differences in P3 scores are related to different level of illegal harvest activities in the area, mostly caused by differences in transportation infrastructure.

If exceptional circumstances apply, outline the situation and whether there is agreement between or among teams on this determination

Not applicable

## 6 Appendix - Surveillance Information

### 6.1 KamchatNIRO Report



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

Head of the Kamchatka branch  
Federal State Budgetary Scientific  
Institution "VNIRO" ("KamchatNIRO")

\_\_\_\_\_ N.Yu. Shpigalskaya

" \_\_\_\_\_ " \_\_\_\_\_ 2022

#### **REPORT (Contract 208-PDD / 22-NIR dated 06/06/2022)**

Subject: Data for the annual MSC audit of certified salmon fisheries in the North-East Kamchatka (Karagin subzone) for the following stock units: pink salmon, chum salmon, sockeye salmon (Karagin Bay - rivers Khai-Anapka, Anapka, Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Khailyulya, Istyk, Nachiki, Uka, Malamvayam, Konkaya; Korf Bay - rivers Vyvenka, Tnakhivnytvayam, Lingenmyvayam, Gatymynvayam)

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

[signature] A.V. Bugaev

Petropavlovsk-Kamchatskiy, 2022

**Prepared by:**

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## CONTENTS

Introduction.....	4
<b>Chapter 1.</b> Data on the control water body, including data on Pacific salmon catches for each certified fishing company for the reporting period (2021) and the last 10 years (2012-2021).....	6
<b>Chapter 2.</b> Data on the control water bodies, including data on aerial surveys (dates, routes, flight time, representativeness) and estimates of the spawning stock of Pacific salmon for the reporting period (2021) and the last 10 years (2012–2021).....	17
<b>Chapter 3.</b> Up-to-date data on escapement targets for Pacific salmon spawners in the spawning grounds of the reference water bodies.....	23
<b>Chapter 4.</b> Data on the Pacific salmon fishery management activities related to certified fisheries in reference water bodies for the reporting year 2021.....	31
<b>Conclusion</b> .....	35
<b>References</b> .....	36

## Introduction

In relation to the MSC certification of salmon fisheries in Karaginsky and Olyutorsky districts of the Kamchatka Krai, the Kamchatka branch of the FGBNU “VNIRO” (“KamchatNIRO”) prepared the required information on Pacific salmon stock and fisheries management in the region. The contract is drawn upon the request from the Kamchatka Salmon Catchers Association (ADLC) (letter: entry No. 1579 dated May 25, 2022), represented by the following fishing companies: LLC “Vostochny Bereg”, LLC “Maksimovsky RPZ”, LLC “Koryakmoreprodukt”, LLC “Nachikinskoye”, LLC “Severo-Vostochnaya Company”, JSC “Kolkhoz im. Bekereva”, LLC “Ukinsky Liman”, LLC “Vyvenskoye”, LLC “Tymlatsky Fish Processing Plant”, LLC “Rusak”, LLC “RA Belorechensk”.

KamchatNIRO specialists examined as part of this survey 3 species units of Pacific salmon regional stocks, representing groups of local stocks of pink salmon, chum salmon and sockeye salmon. The 3 species units were combined in this report due to their geographical proximity, similar ecology of the freshwater and marine / oceanic periods of life of the indicated Pacific salmon species, as well as a common fishing strategy applied to these salmon stocks.

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, the fisheries in the Karaginskiy subzone are defined as follows: 1) Target fish species: pink salmon *Oncorhynchus gorbuscha*, chum salmon *Oncorhynchus keta*, sockeye salmon *Oncorhynchus nerka* 2) Geographical area (fishing area): northeastern coast of Kamchatka, Bering Sea, Karaginsky subzone - 61.02.1, Karaginsky and Olyutorsky administrative regions of the Kamchatka Territory; 3) Fish stocks (fishing units): groupings of local stocks (populations) of 3 species of Pacific salmon (pink salmon, chum salmon, sockeye salmon), reproducing in the rivers of North-Eastern Kamchatka (Karagin Bay - rivers Khai-Anapka, Anapka, Virovayam, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Khailyulya, Istyk, Nachiki, Uka, Malamvayam, Kanskaya;

### Research goal

Pacific salmon (pink salmon, chum salmon, sockeye salmon) stock, fishing dynamics and fisheries management assessment of North-Eastern Kamchatka (Karagin Bay - rivers Khai-Anapka, Anapka, Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Khailyulya, Istyk, Nachiki, Uka, Malamvayam, Kanskay; Korf Bay - rivers Vyvenka, Tnakhivnytvayam, Lingenmyvayam, Gatymynvayam).

### Research tasks:

- 1) Provide data on the control water body, including data on Pacific salmon catches for each certified fishing company for the reporting period (2021) and the last 10 years (2012-2021)
- 2) Provide data on the control water bodies, including data on aerial surveys (dates, routes, flight time, representativeness) and estimates of the spawning stock of Pacific salmon for the reporting period (2021) and the last 10 years (2012–2021)
- 3) Provide the up-to-date data on escapement targets for Pacific salmon spawners in the spawning grounds of the reference water bodies
- 4) Provide with the data on the Pacific salmon fishery management activities related to certified fisheries in reference water bodies for the reporting year 2021

## Chapter 1. Data on the control water body, including data on Pacific salmon catches for each certified fishing company for the reporting period (2021) and the last 10 years (2012-2021)

In this report we have used catch data from the official fishery statistics (Northeastern Territorial Administration of FAR - SVTU). Statistical data are presented for the Karaginsky and Olyutorsky districts of the Kamchatka Territory. According to the marine mapping of fishing areas, statistics is given for the Karaginsky subzone. The total catch of Pacific salmon in this area by all types of fisheries in 2021 is presented in Table 1.1.

Table 1.1 - Catching volumes of Pacific salmon in the Karaginsky subzone in 2021, tons

Catch	Pink	Chum	Sockeye	Coho	Chinook
Total	199261.19	7612.31	2904.89	702.06	34.04
Commercial	197928.77	7255.86	2794.00	653.52	30.61

### *Commercial fishing*

Currently, the following fisheries are involved in MSC audit: Karaginsky district – LLC “Vostochny Bereg”, LLC “RPZ Maksimovsky”, LLC “Koryakmoreprodukt”, LLC “Nachikinskoye”, LLC “Severo-Vostochnaya Company”, JSC “Kolkhoz im. Bekereva”, LLC “Ukinsky Liman”, LLC “Tymlatsky Fish Processing Plant”, LLC “Rusak”, LLC “RA Belorechensk”; Olyutorsky district – LLC “Vyvenskoye”.

In total, in 2021 all of these fisheries were catching salmon at 146 sea fishing parcels in the Karaginsky and Korf Bays, as well as at 11 river fishing parcels in the basins of Uka, Rusakova, Dranka, Ossora, Tymlat, Kichiga, Belaya, Anapka and Vyvenka rivers. According to the decision made by the Anadromous Fish Commission in the Kamchatka Territory (hereinafter referred to as the Commission), all of the indicated fishing parcels belonged to the group of water bodies: “Olyutorsky Bay, Korf Bay, Anana Bay, rr. Vyvenka, Kultushnaya, Balina, Northern Impuk, Pakhacha, Apuka, Ananapylgen, Navyrinvyam, Kavacha lagoon, Karaginsky Bay, Ossorskaya lagoon, rr. Ossora, Karaga, Tymlat, Kichiga, Belaya, Anapka, Khai-Anapka, Karaginsky Bay, rr. Uka, Khailyulya, Rusakova, Dranka” (Minutes No. 4 dated 07.05.2021). Data on the catch of Pacific salmon by certified fisheries in the commercial fishing regime are presented in Table 1.2.

The share of Pacific salmon catches by the certified fisheries in 2021 amounted to 78.2% of the total Pacific salmon catch in the Karaginsky subarea. The main fishing target was pink salmon. In 2021, it accounted for 95.8% of the total catch of Pacific salmon by certified fisheries, the share of chum salmon - 3.0%, sockeye salmon - 0.9%, coho salmon - 0.3%.

Table 1.2 - The Pacific salmon catches by fisheries undergoing MSC audit in 2021

User of the fishing parcel/fishery	Parcel	Water basin	Catch, tons				
			Pink salmon	Chum salmon	Sockeye salmon	Coho salmon	Chinook salmon
LLC "Vyvenskoe"	468	Korf Bay	0.05	0.00	0.00	0.00	0.00
	470	Korf Bay	207.48	1.20	3.30	0.00	0.01
	471	Korf Bay	1474.62	5.79	13.29	0.00	0.04

	472	Korf Bay	1,143.96	8.60	21.69	0.00	0.07
	473	Korf Bay	1,296.89	9.15	32.01	0.00	0.05
	474	Korf Bay	898.42	7.71	14.27	0.00	0.05
	475	Korf Bay	1,115.70	7.87	16.02	0.00	0.07
	476	Korf Bay	215.08	0.95	4.57	0.00	0.02
	488	Korf Bay	164.23	0.43	1.47	0.00	0.01
	489	Korf Bay	205.59	0.74	1.10	0.00	0.00
	490	Korf Bay	627.21	3.95	8.08	0.00	0.02
	936	R. Vyvenka	0.29	0.00	0.07	0.00	0.00
LLC "Severo-Vostochnaya Company"	288	Karaginsky Bay	13.50	0.47	0.00	0.00	0.00
	289	Karaginsky Bay	0.00	0.00	0.00	0.00	0.00
	291	Karaginsky Bay	344.25	3.43	0.71	0.00	0.00
	298	Karaginsky Bay	85.16	0.84	0.30	0.00	0.00
	299	Karaginsky Bay	103.62	1.79	0.16	0.00	0.00
	300	Karaginsky Bay	104.74	3.04	0.12	0.00	0.00
	394	Karaginsky Bay	1,001.67	4.89	4.33	0.00	0.00
	395	Karaginsky Bay	479.21	11.22	5.79	0.00	0.00
	396	Karaginsky Bay	721.69	13.58	6.12	0.00	0.00
	400	Karaginsky Bay	1,286.61	6.66	2.63	0.00	0.00
	401	Karaginsky Bay	941.04	4.29	2.61	0.00	0.00
	405	Karaginsky Bay	444.93	4.61	1.73	0.00	0.00
	407	Karaginsky Bay	1385.92	30.46	4.30	0.00	0.00
	409	Karaginsky Bay	1,331.52	17.24	5.67	0.00	0.00
	415	Karaginsky Bay	1,289.36	22.28	5.47	0.00	0.00
	924	R. Ossora	0.44	0.47	0.00	0.00	0.00
LLC "Tymlatsky fish processing plant"	290	Karaginsky Bay	4.01	0.00	0.00	0.00	0.00
	303	Karaginsky Bay	96.21	0.66	0.00	0.00	0.00
	360	Karaginsky Bay	1331.81	17.03	2.65	0.00	0.00
	362	Karaginsky Bay	968.06	15.58	1.78	0.00	0.00
	371	Karaginsky Bay	960.55	18.99	3.20	0.00	0.00
	380	Karaginsky Bay	4.01	0.00	0.00	0.00	0.00
	382	Karaginsky Bay	252.97	5.54	0.64	0.00	0.00
	386	Karaginsky Bay	231.44	9.58	1.34	0.00	0.00
	387	Karaginsky Bay	504.63	9.47	2.13	0.00	0.00
	390	Karaginsky Bay	4.01	0.00	0.00	0.00	0.00
	392	Karaginsky Bay	702.25	8.83	4.83	0.00	0.00
	393	Karaginsky Bay	569.60	11.88	6.86	0.00	0.00
	398	Karaginsky Bay	1468.01	12.84	5.16	0.00	0.00
	399	Karaginsky Bay	1304.15	8.96	3.78	0.00	0.00
	402	Karaginsky Bay	4.01	0.00	0.00	0.00	0.00
	403	Karaginsky Bay	479.94	4.07	1.72	0.00	0.00

	404	Karaginsky Bay	485.15	4.70	1.77	0.00	0.00
	408	Karaginsky Bay	785.05	14.24	3.77	0.00	0.00
	410	Karaginsky Bay	1416.28	16.97	6.67	0.00	0.00
	412	Karaginsky Bay	2324.83	39.24	7.57	0.00	0.00
	413	Karaginsky Bay	1,165.27	23.23	4.07	0.00	0.00
	414	Karaginsky Bay	853.73	13.91	3.33	0.00	0.00
	416	Karaginsky Bay	998.95	17.16	4.12	0.00	0.00
	417	Karaginsky Bay	1,044.36	26.63	5.58	0.00	0.00
	419	Karaginsky Bay	2308.26	47.57	10.12	0.00	0.00
	420	Karaginsky Bay	2246.92	45.51	9.36	0.00	0.00
	421	Karaginsky Bay	1356.33	22.41	4.90	0.00	0.00
	426	Karaginsky Bay	321.78	4.21	1.14	0.00	0.00
	428	Karaginsky Bay	939.23	12.66	4.62	0.00	0.00
	429	Karaginsky Bay	1,351.25	12.54	5.03	0.00	0.00
	430	Karaginsky Bay	1620.50	26.61	8.21	0.00	0.00
	431	Karaginsky Bay	1229.89	51.68	7.59	0.00	0.00
	432	Karaginsky Bay	1307.49	63.28	10.91	0.00	0.00
	433	Karaginsky Bay	2,084.87	41.22	8.54	0.00	0.00
	434	Karaginsky Bay	2074.92	68.65	7.95	0.00	0.00
	435	Karaginsky Bay	2,104.28	91.79	13.15	0.00	0.00
	436	Karaginsky Bay	2160.64	65.94	22.93	0.00	0.00
	437	Karaginsky Bay	2322.78	116.35	17.15	0.00	0.00
	438	Karaginsky Bay	2,279.27	88.12	16.45	0.00	0.00
	439	Kichiginsky Bay	1,846.43	91.84	10.79	0.00	0.00
	440	Kichiginsky Bay	1,799.88	47.91	11.45	0.00	0.00
	441	Kichiginsky Bay	1,728.90	25.53	5.62	0.00	0.00
	442	Kichiginsky Bay	1,054.01	19.95	6.01	0.00	0.00
	925	R. Tymlat	4.01	0.00	0.00	0.00	0.00
	928	R. Kichiga	1,111.90	586.28	13.17	8.18	0.00
	929	R. Belaya	402.37	72.08	2.28	0.00	0.00
LLC "RPZ Maksimovsky"	359	Karaginsky Bay	1977.27	68.94	15.81	0.05	0.00
	363	Karaginsky Bay	16.74	4.52	1.71	4.00	0.00
	364	Karaginsky Bay	7.60	4.92	5.10	4.00	0.00
	365	Karaginsky Bay	1964.67	53.39	15.88	0.00	0.00
	366	Karaginsky Bay	1993.22	63.69	12.26	0.00	0.00
	367	Karaginsky Bay	1,644.05	24.46	3.00	0.00	0.00
	368	Karaginsky Bay	1,891.53	47.78	9.86	0.00	0.00
	369	Karaginsky Bay	1566.62	89.55	18.19	0.00	0.00
	370	Karaginsky Bay	1,803.46	53.10	9.01	0.00	0.00
LLC RA "Belorechensk"	443	Kichiginsky Bay	737.62	3.97	4.60	0.00	0.00
	444	Karaginsky Bay	821.04	4.98	2.57	1.39	0.00
	445	Karaginsky Bay	7.58	0.00	0.00	0.00	0.00



	446	Karaginsky Bay	295.42	1.45	4.51	0.00	0.00
	447	Karaginsky Bay	286.42	3.22	4.54	0.00	0.00
	448	Karaginsky Bay	569.15	8.01	2.09	0.00	0.00
	449	Karaginsky Bay	854.37	3.47	4.72	0.00	0.00
	451	Karaginsky Bay	7.29	0.00	0.00	0.00	0.00
	452	Karaginsky Bay	819.11	16.71	8.45	0.00	0.00
	453	Karaginsky Bay	7.51	0.00	0.00	0.00	0.00
	454	Karaginsky Bay	105.03	3.78	0.12	0.00	0.00
	457	Karaginsky Bay	57.06	4.73	2.09	0.00	0.00
	458	Karaginsky Bay	822.77	4.77	4.63	0.06	0.00
	460	Karaginsky Bay	7.32	0.00	0.00	0.00	0.00
	464	Karaginsky Bay	531.63	4.86	4.66	0.00	0.00
	466	Karaginsky Bay	7.29	0.00	0.00	0.00	0.00
	933	R. Anapka	149.02	38.81	1.49	74.02	0.00
LLC "Nachikinskoe"	304	Karaginsky Bay	255.24	16.81	4.64	0.00	0.22
	305	Karaginsky Bay	2004.38	23.40	7.68	0.00	0.07
	306	Karaginsky Bay	1978.44	24.72	10.60	0.00	0.20
LLC "Ukinsky Liman"	307	Karaginsky Bay	1675.73	26.23	7.98	0.00	0.06
	308	Karaginsky Bay	1,150.81	44.25	8.62	0.00	0.00
	309	Karaginsky Bay	236.69	33.31	5.82	0.00	0.00
	310	Karaginsky Bay	1,755.79	91.67	16.13	0.00	0.20
	311	Karaginsky Bay	1415.26	55.84	9.23	0.00	0.05
	312	Karaginsky Bay	1,861.11	93.26	20.60	0.00	0.00
	906	R. Uka	42.91	9.99	3.45	8.53	0.01
	907	R. Uka	29.98	9.45	0.89	14.06	0.03
LLC "Koryakmoreprodukt"	313	Karaginsky Bay	1,299.23	42.76	7.35	0.00	0.01
	317	Karaginsky Bay	1348.13	52.75	12.13	0.00	0.06
	319	Karaginsky Bay	2,882.41	139.45	57.26	53.72	0.09
	320	Karaginsky Bay	0.00	0.00	0.00	0.00	0.00
	323	Karaginsky Bay	2,254.55	93.15	36.29	55.72	0.10
	324	Karaginsky Bay	2369.46	127.14	51.94	55.56	0.09
	325	Karaginsky Bay	1675.69	66.39	28.18	3.00	0.06
	328	Karaginsky Bay	1,878.81	87.63	45.79	65.95	0.00
JSC "Kolkhoz named after Bekerev"	314	Karaginsky Bay	1,028.87	40.51	9.50	0.00	0.00
	315	Karaginsky Bay	952.12	34.90	4.15	0.00	0.00
	316	Karaginsky Bay	1,881.32	56.77	12.54	0.00	0.00
	318	Karaginsky Bay	1472.89	83.01	12.81	0.00	0.00
	321	Karaginsky Bay	1,071.06	38.99	7.59	0.00	0.00
	322	Karaginsky Bay	1,026.73	34.54	9.15	0.00	0.00
	326	Karaginsky Bay	758.48	15.82	6.29	0.00	0.00
	327	Karaginsky Bay	765.38	20.43	6.53	0.00	0.00

	329	Karaginsky Bay	586.60	16.67	7.73	0.00	0.00
	330	Karaginsky Bay	469.96	15.76	5.09	0.00	0.00
	335	Karaginsky Bay	1,838.86	60.61	37.25	1.19	0.00
	338	Karaginsky Bay	2,157.19	62.34	34.29	1.81	0.00
	343	Karaginsky Bay	1,795.91	33.30	14.74	0.00	0.04
	344	Karaginsky Bay	0.00	0.00	0.00	0.00	0.00
	345	Karaginsky Bay	1608.72	42.03	20.70	1.52	0.04
	354	Karaginsky Bay	2,289.24	70.63	22.30	2.42	0.04
	355	Karaginsky Bay	1,681.56	27.96	7.09	0.00	0.04
	357	Karaginsky Bay	1,735.52	40.26	8.35	0.00	0.04
	358	Karaginsky Bay	1,835.47	46.08	8.34	0.00	0.00
LLC "Rusak"	331	Karaginsky Bay	2484.26	42.57	12.19	0.00	0.00
	332	Karaginsky Bay	3,083.06	87.19	32.34	6.23	0.00
	914	R. Rusakova	191.44	1.76	18.04	7.49	0.00
	915	R. Rusakova	96.25	8.46	24.99	38.48	0.00
LLC "Vostochny Bereg"	333	Karaginsky Bay	812.16	31.57	13.11	3.31	0.02
	334	Karaginsky Bay	767.63	27.66	11.16	0.00	0.01
	336	Karaginsky Bay	770.48	45.35	34.01	21.11	0.01
	337	Karaginsky Bay	795.36	22.49	8.36	0.00	0.02
	339	Karaginsky Bay	636.65	16.00	7.23	0.00	0.04
	340	Karaginsky Bay	611.29	39.28	23.53	21.86	0.00
	341	Karaginsky Bay	831.51	13.29	4.82	0.00	0.01
	342	Karaginsky Bay	1,043.82	49.57	24.79	18.61	0.09
	346	Karaginsky Bay	1,766.54	69.10	28.43	20.71	0.04
	350	Karaginsky Bay	1231.32	38.04	14.36	43.31	0.04
	351	Karaginsky Bay	1,352.59	29.52	9.63	0.00	0.06
	352	Karaginsky Bay	968.48	51.82	21.12	3.31	0.00
	353	Karaginsky Bay	733.00	20.52	6.47	0.00	0.01
	356	Karaginsky Bay	1,003.58	21.96	5.05	1.65	0.02
	916	R. Dranka	1.25	1.80	0.65	1.64	0.00

Please refer to the catch data by certified fisheries for a ten-year period (Table 1.3, Figure 1.1).

