Marine Stewardship Council
Iturup Pink & Chum Salmon Fisheries
Re-Assessment

Public Certification Report

27 August 2015

Evaluation Prepared for

J.S.C. Gidrostroy

Evaluation Prepared by
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1 SUMMARY

The Island of Iturup is located in the Kuril Island chain east of Sakhalin Island in the Russian Far East and northeast of Hokkaido Island, Japan. Iturup boarders the Pacific Ocean and the Sea of Okhotsk. The island has supported successful Pacific salmon fisheries for more than 100 years on the sloping north side of the island. There are several short river systems and some fresh water lakes that support Pacific salmon runs. The Iturup pink and chum salmon set net fisheries were first certified as sustainable in accordance with the MSC Principles and Criteria in September 2009 by accredited certification assessment body, SCS Global Services (SCS). The methodology in use at the time when the assessment began (FCM v6) stipulated that the assessment team develop the performance indicators that would be used to assess the fishery. Since that time, the MSC has developed a more standardized approach to MSC fishery assessments with the development of the default assessment tree.

This report is the result of the first 5-year re-assessment of the fisheries and utilizes the methodology in use at the start of the re-assessment (MSC Certification Requirements v1.3, Jan 2013) by SCS. The re-assessment started at the same time as the 4th annual surveillance audit in early August 2013. Stakeholders were informed of the meetings and were engaged at several junctures during the assessment where public comment is sought during an MSC assessment. One such juncture was the composition of the team, another was the exact performance criteria by which the team would assess the fishery (the assessment tree). After consultation, the team consists of the original team members with the addition of a new team leader. The team responsible for this report was comprised of: Mr. Ray Beamesderfer (principle 1), Dr. Chet Chaffee (principle 2), Mr. Evgeny Matsak (principle 3) and Ms. Adrienne Vincent (team leader).

The fishery includes an enhancement component (hatcheries) that are operated on the Island. Because of this, the MSC Default Assessment Tree was modified to include criteria that are specific to enhancement. The assessment tree was the same as was used in other Russian MSC assessments (Narody-Severa Bolsheretsk Salmon fishery also in the Russian Far East) except that the team opted to use the alternative performance indicator for PI 2.3.1.

During the assessment meetings which took place in both Yuzhno-Sakhalinsk, Sakhalin and Iturup Island, and after receiving several updated pieces of information and recent publications from the management agency SakhNIRO and scientists, the assessment team met at SCS headquarters in Emeryville CA USA for the scoring meeting.

The team identified several strong points and some areas that will require additional research and/or action to maintain MSC certification. JSC Gidorostroy, the client, has been proactive in identifying the stock origin of both pink and chum salmon intercepted in the fisheries by undertaking otolith mark and recapture studies since 2009. The first marked chum salmon began to return in 2012 with the otoliths being analysed in 2013. Otolith collection and analysis continues and as sample sizes increase, the power of the analysis is expected to improve. So far, results indicate that Iturup have strong homing to their natal streams and that hatchery origin chum return weeks earlier than their wild/natural counterparts. There are also at least two lakes that support chum populations with the unique life history trait of spawning on the beaches of the lakes instead of in the rivers as is more common to salmon. Understanding the interactions between these unique lake spawning populations, the hatcheries that are on the same riparian systems and the fishery is a priority and additional research continues to be undertaken. Results from otolith mark and recapture studies will continue to monitor run times and stray rates on Iturup.

The report was reviewed by two independent peer reviewers, Dr. Dmitry Lajus of St. Petersburg University and Dr. Greg Ruggerone, an independent salmon ecology specialist based in the US. The team considered and incorporated reviewer input before publishing the report for public comment. The report was available for a period of 30 days for public comment on the MSC website. Stakeholders were informed of the comment period by direct email. No comments were received. The report including peer review, stakeholder and MSC comments was presented to the SCS Global Services Certification Board to make the certification decision. The Certification Board did agree with the positive recommendation from the assessment team. This is not the final decision. The report is available for a period of 15 working days for stakeholders to object to the Certification Board decision to re-certify the Iturup pink and chum salmon set net fishery. Details of the assessment scores, conditions to certification and description are found below. Rationales and performance indicator scores may be found in Appendix 1. Stakeholder comments and peer review comments may be found in Appendices 2 and 3.

Final Principle Scores

Principle	Pink salmon	Chum Salmon
Principle 1 – Target Species	86.2	81.6
Principle 2 – Ecosystem	85.3	85.3
Principle 3 – Management System	82.5	80.5

Summary of Conditions

Condition	Applicable Performance Indicator	Related to Previously Raised Condition?
Error! Reference source not found.*The fishery must demonstrate that there is a strategy in place to protect wild chum stocks from significant detrimental impacts of enhancement. The strategy must be based on outcome metrics that are based on evidence and expected to cause the minimum impact on wild chum stocks (e.g., related to verifying and achieving acceptable proportions of hatchery-origin fish in the natural spawning escapement) by the second annual audit and annually thereafter.* *Milestones* ▪ *2016 audit: Update the management policy to define and incorporate metrics used to adjust harvest control rules that are consistent with the FAO Precautionary Approach to protect wild chum stocks from significant detrimental effects from enhancement. Provide results of 2014 and 2015 otolith and scale sampling in the Annual Otolith Sampling Report.* ▪ *2017 audit and annually thereafter: Include in the Annual Otolith Sampling Report an estimate of the over-all percent contribution of hatchery origin chum salmon in each of the sampling areas. This must include systems with hatchery input and those without hatchery input. Include in the Annual Harvest Report whether any management actions were needed and, if so, what actions were taken.*	**1.3.2**	**no**
Error! Reference source not found. *Milestones*	**1.3.3**	**no**

▪ *2017 audit and annually thereafter: Include in the Annual Otolith Sampling Report an estimate of the over-all percent contribution of hatchery origin chum salmon in each sampling area including systems with hatchery input and those without hatchery input. Include in the Annual Harvest Report whether based on this calculation, management actions were needed and if so, what actions were taken.*		
Condition 3. By the first surveillance audit, clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within the management policy as defined by JSC Gidrostroy. *Milestones* ▪ *2016 audit: update the Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the FAO Precautionary Approach to protect wild salmon.*	**3.1.3**	**no**
Condition 4. By the first surveillance audit, short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and enhancement activities. *Milestones* ▪ *2016 audit: update Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the Precautionary Approach to protect wild salmon.*	**3.2.1**	**no**
Error! Reference source not found. *Milestones* ▪ *2016 audit: update the Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the FAO Precautionary Approach to protect wild salmon.* ▪ *2017 audit: update the Annual Harvest Report with a summary of any actions that may have been taken to protect wild salmon based on the harvest control rules defined in the Management Policy.*	**3.2.2**	**yes**

2 AUTHORSHIP & PEER REVIEWERS

The re-assessment was conducted by four persons who cumulatively meet the MSC requirements for assessment teams.

Mr. Ray Beamesderfer, M.Sc. Principle 1, Senior Fish Scientist, R2 Consultants, USA
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. Ray has special expertise in using quantitative analysis, statistics, and computer modeling to solve difficult fisheries-related questions, and in synthesizing and translating scientific analyses. He 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 SCS and other fishery assessment teams for salmon fisheries in Alaska, Japan and Russia and brings perspective and harmonization between salmon fishery assessments in the Pacific. He participated on the previous assessment team for Iturup salmon.

Dr. Chet Chaffee, Principle 2, Carbon Solutions, USA
Dr. Chaffee developed the first independent, third-party ecosystem-based assessment and certification program for marine fisheries – The Marine Fisheries Certification Program. This program is the first of its kind and first to be accredited by the Marine Stewardship Council. From 1999 – 2009 Dr. Chaffee managed the program and led fisheries assessment projects in 9 countries, which included such fisheries as Bering Sea Pollock, Russian salmon, Alaska Salmon, British Columbia Salmon, Western Australian Rock Lobster. He led the previous assessment of Iturup salmon. Dr. Chaffee also participated as an advisor and expert on assessment to numerous MSC initiatives and projects from developing the initial assessment methodology to projects to improve assessment techniques and processes. Dr. Chaffee also managed and acted as lead auditor for SCS Chain of Custody program for sustainable seafood. Allied to marine fisheries work, Dr. Chaffee helped pioneer the first ecosystem assessment methods used for Life Cycle Assessment and Type III Ecolabeling. These methods utilized GIS systems, aerial photography, infrared imaging, and field sampling to assess effects of power generation (hydroelectric, wind, fossil fuel, and nuclear) on associated ecosystems.