Table 1.3 - Catches of Pacific salmon by fisheries (commercial fishing) in the Karaginsky subzone in 2012–2021

Year	Water basins	Catch, tons				
		Pink salmon	Chum	Sockeye	Coho	Chinook salmon
2012	Karaginsky Bay	5110.05	6160.73	713.11	0.00	2.04
	Korf Bay	1070.41	207.47	42.33	0.00	2.28
	R. Uka	20.56	50.53	6.29	0.48	0.00
	R. hailulya	100.69	142.38	17.20	1.08	0.00
	R. Rusakova	41.02	138.52	17.89	3.50	0.00
	R. Dranka	25.00	15.23	2.16	0.00	0.00
	R. Ossora	10.00	0.00	0.00	0.00	0.00
	R. Tymlat	9.35	42.42	2.21	0.00	0.00
	R. kichiga	3.17	2.99	2.00	0.00	0.00
	R. Belaya	4.00	0.00	0.00	0.00	0.00
	R. Anapka	100.00	118.04	1.54	0.00	0.00
	R. Vyvenka	9.95	11.48	1.69	1.91	0.22
2013	Karaginsky Bay	24420.73	9908.34	1580.92	138.09	2.94
	Korf Bay	1000.66	469.48	72.41	5.91	10.06
	R. Ossora	5.61	1.98	0.00	0.00	0.00
	R. Tymlat	10.00	0.00	0.00	0.00	0.00
	R. kichiga	10.00	0.00	0.00	0.00	0.00
	R. Belaya	4.00	0.00	0.00	0.00	0.00
	R. Anapka	58.03	7.06	0.03	0.00	0.00
	R. Vyvenka	13.62	7.83	3.82	0.00	1.30
2014	Karaginsky Bay	13090.94	13051.19	827.23	67.20	1.40
	Korf Bay	985.85	752.17	71.36	0.00	4.84
	R. Tymlat	0.10	0.10	0.00	0.00	0.00
	R. Anapka	121.92	172.39	2.00	0.00	0.00
	R. Vyvenka	2.00	0.84	0.37	3.18	0.71
2015	Karaginsky Bay	56234.00	6355.58	1657.62	53.33	3.30
	Korf Bay	5226.52	266.84	84.80	0.00	1.30
	R. Uka	6.34	2.00	0.48	0.00	0.05
	R. Rusakova	0.00	0.16	0.15	0.00	0.10
	R. Ossora	4.97	0.45	0.12	0.00	0.00
	R. Tymlat	30.00	3.00	0.00	0.00	0.00
	R. Kichiga	51.40	17.28	0.00	2.12	0.00
	R. Anapka	283.42	8.75	2.44	0.00	0.00
	R. Vyvenka	249.69	15.71	8.05	0.00	1.34
2016	Karaginsky Bay	38059.04	6981.55	2727.91	35.51	9.51
	Korf Bay	2528.78	235.76	66.26	0.00	1.75
	R. Uka	46.79	5.91	1.73	0.00	0.00

	R. Rusakova	27.43	15.25	17.27	0.08	1.00
	R. Dranka	17.34	1.47	0.85	0.00	0.00
	R. Ossora	4.97	0.17	0.00	0.00	0.00
	R. Tymlat	0.00	4.78	0.00	0.00	0.00
	R. kichiga	0.00	4.82	0.10	0.00	0.00
	R. Belaya	1328.91	356.22	24.43	0.27	0.00
	R. Anapka	181.84	0.94	0.00	0.00	0.00
2017	Karaginsky Bay	111131.33	6729.52	667.84	23.95	0.94
	Korf Bay	4948.30	278.27	112.08	0.00	0.28
	R. Uka	91.21	2.37	0.87	0.00	0.00
	R. Dranka	29.99	4.99	1.00	0.00	0.00
	R. Ossora	4.73	0.00	0.00	0.00	0.00
	R. Tymlat	49.99	0.00	0.00	0.00	0.00
	R. Kichiga	553.73	158.70	2.15	3.07	0.00
	R. Belaya	621.02	157.91	1.52	1.85	0.00
	R. Anapka	16.50	4.17	0.00	9.05	0.00
	R. Vyvenka	0.98	0.10	18.04	0.69	0.00
2018	Karaginsky Bay	84392.53	6209.79	983.27	7.87	2.66
	Korf Bay	1414.75	359.77	79.74	0.00	0.61
	R. Uka	8.78	4.33	0.43	34.00	0.02
	R. Rusakova	0.00	11.29	1.19	0.00	0.00
	R. Dranka	54.97	3.89	0.99	8.77	0.00
	R. Ossora	4.80	0.00	0.00	0.00	0.00
	R. Kichiga	598.62	184.68	0.82	0.00	0.00
	R. Belaya	554.76	155.21	0.03	0.00	0.00
	R. Anapka	73.59	22.35	1.40	9.97	0.00
	R. Vyvenka	1.69	0.22	0.81	0.04	0.00
2019	Karaginsky Bay	173274.10	8288.60	1817.53	35.47	2.70
	Korf Bay	10704.39	255.18	171.86	0.00	2.45
	R. Uka	32.32	4.92	0.95	6.11	0.06
	R. Dranka	147.08	15.44	1.35	12.31	0.00
	R. Ossora	4.00	0.00	0.00	0.00	0.00
	R. Tymlat	1.41	0.37	0.14	0.00	0.00
	R. Kichiga	825.26	339.07	7.71	0.71	0.00
	R. Belaya	830.56	343.80	13.08	5.02	0.00
	R. Anapka	140.94	75.03	3.08	22.75	0.00
	R. Vyvenka	0.00	0.04	0.00	13.77	0.00
2020	Karaginsky Bay	12825.33	1783.42	641.08	6.33	3.26
	Korf Bay	49.00	33.89	19.12	0.00	0.08
	R. Uka	62.11	5.01	7.85	18.79	0.08
	R. Rusakova	4.10	22.59	28.57	19.92	0.00

	R. Dranka	4.00	0.50	0.50	0.00	0.00
	R. Tymlat	0.59	16.57	0.89	0.00	0.00
	R. Kichiga	458.91	401.25	3.10	0.20	0.00
	R. Belaya	202.97	127.74	10.16	0.00	0.00
	R. Anapka	88.13	18.91	1.29	5.88	0.00
2021	Karaginsky Bay	148321.15	4183.63	1247.83	390.48	1.78
	Korf Bay	7349.23	46.39	115.78	0.00	0.35
	R. Uka	72.89	19.44	4.34	22.58	0.04
	R. Rusakova	287.69	10.21	43.03	45.97	0.00
	R. Dranka	1.25	1.80	0.65	1.64	0.00
	R. Ossora	0.44	0.47	0.00	0.00	0.00
	R. Tymlat	4.01	0.00	0.00	0.00	0.00
	R. Kichiga	1111.90	586.28	13.17	8.18	0.00
	R. Belaya	402.37	72.08	2.28	0.00	0.00
	R. Anapka	149.02	38.81	1.49	74.02	0.00
	R. Vyvenka	0.29	0.00	0.07	0.00	0.00

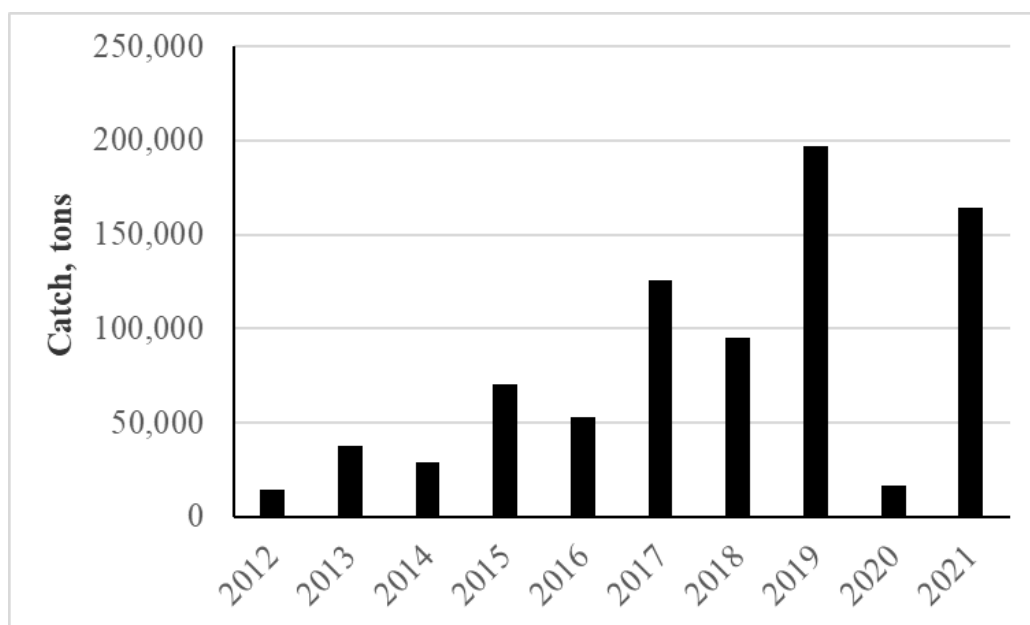


Figure 1.1 — Commercial catch of Pacific salmon by certified fisheries in 2012–2021

The total catch of Pacific salmon over 10 years (2012–2021) ranged from 14.2 to 197.4 thousand tons, averaging 80.4 thousand tons. At the same time, most of the Pacific salmon (98.2%) were harvested at the sea fishing parcels.

Figure 1.2 show Pacific salmon catch by all fishing companies (certified + non-certified) in the fishing areas of certified fisheries. It should be noted that the main fishery is carried out at the sea fishing parcels in the Karaginsky Bay, where 92.1% of the total catch of Pacific salmon is harvested by all fisheries. At river fishing parcels, salmon is harvested mainly in the basin of the Kichiga-Belaya River system - 52.9% (Fig. 1.3).

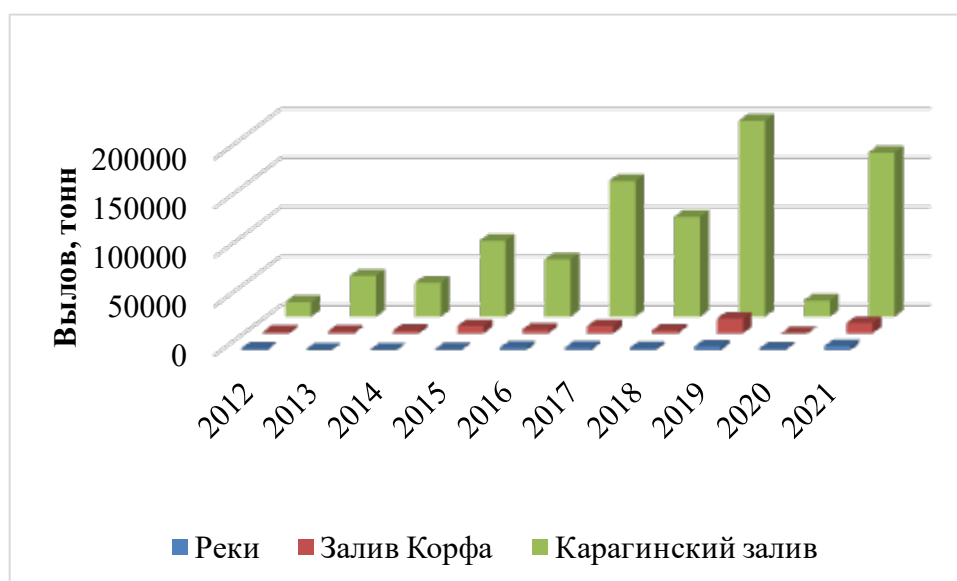


Figure 1.2 - Commercial catch of Pacific salmon by all fisheries in the research area at river and sea fishing parcels in 2012–2021

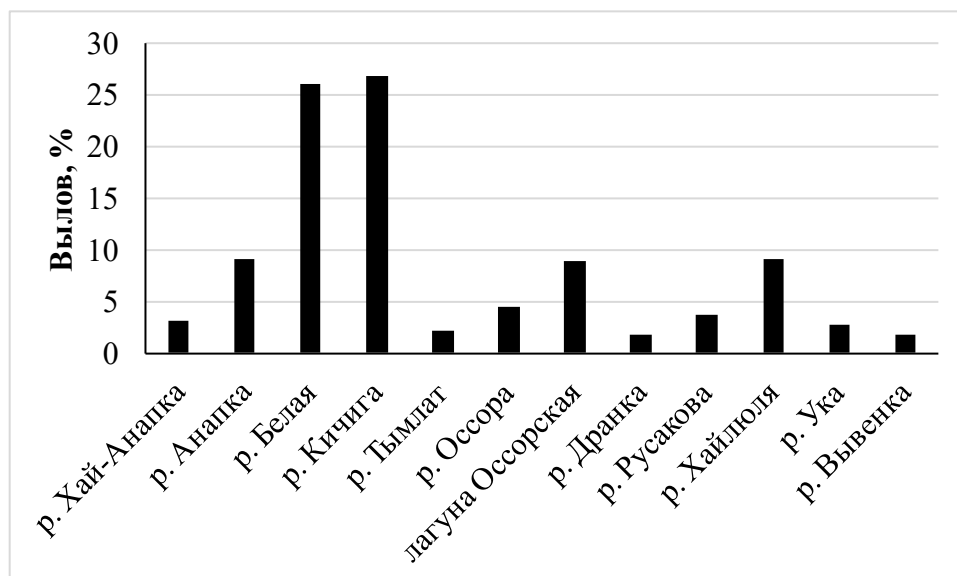


Figure 1.3 — Commercial catch of Pacific salmon by all fisheries in the research area at river sea fishing parcels in 2012–2021

### ***Traditional Indigenous Fishing***

In addition to the commercial fishing in the Karaginsky subzone, Pacific salmon are harvested (caught) by Indigenous Peoples of the North, Siberia and the Far East of the Russian Federation. Traditional fishing is carried out at 8 fishing parcels in the Korf Bay, at 16 fishing parcels in the Karaginsky Bay and at 29 fishing parcels in the river basins flowing into these Bays. Table 1.4 presents data on the catch of Pacific salmon by indigenous fishing.

**Table 1.4 - Pacific salmon harvest (indigenous fishing) 2012–2021, tons**

<b>Year</b>	<b>Water basin</b>	<b>Catch, tons</b>				
		<b>Pink salmon</b>	<b>Chum</b>	<b>Sockeye</b>	<b>Coho</b>	<b>Chinook salmon</b>
2012	Rivers	92.86	200.06	53.04	5.86	0.00
	Korf Bay	1.33	2.32	0.81	0.45	0.00
	Karaginsky Bay	51.52	92.26	9.05	4.01	0.00
2013	Rivers	354.72	204.76	39.25	32.93	3.62
	Korf Bay	0.58	2.36	1.16	1.98	0.15
	Karaginsky Bay	86.55	40.41	7.74	11.16	0.00
2014	Rivers	303.05	300.68	44.04	17.37	1.60
	Korf Bay	0.00	1.31	0.00	1.61	0.00
	Karaginsky Bay	168.96	138.32	12.43	12.07	0.00
2015	Rivers	872.61	243.50	66.92	23.46	3.75
	Korf Bay	10.77	1.91	2.14	1.50	0.12
	Karaginsky Bay	449.92	100.35	26.41	7.26	2.79
2016	Rivers	437.66	446.93	116.49	21.09	4.65
	Korf Bay	46.89	12.34	6.31	4.00	0.00
	Karaginsky Bay	110.83	109.37	19.05	5.81	0.70
2017	Rivers	1120.07	366.59	116.51	32.90	8.71
	Korf Bay	196.20	71.00	25.45	8.40	6.80
	Karaginsky Bay	529.37	125.92	35.55	11.30	1.70
2018	Rivers	1009.63	321.70	87.72	24.21	1.96
	Korf Bay	112.37	31.60	10.56	5.38	0.35
	Karaginsky Bay	367.15	139.44	23.97	10.11	0.00
2019	Rivers	837.83	269.30	81.77	20.56	1.31
	Korf Bay	155.78	42.56	14.38	3.46	0.45
	Karaginsky Bay	529.18	156.14	14.61	15.47	0.97
2020	Rivers	539.13	218.96	64.42	6.71	1.66
	Korf Bay	46.24	27.65	8.96	0.67	0.02
	Karaginsky Bay	242.36	94.93	23.62	7.31	0.27
2021	Rivers	662.60	196.50	71.24	26.83	2.57
	Korf Bay	192.56	35.02	11.28	8.30	0.00
	Karaginsky Bay	467.27	120.80	26.19	13.11	0.87

### ***Recreational fishing***

Recreational fishing is carried out at 1 fishing parcel in the Karaginsky Bay, Yuzhny Liman, at 1 fishing parcel in the Ossorskaya lagoon and at 1 fishing parcel in the basin of the river Ossora. Table 1.5 presents data on Pacific salmon catch by recreational fishing.

Table 1.5 — Pacific salmon harvest (recreational fishing) in 2012–2021, tons

Year	Water	Catch, tons			
		Pink salmon	Chum	Sockeye	Coho
2012	R. Ossora	0.75	0.00	0.00	0.00
	Ossora Lagoon	3.60	0.00	0.00	0.00
	Karaginsky Bay	0.00	0.00	0.00	0.00
2013	R. Ossora	4.50	3.50	1.50	0.00
	Ossora Lagoon	3.30	1.00	0.00	0.00
	Karaginsky Bay	0.00	0.00	0.00	0.00
2014	R. Ossora	0.39	0.64	0.10	0.38
	Ossora Lagoon	4.14	4.99	1.01	0.56
	Karaginsky Bay	0.00	0.00	0.00	0.00
2015	R. Ossora	5.00	1.00	0.10	0.50
	Ossora Lagoon	5.00	1.00	0.10	0.50
	Karaginsky Bay	0.00	0.05	0.04	0.10
2016	R. Ossora	0.33	0.35	0.00	0.00
	Ossora Lagoon	0.85	0.87	0.00	0.00
	Karaginsky Bay	0.00	0.16	0.13	0.30
2017	R. Ossora	5.00	2.00	1.00	0.00
	Ossora Lagoon	1.30	0.58	0.58	0.00
	Karaginsky Bay	0.15	0.00	0.07	0.14
2018	R. Ossora	0.00	0.00	0.00	0.00
	Ossora Lagoon	0.00	0.00	0.00	0.00
	Karaginsky Bay	0.00	0.15	0.15	0.15
2019	R. Ossora	5.00	2.00	1.00	0.00
	Ossora Lagoon	5.00	2.00	1.00	0.00
	Karaginsky Bay	0.00	0.09	0.09	0.09
2020	R. Ossora	3.50	0.75	0.15	0.00
	Ossora Lagoon	3.54	0.74	0.15	0.00
	Karaginsky Bay	0.00	0.09	0.15	0.18
2021	R. Ossora	5.00	2.00	1.00	0.00
	Ossora Lagoon	5.00	2.00	1.00	0.00
	Karaginsky Bay	0.00	0.12	0.18	0.30



## **Chapter 2. Data on the control water bodies, including data on aerial surveys (dates, routes, flight time, representativeness) and estimates of the spawning stock of Pacific salmon for the reporting period (2021) and the last 10 years (2012–2021)**

### ***Information on the representativeness of aerial surveys (dates, routes, flight time, representativeness) for the reporting year (2021)***

In 2021, KamchatNIRO specialists conducted aerovisual surveys in control rivers: Uka, Khailyulya, Rusakova, Ivashka, Dranka, Makarovka, Karaga, Tymlat, Kichiga, Belaya and Vyvenka from August 07 to August 14. Research methods are standard for this type of survey on the water bodies of Kamchatka (Ostroumov, 1962). MI-2 helicopter was used as an aircraft. The survey was carried out by 2 people.

In the reporting year, the total flight time in the Karaginsky subzone was 38 hours 25 minutes (Table 2.1). The total covered distance is approximately 5.7 thousand km. The intensity of aerial photography in the control rivers was determined according to the adopted methodology. Aerial surveys were carried out based on the calculation of the maximum escapement rate in the spawning grounds of the studied Pacific salmon species. The period of the aerial surveys was specified and amended according to the data from the fishery statistics provided by the SVTU.

Table 2.1 - Flight time (hours) allotted for the survey of spawning rivers in the Karaginsky subzone in the period 2012–2021

<b>Flight time (hours) allotted for the survey of spawning rivers in the area of certification</b>										
<b>Area</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Karaginsky subzone	17.2	28.35	24.25	20.1	39.55	39.55	47.4	50.05	37.25	38.25

It should be emphasized that the full-scale aerial surveys on water bodies of the northeastern coast of Kamchatka was restored in 2016. Prior to this period, aerial surveys in 2012–2015 were significantly reduced. In the current research period (2016–2021), on average, about 42 hours are spent on aerial surveys in the river basins of the Karaginsky subzone. A similar indicator for the period 2012–2015. was approximately 22 hours.

Aerial survey of river systems was carried out in the main river channels and tributaries of the first order, where the most productive spawning areas are located. As a result, at least 70% of the entire spawning area of the control rivers was surveyed.

Data on flight transects and period of aerial surveys at spawning grounds for Pacific salmon in the Uka, Khailyulya, Rusakova, Ivashka, Dranka, Makarovka, Karaga, Tymlat, Kichiga, Belaya and Vyvenka rivers in 2021 is presented in Figure 2.1 and Table 2.2.

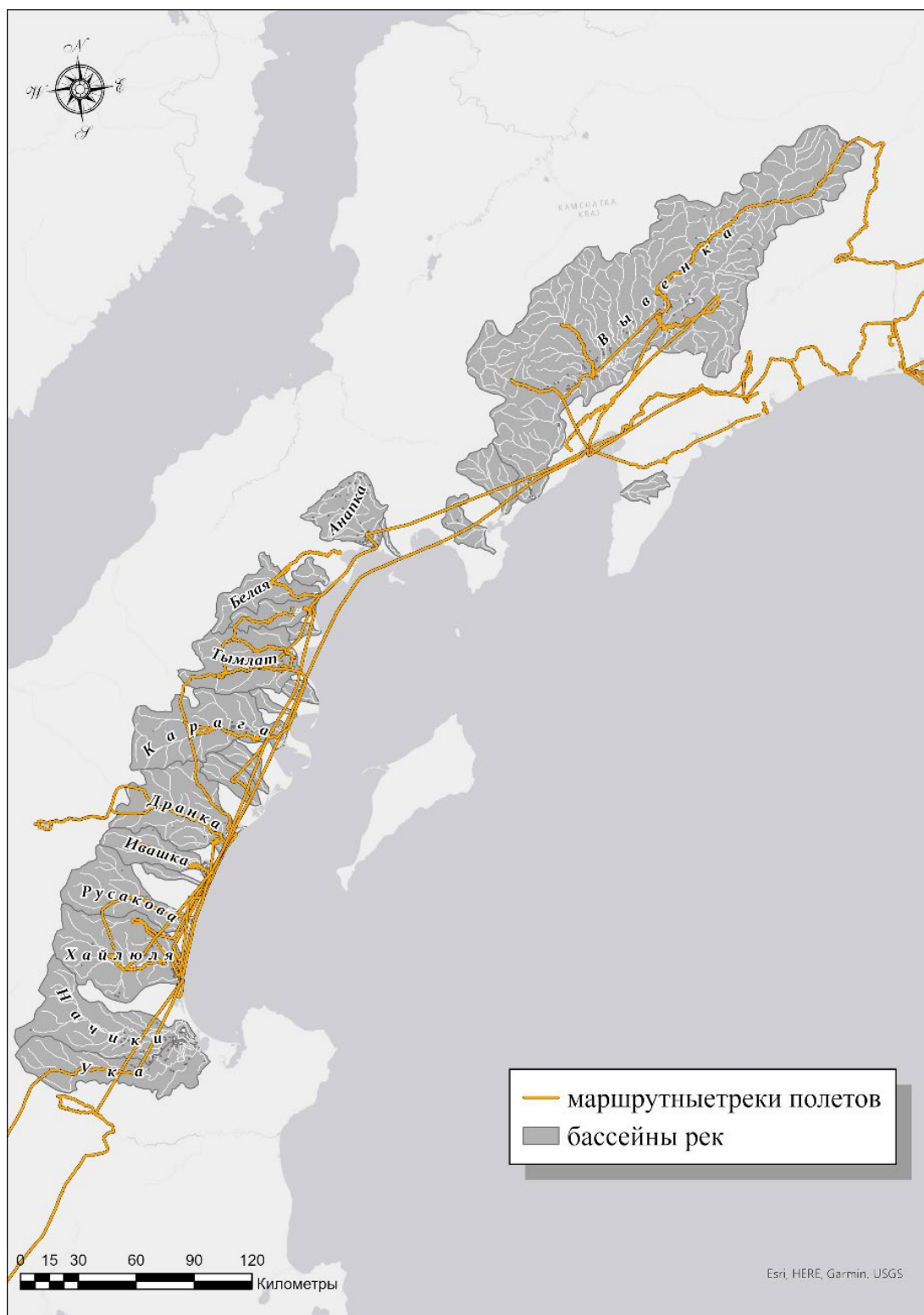


Figure 2.1 — — Flight routes (transects) for counting the Pacific salmon population in index rivers in 2021

Table 2.2 - Chronology of aerial surveys of Pacific salmon in control (index) rivers in 2021

Index rivers and species for which aerial photographs were taken in 2021			
Water basin	Pink salmon	Chum salmon	Sockeye salmon
Hailulya	07.Aug	07.Aug	07.Aug
Ivashka	07.Aug	07.Aug	07.Aug
Dranka	08.aug	08.aug	08.aug
Tymlat	09.Aug	09.Aug	09.Aug
Kichiga	09.Aug	09.Aug	09.Aug
Vyvenka	09.Aug	09.Aug	09.Aug
Vyvenka	12.Aug	12.Aug	12.Aug
Hailulya	Jan 13	Jan 13	Jan 13
Rusakova	Jan 13	Jan 13	Jan 13
Makarovka	Jan 13	Jan 13	Jan 13
Karaga	Jan 13	Jan 13	Jan 13
Belaya	Jan 13	Jan 13	Jan 13
Uka	14.aug	14.aug	14.aug

It should be noted that aerial surveys in the basins of the spawning rivers of North-Eastern Kamchatka are carried out according to the adopted methodology, focused on assessing the salmon stocks of control rivers (Shevlyakov, Maslov, 2011). Therefore, all the listed water bodies involved in aerial surveys are the most commercially significant and constitute in total about 80–90% of the spawning stocks of Pacific salmon in the Karaginsky subzone.

However, in 2021, aerial surveys were not carried out in the following water bodies: Khai-Anapka, r. Anapka, r. Virovayam, r. Paklavayam, r. Vytvirovayam, r. Ossora, b. Kayum, r. Sukhaya, r. Istyk, r. Nachiki, r. Malamwayam, r. Konkaya, r. Tnakhivnytvayam, r. Lingenmyvayam, r. Gatyminvayam. It is clear that all of the listed water bodies are important for the salmon fisheries by certified fishing companies. However, it should be emphasized that the total spawning stock of Pacific salmon in all of these water bodies is less than 10% of the total reproductive potential of the Karaginsky subzone. In addition, the following data on the escapement rate of Pacific salmon in the rivers of the Karaginsky and Olyutorsky (partially) administrative districts over the past 10 years (2012–2021) is given below.

***Estimates of Pacific salmon spawning stock for the reporting year (2021) and the last 10 years (2012–2021)***

In the forecast for 2021, the estimated spawning abundance of pink salmon and chum salmon in the Karaginsky subzone was 23,000 and 268 thousand spawners, respectively. For the sockeye salmon of the Karaginsky subzone, the forecast is based on the presence of two regional spawning centers - in the Karaginsky and Olyutorsky administrative districts. The fishery of the majority of the certified companies under consideration is concentrated in the Karaginsky district, where the predicted escapement rate of sockeye salmon in 2021 is determined at the level of 54 thousand spawners. River Hailulya is the most significant water body for the reproduction of sockeye salmon in the region. The escapement rate of sockeye salmon in this water reservoir in the reporting year was calculated according to the target reference point of 9 thousand spawners.

The actual escapement rate of pink salmon in the Karaginsky subzone in 2021 is estimated at 104895 thousand spawners, and chum salmon - 1807 thousand spawners. The number of sockeye salmon spawners in the Karaginsky district amounted to 168.2 thousand spawners, and in

the river Hailulya 7.9 thousand spawners. As a result, the actual escapement rate of Pacific salmon spawners exceeded forecasted expectations by 4.5 times. Total number of counted Pacific salmon spawners in control rivers in 2012–2021 presented in table 2.3.

Table 2.3 - The number of spawners of Pacific salmon escaped to spawn in the control (index) rivers of North-Eastern Kamchatka in the period 2012–2021

Escapement rate (thousands of spawners)											
Species	Water basin	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Pink salmon	Nachiki					27.7				150	
	Uka		210	435	3100	75.13	2819.5		2500	1000	2210
	Hailulya	44	700	19.12	7150	147.5	9375	328.9	5700	460	7300
	Rusakova			850	900		550		2700	25	3500
	Sukhaya rechka								230		
	Ivashka	36	315	221.5	825	41	1900		2000	50	2300
	Dranka		1800	4350	3350	381.5	12250	3510	11000	1610	12500
	Makarovka	460	290	375	1100	100.5			2000	200	500
	Cayoum			45.5		190				50	
	Karaga	500		2.3	5550			2555	6300	400	3200
	Ossora							1600	400	138	
	Vytvirovayam										
	Tymlat	540	825	123	5750	4600	7500	4750	17000	1010	5000
	Paklavayam	29	35						350	40	
	Kichiga	165	22.5		5450	1800	4400	3050	8500	300	3500
	Belaya	435	2.75	12	8500	2000	5200	3450	7500	100	5500
	Virovayam								500		
	Anapka	3100	290	800	5300	2900	2300	1700	3000	450	
	Khai-anapka										
	Gatyminvayam								50		
	Lingenwashya m								350	10	
	Vyvenka	99.25	4.65	1762.5	5840	617.5	865	919.75	3300	92	15300
	Tnahyvnytvaya m							135			
Chum salmon	Nachiki								0.01		
	Uka		0.003	7.25	8.75		12.2		22.525	28	115
	Hailulya	7.7	4.6	1.95	123.62		17.9	29.75	32.6	3	70.1
	Rusakova			3	13	4	1.85		5.035	1	80
	Sukhaya rechka										
	Ivashka	10	10.5	0.5	35.5	12.9	1		11	1	50
	Dranka		15.55	12.5	106.5	15.15		22.4	35.73	5	150
	Makarovka	15	52.5	0.3	38	0.01			8.1		30
	Cayoum					0.25				0.2	

[illegible]

Salmon spawning stocks characteristics by target species in the control rivers under consideration are presented below.

Pink salmon. In the period 2012–2021 the escapement rate in the spawning grounds in the control rivers varied from 4494 to 73380 thousand spawners (average 29402 thousand fish). During the period under review, the main spawning center was registered in the river cluster in the central part of the Karaginsky Bay - rr. Dranka, Tymlat and Kichiga-Belaya. The total escapement rate of spawners here averaged 16639 thousand spawners. In the rivers of the northern and southern parts of the Bay, the abundance of pink salmon did not exceed 1,300,000 fish on average. Based on these data, the spawning stock of pink salmon in the watercourses under consideration corresponds to the level of productive generations.

Chum salmon. Over the past 10 years, the population of chum salmon has varied from 68 thousand to 1314 thousand spawners (413 thousand fish on average) and has not decreased below the target escapement values, with the exception of 2016, when the recorded number of chum salmon was 68 thousand spawners. In the long-term aspect, the dynamics of the chum salmon distribution is in many respects similar to the distribution of pink salmon. The most productive rivers for chum salmon are the same as for the pink salmon, that is, the highly productive spawning stock is formed in a cluster of rivers in the central part of the Karaginsky Bay. In general, for the specified 10-year period, the state of the spawning stock of chum salmon is estimated as high.

Sockeye salmon. The number of sockeye salmon in the index rivers is estimated at a relatively low level and in the period from 2012 to 2021. on average did not exceed 40 thousand spawners. At the same time, the escapement values ranged from 3.4 thousand to 77.9 thousand spawners.

The spawning stock of sockeye salmon on the northeastern coast of Kamchatka should be considered in the spatial and structural context. The stock of sockeye salmon in North-Eastern Kamchatka consists of two population groups of sockeye salmon reproducing in Karaginsky and Olyutorsky districts. At the same time, the stock is mainly formed by the spawners from the rivers of Olyutorsky district. Accordingly, when analyzing the distribution of sockeye salmon spawners in the studied spawning rivers, as a rule, the largest escapement values are recorded in the northern part of the Karaginsky Bay, as well as in the Korf Bay. Therefore, the analysis of the studied control rivers showed the highest escapement level of sockeye salmon in the basin of the river Vyvenka. A relatively stable stock of sockeye salmon has been registered in Tymlat, Dranka and Khailyulya rivers, belonging to the river systems located further south and included in the list of index rivers.

### Chapter 3. Up-to-date data on escapement targets for Pacific salmon spawners in the spawning grounds of the reference water bodies

The basic principles underlying the formation of the target reference points for Pacific salmon escapement goals in the water basins of the North-East Kamchatka are presented in the article by M.G. Feldman et al. (2019).

In the modern interpretation (Feldman et al., 2022) of salmon fishery management, the target reference points for escapement goals are as follows:

1.  $S_{MSY}$  is a target (optimal) escapement goal that consistently ensures effective reproduction and a certain level of commercial yield (maximum sustainable yield (MSY - Maximum Sustainable Yield) of a specific stock unit;

2.  $S_{MAX}$  - the maximum escapement, providing an expanded reproduction of a specific unit stock with a decrease in the yield value;

3.  $S_{BUF}$  is a buffer reference point for the escapement that provides a sufficient level of reproduction and MSY.

To ensure stable fishing and efficient reproduction of Pacific salmon, it is necessary that the escapement rates be at least  $S_{BUF}$  but not less. If it is less, then the fishing should be limited or completely closed.

The calculated target reference points for Pacific salmon escapement to the spawning grounds of the control water bodies of North-East Kamchatka are presented in Table 3.1. Data on average long-term escapement rates of Pacific salmon in the rivers under consideration relative to the target reference points are presented in Figures 3.1–3.3.

Table 3.1 - Target and minimum reference points of Pacific salmon spawners escapement into the control (index) rivers of North-East Kamchatka (according to Feldman et al., 2019)

Reference points (thousands of spawners)				
Species	Water basin	Intermediates ( $S_{buf}$ )	Target ( $S_{msy}$ )	Maximum ( $S_{max}$ )
Pink salmon	<b>Total by rivers</b>	<b>9340</b>	<b>15490</b>	<b>29290</b>
	Nachiki	-	-	-
	Uka	550	910	1720
	Hailulya	680	1130	2150
	Rusakova	800	1320	2490
	Sukhaya rechka			
	Ivashka			
	Dranka	890	1480	2800
	Makarovka	810	1350	2550
	Cayoum			
	Karaga			
	Ossora	950	1570	2970
	Vytvirovayam			
	Tymlat			
	Paklavayam	1740	2890	5470

	Kichiga			
	Belaya			
	Virovayam			
	Anapka	1050	1740	3280
	Khai-Anapka			
	Gatyminvayam	640	1070	2020
	Lingenwashyam			
	Vyvenka	1230	2030	3840
	Tnahyvnytvayam	-	-	-
<b>Chuma salmon</b>	<b>Total by rivers</b>	<b>132</b>	<b>179</b>	<b>263</b>
	Nachiki	6	6	13
	Uka			
	Hailulya	13	18	26
	Rusakova	5	7	11
	Sukhaya rechka	-	-	-
	Ivashka	7	9	13
	Dranka	13	18	26
	Makarovka	-	-	-
	Cayoum	-	-	-
	Karaga	19	26	37
	Ossora			
	vytvirovayam			
	Tymlat			
	Paklavayam	-	-	-
	Kichiga	25	34	49
	Belaya			
	Virovayam	8	11	16
	Anapka			
	Khai-Anapka	-	-	-
	Gatyminvayam	-	-	-
	Lingenwashyam	-	-	-
	Vyvenka	36	50	72
	Tnahyvnytvayam	-	-	-
<b>Sokeye salmon</b>	<b>Total by rivers</b>	<b>31.0</b>	<b>64.0</b>	<b>106.0</b>
	Nachiki	8.0	17.0	28.0
	Uka			
	Hailulya	6.0	12.0	20.0
	Rusakova	7.0	14.0	24.0
	Sukhaya rechka			
	Ivashka			
	Dranka			
	Makarovka	-	-	-
	Cayoum	-	-	-
	Karaga	5.0	10.0	16.0
	Ossora			
	Vytvirovayam			
	Tymlat			



	Paklavayam			
	Kichiga			
	Belaya	-	-	-
	Virovayam	-	-	-
	Anapka	-	-	-
	Khai-Anapka	-	-	-
	Gatyminvayam	-	-	-
	Lingenwashyam	-	-	-
	Vyvenka	5.0	11.0	18.0
	Tnahyvnytvayam	-	-	-

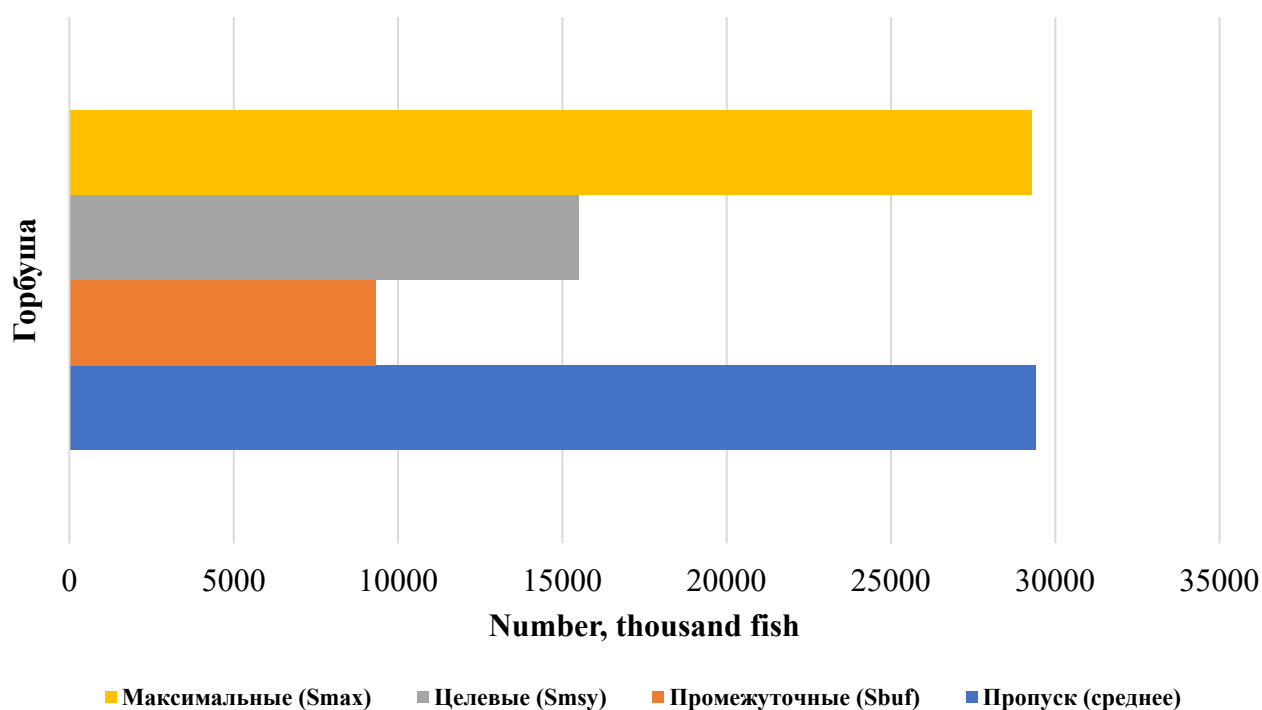


Figure 3.1 - Average long-term escapement rate of pink salmon in the index rivers of North-East Kamchatka in the period 2012–2021 relative to the target reference points

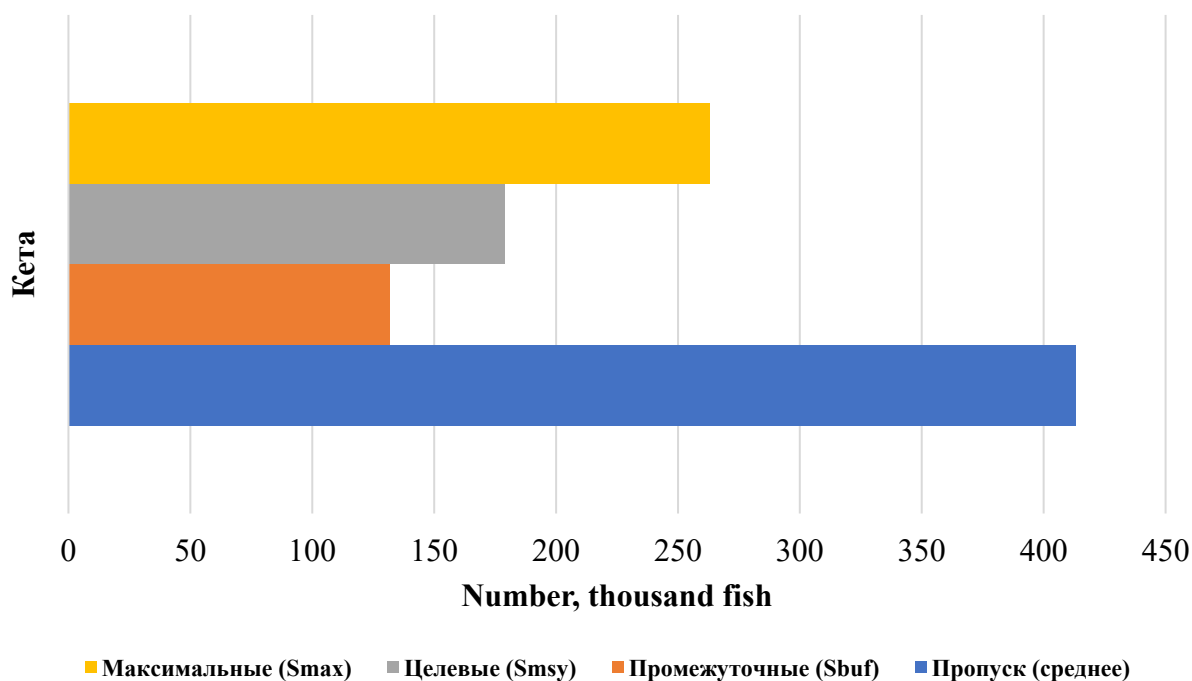


Figure 3.2 - Average long-term escapement rate of chum salmon spawners in the index rivers of North East Kamchatka in the period 2012–2021 relative to the target reference points

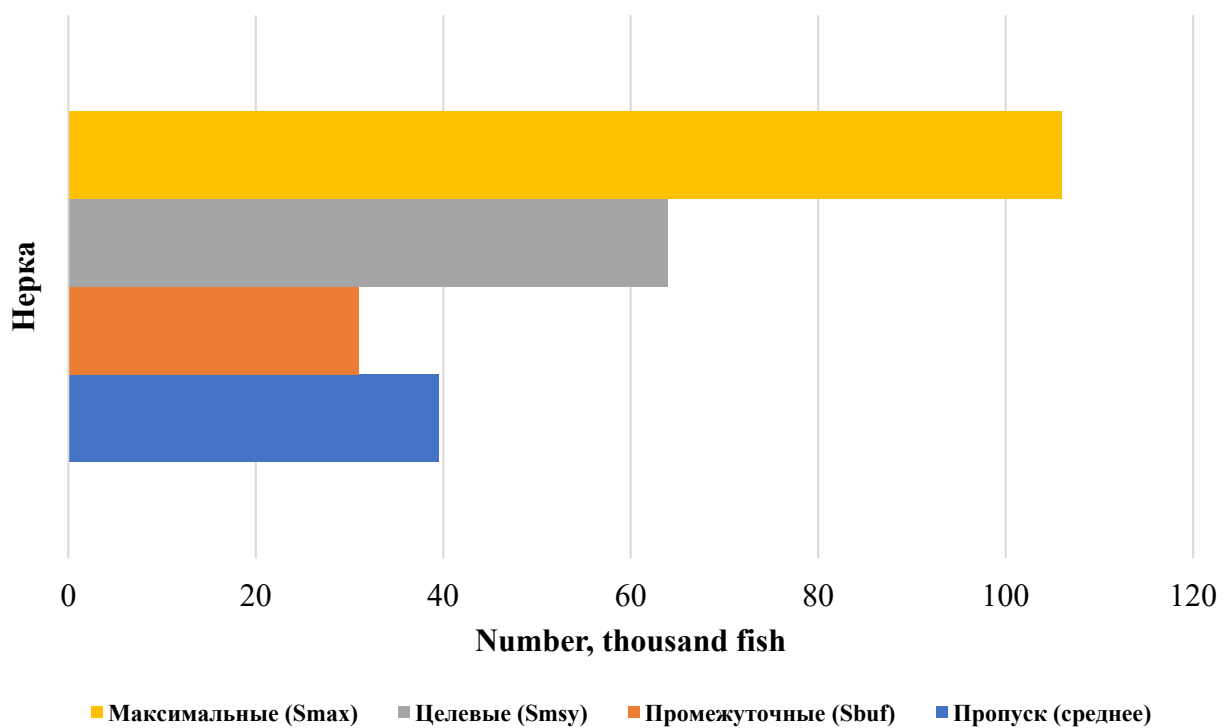


Figure 3.3 — Average long-term escapement rate of sockeye salmon spawners escapement into the index rivers of North-East Kamchatka in the period 2012–2021 relative to the target reference points

In accordance with target escapement goals, the total average long-term value of the spawning stock of the salmon species under consideration in the control rivers of North-East Kamchatka in 2012–2021 is not equal and is evaluated at different productivity levels.

At the same time, escapement rates of pink salmon and chum salmon significantly exceeded the indicated target (average) reference points. For pink salmon, it corresponded to the maximum target reference point, and for chum salmon, the spawning escapement rate was noticeably higher than the target reference point. In both cases, the escapement rates in the spawning grounds meet the requirements for the expanded reproduction of the species.

The average long-term level of spawning stock for sockeye salmon corresponded to the intermediate target escapement goal. This does not involve the significant increase of the potential stock. However, this escapement level guarantees stable reproduction and fishing.

Long-term dynamics of Pacific salmon spawning stock in the index rivers relative to the target reference points is shown in Figure 3.4.

The presented graphs show that most of the estimates of the Pacific salmon spawning stocks in the studied water bodies of North-Eastern Kamchatka correspond to different target reference points. It should be noted that in some years the escapement value of salmon spawners did not reach the buffer reference points. However, the further dynamics of the spawning stocks of the species under consideration reached again a productive and highly productive level. This suggests that the observed fluctuation in the salmon abundance was not critical for the productivity of fish generations in this region.

One of the reasons for the low estimates of salmon escapement rates in some years is the lack of aerial surveys, due to objective reasons related to the financing issues. The fact is that on the spawning rivers of North-East Kamchatka, the aerial surveys are carried out at the same time, within standard time limit. However, the quality of estimates may depend on various conditions. For example, on the hydrology of rivers (turbidity and water level) or the nature of the anadromous course (delay in migration, distribution of spawners in the river basin). Therefore, all these circumstances can entail failures in obtaining results during aerial surveys. We believe that such a situation was observed in some years.

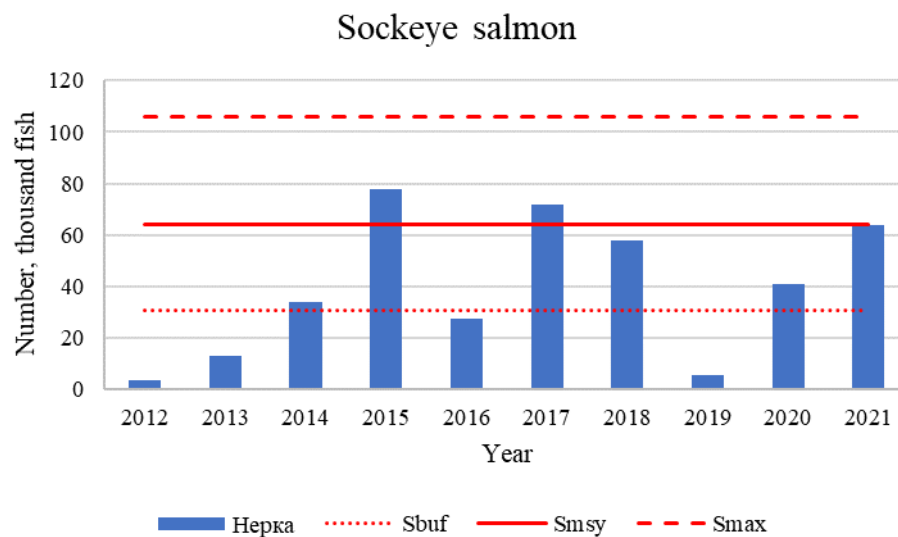
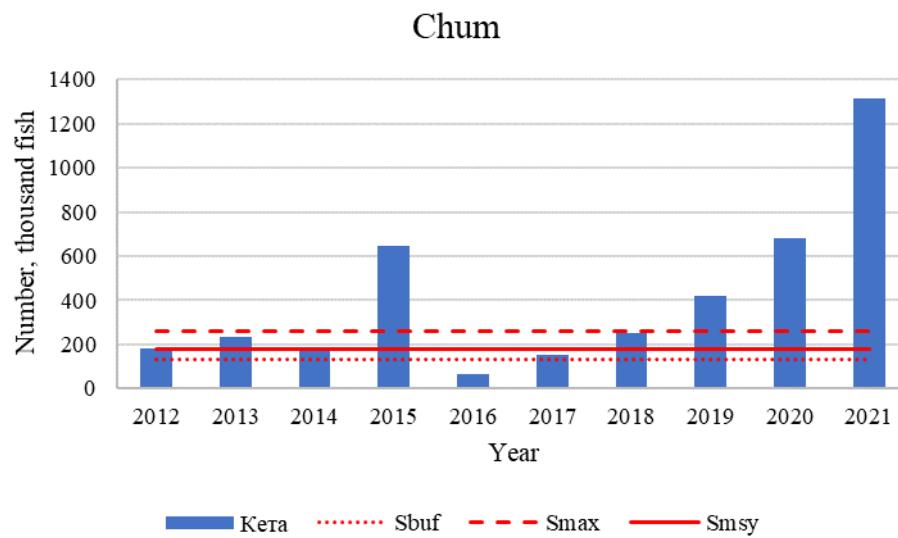
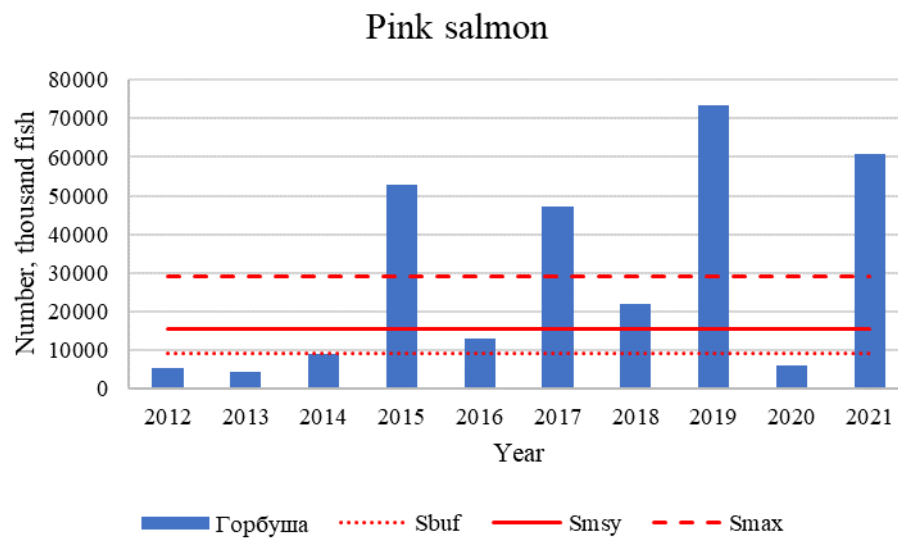


Figure 3.4 - Dynamics of Pacific salmon spawning stocks in control rivers in 2012–2021 relative to target reference points

*Pink salmon.* The presented data make it possible to determine that the dynamics of the spawning abundance of pink salmon over the past 10 years has two characteristic trends. Moreover, a significant increase was registered for the odd-year generative line, the spawning stock of which, starting from 2015, is at the level of highly productive generations. In the even-year reproduction line, the dynamics of pink salmon stock has a less pronounced growth trend until 2018. However, in 2020, the stock level decreased below the buffer values ( $S_{BUF}$ ).

*Chum salmon.* Long-term escapement rates of chum salmon generally reflect the stable state of the population. Moreover, in the last 5 years, the value of the spawning stock has consistently increased, and, starting from 2019, it has exceeded the level corresponding to the maximum stratum of the target escapement goal ( $S_{MAX}$ ).

*Sockeye salmon.* The dynamics of sockeye salmon escapement rate in the spawning grounds has been unstable over the past 10 years. In some years, the escapement rate corresponded to the optimal escapement goal ( $S_{MSY}$ ), but there were also years with low escapement rates in the rivers. In general, the size of the spawning stock of sockeye salmon does not cause serious concern and, on average, corresponds to the target goal, which is within the range between the buffer ( $S_{BUF}$ ) and optimal ( $S_{MSY}$ ) reference points.

Taking into account the need for an overall assessment of dynamics of Pacific salmon spawning stocks at the regional level, the report provides data in general for all studied water bodies of North-Eastern Kamchatka (Karagin subzone) in 2012–2021. (Fig. 3.5).

Based on the presented data, it can be seen that the spawning stock of Pacific salmon in the Karaginsky subzone has tended to increase over the past 10 years. This is true for all species. We believe that this situation has developed under the influence of the climate change, which has affected the dynamics of Pacific salmon stocks in the North Pacific.

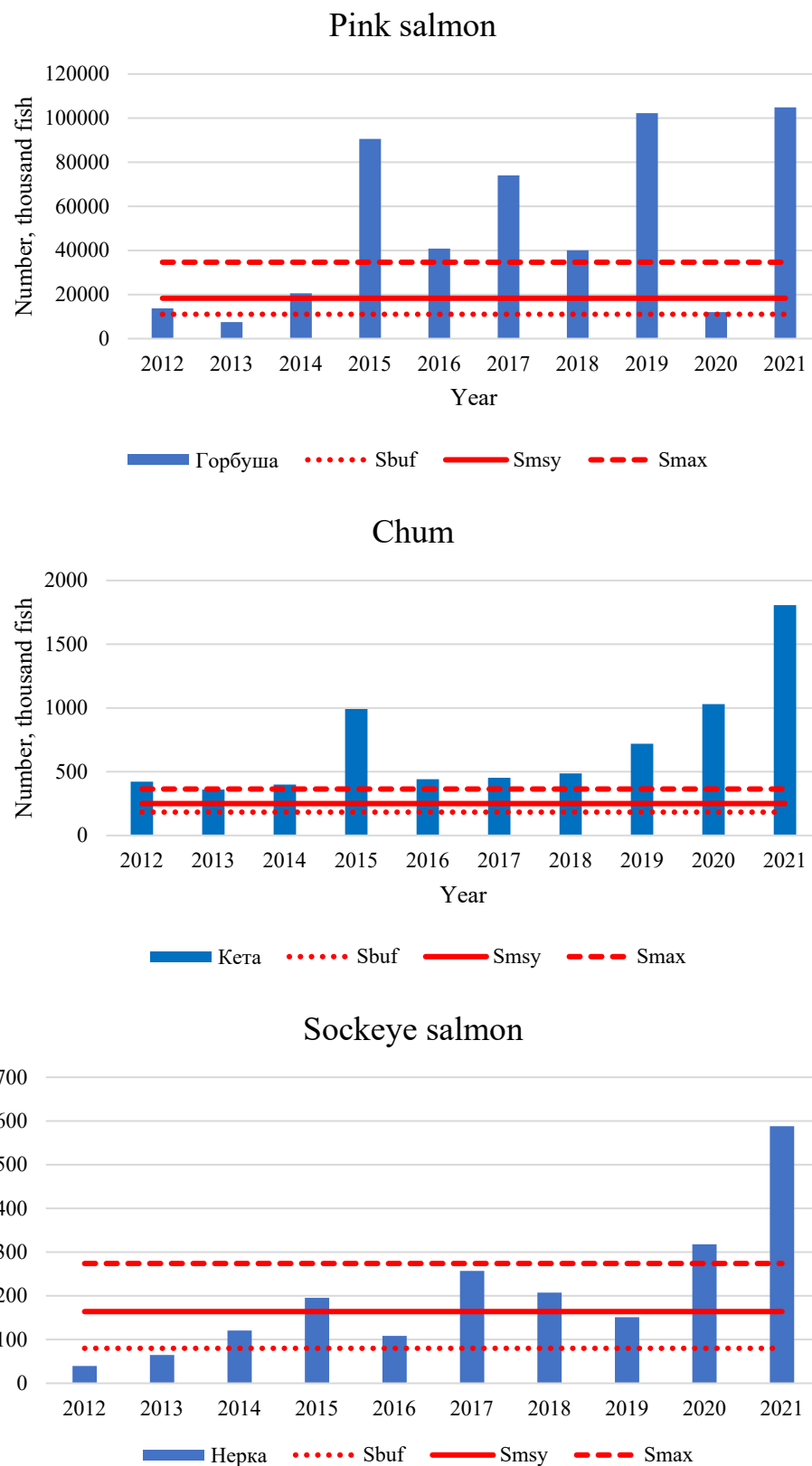


Figure 3.5 — Dynamics of spawning stocks of Pacific salmon in the Karaginsky 2012–2021 relative to the target reference points

## Chapter 4. Data on the Pacific salmon fishery management activities related to certified fisheries in reference water bodies for the reporting year 2021

### 1. Far Eastern Scientific and Fisheries Council (DVNPS) in 2021

[https://fish.gov.ru/wp-content/uploads/documents/otraslevaya\\_deyatelnost/organizaciya\\_rybolovstva/protokoly\\_ko\\_missij\\_sovetov/protokol\\_dvnps\\_150421.pdf](https://fish.gov.ru/wp-content/uploads/documents/otraslevaya_deyatelnost/organizaciya_rybolovstva/protokoly_ko_missij_sovetov/protokol_dvnps_150421.pdf)

### 2. Anadromous Fish Commission in Kamchatka in 2021 (hereinafter referred to as the Commission)

#### Meeting on 21.04.2021, Minutes No. 3

[https://svtu.rf/images/Prikazi\\_2021/2104\\_Protokol\\_3.pdf](https://svtu.rf/images/Prikazi_2021/2104_Protokol_3.pdf)

Recommended Pacific salmon catch (MT) in commercial fishing, traditional fishing, as well as the recreational fishing in the Kamchatka Kray in 2019 in 2021 :

Fishing area (zone, subzone)	Pink salmon	Chum	Sockeye salmon	Coho salmon	Chinook salmon	Total
Karaginsky	147556.625	5994.325	2060.100	294.200	47.250	155952.500

#### Meeting on 05.07.2021, Minutes No. 4

[https://svtu.rf/images/Prikazi\\_2021/1105\\_Protokol\\_4.pdf](https://svtu.rf/images/Prikazi_2021/1105_Protokol_4.pdf)

The start dates for commercial and traditional fishing in the sea area, in relation to Pacific salmon and char are set:

#### East Coast:

##### Karaginsky subzone :

- Olyutorsky area from June 15 (except for the Gulf of Korf and the rivers flowing into it);
- the Gulf of Korf and the rivers flowing into it from June 27;
- Karaginsky district from June 15.

The escapement periods (escapement days) are set up for commercial, recreational (using net fishing gear), traditional fishing:

#### Inland water bodies:

- in rivers and lakes, with the exception of rivers Palana, Lesnaya, Voyampolka (Materay), Bolshaya, Ozerneya (western), Zhupanova , lagoons Ossorskaya , estuary rivers Khairyuzova, Belogolovaya, and also rivers and lakes Aleutian district - Monday , Tuesday , Wednesday .

The procedure for disabling/removing fishing gear during salmon escapement has been determined:

Set nets are not used until 24.00 hours of the day preceding the escapement day. Set nets are disabled by closing the entrance of the fish trap, which prevents fish from entering the trap, while making a safe path for the salmon along the coastline to the river mouth. To ensure the escapement of salmon to the mouth of the spawning river, the wing of the trap net is removed or tied up for at least 200 m in the coastal (starting from 150 m from the water edge) and near-trap (immediately before the entrance to the trap) parts, which are marked with buoys (yellow, red or orange). When tying the wing, the net is not allowed to sag more than 1.0 m from the water surface.

In all areas, with the exception of the Kamchatka Bay, the early deployment of frames of the trap nets (without attaching the net mesh) is allowed. Attaching the mesh on the wing part of

the trap is allowed 2 days before the start date of the fishing, deployment of the trap - on the start date of the fishing.

Other fishing gears during the escapement period, both in sea and river water areas, until 24:00 hours of the day preceding the escapement days, are completely removed.

In order to decrease commercial loads on the salmon stock in the basin of the r. Kamchatka and rivers that flow into the Korf Bay, and ensure optimal escapement rates of spawners in the spawning grounds, it was recommended for the users to limit the length of the central rope of the trap nets to 1000 m in the Kamchatka Bay, to 1500 m in the Korf Bay; the given distance is calculated from the mounting point of the central rope on the shore to the head buoy in the gulf or the sea.

**Meeting on 07.07.2021, Minutes No. 14**

[https://svtu.rf/images/Prikazi\\_2021/0707\\_Protokol\\_14.pdf](https://svtu.rf/images/Prikazi_2021/0707_Protokol_14.pdf)

The groups of water bodies of the Karaginsky subzone were combined for sockeye salmon with the allocated 1785.0 tons of sockeye salmon (taking into account an additional volume of 130 tons).

**Meeting on 13.07.2021, Minutes No. 17**

[https://svtu.rf/images/Prikazi\\_2021/1307\\_Protokol\\_17.pdf](https://svtu.rf/images/Prikazi_2021/1307_Protokol_17.pdf)

The materials developed by KamchatNIRO justifying an increase in the predicted volume of chinook salmon catch in the Karaginsky subzone by 50 tons and sockeye salmon in the Karaginsky subzone by 2,400 tons were approved by the decision of the Bureau of the Industrial Council (Minutes No. 20 dated 12.07.2021)

Groups of water bodies of the Karaginsky subzone were combined for chinook salmon in order to rationally use the allocated resources.

**Meeting on 16.07.2021, Minutes No. 18**

[https://svtu.rf/images/Prikazi\\_2021/1607\\_Protokol\\_18.pdf](https://svtu.rf/images/Prikazi_2021/1607_Protokol_18.pdf)

The groups of water bodies of the Karaginsky subzone were combined for pink salmon with the allocated 145,676.0 tons of pink salmon (including an additional volume of 57,800.0 tons).

**Meeting on 21.07.2021, Minutes No. 19**

[https://svtu.rf/images/Prikazi\\_2021/2107\\_Protokol\\_19pdf.pdf](https://svtu.rf/images/Prikazi_2021/2107_Protokol_19pdf.pdf)

The groups of water bodies of the Karaginsky subzone were combined for chum salmon with the allocated 3690.0 tons

**Meeting on 27.07.2021, Minutes No. 22**

[https://svtu.rf/images/Prikazi\\_2021/2707\\_Protokol\\_22.pdf](https://svtu.rf/images/Prikazi_2021/2707_Protokol_22.pdf)

The materials developed by KamchatNIRO justifying an increase in the predicted volume of pink salmon catch in the Karaginsky subzone by 80,000 tons were approved (Minutes No. 24 dated July 23, 2021)

**Meeting on 29.07.2021, Minutes No. 23**

[https://svtu.rf/images/Prikazi\\_2021/2907\\_Protokol\\_23.pdf](https://svtu.rf/images/Prikazi_2021/2907_Protokol_23.pdf)

The previously set up escapement days on August 02, 03, 04 in the rivers of the Sobolevsky district, as well as in the rivers Kikhchik, Tymlat, Kichiga, Belaya, Khailyulya, Dranka, Uka, Zhupanova, in the estuary of the Khairyuzova, Belogolovaya rivers were cancelled.



**Meeting on 04.08.2021, Minutes No. 25**

[https://svtu.rf/images/Prikazi\\_2021/0408\\_Protokol\\_25.pdf](https://svtu.rf/images/Prikazi_2021/0408_Protokol_25.pdf)

The previously set up escapement days on August 09, 10, 11 were canceled at the river fishing parcels of the West Bering Sea zone, in the rivers of the Sobolevsky district, as well as in the rivers Kikhchik, Tymlat, Kichiga, Belaya, Khailyulya, Dranka, Uka, Ossora.

**Meeting on 11.08.2021, Minutes No. 26**

[https://svtu.rf/images/Prikazi\\_2021/1208\\_Protokol\\_26.pdf](https://svtu.rf/images/Prikazi_2021/1208_Protokol_26.pdf)

The materials developed by KamchatNIRO justifying an increase in the predicted volume of chum salmon catch in the Karaginsky subzone by 2000 tons were approved by the decision of the Bureau of the Industrial Council (Minutes No. 32 dated 10.08.2021)

**Meeting on 19.08.2021, Minutes No. 29**

[https://svtu.rf/images/Prikazi\\_2021/1908\\_Protokol\\_29.pdf](https://svtu.rf/images/Prikazi_2021/1908_Protokol_29.pdf)

The groups of water bodies of the Karaginsky subzone were combined for coho salmon with the allocated 130.0 tons of coho salmon (taking into account the additional volume of 39.0 tons).

**Meeting on 26.08.2021, Minutes No. 31**

[https://svtu.rf/images/Prikazi\\_2021/2608\\_Protokol\\_31.pdf](https://svtu.rf/images/Prikazi_2021/2608_Protokol_31.pdf)

The materials developed by KamchatNIRO justifying an increase in the predicted volume of coho salmon catch in the Karaginsky subzone by 300 tons were approved by decision of the Bureau of the Industrial Council (Minutes No. 37 dated August 24, 2021).

**Meeting on 01.09.2021, Minutes No. 32**

[https://svtu.rf/images/Prikazi\\_2021/0109\\_Protokol\\_32.pdf](https://svtu.rf/images/Prikazi_2021/0109_Protokol_32.pdf)

The materials developed by KamchatNIRO justifying an increase in the predicted volume of catch in the Karaginsky subzone - coho salmon by 500 tons and chum salmon by 500 tons were approved by decision of the Bureau of the Industrial Council (Minutes No. 41 dated August 31, 2021)

**Meeting on 06.09.2021, Minutes No. 33**

[https://svtu.rf/images/Prikazi\\_2021/0609\\_Protokol\\_33.pdf](https://svtu.rf/images/Prikazi_2021/0609_Protokol_33.pdf)

The period of ban on commercial, traditional and recreational (using net fishing gear) fishing in the West Bering Sea zone, Karaginskaya, Petropavlovsk-Komandorskaya (with the exception of the Milkovsky region, as well as river fishing parcels belonging to the recreational fishing in the Ust-Kamchatsky region) subzones from 00 hours on September 11.

Unallocated volume (MT) of possible catch of Pacific salmon for commercial fishing and organization of recreational and sport fishing) in 2021:

Fishing area (zone, subzone)	Pink salmon	Chum salmon	Sockeye salmon	Coho salmon	Chinook salmon	Total
Karaginsky	75.632	25.066	7.184	0.290	2.015	<b>110.187</b>

## Conclusion

The Fishery Research Agency NIRO carried out the research under the contract with Kamchatka Salmon Catchers Association (ADLK) and prepared the information required for the annual MSC audit of certified salmon fisheries in North-East Kamchatka (Karaginskaya subzone). ADLK is represented by the following fishing companies: Karaginsky district - LLC “Vostochny Bereg”, LLC “RPZ Maksimovsky”, LLC “Koryakmoreprodukt”, LLC “Nachikinskoye”, LLC “Severo-Vostochnaya Company”, JSC “Kolkhoz im. Bekereva”, LLC “Ukinsky Liman”, LLC “Tymlatsky Fish Processing Plant”, LLC “Rusak”, LLC “RA Belorechensk”; Olyutorsky district – “Vyvenskoye LLC”. Target fish species are 3 species of Pacific salmon - pink salmon, chum salmon and sockeye salmon. The spawning area of the studied populations (local stocks) of Pacific salmon includes the following water bodies: Karaginsky Bay - rr. Khai-Anapka, Anapka, Virovayam, Belaya, Kichiga, Paklavayam, Tymlat, Vytvirovayam, Ossora, Karaga, Kayum, Makarovka, Dranka, Ivashka, Sukhaya, Rusakova, Haylulya, Istyk, Nachiki, Uka, Malamvayam, Konskaya; Gulf of Korf - rr. Vyvenka, Tnakhvnytvayam, Lingenmyvyyam, Gatymynvayam.

This research provides an assessment of the dynamics of the Pacific salmon spawning stocks over the past 10 years (2012–2021). It is shown that the estimated escapement rate of Pacific salmon in the spawning grounds of the studied rivers of Karaginsky subzone, according to long-term average data, remained at the target level and above. The long-term dynamics of spawning stocks of all species under consideration demonstrates a trend towards an increase.

Given the above, we believe that the measures taken to regulate Pacific salmon fisheries in Karaginskiy subzones are quite sufficient for the effective reproduction and sustainable fishing.

We would like to draw the attention to the significant contribution of certified fisheries in the Karaginsky subzone to the monitoring of salmon stocks. First of all, we are talking about financing aerial surveys at the spawning grounds of water bodies and assistance in organizing surveys to count salmon fries in the control rivers (the Khailyulya and Kichiga rivers). In addition, KamchatNIRO employees annually collect biological data on Pacific salmon spawners at fish processing plants belonging to the certified fisheries.

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## 6.2 Tymlat Illegal Fishery Socio-anthropological study

*Report on socio-anthropological field research*

**Assessment of illegal salmon fishery in**

**“Tymlatsky Rybokombinat Ltd” fishing zone**

**in Karaginsky Bay**

*intermediate stage*

Head:

*Sole proprietor, Yekaterinburg*



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## SUMMARY

Report: 43 pages, 2 tables, 2 graphs, 15 figures.

**Keywords:** Kamchatka, Karaginsky district, Tymlat, Tymlatsky Rybokombinat, MSC, illegal fishing, commercial fishing, indigenous fishing, poaching, salmon, pink salmon, chum salmon

**Research objective:** quantitative and qualitative assessment of illegal salmon fishing in Karaginsky Bay, in Tymlatsky Rybokombinat Ltd. fishing zone.

**Research tasks:** Collecting and processing of materials on the theme of the research; analysis of the geographical location of the Karaginsky district, socio-economic conditions, economic conjuncture of caviar fishing in Kamchatka, legal regulation of salmon fishing; characterizing of the types of poaching identified during the study, characterizing of salmon protection services; verification of the hypothesis put on the first stage of the research work.

**Research materials:** interviews with experts from fishing industry, authorities, local fishermen, field observations, mass media, official government and branch department data, stock sources.

**Results:** Made qualitative descriptions and quantitative assessments of illegal salmon fishing. Described factors, institutions and collisions that determine the face and level of illegal salmon pressure in the Karaginsky Bay today.

## Table of contents

Definitions .....	5
Introduction.....	6
Geography of TRK fishing zone.....	7
Transport logistics.....	10
Demographics and employment as risk factors .....	13
Economic conjuncture .....	17
Legal regulation of salmon fishing .....	19
Illegal salmon extraction and its suppression .....	25
Security services.....	25
Household poaching.....	27
Criminal poaching .....	32
Industrial poaching.....	35
Indigenous peoples communities (obshchinas).....	36
Conclusion .....	40
References.....	43

## Definitions

**ABR** — aquatic biological resources.

**PA/RA** – possible amount/recommended amount of aquatic biological resources catch.

**GMI** — State Marine Inspection (part of the Border Service of the FSB).

**Karaginskaya subzone** – geographical unit of fishery certification, which includes the most part of Karaginsky Bay and river basins of the tributaries. The land area of the subzone is a part of both Karaginsky and Olutorsky districts of Kamchatsky krai (present report covers Karaginsky part of the subzone).

**Indigenous Peoples** — Indigenous small-numbered peoples of the North, Siberia and the Far East.

**Comission** – comission, regulating anadromous fish species extraction in Kamchatsky krai; presented by the members of the government of Kamchatsky krai, SVTU, KamchatNIRO, public organizations and branch departments.

**Koryakiya** – shortened name of the Koryak okrug (former Koryak autonomous okrug, which was merged with Kamchatskaya Oblast to form the Kamchatsky krai)

**Merkuriy** – automated electronic certification system, registrating the hauls, controlled by the Federal Service for Veterinary and Phytosanitary Supervision (Rossel'khoznadzor), and tracking them within Russian borders.

**Obshchina** – community of indigenous people, official “non-commercial” institution with the purpose of supporting the “traditional economic activities” and “ways of life” for Russia’s indigenous peoples. In practice, founding an obshchina formalizes existing networks of kin, friends, and acquaintances that cooperate while harvesting, processing, and distributing salmon.

**TAC** — total allowable catch. Category used in calculating optimal amounts of catch before the category “recommended amount” was introduced.

**BS FSB** — Border Service of the Federal Security Service of the Russian Federation.

**SVTU FAR** – North-eastern territorial division of the Federal Agency for Fishery (Rosrybolovstvo).

**TRK** — Tymlatsky Rybokombinat.

**TNC** – Territorial Neighborhood Community.

**UoA** – Unit(s) of Assessment according to the **MSC** certification standard, which contains a list of parameters, such as primary salmon fishery species, zone, and fishing methods.

**MSC** – Marine Stewardship Council – an international non-profit organisation, holding the fishery assessment process to solve the global problem of overfishing, leading to the depletion of the world's fisheries.

## Introduction

**Research objective** is the quantitative and qualitative assessment of illegal salmon fishing in Karaginsky Bay, in Tymlatsky Rybokombinat Ltd. fishing zone. Field research was conducted in August 2021 according to the technical requirement, approved in the contract between individual entrepreneur I.V. Abramov and Tymlatsky Rybokombinat Ltd. through mediation of ForSea Solutions Inc.

The anthropological study is conducted in connection to the audit of the salmon fishery (pink salmon and chum salmon) of the Kamchatka "Tymlatsky Rybokombinat Ltd" company (TRK in further text) according to the MSC standard. Assessment of illegal salmon fishing is one of the conditions for passing the MSC audit. Poaching is a potential threat to the stability of the salmon population. Such audit condition is justified by the lack of relevant data on the amounts of illegally caught fish and a high level of poaching pressure in the past.

**Methodology:** assessment of illegal fishing requires research on the spot by anthropological and sociological methods. Researchers collect first-hand information and analyze it with regard to statistical data, expert opinions and publications. It provides a balanced approach to the threat assessment and an opportunity to fulfill the condition of the MSC audit.

Procedure of anthropological assessment consists of two stages, desk and field. At the *desk stage* (March 2021), we put forward a hypothesis describing illegal fishing, methods of field research were also proposed during this stage. At the *field stage*, the hypothesis was tested in the field by qualitative methods: interviews, surveys and observations. Visits to the study area were accomplished during different seasons of the year. The first trip took place in August 2021 to get an idea of fishing season in Karaginsky Bay and catch local fishermen fishing.

**Field work** was carried out by a group of three anthropologists under the guidance of Ilya Abramov. The team worked in the Karaginsky district from August 4 to August 26, including 16 days directly in the catch zone of TRK. The route passed through Ivashka, Tymlat, Ossora, Karaga and Kostroma. The team visited all settlements of the Karaginsky Bay, except Ilpyrsky, traveling by helicopters, which fish companies charter for their employees. The situation on spawning rivers in the vicinity of settlements was studied by observation. The guides were found among local residents.

The method of collecting information was adjusted in favor of in-depth intentional interviews, trips around the area, observations and conversations with people in an informal setting; survey method was left out due to inability to collect a statistically acceptable sampling frame within the allotted time. The initial circle of respondents consisted of officials, entrepreneurs and specialists in the fishing industry. In total, we interviewed 35 people from different fields of activity, which allowed us to get a relief picture of local fishing. Friendly attitude of informants has become a pleasant background for work.



## Geography of TRK fishing zone

There are four settlements in TRK catch zone: Tymlat, Ossora, Karaga and Kostroma, with a total population of 3 thousand people. The fish processing factories of TRK are located near Tymlat directly and on the site of the former village Krasnoe, 46 km to the north (Fig. 1). The company attracts up to 1.5 thousand people to work during the fishing season. They are accommodated in dormitories at factories and on ships. Factories' conveyors work from July to August, it takes another couple of months to prepare them for intense work, the rest of the time they are closed. Seasonal workers arrive immediately at factories, bypassing villages (the pandemic has only consolidated this practice).

The first factory is located in 10 km from the village Tymlat, at the tip of a long spit that separates the bay of Tymlat from the Tymlat lagoon. Factory was built in 2009-2010, six years later it burned down and was then rebuilt. Processing capacity is 450 tons of raw fish per day. Second and third factories are located near the common mouth of the Belaya and Kichiga rivers on the same production site. They were launched in 2019, the processing capacity of the larger factory is 600 tons of raw fish per day, the capacity of the smaller one is 250 tons. The total volume of all TRK refrigerators in the Karaginsky district is about 14 thousand tons. Three company's own trawlers also accept and freeze 1 thousand tons of salmon. In addition to them, the company's fleet has 19 small fishing seiners and 8 auxiliary boats.

The position of the TRK factories is caused by the geography of the rented fishing parcels and the history of industrial production, launched in 1999. Today, 46 fishing parcels are assigned to TRK, they are grouped in the northern part of Karaginsky Bay from the Dranka river to the Virovayam river (Fig. 2). A couple of fishing parcels are located south of the bay, near the mouth of the Dranka river, another couple — near the coast of the Karaginsky Island. In Ossora and Karaga bays, TRK fishing parcels are alternated with fishing parcels of other companies and indigenous communities, without forming clusters. Caught fish there is handed over to refrigerated vessels, or to coastal plants of other companies with which the contract is signed.

Among 46 fishing parcels of TRK, 42 are marine, 3 are on rivers. Fishing in marine parcels is carried out with fixed seines (Fig. 3) with the use of a special fleet and auxiliary devices. Fishing



Fig. 1. TRK fishing zone

in river parcels is carried out by seines with the use of boats. The first tool is allowed exclusively for commercial salmon fishing in the sea, the second is also allowed to indigenous communities. Types, sizes and rules for the installation of fishing gear are registered in the rules of fishing in the Far Eastern Fishery Basin.



Fig. 2. Commercial fishing parcels in TRK fishing zone



In 2018-2019 TRK accounted for 64% of the total industrial catch in the area from the Dranka river to the Virovayam river. Three quarters of salmon the company catch with seines located to the north of Ossora, so the issue of economic efficiency of TRK depends on a rational approach to salmon returning to the rivers Tymlat, Kichiga and Belaya. To solve this problem, TRK puts up a guard service on the rivers for the entire period of the fishing season and pays for the work of ichthyologists to obtain accurate forecast estimates on the survival of fry and approaches of adult salmon. The difference between the approaches of salmon in even and odd years sometimes differs in 5-6 times, therefore, in even (low-approached) years the company does not set seines in some fishing parcels.

Ossora is a district center with automobile roads leading to Karaga and Kostroma, with a vast coast of two bays accessible by car. In terms of the number of people and fishing press, this area is very different from Tymlat and Ivashka. There are no companies in Karaginsky and Ossora bays that could take on the role of protecting salmon or the task of coordinating the actions of commercial actors. Each company is responsible only for its own site. The most problematic is the Karaga river, since the bay where it flows into is divided between more than ten tenants, not counting several hundred individual fishermen.

Thus, the study of illegal salmon fishing in TRK catch zone is logically divided into two loci, with centers in Tymlat and Ossora. **Geographical location, social situation, economic situation and regulation of fishing** are the factors that determine the potential of illegal salmon fishing. The study begins with a description of these areas, then specifics of illegal fishing and ways to suppress it are characterized.



Fig. 3. Fixed seine of Tymlatsky Rybokombinat Ltd. in Tymlat Bay

## Transport logistics

The first observation a researcher makes before visiting Tymlat or Ivashka – the difficulty of reaching the Koryak settlements. The district is cut off from the regional net of roads. It is officially possible to get there only from Petropavlovsk-Kamchatsky by air. Air travel prices can be described as prohibitive. For the two hour flight to Ossora a resident of the mainland in 2021 paid three times more than a resident of the peninsula - 29,676 rubles instead of 10,2 thousand rubles (excluding the agency's commission of about 2%). Villages within the district are connected by regular helicopter flights once a week. A twenty—minute flight from Ossora to Tymlat costs 12 thousand rubles. There is no publicly available alternative to this way of moving. Fishing companies bring employees by charter helicopter flights from Kozyrevsk and Maysky because of the lack of available seats on regular flights. Before the beginning of reconstruction of the airstrip in Ossora, TRK reserved up to 60 flights per season. Fishing season noticeably aggravates the transport problem, the population of the district increases in the summer months by one and a half to two times due to seasonal workers. Business in the Karaginsky district is associated almost exclusively with fishing and related work (construction, supply). Tourism in the area is not developed due to the problematic communication and expensive tickets.

**Aviation.** Airport in Ossora reopened in 2021 after a long reconstruction. It is the only place in the district capable of accepting planes. Heretofore there were only helicopter flights held through the stopover in Tilichiki — the center of the Olyutorsky district (Fig. 4). This airway is maintained by the state-owned operator "Kamchatskoe aviatsionnoe predpriyatie" ("Kamchatka Aviation Enterprise"), which provides An-26 (~ 43 seats, 6.5 t load capacity) and Yak-40 (~ 36 seats, 3.6 t load capacity) aircrafts.

Baggage on the flight is limited by 20 kg. A passenger carrying caviar in his luggage is not required to confirm its origin and can fill all 20 kg with it. A slight excess baggage can be paid at a price 290 rubles per 1 kg. Overloading of caviar by more than 5 kg is likely to be rejected by the Airport service. This is confirmed by the certificates and rules received: *"The Carrier has the right to restrict the carriage or refuse to carry the passenger's baggage, the weight of which exceeds the free baggage allowance established by the Carrier, if such carriage has not been previously agreed with the Carrier"*<sup>1</sup>.

It is more difficult to send caviar as a separate cargo. Caviar refers to perishable products with a strict set of conditions for transportation. Documents confirming the safety of the quality of the cargo during transportation are required. The document is signed by the veterinarian on the day of delivery of the cargo for each shipment<sup>2</sup>. At the same time, an increased tariff is applied to perishable cargo: the transportation of 1 kg of caviar in 2022 will cost 600 rubles on the Ossora — Petropavlovsk-Kamchatsky flight.

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<sup>1</sup> Paid (excess) and oversized baggage // Ibid. URL: <http://www.aokap.ru/passazhiram/pravila-perevozki-ruchnoy-klad/platnaya-sverkhnormativnaya-i-negabaritnaya-ruchnaya-klad/> (accessed on: 28.12.2021).

<sup>2</sup> Perishable cargo // Ibid. URL: <http://www.aokap.ru/passazhiram/pravila-perevozki-gruzov/skoroporyashchiysya-gruz/> (accessed on: 28.12.2021).

Kozyrevsk — Ivashka — Ossora helicopter line is an alternative way of arriving to the Karaginsky district. It is served by the "Kamchatskoe aviatsionnoe predpriyatie" or "Vityaz-Aero". The route is not convenient, since the Kozyrevsk heliport is 505 km or 7 hours away from Petropavlovsk-Kamchatsky. The board flies three times a week, with refueling in Ivashka. Kozyrevsk — Ivashka ticket costs 25.5 thousand rubles, Ivashka — Ossora — 18.5 thousand rubles. The baggage weight is also limited by 20 kg. Excess baggage is possible at the discretion of the Carrier and is paid at the rate of 320 rubles per 1 kg (Kozyrevsk — Ivashka) or 190 rubles per 1 kg (Ossora — Ivashka). Caviar can also be sent as a separate cargo at the same price and rules as in an airplane.



**Fig. 4. Air routed of north-east of Kamchatka**

Individual helicopter companies are equipped with Mi-8 helicopters (18-22 seats, 3.5 tons load capacity). “Vityaz-Aero” company is based in Kozyrevsk. Heliports of “Yeltsovka” company are located in Mayskoye, 10 km far from Kozyrevsk, as well as in Kozyrevsk and Anavgay (near Ezzo). Both companies serve the fish processing factories of Karaginsky Bay, transporting passengers and cargo. Flights are irregular, depend on the weather, up to six flights a day can take place at the beginning and at the end of the fishing season. Due to the crash of the “Vityaz-Aero” helicopter in August 2021 passenger transportation by this company has been suspended.

Helicopter flights in both directions are usually fully loaded. The sender coordinates the volume, weight, and nature of the cargo with the company, but in fact, the cargo is not checked and inspected at the heliport. Pilots estimate weight loading of the helicopter by eye, if there are no very heavy loads. When we flew from Mayskoe to Ivashka by “Yeltsovka” helicopter, the cabin, in addition to 14 passengers, was filled with boxes up to the ceiling.

Uncoordinated transportation of caviar on charter flights of fishing companies is prohibited. Luggage is inspected by the company's security service before boarding passengers. The management team of factories, as well as top-level technical workers, have the right to carry 5-10 kg of caviar with them at the end of the fishing season as a bonus from the administration for their work, they receive the accompanying documents in the office. Seasonal workers are prohibited from transporting caviar on charter boards of companies.

Despite all that, Kamchatka helicopter companies periodically appear in FSB reports on the suppression of attempts to transport large volumes of non-certified caviar on chartered flights<sup>3</sup>. Apparently, it remains possible to hire a helicopter for transportation without explaining the nature of the cargo. This was pointed out to us by various informants. However, in a field study, we have not been able to find such a case over the past year.

**Post.** The only operator of shipments is the state Post of Russia (“Pochta Rossii”). Parcels from the Karaginsky district are sent only by air. Until 2020, the post office accepted salmon caviar for shipment, people used this opportunity and sent parcels to continental Russia for 20-25 kg, without indicating that it was a perishable cargo. Since 2020, caviar has been included in the list of products prohibited for shipment in large containers. We were personally convinced of this fact in the post offices in Ivashka and Ossora.

**Sea transportation.** Cargo and fishing vessels from Petropavlovsk-Kamchatsky go to Karaginsky Bay for 3-5 days along the Bering Sea. There are no regular passenger cruises. Commercial barges can take a small number of passengers, who usually accompany cargo. The cargo and passenger vessel “Zavoiko” and the cargo vessel “Rys” run regularly. It is possible to move between settlements within the district by motorboats and powerboats. A boat “Nadezhda” carrying employees circulates between Ossora and TRK during the fishing season (Fig. 5).

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<sup>3</sup> Half a ton of red caviar was seized in Kamchatka. 15.05.2020 // News Agency “Kamchatskoe vremya”. URL: <https://city-pages.info/news/novosti-kamchatki/na-kamchatke-izyato-poltonny-krasnoy-ikry/> (accessed on: 28.12.2021).





**Fig. 5. Boat “Nadezhda” of TRK, Ossora**

Smuggling of caviar by small high-speed transport is possible, since it is impossible to track loading and reloading outside the terminals. But, admittedly, such movements are associated with many risks. We have not been able to establish fresh facts of caviar transportation by sea to Ust'-Kamchatsk or Petropavlovsk-Kamchatsky. However, it follows from the media materials of 2010-2020 and our interviews that this smuggling channel was used in the past. Our respondent carried up to a ton of caviar from Karaginsky Bay to Petropavlovsk-Kamchatsky on board of a small boat. Due to storms and a small number of bays along the way, these were dangerous voyages, and border control at sea has tightened over the past 10 years. Caviar is also carried in caches on large cargo ships. Given the difficulty of checking all niches, it can be assumed that small batches of caviar still get to Petropavlovsk-Kamchatsky this way.

**Winter overland transportation.** There are no official winter roads in the area. Snowmobile trails are the only alternative from December to April. A Vityaz tracked all-terrain vehicle (30 tons) is also used. The main land route from Karaginsky Bay leads south to the village of Klyuchi. The distance from Ossora to Klyuchi is 400 km through a low saddle. Petropavlovsk-Kamchatsky— Ust'-Kamchatsk automobile road passes through Klyuchi. There is a year-round road, on which all-terrain vehicles leave the tundra, from Klyuchi to the Ozerovsky gold mine. All-terrain vehicles are awaited by partners on a wheeled transport, in which fish products are overloaded. Since the road passes through the “Kura” missile range, the driver most likely needs to coordinate his passing with the military (there is no accurate data on the issue). Traffic police does not control this road.

Capacity of unofficial winter road is limited by the weather and unfrozen rivers on the route, however, potentially, this is the most capacious channel for the export of non-certified fish products. Salmon caviar and smelt caught in autumn and winter are taken out towards Petropavlovsk-Kamchatsky, goods and products are brought back to settlements. Snowmobile movements are made in groups. A snowmobile can pull a sled with half a ton of cargo, therefore, a group of six snowmobiles will take out 2.5–3 tons in one trip. Regular carriers go one time in three days from Ossora in winter, which is calculated up to 15 times per winter. That is, cargo traffic with such a schedule will be up to 45 tons. Probably, Karaga and Ivashka form their own

snowmobile groups, not so numerous and regular — let's estimate their contribution at 30 tons. If the demand for transportation is stable, residents of Klyuchi can also involve in the process. We don't have any information on this. Sending 1 kg of cargo from Ossora costs 100-150 rubles, which is much more profitable than air fares. The opening of the airport in Ossora may have somewhat reduced the intensity of winter overland traffic.

### **Demographics and employment as risk factors**

Economy of the Karaginsky district is monoresource, and most of the employable population receives income from the extraction of marine bioresources in one form or another. If the conditions of fishing companies do not suit the fisherman, or the company is not satisfied with the candidate (for example, they have a criminal record), he can work individually or assemble an unofficial team. For the government this person is unemployed, but not taken into account by statistics. Official unemployment in the Karaginsky district is low, according to 2018-2019, 74-85 people applied to the employment service<sup>4</sup>.

The volume of catch directly depends on the organizational form of fishing, the income of the fisherman depends indirectly. But a large company does not guarantee a large income, because it depends on the approaches of the fish, which are a subject to fluctuations. In 2020 almost all the companies of the Karaginsky Bay suffered losses on salmon fishing. A self-employed river fisherman is able to fill his freezers even in underflow situation. In summer, the catch is mainly salmon (in descending order: pink salmon, chum salmon, coho salmon, sockeye salmon), in winter — smelt and navaga.

The policy of fishing companies in the places of their localization is an important factor in the prevention of poaching. The organization either seeks to hire local residents and thereby reduces domestic poaching pressure, or distances itself from social problems and inevitably faces the problem of poaching on spawning rivers. The social situations in Tymlat and Ossora are very different. In Tymlat, TRK is the main employer and social investor. Collectively, all the fishing companies of Ossora and Karaga cannot be compared with the TRK in terms of power and social significance.

**Table 1. Demographic situation of the Karaginsky district**

		<b>Statistical population, people.</b>	<b>Indigenous, people.</b>	<b>Employable, people.*</b>	<b>Households, unit.</b>	<b>Salmon quota recipient, people.</b>
1	Ossora	1 937	no data	no data	no data	no data
2	Tymlat	732	384	300	197	370
3	Ilyyrysky	97	no data	no data	no data	no data
4	Karaga	294	192	169	164	192
5	Kostroma	69	no data	no data	no data	no data
6	Ivashka	542	no data	250	no data	150
	<b>Total</b>	<b>3 671</b>				

\* Approximate assessment

<sup>4</sup> Dolgan R.M. Report on the observance and protection of the rights of indigenous peoples of the North, Siberia and the Far East, living on the territory of Kamchatka, for 2019. Petropavlovsk-Kamchatsky, February 28, 2020. P. 96.



**Tymlat.** Statistical population of Tymlat is 732 people, but no more than 400 people live in the village all year round, about 300 of them are employable. The difference between living and being registered is explained by living in two houses. For example, in winter a person lives in Petropavlovsk-Kamchatsky, in summer he comes to Tymlat for the fishing season. Official local residence allows you to use a preferential flight and apply for priority employment in TRK. In turn, in order to receive 75% of the benefits from the state for the use of marine biological resources, TRK must employ at least 50% of the residents of the village<sup>5</sup>. The same benefit is granted to the Karaga companies "Kolkhoz Udarnik" in Kostroma and "Kolkhoz im. Bekereva" in Ivashka<sup>6</sup>. The rate of taxes without benefits is 3.5 thousand rubles for 1 ton of pink salmon and 3 thousand rubles for 1 ton of chum salmon<sup>7</sup>. Indigenous communities also pay only 15% of the fee if they receive more than 70% of their income from fishing.

Employment by TRK, in turn, attracts people by high earnings, which are not available to reach in Petropavlovsk-Kamchatsky and on the mainland. In 2020 TRK hired 280 local residents: 186 from Tymlat, 81 from Ossora, 1 from Kostroma, 3 from Karaga, 8 from Ilpyrsky, 1 from Ivashka<sup>8</sup>.

In 2021, 293 people from the Karaginsky district worked at TRK factories: 203 people from Tymlat, 87 from Ossora, 1 from Ilpyrsky and 2 people from Karaga. In 2021 there were 15 people from Tymlat and Ossora, who worked in river brigades. Thus, 50-75% of employable population of Tymlat in 2020-2021 was employed by TRK during the fishing season<sup>9</sup>. Another 23 people work in reindeer husbandry all year round. Reindeer breeding is a new activity of TRK.

We flew from Ivashka to Tymlat on August 9, a couple of days after the conveyors of the local factory stopped — the rune course of pink salmon ended. Chum salmon, coho salmon and sockeye salmon do not provide flowline loading of factories. Seasonal workers went home, and local residents switched to fishing for their own needs and picking berries (Fig. 6). Only the small TRK plant on the Kichiga river continued to work, receiving fish from the river fishing parcel.

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<sup>5</sup> Employees and family members living together are taken onto account.

<sup>6</sup> Decree of the Government of the Russian Federation No. 452 of September 3, 2004 "On the List of city- and settlement-forming Russian fishing organizations that have been granted a reduced fee taxes rate for the use of aquatic biological resources". URL: [https://base.garant.ru/12136795/#block\\_1000](https://base.garant.ru/12136795/#block_1000) (accessed on: 20.12.2021).

<sup>7</sup> Article 333.3. Rates of taxes. Tax Code of the Russian Federation // Federal Tax Service. URL: [http://nalog.garant.ru/fns/nk/23ea44f688a69bc1f16b892b6d10e2b9/#block\\_3333](http://nalog.garant.ru/fns/nk/23ea44f688a69bc1f16b892b6d10e2b9/#block_3333) (accessed on: 20.12.2021).

<sup>8</sup> HR department of TRK data.

<sup>9</sup> Certificate of anti-poaching activity of TRK dated 19.10.2021 for MRAG Americas Inc.



**Fig. 6. Koryaks from Tymlat harvest salmon**

Fishing season provides a seasonal fish processor with an income about 350-500 thousand rubles, but if there is an underflow, as it was in 2020, the income is equal to a salary of 80-100 thousand rubles. In any case, this money will not be enough for a local resident for the period until next summer. Part of it immediately goes to cover debts. Permanent work is appreciated, but there is a lack of it in the village. People are left with fishery and hunting. Not all Koryaks can withstand the discipline that is required in industrial production — women are more likely to go into fish processing. Men prefer to get a job in the maintenance service or in the fishing brigade on Kichiga, where the catch lasts until September and the salary is 2-3 times higher than inside the factory. You will rarely meet Koryaks in the marine industry, because workers here need sailor documents, there are no Koryaks among engineering and technical workers as well.

TRK helps the Administration of Tymlat in current affairs, the company restored and repaired a public bathhouse in the village, completely repaired the bakery, including the replacement of equipment, the company independently delivers flour and ingredients for baking bread. TRK fully repaired the interior and facades of the school in Tymlat with landscaping of the adjacent territory. The company renovated the church, annually sends about 20 tons of frozen fish to school and kindergarten and distribute fish to the poor and pensioners. The company has also been distributing venison to the villagers for free for the last 2 years. TRK annually collects and sends New Year's gifts to the children of the village, annually provides targeted social assistance to the villagers, carries out territory cleaning on their own, attracting factory workers and

equipment from factories to improve the village. In 2021 TRK began financing the project of a new House of Culture and kindergarten in Tymlat, and also began designing a well and a cold water supply system in Tymlat, since for more than 20 years within which there was a single-pipe system with only hot water supply. Unfortunately, the company does not publish reports according to international standards of corporate social responsibility to clarify the data.

**Ossora.** Ossora was built in Soviet times as an administrative center with all the necessary services; almost two thousand people live in the village. This is the most depressing locality of Karaginsky Bay that we have visited. There are a lot of empty and abandoned apartments in multi-storey buildings, a minimum of cultural and leisure facilities. It was strange to find such an oppressive social environment in one of the richest fish district centers of Kamchatka.

Up to 50% of the employable population of Ossora works during the fishing season, including employment by TRK factories. Local companies — "SVK" LLC (16 fishing parcels), "Asuas" LLC (3 fishing parcels), "Kama" LLC (5 fishing parcels), "Karaga" LLC (1 fishing parcels), "RK "Ossorsky" LLC (2 fishing parcels) — are also focused on attracting local workers, but workplaces either lacking, or don't satisfy people with the working conditions. No factory can do without outsider employees. Companies of Ossora do not have a pronounced policy on social responsibility as a way to prevent poaching. They work in their own interests and are responsible for their segments of the coast.

There is a year-round road 19 km long from Ossora to Karaga, where 300 people live, Koryaks make up about 65%. After another 7 km, the road ends in Kostroma, where 70 people live. In total, there are about two hundred employable people in two settlements, slightly less than half of them have permanent jobs. Fishing becomes the main occupation. In Karaga there are two factories of "Karaga" LLC and "Orochon" LLC, and "Kolkhoz Udarnik" (12 fishing parcels) in Kostroma. There are also three obshchinas, who fish along the shores of the bay, mainly consisting of outsiders and not the local residents. "Karaga" LLC and "Kolkhoz Udarnik" recruit mainly local residents, "Orochon" LLC brings Belarusians to work.

Respondents differed greatly in their assessment of the necessary income. The average estimate is an income of 150-200 thousand rubles per month for the head of the household. Monthly expenses for food are estimated at 80 thousand rubles, fuel — about 7-8 thousand rubles. A barrel of gasoline (200 liters) costs 18-20 thousand rubles, excluding the cost of packaging. For the winter a hunter-fisherman needs at least three barrels (600 liters) and one or two barrels for the summer. That is, the annual fuel budget is about 80-100 thousand rubles. Fuel is bought in summer and autumn for a year ahead. There is no 3G or 4G connection in the area. For satellite Internet with a speed of 2 Mbit/sec in Tymlat people pay 6,600 rubles per month, so few people have it.

The official average salary in the Karaginsky district is slightly over 100 thousand rubles, so we assume a high level of involvement in the shadow economy in order to maintain the family budget. There is a lot of indirect evidence: the stores give contacts of caviar sellers who can sell it without documents. It is impossible to buy red caviar from industrial producers in the Karaginsky district — factories immediately ship it to the mainland, and local workers are forbidden (except for rare exceptions) to take out products from the territory of the factory. Communities are also

not interested in retail trade and processing, because they do not have time or resources for this, and the capacity of the local market is very small. The internal need of the district for caviar is saturated exclusively by individual traders. In rented apartment in Ossora, where we lived, the owner's freezer was completely filled with red caviar, at least 20 kg. Considering that this is a citizen with a permanent good job, not a fisherman and not an indigenous person, all these were illegal products.

### **Economic conjuncture**

Salmon caviar costs 10-15 times more than the fish carcasses from which it is extracted. Consistently high price of salmon caviar (2.5–5 thousand rubles per 1 kg) on the domestic Russian market is the main stimulator of poaching in the Far East. Purchase prices for frozen pink salmon roe in Japan, Korea, China in 2021 reached 35-37 dollars (2500-2700 rubles) per kilogram<sup>10</sup>.

In November 2021 prices for red caviar in Russia rose to a historic high level, breaking the threshold of 5 thousand rubles (30% more than a year earlier)<sup>11</sup>. This happened against the background of record salmon production volumes of 538 thousand tons (the third indicator in the history of Russian fishing) and the assurances of Rosrybolovstvo about an oversupply of raw materials on the market. From January to September 2021 Russia produced 20.7 thousand tons of salmon caviar, for the same period last year — 9.9 thousand tons<sup>12</sup>. Speculative prices for red caviar were explained by the behavior of traders who held the goods before the New Year holidays, despite the oversaturation of warehouses. Prices for pink salmon, on the contrary, have almost returned to the indicators of 2019: freshly frozen pink salmon with a head is sold today at 200-250 rubles/kg.

Illegally obtained caviar is sold either through private distribution networks, where it is not necessary to confirm the origin of raw materials, or it is issued as legal under fake documents. Homemade lightly salted caviar can have high quality, and there are no reliable signs by which the buyer could determine its origin (Fig. 7). By the end of 2020, veterinary supervision in Kamchatka prohibited the use of 10 tons of salted salmon caviar and 108 tons of frozen salmon (the origin of the products is not specified) — a drop in the sea, in terms of situation in Kamchatka<sup>13</sup>.

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<sup>10</sup> The Fish Union named the reasons for the rise in prices of caviar // RBC. November 22, 2021. URL: <https://www.rbc.ru/business/22/11/2021/619b80819a7947ab39dfd592> (accessed on: 23.11.2021).

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

<sup>13</sup> The report of the Rosselkhozadzor Administration for Kamchatsky krai and the Chukotka Autonomous Okrug for 2020. URL: <http://rai.kamchatka.ru/otchwork/files/2020upr.pdf> (accessed on: 22.12.2021).



**Fig. 7. Fresh-salted caviar for selling. Karaginsky district**

If the seller of caviar is present on the market, the product has a veterinary certificate by default. But in case of small businesses, this proves nothing, and individual sellers do without papers at all. Only the ratio of costs and profits is important in terms of shadow economy. Poaching caviar is cheaper (not for the buyer, but for the manufacturer), even taking into account the purchase of fake veterinary certificates. With current prices, frauds justify the risk<sup>14</sup>. This is primarily a problem of Petropavlovsk-Kamchatsky and the agglomeration, in which about 75% of the population of Kamchatka lives. The only airport connecting the peninsula with the mainland is located here, dealers and consumers of illegal caviar are also concentrated there. Poaching caviar flocks here from all over the region.

A significant part of the illegal caviar flies to the mainland as private baggage during the year, the other part is consumed locally and sold out by tourists under the guise of official products. Huge fishing companies that produce salmon on the east and west coasts of Kamchatka send raw materials (frozen fish and roe) directly to Primorsky krai or to Northern China for subsequent shipment to Central Russia, where it is salted and packaged. In other words, legally obtained salmon fish and caviar for the most part bypass Petropavlovsk-Kamchatsky, where there are few consumers, besides you have to compete with poachers on the local market. The existing logistics makes a significant contribution to the fact that the fishing trade of the Petropavlovsk-Kamchatsky agglomeration rests on the channels of the shadow economy.

There are no restrictions on the transportation of caviar in personal luggage at Yelizovo Airport. This freedom is used by dealers through their couriers and passengers who agree to take caviar for transportation for a fee. In 2020, about 850 tons of caviar flew to the continent. Taking into account cargo containers sent from the seaport, about 2 thousand tons of poaching caviar were

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<sup>14</sup> About 3 tons of dangerous caviar were seized from an married couple in Kamchatka // News Agency “Kamchatka”. July 6, 2017. URL: [https://kamtoday.ru/news/crime/u-predpriimchivoy-semeynoy-pary-na-kamchatke-izyali-okolo-3-tonn-opasnoy-ikry/?sphrase\\_id=34271158](https://kamtoday.ru/news/crime/u-predpriimchivoy-semeynoy-pary-na-kamchatke-izyali-okolo-3-tonn-opasnoy-ikry/?sphrase_id=34271158) (accessed on: 20.11.2021).



exported from Kamchatka in total<sup>15</sup>. For three years Kamchatka authorities have been promising to introduce a limit of 10 kg per passenger in order to weaken this export channel and the entire supply chain.

The regional “Kamchatka Fish” (“Kamchatskaya ryba”) project is an economic anti-poaching measure: in the summer of 2021 the delivery of chilled pink salmon from fishing parcels to Petropavlovsk-Kamchatsky was launched<sup>16</sup>. Pink salmon was sold to Kamchatka residents for 50 rubles per 1 kg, caviar for 2.5–3 thousand rubles per 1 kg. This is a direct competition for poaching products on the Kamchatka market. But there were too few points of sale.

Official commercial companies cannot show more caviar on the market than they have officially caught fish. This is monitored by the system of veterinary certification of FGIS “Merkuriy”, which unites all fishing and fish processing factories of the region. Output coefficient of salmon caviar from a specific catch zone cannot be exceeded — “Merkuriy” will issue an alarm alert. Otherwise, companies would be inclined to fill freezers with caviar and not fish and falsify the indicators of roe output. Major market players are bound by the legal market, certificates of conformity, fines and sanctions in case of violation of the rules. For small businessmen, there remains the possibility and benefit of fraud with veterinary certificates, and there are manufacturers who are ready to mix legal and illegal raw materials at the exit, thereby stimulating poachers.

### **Legal regulation of salmon fishing**

Fishing is regulated by federal laws, resolutions of the Government of the Russian Federation and orders of various ministries. These are more than a dozen documents that are constantly being edited. The procedure and rules of fishing are established by the Ministry of Agriculture of the Russian Federation. Quotas of traditional catch are determined and distributed by the territorial bodies of the Rosrybolovstro after the total volume of catch is determined at the federal level<sup>17</sup>. The administrative regulations of public services are determined by the Ministry of Agriculture<sup>18</sup>.

An ordinary fisherman does not follow the letter of the law, he proceeds from the law enforcement practice of the particular place and possible punishments. In large commercial companies, lawyers monitor changes in the rules, and the interests of the legislative and executive authorities of the region are protected by specialized officials from the fishing industry. There are

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<sup>15</sup> Rosselkhozadzor accused the Kamchatka authorities of inaction to restricting the carriage of caviar in luggage // Kamchatka-Inform October 21, 2021 . URL: <https://kamchatinfo.com/news/politics/detail/46532/> (accessed on: 22.12.2021).

<sup>16</sup> Over 12 tons of red caviar were sold at social prices in Kamchatka // Interfax. 25 August, 2021. URL: <https://www.interfax.ru/russia/786369> (accessed on: 28.12.2021).

<sup>17</sup> Resolution of the Government of the Russian Federation of October 15, 2008 No. 765 “On the procedure for preparing and Making a Decision on the Provision of aquatic biological resources for use”. URL: <https://base.garant.ru/2166410/> (access on: 28.12.2021).

<sup>18</sup> Order of the Ministry of Agriculture of the Russian Federation No. 596 dated November 10, 2020 "On approval of the Administrative Regulations of the FAR on the provision of state services for the preparation and adoption of a decision on the provision of aquatic biological resources for use". URL: [https://свту.пф/images/Prikazi\\_2021/2503\\_Prikaz\\_596\\_Reglament.pdf](https://свту.пф/images/Prikazi_2021/2503_Prikaz_596_Reglament.pdf) (дата обращения: 28.12.2021).

strong associations in Kamchatka that represent consolidated positions of marine fish producers, their chairmen have connections among authorities, they can lobby the interests of major market players. The interests of other fishermen are poorly protected. Aborigines of the region are defended by the Association of Indigenous Peoples of the North of Kamchatka (Regional Public Organization "AKMNS KK") and the Chairman for the Rights of indigenous people of the region. Amateur fishing has no association.

#### *ANADROMOUS FISH COMMISSION*

The Commission for the Regulation of the Extraction (Catch) of Anadromous Fish Species (Commission in further text) is the administrator of quotas for salmon fishing in Kamchatka. The order of the Commissions' work in the regions was approved by the order of the Ministry of Agriculture dated April 8, 2013<sup>19</sup>. The Commission consists of representatives of federal and regional executive authorities, representatives of defense, security, environmental protection, public organizations, associations (associations and unions), KamchatNIRO. Commission is headed by the Governor, the meetings are held by the Minister of Fisheries of Kamchatsky krai. Meetings are held as they are needed (on average 30 times a year), protocol of the meeting with decisions is published afterwards<sup>20</sup>. Decisions are made by a majority of those who voted and take effect immediately. Composition of participants of the Commission is approved by the Ministry of Agriculture of Russia. Since 2020, observers may participate in the meetings of the Commission, but the decision about this is made by the chairman.

Since the Commission's decisions are crucial, representation and the data on the basis of which decisions are made are of great importance. To work out complex issues, the Commission forms working groups of third-party experts who prepare materials and make reports, these materials are not published. Protocols of Commission contain only the resultant part, discussions or debates are not reflected in them. A.M. Metelitsa — Chairman of the Association of Indigenous Peoples of the North of Kamchatka is often in the minority on issues affecting the rights of indigenous peoples. There is no person in Commission who would represent the interests of sports and amateur fishing.

#### *Indigenous people quotas*

Specifics of the Karaginsky district is a high proportion of indigenous residents. Until recently they included Russian long-term residents. Until 2021 fishing regulations, approved by the Government of Kamchatka in 2011 "to meet personal needs"<sup>21</sup>, applied to them. In Koryakia, a limit of 200 kg of aquatic biological resources per year per person was set, in other areas of

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<sup>19</sup> Order of the Ministry of Agriculture of the Russian Federation No. 170 dated April 8, 2013 "On approval of the Procedure for the Activities of the Commission for the Regulation of the extraction (catch) of anadromous fish species". URL: <https://docs.cntd.ru/document/499016590?marker=6500IL> (accessed on: 28.12.2021).

<sup>20</sup> Protocols of the Commission of Kamchatsky krai. // SVTU FAR. URL: <https://cbry.pf/organizatsiya-rybolovstva/komissiya-po-regulirovaniyu-dobychi-vylova-anadromnykh-vidov-ryb/protokoly-zasedaniya-komissii-po-kamchatskomu-krayu.html> (accessed on: 28.12.2021).

<sup>21</sup> Resolution of the Government of Kamchatsky krai No. 190-P dated May 23, 2011 "On setting limits on the extraction (catch) of aquatic biological resources to meet personal needs". URL: <https://docs.cntd.ru/document/460141336> (accessed on: 28.12.2021).

Kamchatka — 50-100 kg. Salmon quota is divided by species characteristic of the waters of different areas. In the Karaginsky district, the proportion is maintained: 100 kg of pink salmon, 60 kg of chum salmon, 20 kg of coho salmon and sockeye salmon.

There is no justification for fish consumption limits in the Resolution, there is only a reference to the letter of the Ministry of Health and Social Development of the Russian Federation N 24-4/10/2-8795 dated October 04, 2010, which apparently provides explanations on the level of fish consumption by indigenous peoples. We requested a copy of this letter from the Ministry, but were refused due to the fact that this is internal documentation.

According to Itelman Oleg Zaporotsky, when he worked in the Koryak AO in the Committee for the Peoples of the North, the salmon quota was 400 kg. He offered to return to this limit amount during his work as the Chairman for the rights of the Indigenous peoples of Kamchatka, but he was ignored. Today, based on the logic of legislators, if indigenous people need to catch in excess of the allocated quota, they should either use amateur vouchers, or catch with the help of community that has a fishing parcel. In both cases, you have to pay to fish to the government, the community or the tenant of an amateur fishing parcel. Amateur fishing sites in the Karaginsky district belong to local fishing companies.

Resolution, published in 2011, does not stipulate traditional economic activities, which, according to federal laws, must also be provided with fish, without being taxed. Indigenous inhabitants of Kamchatka catch salmon not only for food, but also for exchange for goods — this is the part of the culture of the coastal peoples. Kamchatka legislators, without regulating this matter separately, automatically equated it to commercial fishing.

In May of each year, the Commission sets limits of catch for traditional fishing. The limit changes little from year to year, although it is claimed that it depends on the forecast of salmon approaches. Shares of indigenous communities and individuals are allocated from this calculated amount. Commission validates the applications of indigenous residents in volumes not exceeding the limits established in 2011<sup>22</sup>, and the quotas of communities from 2018 are calculated according to the rule<sup>23</sup>. If the total amount of willing catch as traditional fishing exceeds the amount allocated to the region for this type of fishing, community quotas are calculated using a special formula. Total amount requested in applications always exceeds the allotted amount: and the first years of using the formula method showed that the community, who requests larger amount receives major quota. Communities began to greatly inflate requestable amounts in applications in order to get the same volumes and not lose part of their quota in favor of another community. As a result, the

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<sup>22</sup> Resolution of the Government of the Kamchatka Territory №190-P dated May 23, 2011, "On setting limits on the extraction (catch) of aquatic biological resources to meet personal needs" was updated in 2022. In the annex to Resolution 65-P of 02/14/2022, the long-standing practice of the Commission on the allocation of species and volumes of aquatic bioresources by districts of the Kamchatka Territory was fixed. Salmon limits remained at the level of 60-200 kg per indigenous representative.

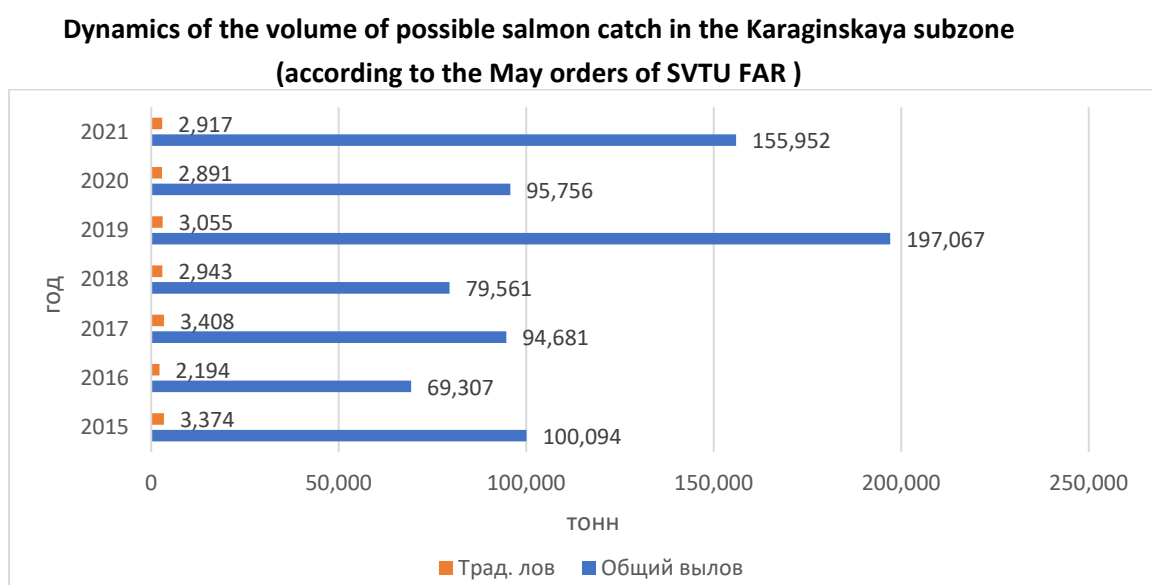
<sup>23</sup> Resolution of the Government of the Russian Federation №558 dated May 5, 2018 "On Approval of the Rules for the Distribution by the Executive Authorities of the Subjects of the Russian Federation of Quotas for the Extraction (Catch) of Aquatic Biological Resources in order to ensure the Traditional Way of Life and the Implementation of Traditional Economic Activities of Indigenous Peoples of the North, Siberia and the Far East of the Russian Federation and Amendments to the Rules for the Preparation and Adoption of Decisions on the provision of aquatic biological resources for use. URL: <https://docs.cntd.ru/document/557308805>



total demand for salmon for traditional catch increased in Kamchatka from 31 thousand tons in 2018 to 80 thousand tons in 2021, reflecting primarily the competition of communities for volumes. In 2021, the traditional catch application was satisfied only by 9%, allocating 7,474 tons<sup>24</sup>. In fact, communities cannot process even the volumes they receive (see Chapter Indigenous peoples communities). In 2021 there was an undercatch of 913 tons of salmon.

Industrial quotas are set separately, without division into companies, and they consist of two approximately equal amounts: possible catch and undistributed fund. The last is distributed by the Commission upon receipt of actual data on salmon approaches in summer. Commission declares that it proceeds from a "reasonable balance of interests of all types of fishing", specifically from the second article of the Federal Law №166 "On fishing..."<sup>25</sup>. If we judge by the dynamics of the share of traditional fishing in the total quota, an opposite conclusion can be made (Graph 1).

**Graph 1**



*Orange – indigenous catch, blue – total catch*

In 2015-2018, the share of traditional fishing was stable in the range of 3.2–3.7% of the total possible catch in the Karaginskaya subzone. Against the background of optimistic salmon forecasts for 2019, 2021, it was logical to assume that the quota of communities would grow to 5.5–6.9 thousand tons, in proportion to commercial catch. However, Commission reduced the quota by 400 tons, bringing the share of traditional fishing to a record low of 1.6–1.9% in the

<sup>24</sup> Minutes of the meeting of the Commission for the regulation of production (catch) of anadromous fish species in the Kamchatka Territory №3 dated April 20, 2021. URL: [https://xn--b1a3aee.xn--p1ai/images/Prikazi\\_2021/2104\\_Protokol\\_3.pdf](https://xn--b1a3aee.xn--p1ai/images/Prikazi_2021/2104_Protokol_3.pdf) (accessed on: 28.12.2021).

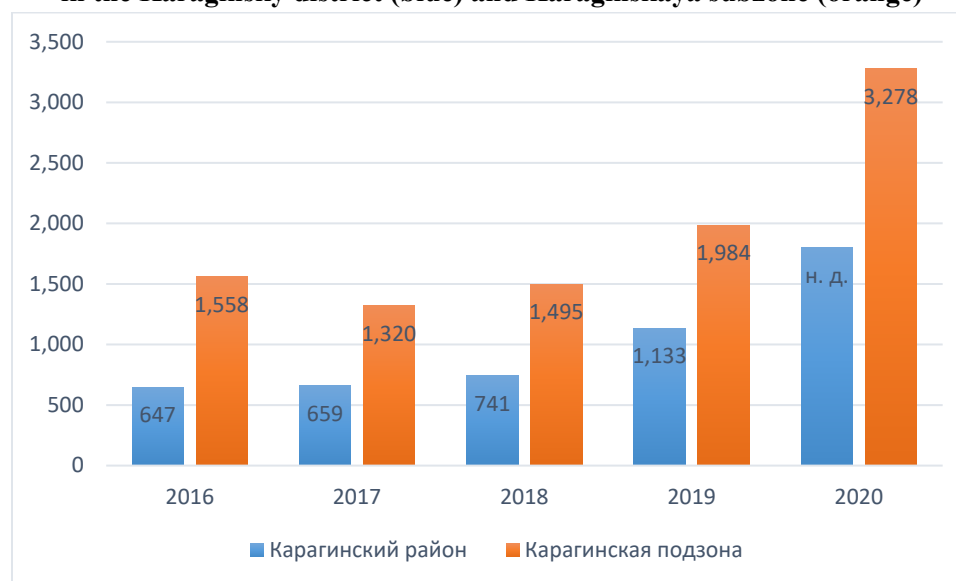
<sup>25</sup> Minutes of the meeting of the Commission on Regulation of production (catch) of anadromous fish species in the Kamchatka Territory for 2019 // Official website of the Ministry of Fisheries of Kamchatsky krai. URL: <https://www.kamgov.ru/minfish/2011/2019?page=2> (accessed on: 08.12.2021).

Karaginskaya subzone. In a special opinion attached to the protocol of the Commission, A. M. Metelitsa draws attention to this issue<sup>26</sup>.

The redistribution of amounts between applicants within the traditional volume affected the process. In the Karaginskaya subzone, the number of applications from indigenous individuals has increased over the past four years: from 1,320 to 3,489 people (Graph 2). As a result, in 2020-2021, 250 tons of traditional fishing quotas in the Karaginskaya subzone "flowed" from communities to individuals on the principle of communicating vessels. The number of fishing communities remained unchanged (55), but they lost up to 20% of the quota amount compared to 2016-2018. The update of the regulations also played a role: since 2018 you cannot simultaneously apply for a quota as an individual and as a member of the community. The individual quota now excludes the community share.

**Graph 2**

**Dynamics of approved individual applications for salmon fishing of indigenous people in the Karaginsky district (blue) and Karaginskaya subzone (orange)**



Based on optimistic forecasts of 2018, 2019, and 2021, fishing companies received the lion's share of the projected total catch, and the possible commercial catch was indexed during the fishing season. In the Karaginskaya subzone, companies caught 122-150% of the total quota (and only 22% in 2020). Against the background of giant catches of companies, the catch of indigenous communities and individuals is microscopic. For example, five communities in the area of activity of TRK in 2019 caught 446 tons — 0.5% of the catch of the company. It raises a logical question about the conservative policy of the Commission in relation to traditional fishing.

At a meeting on September 6, 2021, the Commission decided to close all types of salmon fishing on the east coast of Kamchatka from September 11 in connection with "the termination of spawning approaches and fulfillment of the established volumes of industrial catch" (A.M.

<sup>26</sup> Minutes of the meeting of the Commission for the regulation of production (catch) of anadromous fish species in the Kamchatka Territory №3 dated April 20, 2021. URL: [https://xn--b1a3aee.xn--p1ai/images/Prikazi\\_2021/2104\\_Protokol\\_3.pdf](https://xn--b1a3aee.xn--p1ai/images/Prikazi_2021/2104_Protokol_3.pdf) (accessed on: 28.12.2021).

Metelitsa was the only one who spoke against)<sup>27</sup>. Population of the Karaginsky district was shocked by unprecedentedly early deadlines for the end of fishing and appealed to the heads of local district and rural administrations to stand up for them. A letter from the head of the administration of Tymlat was signed by 64 residents. The same was done in Ivashka, Karaga — the general appeal was supported by the district administration. Even after consideration of the collective application, Commission decided not to extend the terms of the traditional catch, referring to the instruction of KamchatNIRO that "the active phase of the spawning migration of the coho salmon is coming to an end and producers are distributed to spawning sites"<sup>28</sup>. A week before, on September 1, Commission allocated an additional industrial quota of 500 tons of chum salmon and coho salmon in the Karaginskaya subzone. Industrialists, most likely, managed to catch this additional bonus.

It is extremely difficult to see a balance of interests of different types of fishing and the declared priority of traditional catch in two consecutive decisions of Commission. The end of the fishing season on September 11 by sharply contradicts the Koryak tradition, in which people fishing for coho and chum salmon for the winter until mid-October. Therefore, after the ban, traditional fishing in the bay continued, but fishermen avoided public places. The inspectors also were not very enthusiastic to search for violators if there were no traces of caviar fishing.

To summarize: the fate and timing of the traditional catch is determined by Commission unilaterally, often contrary to the opinion of indigenous representatives. Existing inefficient system of regulation of traditional fishing is explained by the inability to control it. Reports of individuals from indigenous peoples are collected poorly, resulting to 50-75% of the number of quotas issued. Community reports are collected completely under threat of fines, but the reality of the figures provided is in great doubt. The data is constructed by the accounting form itself: "how much was allowed to catch — so much was caught". Fishermen show the ceiling catch so that there are no reasons to cut their quota. In fact, one part of the communities catches much more than it should, the other does not catch at all and sell their allocated quota, and all report appears to be unreliable figures. The existing mechanism of regulation of traditional fishing pushes to concealing data and misinformation. Federal rules force Commission to adhere to formulaic decisions — starting a vicious circle as a result.

Theoretically, solving issues of traditional fishing should be brought down to the areas where the councils of indigenous elders should decide on the timing of fishing and the distribution of volumes between communities and indigenous people and send information to the Commission for approval. These and other proposals are being worked on by A.M. Metelitsa, Chairman of the Association of Indigenous Peoples of the North of Kamchatka. V.N. Bronevich, Human Rights Representative in Kamchatsky krai, proposed measures to edit legal regulations concerning

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<sup>27</sup> Minutes of the meeting of the Commission for the regulation of production (catch) of anadromous fish species in the Kamchatka Territory №33 dated September 6, 2021. URL: [https://xn--b1a3aee.xn--p1ai/images/Prikazi\\_2021/0609\\_Protokol\\_33.pdf](https://xn--b1a3aee.xn--p1ai/images/Prikazi_2021/0609_Protokol_33.pdf) (accessed on: 28.12.2021).

<sup>28</sup> Minutes of the meeting of the Commission for the regulation of production (catch) of anadromous fish species in the Kamchatka Territory №34 dated September 20, 2021. URL: [https://xn--b1a3aee.xn--p1ai/images/777777/Protokol\\_34-%D1%81%D0%B6%D0%B0%D1%82%D1%8B%D0%B9.pdf](https://xn--b1a3aee.xn--p1ai/images/777777/Protokol_34-%D1%81%D0%B6%D0%B0%D1%82%D1%8B%D0%B9.pdf) (accessed on: 28.12.2021).

traditional fishing in 2019<sup>29</sup>. These measures should help to separate real communities from fictitious ones and make traditional catch quotas a target tool.

Another problem clearly emerged in 2021. Until this year, not only representatives of indigenous peoples, but also long-term residents of Kamchatka could apply for a quota. The status of a long-term resident did not require confirmation. In the Karaginskaya subzone, all incoming applications that had no mistakes in registration form were satisfied. Since 2021, a copy of the document confirming the applicant's belonging to the indigenous peoples of the North is required to be attached to the application. Only those who can prove that they belong to the peoples of the North (approved in List of indigenous small-numbered peoples of the North, Siberia and the Far East) receive a quota, and long-term residents are cut off. There are about 50 people in Tymlat who receive a salmon quota as long-term residents. In May 2022, it will be known whether they managed to get it again. There is no data on other settlements, but it can be judged by the refusals issued.

By July 30, 2021, the Kamchatka branch of Rosrybolovstvo refused to accept 537 applications, including from 215 fishermen of the Karaginskaya subzone. The main reason for the rejection: *"certified copies of documents confirming the applicant's nationality to indigenous small peoples are not attached"*<sup>30</sup>. On August 16, 2021, an amendment was issued, according to which copies of documents do not need to be certified, but they still need to be attached to the application. The Russian long-term residents of Kamchatka could not provide them and in full were left without quotas for 2022. This is a serious problem; in August 2021 the governor of Kamchatka, Vladimir Solodov, reacted: *"The Regional Ministry of Fisheries is working on the issue of defining the boundaries of new fishing parcels near settlements located in the Koryak district, where residents who do not have a confirmed indigenous status will be able to fish for Pacific salmon"*<sup>31</sup>.

On November 22, 2021, a meeting of the interdepartmental workgroup on the state of legality in the field of fishing in the Far East was held in Khabarovsk. The meeting was headed by Deputy Prosecutor General of the Russian Federation Dmitry Demeshin. Officials of the Ministry of Agriculture and Rosrybolovstvo were asked questions about the widespread infringement of the rights of indigenous peoples. Comments related to the deadlines for accepting applications from indigenous peoples as they differ from all other applicants, the lack of clear criteria for determining the volume of catch of indigenous peoples. As a result of the meeting, the Ministry of Agriculture, in alliance with the Federal Agency for Ethnic Affairs, was recommended to eliminate gaps and

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<sup>29</sup> Bronevich V.T. Report of the Commissioner for Human Rights in Kamchatsky krai on the protection of the rights, freedoms and legitimate interests of man and citizen in Kamchatka in 2019. P. 135-142. URL: <http://www.prava41.ru/dokladi-upolnomochennogo-po-pravam-cheloveka/> (accessed on: 20.11.2021).

<sup>30</sup> About the applications of Indigenous peoples for 2022 that do not meet the requirements of the current legislation (as of 30.07.2021) // SVTU FAR. URL: <https://cbty.pf/informatsiya-dlya-kmns/vazhnoe/3685-o-zayavkakh-kmns-na-2022-god-ne-sootvetstvuyushchikh-trebovaniyam-dejstvuyushchego-zakonodatelstva-po-sostoyaniyu-na-30-07-2021.html> (accessed on: 28.12.2021).

<sup>31</sup> Vladimir Solodov is trying to ensure that residents of remote villages, along with representatives of indigenous peoples, can receive limits for legal fishing // Official website of Kamchatsky krai. URL: <https://kamgov.ru/news/vladimir-solodov-dobivaetsa-ctoby-ziteli-otdalennyh-poselkov-naravne-s-predstavitelami-korennyh-narodov-mogli-polucat-limity-na-vylov-ryby-43469> (accessed on: 28.12.2021).

ambiguous procedures regarding the provision of aquatic biological resources to indigenous peoples.

If the efforts of the Prosecutor General's Office, the governor of Kamchatka and all relevant departments are succeeded by the beginning of 2022 fishing season, then the Far Eastern regions will receive a new batch of poachers who were created by reforming efforts. According to our estimates, there are about half a thousand people in the Karaginsky district who received quotas until 2021 as long-term residents of the region. They were allocated about 100 tons of salmon.

## **Illegal salmon extraction and its suppression**

### ***Security services***

Protection of fish resources is the responsibility of Fish inspection (SVTU FAR; Rosrybolovstvo) and Border Service of the Federal Security Service of the Russian Federation (BS FSB). Fish inspection is responsible for internal waters (rivers, lakes), border service – for external waters (bays, harbors and estuaries). Police, represented by the local police commissioners, cooperated with them during raids. The fourth force – is own or hired security services of fishing companies, which act independently. The geographical division of powers and forces seriously complicates the control of anadromous fish species that move from saltwater to fresh water. Synchronous operations of the services are practically impossible in such conditions, and poachers use certain circumstances in their own interests.

Only fish inspectors ("farovtsy") have special knowledge about fish, fishing and possible violations. We talked with the inspectors twice: in January 2021 in the operational department of SVTU FAR in Petropavlovsk-Kamchatsky and in August in the Karaginsky district – in Ivashka and Ossora. In Ivashka and Ossora we also interviewed FSB and Police representatives. We also met with representatives of the security service of TRK in their offices in Petropavlovsk-Kamchatsky and in Tymlat. Here follow the specifics of the work of law enforcement agencies based on the obtained data and observations.

The permanent staff of the fish inspection in the Karaginsky district is relatively small — four people (instead of 22 in Soviet times): two people are on duty during the fishing season on Karaginsky Island, one person is responsible for the easily accessible Ossora River, and the last one for the huge basin of Karaga river. One more inspector from Petropavlovsk-Kamchatsky was seconded during the fishing season in 2021: in July he operated in Ilpyrskoye, in August he was transferred to Ossora.

Fish inspectors are guided by the Code of Administrative Offences of the Russian Federation, article 8.37 of the "Violating the Rules for Use of Animal Kingdom and Aquatic Biological Resources". Border service proceed from Article 8.17., which is "Violating the Terms and Conditions of a License Regulating Activities in Internal Sea Waters, or in the Territorial Sea, or on the Continental Shelf and (or) in the Economic Exclusion Zone of the Russian Federation".

Fish inspectors in Ossora primarily control the rivers, which can be reached by car: Ossorka, Ossora, Gatygyryvayam, Karaga. Car inspection post is set up on the road leading to Ossora River during the fishing season. On Karaga River the post is based in Kirpichny tract, the only access location, connecting it with the road from Ossora. In 2021 there was no post, only

raids were conducted from time to time. As we were told, no one expected the intensification of poaching.

Local police officers are involved in fish inspection raids in order to increase the powers of the inspection team and strengthen the evidence base in case of the following detention and legal action in court. Police representatives do not have their own boats, and arrests occur mostly outside settlements. Local policemen publish reports on their work, but they are too superficial to reveal to which extent police is involved in anti-poaching operations. There are local police officers in Ossora, Ivashka and Tymlat, they go to Ilpyrskoye, Karaga and Kostroma in case of an accident. According to our observations, local police officer in Ivashka works closely with the fish inspection, cooperated raids are also practiced in Ossora. Formally there is a local policeman in Tymlat, but he was away for almost the whole fishing season in 2021.

There is a huge border post in Ossora, where more than 30 people serve. The post is equipped with boats, speedboats, all-terrain vehicles, and can involve a sea-based helicopter for patrolling. Coast Guard inspectors are busy patrolling borders and preventing possible violations, inspectors of (GMI) internal sea waters (bays, harbors, estuaries, seaports), on the territorial sea and on the shelf.

The powers of inspectors are very broad and are set by FSB Order No. 569 from September 26, 2005, "On Approval of the Regulations on the Procedure for State Control in the Field of Marine Biological resources protection". There are no border posts in Tymlat and Ilpyrsky, and the activity of GMI inspectors in Ossora and Ivashka are reduced to checking the papers of fish processing plants when product is reloaded. They do not monitor the process of commercial salmon catch in the sea. Border service also doesn't cooperate well with the fish inspection due to belonging to different law enforcement departments. The border service post in Ivashka is not equipped with transport and does not patrol the area outside the village. From the point of view of salmon protection, border outposts are not functional.

In Tymlat area anti-poaching work has been entrusted to the security service of TRK. 21 people are involved in the guarding process, the service is also equipped with all the necessary means for rapid response. Guarding patrols activity is conducted in summer, they monitor the rivers of the bay from Vytrirovayam to Virovayam, based on two TRK factories. There is also a separate post in the Tymlat village, which is equipped with an all-terrain vehicle in addition to motor boats. During the run course of the pink salmon, patrolling along the river Tymlat is carried out daily (Fig. 8).

No traces of poaching were detected on the river and along the banks of the Tymlat in 2021. Security service, according to the own words of representatives, suppressed the activity of one group of outcoming poachers, who wanted to settle on the river. According to other sources, the guards of TRK were idle in relation to the brigade of caviar buyers, who spent the whole fishing season in Tymlat. The shadow of their presence in the village of Tymlat fell on the security service of TRK. Perhaps that is why the average service lifespan of one security squad is about two years. Due to evidence or fears of collusion with poachers, the guards in full force are being changed, as happened after the fishing season in 2021.





**Fig. 8. In a raid with the security service of TRK on the tributary of the Tymlat river. In the camp of a Koryak kayur.**

Private security service is an effective way to eradicate criminal groups and establish control over spawning rivers in the absence of FAR officials, police officers and FSB representatives. At the same time replacing state law enforcement services, which suggest strict discipline and a high level of responsibility, private security forces tend to overstep their bounds. Most of the private service representatives are certified PSE (private security enterprise) guards; they are doing the part as public inspectors and do not have the right to carry firearms, but this does not prohibit them from having hunting weapons for protection. They do not hide weapons and sometimes they use them against unarmed people or their property. Private security guards often apply physical and psychological pressure against potential poachers or those, who have previously been seen in illegal fishing. The consequence of such actions are conflicts with local residents and a tense atmosphere. Fishing season in 2021 was quite calm in this regard, but we received evidence of overstepping the bounds by the guards of TRK from past years.

### ***Household poaching***

Domestic poaching is the fishing activity of the local population without permission for personal consumption and for sale (Zaporozhets et al., 2007, p. 476). It's all about volumes. There are not so many people, but lots of fish in the Karaginsky Bay, so there is no need to pay attention, for example, to unlicensed amateur fishing with fishing rods and even nets, if they do not block the rivers. Areas for amateur fishing have been allocated, but we have not seen fishermen-athletes with rods in any village. Licenses are considered irrelevant.

All large-scale cases of poaching by local residents are related to the use of a seine or weighted nets, which are kind of similar to seines. The use of a seine by default presupposes intent

to cause damage and collusion of a group of people, since this fishing gear is prohibited and requires collective efforts. In 2018, taxes for damage caused by illegal fishing were raised: 1 piece of pink salmon — 961 rubles, chum salmon — 2009 rubles, 1 kg of salmon caviar – 27455 rubles<sup>32</sup>. One throw of the seine is enough to catch a volume that will qualify as causing major damage (over 100 thousand rubles), which is met by a penalty: fine of 300-500 thousand rubles, forced labor or imprisonment<sup>33</sup>. Fishing gear is confiscated before the trial, which is a serious threat if the case happens during the fishing season. A risk of being caught can stop household poachers, but it will not stop criminal groups, as for them risk is an integral part of their activities.

Another type of household poaching – violations associated with individual fishing by means of representatives of indigenous peoples and long-term residents. The nets must be labeled and correspond to the permitted sizes (30 m in length), the time of setting fishing gear and catch must be recorded in free form writing (until 2019 individuals kept fishing logbooks registered by the fish inspection). Local administrations regularly update memos for indigenous people about their rights and responsibilities<sup>34</sup>. The specificity of Koryakia is that the indigenous people can fish on any reservoirs, while in southern Kamchatka, the places of setting fishing gear are assigned by the Commission. In 2016, the representative of SVTU FAR proposed to the Commission to extend this rule for Koryakia in order to curb poaching in spawning grounds and restrain brigades exploiting the rights of indigenous peoples for illegal salmon fishing. The Commission refused, advising the FAR representative to discuss this issue with municipal authorities and associations of the indigenous people of Koryakia<sup>35</sup>.

FAR inspectors are not inclined to deal with minor salmon overfishing according to quotas if fishermen themselves process the catch without leaving waste in the places of extraction (catch), as they do in case of fishing for the purpose of roe extraction. They proceed from the general picture of the catch, in which the net fishing of local residents is not a threat to salmon stocks, but at the same time provides social stability, so these violations are considered insignificant – *"Well, you have 50 kg of caviar, you are not interesting to me as a representative of the law. To become a poacher a person must cut 2-3 tons of roe. But why take such a risk?"* (quote the inspector of the Karaginsky district). The disciplining effect of the posts set up on the rivers and the raids appears to be more efficient, because in conditions of permissiveness, household poaching can quickly turn into criminal (roe poaching), and this trend must be counteracted. Actually, the activities of the fish inspection are primarily aimed at suppressing and destroying alliances between organized crime and involved regular fishermen. Such scams occur periodically.

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<sup>32</sup> Taxes for calculating the amount of damage caused to aquatic biological resources // Decree of the Government of the Russian Federation No. 1321 dated 03.11.2018 "On approval of taxes for calculating the amount of damage caused to aquatic biological resources".

<sup>33</sup> Article 256 of the Criminal Code of the Russian Federation "Illegal extraction (catch) of aquatic biological resources".

<sup>34</sup> Traditional fishing // Administration of the Karaginsky municipal district. URL: <https://xn--80aajuagbe0a0ap.xn--plai/rybolovstvo1/traditsionnoe-rybolovstvo/> (accessed on: 14.12.2021).

<sup>35</sup> Minutes of the meeting of the commission on regulation of production (catch) of anadromous fish species in Kamchatsky krai dated May 16, 2016, N 6. URL: [https://xn--b1a3ace.xn--plai/images/docs/Protokol\\_6\\_skan.pdf](https://xn--b1a3ace.xn--plai/images/docs/Protokol_6_skan.pdf) (accessed on: 14.12.2021).



In Karaga bay (not to be confused with the Karaginsky Bay) household poaching is rooted among local residents for a number of reasons. The indigenous population does not have enough jobs to employ or qualifications to compete for these jobs with outside shift workers. Many have retained the habit from the times when poaching was rampant and was not considered a reprehensible or improper practice. If the fish inspection, border guards or private security service are "clamping down" the fishery, that is, it controls the fishing of Koryaks and long-term residents too tightly, the social situation heats up sharply. The unjustified use of physical force or firearms by law enforcement officers becomes the subject of complaints from local residents. In criminal proceedings in this case both sides suffer, but local residents have nowhere to retreat, and the composition of the border guards or the security service is completely changed after a high-profile incident.

The last high-profile incident was the detention of a group of young Koryaks by a squad of border guards on August 20, 2019 on Karaga River. During the operation, one of the four border guards drowned. The squad went on a call to check operational information about poaching, but the detention was carried out on internal waters that are not included in the area of responsibility of the border service. In the group of poachers, only three out of nine people had quotas, and 2.5 tons of salmon were extracted — this is the version of the border guards. In response 96 residents of Karaga village signed a petition to Russian President Vladimir Putin, head of FSB Alexander Bortnikov and head of the border service Vladimir Kulishov with their version of events. The case was soft-pedaled.

The problem of local poaching lies much deeper than the problem of law violations and is based on local concepts of justice. The existing system of distribution of rights and quotas for salmon fishing is considered unfair by the majority of the population. The prevailing opinion is that the break in private quotas is nothing compared to the damage to salmon caused by industrial fishing. In the Karaginskaya subzone there are about 200 industrial seines, the total catch of which exceeded 240 thousand tons in 2019. The catch by quotas of individuals in the Karaginsky district barely reached 300 tons, by quotas of indigenous communities — 550 tons. The entire traditional catch of the area is comparable to one day of fish acceptance by TRK plants.

### *Tymlat*

The places of permanent fishing in Tymlat are assigned to families and are easily detected by utility buildings on the shore. The lower reaches of the river Tymlat within the village are the main place of fishing for Koryaks. The estuary part of the river is the place of accumulation of salmon when it comes in with the tide. We arrived at the end of the first decade of August, when the course of pink salmon was replaced by the rise of chum salmon and coho salmon, the most valuable for harvesting. The activity of flies, on the contrary, was down. The Koryaks returned from shifts on the fish processing plants of TRK and almost all the traditional fishing places ("rybalki") were busy (Fig. 9). We observed about 10 households fishing with nets at the same time, there were from 25 to 35 people of all ages on the river. Fishing usually started at high tide at 12-13 o'clock in the afternoon and lasted 4-6 hours with breaks for food and chatting. Unlike conveyor work at the plants, no one was in a hurry. A family of 3-4 people just had time to process

one net catch, as the next one was full, and the container on the shore is filled with fish again. With good and well-coordinated work, the family quota (600-800 kg) can be caught in two or three days.

Theoretically, if working every day, the family is able to catch up to 8 tons for the entire time of the fishing season, but the storage problem is acute if the plants do not accept fish from locals — this is typical for odd years. Fishing takes most of the day — all the fish caught must be processed: cut, gutted, dried or salted; traditional yukolniki and (or) large freezers are used for these matters. There are about 370 quota recipients in Tymlat, and if we take into account that some people do not fish, and the other part catches more than ought to, then we can conclude that the quota size of 180-200 kg is close to the real average catch per person. Taking into account overfishing, according to an approximate estimate, residents of Tymlat (without indigenous obshchinas) catch about 150 tons of salmon during the fishing season.



**Fig. 9. Koryak rybalka in Tymlat**

The problem of Tymlat and other villages of the district is in a small market for locals and the difficulty of supplies outside the district. Having established the production of home-made fish products with added value, people are forced to partially distribute it not being able to sell. According to these conditions, salted caviar wins as a product that provides maximum profit per unit of weight. Resellers orient people to produce caviar if they manage to settle in the village. In the summer of 2021, in Tymlat, we observed one brigade of caviar buyers, known from previous years. They offered to exchange salt and containers for caviar, but they did not fish themselves. They did not reach a scope of buying as wide as in previous years.

## Ossora and Karaga

The population of Karaga and Kostroma together is 400 people, about 250 of them receive quotas. They have an opportunity to deliver fish to three plants in the Karaga bay (Orochon, Karaga, Kolkhoz Udarnik). Indigenous communities, about which little is known, also catch salmon there. During the rune course, there are vessels in the bay ready to freeze raw salmon. In such conditions, commercial companies can promptly record overfishing of the communities (obshchinas) and local fishermen, or cheaply buy out an obshchina quota to buy fish from private poaching fishermen for it, but this is perhaps the lesser of evils, since the fish is ultimately accounted and processed.

When there is too many fish, people may have a temptation to take only roe and throw the fish into the water or leave it on the shore. Local roe poaching is reduced to night or early morning fishing in places not too far from the village but hidden from the eyes. The difference is that the males are rejected immediately, and the cut females are thrown out after, the tide helps to hide the traces. To speed up the process, they can fish with a small seine. Accordingly, the risks increase. In Karaga and Kostroma, where people fish not on rivers, but on the seashore, it is even more difficult to track night fishing, because any transport unmask itself long before reaching the fishing site, which are located on open shore (Fig. 10).



**Fig. 10. Map of the area around Ossora. Karaginsky District Museum of Local Ethnography**

According to some informant's observation, almost every third house in Karaga and Kostroma is equipped with a private manufactory for processing roe – an utility room where it is cleaned and salted. This is the legacy of the times when residents were massively engaged in illegal fishing. Today, a family (household) store up about 100-150 kg of caviar — the majority of respondents lean towards this amount. In recalculation this is equivalent to 1,7–2,5 ~ 2 tons of salmon. If we assume that the average size of a fishing team of the household is 4 people, then we

will get 500 kg of salmon per individual. Taking this number as an actual catch rate, and multiplying it by the number of recipients of traditional quotas (192 in Karaga, ~50 in Kostroma), we will get 120 tons of salmon. Most likely, this is the minimum possible catch rate in the bay and the Karaga River. But if we take into account that residents of Ossora and visiting fishermen without quotas have an opportunity in these places, the upper catch threshold level should be about 200-250 tons.

At least 150 tons of salmon are caught in Ossora adjacent waters, based on the number of residents and quota recipients. **Total volume** of individual salmon catch in the fishing zone of the Tymlatsky Rybokombinat (Kichiga, Tymlat, Ossora, Karaga) we estimated as 500-550 tons annually. About 320 tons are covered by traditional catch quotas, i.e., about 120-170 tons are not declared.

In Tymlat, the main burden of unaccounted household catch falls on valuable salmon breeds (chum salmon, coho salmon, sockeye salmon), which spawn in August–September and are of greater interest for harvesting than pink salmon. In the bays of Karaga and Ossora, pink salmon is primarily caught. A local private trader can take a pink salmon to one of the factories or a ship, and therefore he chases the volume.

### **Criminal poaching**

Criminal fishing is focused exclusively on obtaining caviar, therefore it cannot be legalized. Its adherents stand out from the mass of other fishermen, since they accept the risk of criminal prosecution. Groups of poachers, as a rule, are based in the upper reaches of rivers, where there are no witnesses, and the weight of roe from one fish increases. Spawning grounds of valuable salmon species are especially appealing for poachers — coho salmon, sockeye salmon, chum salmon. Unlike pink salmon, these species spawn in specific locations where they form clusters that are visually detectable from the shore. The damage to the salmon population caused by poachers this way can be very sensitive, especially in even-numbered years, when the underflow of pink salmon is compensated by valuable species. The fight against caviar poaching in spawning grounds is a priority for all regulatory services. Large poaching camps are equipped in the spring, bringing building materials, containers, salt on snowmobiles. Tactically, it is most effective to stop poachers during this stage, until the river banks are hidden by greenery, but this is not always possible.

The discharge of gutted fish into the water in the upper reaches is not as noticeable as at the mouth, but sometimes the traces of poaching can't be covered up, because of the volumes of dead fish. Heaps of flogged fish are left on the shore or on the shoals, they begin to decompose, attracting predators. The vegetation is burning out. Such places are called “plops” (*plyukhas*), and they are viewed from the water and air. A group working in one place, as a rule, does not allow landfills, masking traces of work. In 2021 not a single plop was detected on the river Tymlat and the bay of Tymlat during flights by quadcopters as well as daily raids by the security service of the TRK, which indicates either the absence of criminal groups or a high degree of conspiracy.

Heaps of dead fish often remain after one-time acts of poaching, when the brigade is mobile and has a base in a village or in a fishing camp. They store the caviar in a secret place along the



way to be taken out later, at the moment when the guard posts are removed, in September. Caviar is safely preserved in earthen caches after the addition of a preservative. Mobile groups of poachers in the Karaginsky district usually consist of local residents, who rely on mutual responsibility and family ties, while stationary groups of poachers are formed from outsiders who are thrown to fishing sites in the upper reaches of rivers, bypassing estuarine settlements. The appearance of strangers, unoccupied in factories, is difficult to hide. This is the specifics of isolated settlements in the area where everyone knows each other. Sometimes visiting groups have a krysha of local security forces. Until the 2010s. there were many criminal groups along the rivers of the Karaginsky Bay, but they and their patrons have been almost completely dealt with by now in the zone of activity of the TRK.

We met the security service of TRK in Tymlat purposely to get a personal impression of their work. With a guard armed with hunting weapons, they made a planned raid along the river Tymlat and the left tributary — the river Sigaiektap, visited two Koryak camps. We did not meet with the guards personally on Kichiga, but we recorded their reaction to our movement along the river. We arrived at the mouth of the Kichiga with Koryaks from Tymlat and went up the river to an abandoned village half an hour away. Twenty minutes later, the boat of the security service of the TRK followed us, as fishermen from the river brigade reported about us (Fig. 11). The passage of any vehicles that do not belong to TRK in this area is controlled. For this reason, poaching activity is unlikely in the upper reaches of Kichiga or Belaya.



**Fig. 11. Kichiga river. Sign of the beginning of Tymlatsky Rybokombinat fishing parcel**

Since the late 1990s, Ossora has been known for its organized groups of poachers who operated on a large scale under the protection (*krysha*) of law enforcement agencies. Despite the «beheading» of the most important groups and the rotation of personnel in law enforcement agencies, the "tradition" of protection in the area has not been outlived, there are still organizers and ordinary people focused only on illegal fishing and waiting for the right moment.

In 2021, brigade from Ossora tried to enter the upper reaches of the Tymlat river, but the possible act of illegal fishing was prevented by the TRK security service. A year earlier, poachers from Ilpyrsky settled in the upper reaches of the Valovayam river, but they were detected by the tracks of tracked vehicles. Valovayam, a river adjacent to Belaya in the upper reaches, which flows into the Bay of Uala, where the company "RA Belorechensk" fishes.

Some of the criminal groups are found during the stage of dropping cargo in spring and autumn, when poachers hire a helicopter or use heavy tracked vehicles. The helicopter is more suitable for ejection, since flights along the coast are noticeable, and the rivers of the Karaginsky Bay are too short to reliably hide landing sites in the upper reaches from a coastal observer. Tracked vehicles, in turn, are counted in every village and leave traces by which they can be tracked.

Difficulties appear with poachers who live among local fishermen and enjoy their patronage. They gut salmon in secluded places known to local fishermen and hide caviar and seines in hiding places on the way to the camps. This appears to be the situation in the Karaga delta, where many tributaries lead to Karaga bay. Opposite the main flow there is a long pebble peninsula — Pervaya Koshka, where there are numerous fishing camps of fishermen from Karaga village (Fig. 12). Outside poachers are squeezed in among them. This is the most convenient place for organizing routes to the Karaga river.



**Fig. 12. Pervaya Koshka fishing area in Karaga bay**

Bay is controlled by border guards, the river is controlled by fish inspectors, but none of the structures has a permanent post in those places. Daily movements of border guards or fish guards from Ossora are immediately found out in camps at Pervaya Koshka, and poachers stop fishing before security services can get to them. Uncoordinated actions of departments leave a wide gap for criminal poaching.

Only sudden raids are effective, for example, a route to Pervaya Koshka by the river by rafting from the upper reaches. This is the prerogative of fish supervision. During our stay in Ossora, inspector seconded from Petropavlovsk-Kamchatsky returned from such a raid. He detained several poachers from among the local residents on the Karaga river. He confiscated two rubber boats with motors, a seine, about 170 kg of packed caviar, more than 2 tons of fish (2,146 specimen of pink salmon). The damage is estimated at 11.2 million rubles. It is rarely possible to detain a full-fledged brigade, as a rule, some people manage to escape in order to return soon with new fishing gear to cover the "loss". This recorded episode of one raid allows us to imagine the scope of illegal fishing, when the river remains uncontrolled for weeks and the risk of being caught is minimal.

Theoretically, control over this difficult area could fall on commercial companies that have fishing parcels in the vicinity of the delta, but this does not happen due to the lack of a common position on the issue. On one of the channels of the delta there is a parcel of the "Kolkhoz Udarnik", but the company does not fish there. Next to Pervaya Koshka there are TRK commercial parcels

number 380 and 382, but the company from Karaga fished on them in 2021 according to the contract. TRK has no expressed interest in Karaga bay due to the remoteness of its factories.

High price of caviar has fueled a faded in recent years interest in illegal fishing on rivers. According to the estimates of fish inspectors and a respondent who was engaged in illegal fishing and transportation of caviar in the recent past, the criminal catch of the Karaginsky district in 2018-2021 fluctuates around 300-600 tons, the large share is given by the Karaga basin.

### **Industrial poaching**

The problem of industrial poaching (overfishing) was removed in 2008-2010 by the transition from the system of total allowable catch (TAC) to the Olympic system and operational regulation of catch. The powers were transferred to the regional commissions and thus the over-limit catch was legalized. Established cumulative basin quota is obtained by companies in a competitive mode, and then the Commission decides, based on operational data, how to distribute the remaining possible catch volume and how much it is possible to increase/decrease commercial catch over the forecast.

Currently, ichthyologists use a new model to develop rules for regulating the fishing of salmon (Feldman et al., 2018). This is a compromise between maximizing industrial catch and the biological safety of salmon stocks. The value of the spawning stock, which provides the maximum sustainable catch, is taken as a milestone. Commercial fishing begins after reaching this pass milestone. Responsibility for the volume of commercial catch has been transferred to ichthyologists, who first predict the number of salmon herds, and then determine the occupancy of salmon rivers at control points during the fishing season. Companies are vitally interested in accurate estimates, so they cover the costs of ichthyologists by measurements in their own catch zones. This also applies to the most expensive part of measurements — air surveys, which are carried out in the first decade of August, during the maximum filling of spawning grounds. Such measurements are carried out every year on all major rivers of Karaginsky Bay.

In case of large approaches of pink salmon in 2021, the pass milestone was achieved earlier than usual, therefore, in the second half of July passing days were canceled on the rivers of Karaginsky Bay. In 2021 total catch was successful for Kamchatka: the catch exceeded expectations and numbered 539 thousand tons. This is the third result in the entire history of the catch. To August 31, 2021, fishing companies of the Karaginskaya subzone caught 208.5 thousand tons of salmon. The recommended volume of the subzone at that moment was 238.7 tons. Thus, starting from 77 tons in May, it grew 3 times<sup>36</sup>. Pink salmon formed the basis of the catch, but chum salmon and coho salmon also showed good approaches. The share of Tymlatsky Rybokombinat in salmon catches in the Karaginskaya subzone on average is 30-35%.

The citizens and industry workers interviewed by us, who wished to remain anonymous, identified the following problematic points of industrial fishing: the use of river parcels, fraud with

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<sup>36</sup> Information on the development of the recommended volumes of catch of Pacific salmon (industrial fishing) by groups of fishing districts in the fishing parcels of the Kamchatka Krai as of 2021-08-31. URL: [https://xn--b1a3aee.xn--p1ai/images/Prikazi\\_2021/0109\\_sved\\_kk.pdf](https://xn--b1a3aee.xn--p1ai/images/Prikazi_2021/0109_sved_kk.pdf) (accessed on: 12.10.2021).



the breed composition and volumes of caviar, loss of fish on fixed seines, the dependent situation of indigenous communities, "laundering" of illegal caviar by unfair companies. Non-publicity and non-transparency of the reports of fishing companies does not allow us to fully get rid of suspicions related to possible violations.

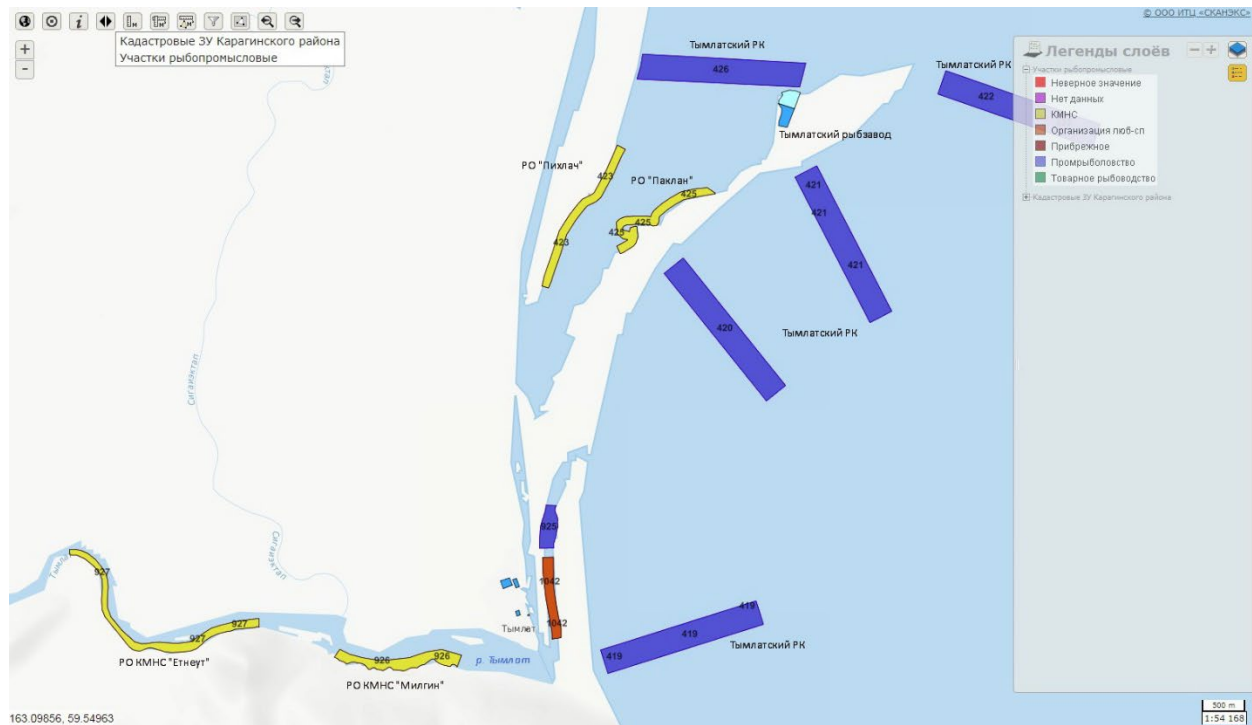
River fishing parcels are needed by companies in order to maximize the usage of quotas for valuable breeds — chum salmon, coho salmon, sockeye salmon, which do not form large shoals in coastal waters. Sea seines are unprofitable after the end of the pink salmon run, and fishing with seines on the rivers is effective until the end of the fishing season. TRK brigades are fishing on Kichiga and Belaya until the end of industrial fishing. There is also the fishing parcel on the river Tymlat, but the company does not fish there. The village is well aware of commercial catches, and many believe that commercial river fishing is a form of legalized poaching, since it is aimed at caviar and is conducted against fish that are ready for spawning. There is no external independent control over these catches.

Based on the subjective estimates obtained in the surveys, losses on fixed seines can reach up to 5-10% over the entire fishing period. As people say, *the fish lie down*, that is, the non-water traps overflow, and the fish crushes itself. Attempts to overload the fish in the transporting boat (prorez') only aggravate the situation. This applies to odd (fish-abundant years) and the period of the run course. This happens either due to an oversight of the crew of the fixed seine, or due to logistical overlaps when the plant is too far away, and the raw fish receiving vessel is unavailable for various reasons, or there are no supply contracts for the nearest vessels. Losses of 5-10% were confirmed by several people directly related to the fishery, including ordinary fishermen who worked on fixed seines. In such cases, fishermen are forced to open the traps of the seines in order to prevent the traps from overflowing with fish, and to prevent fish from "lying" in the traps. However, there are still losses and these losses are not taken into account, since they occur before the catch registered. When asked how to qualify such a violation, we received an answer from the fish inspection that it was "improper management of a salmon herd", but it is not difficult to notice a violation of fishing rules. Taking into account the volume of catch on the fixed seines, possible losses can amount to hundreds and thousands of tons of salmon in Karaginsky Bay.

In the context of this research, we are concerned that the fish lost this way, as well as poaching, is not available for statistical accounting. Salmon losses cannot be quantified, tracked or proved, since there are more than 200 seines in the Karaginskaya subzone. This is the prerogative of internal investigations of companies, since none of them is interested in losing fish and profits. The problem itself is probabilistic, not systematic, we do not link it to any specific company, because we believe that from time to time it happens on different seines and more likely to happen at fishing parcels that are removed from coastal factories and have to ship fish to refrigerated vessels. With large approaches of salmon in odd years, this problem worsens, on the other hand, in such years there are no problems with providing the necessary minimum pass to spawning grounds, and losses are not so critical.

### *Indigenous peoples communities (obshchinas)*

From five indigenous communities in Tymlat that received quotas for 2020 and 2021, only one was fishing at the time of our presence — obshchina “Milgin”. Their river fishing parcel is located in full view of the village. Higher up the river there is the fishing parcel of the community "Yetneut", they almost did not fish, because there was nowhere to hand over raw fish, their freezers were not enough. For themselves, they caught in a limited volume (Fig. 14).



**Fig. 14. Fishing obshchinas of Tymlat (GIS of Kamchatsky krai)**

The Milgin community was fishing as they had a fish acceptance contract with a small fishing company that, in its turn, has its own fishing parcel and a floating freezer in the Tymlat lagoon. The company's employees carried fish from the Milgin's fishing parcel to the lagoon on their whaleboats. The frequency of movements and shallow-draught position allowed us to assume decent volumes of catch.

We could not find the owners of two communities (obshchinas), owning fishing parcels in the Tymlat lagoon itself. We learned from a representative of the third community in the lagoon, that it had recently survived an attempted raider takeover and was still in a difficult situation. It was the most powerful obshchina in Tymlat with its own small factory. Communities that have fishing parcels on Kichiga and Belaya have not been fishing there for several years. According to the information received, the communities were affiliated with fishing companies – which were the competitors of the TRK and after a series of conflicts with its security service, they left the rivers. The Koryaks we found fishing at the mouth of the Kichiga were not representatives of communities.

Thus, of all the listed communities, only "Yetneut" consists of local Koryaks who catch salmon to maintain a traditional way of life (Fig. 15). “Milgin” community caught raw fish for

sale. Traces of the activities of the other Tymlat communities could not be found. However, all of them regularly receive a quota for 20-45 tons of salmon, which means they report on the catch.



**Fig. 15. Fishing camp of obshchina “Yetneut” on the Tymlat river**

The situation is not much different with the six indigenous communities that have fishing parcels in Karaga bay. We managed to meet with a representative of two communities of the bay. For the most part, the communities are not related to the traditional way of life, only one obshchina consists of local Koryaks. The rest work under the auspices of commercial companies. They have an interest in catching over quotas, since the factories in Karaga bay need suppliers and accept fish on account of the commercial quota. The communities do not have their own processing, which means that almost all the fish (even those that are caught according to the quota) they hand over to factories and refrigerated vessels. Such transactions happen on 50/50 terms: half of the fish is taken by the buyer, setting conditions to the supplier. Communities have nowhere to go, as even such terms are beneficial for them. Taking into account the undercatch of Tymlat communities and the likely overfishing of the Karaga communities, we can assume that in total, the communities in the catch zone of TRK catch no less than the Commission allocates for them – 550-680 tons of salmon. Competent communities are interested in a multiple increase of quotas; they in fact represent as commercial enterprises interested in increasing turnover and owning their own equipment.

**Tab. 2 Catches of Pacific salmon by communities (obshchinas) in the catch zone of TRK. tons**

				2017	2018	2019	2020
1	Karaga	376	Karaga bay	85	48	90,6	53,3
2	Ostrov Karaginsky	378	Karaga bay		69,8	0,1	52,7
3	Zhyvonosny istochnik	379	Karaga bay	60,7	63,7	61,4	52,9
4	Rodnik	381	Karaga bay		51,2	34,9	50,6
5	Makarievskaya	383	Karaga bay	72,6	45,9	67,9	49,9
6	Masanna	389	Karaga bay		74,3	44,2	50,9
7	Pikhlach	423	Tymlat bay	71,4	69,7	59,4	44,5
8	Pankarina	424	Tymlat bay			82,3	11,8
9	Paklan	425	Tymlat river	71,1		19,5	26,3
10	Milgin	926	Tymlat river	16,5	16,5	6,8	
11	Yetneut	927	Tymlat river	86,7	94,4		53,4
12	Pankarina	930	Belaya river	77,8	70,7	49,5	52
13	Tumgutum	1000	Kichiga river	87,4	72,8	32,5	52,8
				629,2	677	549,1	551,1

Overfishing by communities in Karaga is indirectly indicated by the offense of 2016: two communities of Karaga bay set up fixed seines and by the time of detection had a catch of 2015 species of salmon, that is, about 5 tons. The foreman covered the damage valued at 1 million 61 thousand rubles and paid a fine worth 100 thousand rubles<sup>37</sup>. Considering that the fixed seines cost 1-1.5 million rubles, there is no doubt that the communities worked for one of the local factories or loaded the refrigerated vessel. It is no coincidence that some foreman was appointed guilty, and not the community as a legal entity

## Conclusion

According to the analysis of factors of salmon poaching, illegal caviar extraction is economically justified throughout Kamchatka, including in the Karaginsky district; the risks of confiscation and the expenses on reseller's service are paid off. The conjuncture of the Russian market foster illegal salmon fishing in the Far East. However, illegal fishing is only interesting for small agents working in the shadow market, while large companies are restricted by the traceability of all products documented and the Federal State Information System «Merkuriy» and by international obligations, part of which is MSC certification.

The regional government is not doing enough yet to outplay the illegal salmon market. The large salmon approaches of 2018-2021 have changed little the inner market of Kamchatka – the main aggregator of illegal catches. “Kamchatka Fish” social project aimed to provide the local population with fresh and cheap fish has shown its effectiveness, but has not reversed the situation.

<sup>37</sup> For fishing with a fixed seine, the foreman of the indigenous obshchina will pay 100,000 rubles court fine. // BezFormata.com. January 11, 2019. URL: <https://petropavlovskkamchatskiy.bezformata.com/listnews/nevodom-brigadr-obshini-kmnns/59789109/> (accessed: 10.10.2021).

Small fish processing enterprises still have the temptation to "clear" illegal raw materials. A negative role is played by the continental market of Russia, where, despite the large reserves of caviar, speculatively high prices are artificially kept. This stimulates poaching in the Far East. The restriction on the carriage of caviar in passenger luggage has been discussed for the third year, but the proposal has not yet acquired a legal form.

The Commission does not maintain the balance of interests between different types of fishing, while distributing salmon quotas. This became especially noticeable against the backdrop of large salmon approaches in 2018, 2019, 2021. With a significant increase in industrial quotas, the share of traditional fishing in the total catch decreased from 3.5% to 1.5%. A set of resolutions, rules and regulations of various departments (Rosrybolovstvo, Ministry of Agriculture) regulating salmon fishing discriminate against traditional fishing in relation to commercial. The quota allocation procedure is highly bureaucratic and replete with pitfalls. Work and process of reporting of participants in traditional fishing are, in turn, equally opaque and uncontrolled. It follows from interviews and observations that the current volume of salmon quotas in the Karaginsky Bay does not cover the needs of households, that is pushing people into illegal fishing and fictitious reporting. The lack of legal support and the attention of executive authorities to the problems of traditional and amateur fishing create situations of social tension in commercial fishing zones and conditions for shadow fishing. The threat of non-allocation of quotas to Russian long-term residents in 2022 can further aggravate this problem.

It is difficult to estimate the social responsibility of fishing companies in the Karaginsky district, since companies do not publish reports in this area. TRK stands out among other companies in the Karaginsky Bay, as it is a settlement-forming enterprise and receives a 75% benefit from the state for the use of marine biological resources. The status sustains by the number of employed local residents, investments in the village infrastructure and support for deer breeding – traditional occupation of the Koryaks. At the same time, TRK does not support the Tymlat fishing communities by accepting and processing of fish produced by the communities, due to the fact that it fully provides its production facilities with raw fish from its fishing zones, which make local residents to exist in the gray zone of the economy.

The socio-economic situation in the settlements of the central part of the Karaginsky Bay (Ossora, Karaga, Kostroma) predisposes to illegal fishing, since it can provide more income than official work at a fish factory. Many fishermen perceive illegal salmon fishing not only as an income, but also as a way of life that was formed in the 1990s. The social role of local fishing companies is small. The lack of legal market for fish products from residents also encourages poaching — to cover personal needs and short-term demand. Only few people switch to large-scale caviar fishing, due to the difficulties of concealing the fishery and selling caviar in conditions of stricter control and penalties.

Isolated location and unreliable distribution channels restrain illegal salmon fishing in Karaginsky Bay. Transportation of caviar by regular flights is limited to baggage limitation, sea transport is rare and inspected, and shipments of caviar by Russian Post are prohibited. Theoretically, charter helicopter transportation of non-certified caviar is possible, but fresh evidence could not be found. Winter ground traffic towards Klyuchi is probably the main channel

for the export of caviar from the Karaginsky Bay. This communication is seasonal and is severely limited off-road. It will be evaluated in the spring of 2022.

The effectiveness of the salmon protection services of the Karaginsky district bumps up against unresolved socio-economic problems of the district — poor social support of the area, unemployment, insufficient incomes of the population. In such conditions, unilateral tightening of catch control by supervisory services is dangerous because of the negative social effect. Inspectors tend to turn a blind eye to small-scale domestic poaching, reacting only to signals about large volumes or the activities of criminal groups.

Rosrybolovstvo (SVTU FAR) lacks inspectors, technical means and juridical support. For example, the Karaga river was left unattended in 2021 by inspectors, although it is the most poached river in the bay due to its closeness to the district center. Karaga bay, for which border guards are responsible, is also poorly controlled. Locals find out about the departure of the squad from Ossora immediately. Officers are not familiar with the specifics of fishing and tend to use pressure and force in controversial situations. Private security services are more efficient, but without external control they work in violation of the laws of the Russian Federation. Protecting the rivers from visiting criminal brigades, they create a space for their own violations. Private security services, as well as the fish inspection, are often overshadowed by collusion with poachers or suspicion in blackmailing fishermen. In other words, private security guards should not replace public services, but this is exactly the situation that was observed in the summer of 2021 in the absence of border guards and inspectors of SVTU FAR.

*Quantitative assessment.* Illegal amateur fishing together with overfishing of individual quotas of indigenous peoples, according to our assessment, does not exceed 200 tons in the Karaginsky district. Inspectors evaluate criminal (caviar) fishing in 300-600 tons. Thus, the entire illegal catch of the area fits into the first thousand tons and does not pose a threat to the salmon population of northeastern Kamchatka. Against the backdrop of commercial salmon catches, river poaching in the Karaginskaya subzone is barely discernible, not exceeding 1% in odd years, and reaching 2-3% in even-numbered years.

More than half of obshchinas in TRK catch zone do not represent the interests of the indigenous peoples of Koryakia. Some of them are inactive or sell their limits without fulfilling their statutory obligations. However, all communities report, stating the same or greater volume of catch for the next year. Possible overfishing of a number of communities is legalized through factories, getting into the statistics of commercial catch. The activities of indigenous and other communities, in our opinion, need special research with the participation of specialists from KamchatNIRO and anthropologists.

Information about possible losses of salmon in commercial fishing with fixed seines causes concerns. During the run course the traps are overflowed and overloaded, and salmon can crush themselves in large volumes. Dead fish is thrown off into the ocean. Data on losses do not appear anywhere, because formally the fish is not caught. Taking into account the number of fixed seines in the bay, losses can reach statistically significant values. We cannot prove this information with concrete examples and figures, but we rely on the opinions of interviewed fishermen and industry



specialists from different settlements of the bay. We believe that fishing companies solve such problems themselves, because they are interested in reducing fish losses.

**Conclusion: illegal fishing does not pose a threat to the salmon populations of the Karaginsky Bay in the catch zone of Tymlatsky Rybokombinat.** However, there are still factors (first of all, the economic situation), which with a number of other circumstances (for example, the change of tenants of fishing parcels), can restore poaching to a dangerous scale.

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### 6.3 Summary of Tymlat anti-poaching activities in 2021



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Initial № \_\_\_\_\_

October 28, 2022

Vice President

MRAG Americas Inc.,

Dr. Graeme Parkes.

#### **Reference on the anti-poaching activities of Tymlatsky Rybokombinat Co., Ltd**

As you know, Tymlatsky Rybokombinat Co., Ltd manages the security service, one of the activities of which is the suppression of poaching within the fishing grounds owned by Tymlatsky Rybokombinat, as well as on the spawning rivers and water bodies of the Karaginsky District from the Dranka River to the Uala Bay.

Tymlatsky Rybokombinat has been deliberately carrying out this activity for more than 15 years, spending large sums from the company's budget on this activity, due to the lack of roads, and the length of rivers and remoteness.

In 2020-2021, within the framework of anti-poaching activities, the company spent more than 15 million rubles, including:

- gasoline for outboard motors for daily raids on motorboats and boats both in the estuary area and on the rivers themselves - Virovayam, Belaya, Kichiga, Paklawayam, Tymlat, Vytvirovyam, Ossora, Karaga, Kayum, Makarovka, Dranka;
- diesel fuel for the GTS all-terrain vehicle for raids in the upper reaches of the spawning rivers - Virovayam, Belaya, Kichiga, Paklawayam, Tymlat, Vytvirovyam, Ossora.
- purchase of quadcopter for the flights above hard-to-reach areas.



Also, the security service together with reindeer herders of Tymlatsky Rybokombinat carried out several overflights of the upper reaches of the Kichiga and Belaya rivers.

2022:

Within the framework of anti-poaching activities, the company spent more than 20 million rubles, including the above expenses in 2020-201, as well as the purchase of a large two-link floating all-terrain vehicle "Vityaz" for the needs of reindeer herders and raids of the security service in the upper reaches of the Tymlat, Kichiga, Belaya rivers, as well as more than 5 helicopter flights on the upper reaches of the Kichiga, Belaya, Tymlat rivers, the security service together with reindeer breeders of Tymlatsky Rybokombinat.

Most of the security personnel are public inspectors of the Federal Fishery Agency, many raids on rivers and water bodies in the process of anti-poaching activities of the security service are carried out jointly with officials of the Federal Fishery Agency and the Police officers.

The security service of Tymlatsky Rybokombinat LLC in the Karaginsky district employed 21 people for the period from May to November. In 2022, the security service of Tymlatsky Rybokombinat LLC conducted raids together with representatives of Police and the the SVTU FAR.

The safety service of Tymlatsky Rybokombinat LLC did not participate in joint anti-IUU activities with neighboring enterprises.

Relationships of Tymlatsky Rybokombinat LLC with the authorities of the village Tymlat and the authorities of the Karaginsky district are good.

The security service of Tymlatsky Rybokombinat LLC in Tymlat village carries out educational work on the changes of legislation and preventive work to prevent offenses in the field of fishing and reduce the illegal unregulated unreported fishing on the rivers and reservoirs of Karaginsky district.

In 2022, 87 people from the village of Ossora, 203 people the village of Tymlat, 1 person from the village of Ilpirski and 2 people from the village of Karaga were brought to work at the Tymlatsky Rybokombinat LLC. On the river fishing parcels of Tymlatsky Rybokombinat LLC, 15 residents from the village Tymlat and the village Ossora worked in river squads during the season in 2021, and 23 residents of the village Tymlat and the village Ossora were brought to work as reindeer herders for the whole year. In fact, the employment

of local residents, both seasonal and year-round, directly affects the prevention and reduction of poaching levels in the Karaginsky district and confirms the fact that the company Tymlatsky Rybokombinat is a socially responsible enterprise and affects the preservation of the sustainability of the fishery of Pacific salmon in the Karaginsky district through all possible legitimate forms of economic activity.

General director

A handwritten signature in blue ink, consisting of stylized, overlapping loops and strokes, positioned between the title 'General director' and the name 'Litvinenko A.Ya.'.

Litvinenko A.Ya.

## 6.4 Federal Fisheries Agency Enforcement Report



FEDERAL AGENCY FOR FISHERY  
(Rosrybolovstvo)

**NORTH-EASTERN  
TERRITORIAL ADMINISTRATION  
OF THE FEDERAL AGENCY  
FOR FISHERY**

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To Mr A. Litvinenko,  
CEO of Tymbatsky Rybokombinat  
Company Ltd.

e-mail: office@trk41.ru

Your ref: No. 768 dated October 7, 2022

Our ref: 08-02-04/9851  
Dated: October 12, 2022

Re: A response to the request

In response to your request for information about the number of administrative offenses on the rivers and other water bodies of the Karaginsky district under Part 2 of Articles 8.37 and 8.33 of the Russian Code on Administrative Offenses, the North-Eastern Territorial Administration of the Federal Agency for Fishery (hereinafter referred to as the Administration) reports:

**In 2021**, 30 administrative offenses were identified, including:

- 26 offenses were under Part 2 of Articles 8.37 of the Russian Code on Administrative Offenses;
- 4 offenses were under Part 2 of Articles 8.33 of the Russian Code on Administrative Offenses;
- 38,6 kg of water biological resources were seized;
- 8 fishing gears and 3 fishing vehicles were seized;
- 2 packages of documents were sent to initiate criminal proceedings.

**In the expired period of 2022**, 41 administrative offenses were identified, including:

- 36 offenses were under Part 2 of Articles 8.37 of the Russian Code on Administrative Offenses;
- 5 offenses were under Part 2 of Articles 8.33 of the Russian Code on Administrative Offenses;
- 115,65 kg of water biological resources were seized;
- 3 fishing gears and 1 fishing vehicle were seized;
- 1 package of documents was sent to initiate criminal proceedings.

Acting Head of the Administration

*[signature]*

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