Evgeny Matsak, Principle 3, formerly of TNIRO
Mr. Matsak has extensive experience as Research Scientist in biology specializing in fish genetics and fisheries management. Mr. Matsak served as the Principle 3 leader in the original Iturup pink and chum salmon certification. Before he joined the MSC Certification Team in 2008, he led a number of scientific projects working in the Genetics Lab of Pacific Institute of Fisheries and Oceanography, Vladivostok, Russia and helped inform management decisions for salmon through TNIRO. He participated in the international cooperative project with Auke Bay Lab (Laboratory of Genetics, Alaska Fisheries Science Center, NMFS) and Fairbanks University on Genetic Relationships among Even-Year Pink Salmon populations, and had a Sabbatical in Fisheries Research Institute, University of Washington, Seattle.

Ms. Adrienne Vincent, Lead Auditor and Team Leader, SCS Global Services
Ms. Vincent is a marine biologist that has worked closely with finfish species of commercial importance including California halibut (*Paralichthys californicus*), surfperches (Embiotocidae family) and white seabass (*Atractoscion nobilis*). After completing her B.Sc. in biology from the University of Oregon she completed an e.M.B. in marine science with the Oregon Institute of Marine Biology and focused on marine species management, estuarine trophic relationships, and plankton distribution based on real

time oceanographic conditions. Ms. Vincent thereafter joined the State Managed Finfish Project with the California Department of Fish and Game where she worked on stock assessment, bycatch and fishing mortality surveys and other management issues. Ms. Vincent managed the hook-and-line and trawl fishery independent sampling (indices of abundance) and by-catch rate surveys as well as halibut movement and age structure studies. With SCS, she was involved with the MSC certifications of US Pacific halibut, US Pacific sablefish, Scotian Shelf shrimp, Iturup and Annette Island salmon, and several Canadian groundfish fisheries. She is now a contracted lead auditor representing SCS in this re-assessment. Ms. Vincent is a lead auditor under the International Standard Organization (ISO) 90011:2008, SA8000 social accountability auditor, chain-of-custody auditor and is qualified to lead Risk-Based-Framework and Low-Trophic-Level MSC Assessments.

The peer reviews were completed by:

Dr. Dimitry Lajus, **Associate Professor in the Department of Ichthyology and Hydrobiology of St Petersburg State University**
Dr. Lajus holds a BS and MS from St. Petersburg University, and a PhD from the Zoological Institute of the Russian Academy of Sciences. His research interests include population biology of marine fish and invertebrates, population phenogenetics, stress assessment, history of fisheries, historical ecology, and population dynamics. Dr. Lajus has authored numerous scientific articles, book chapters, and scientific reports, and conducted certification pre-assessments and full assessments for a number of fisheries in Russia.

Dr. Greg Ruggerone - Natural Resource Consultants Corp., Seattle, WA, USA
Greg is Vice President at Natural Resources Consultants and has more than 20 years of research and management experience in Pacific salmon from California to Alaska. He has held positions at the University of Washington, Jones & Stokes Associates, and BioSonics. Dr. Ruggerone has been an assessment team member on 2 MSC assessments of salmon and a peer reviewer for 2 or more MSC reports. . Dr. Ruggerone has conducted applied research in salmonid predator-prey interactions, effects of habitat changes on salmonid production, limnological studies, salmon stock identification techniques, effects of hydropower operations on downstream smolt and upstream adult migrations, forecasting salmon run sizes, and investigations of oil spill effects on anadromous fish populations. Dr. Ruggerone has published more than 50 papers on salmon.

3 DESCRIPTION OF THE FISHERY

3.1 Unit(s) of Certification and Scope of Certification Sought

The fisheries meet the MSC requirements to be in scope for fishery assessments. Although the fisheries include enhancement components, there are significant naturally spawning populations on the island. Enhanced (hatchery) fish are released at a small size and spend most of their lives in the wild environment. The team chose to keep the same units of certification as were assessed in the initial MSC final certification report. There are two units based on two species, pink and chum Pacific salmon.

The certification units include the pink and chum salmon fish trap fisheries managed by the Russian government and the JSC Gidrostroy Company on Iturup Island in the Russian Far East. The fishery of interest occurs along Iturup's north coast in Kurilskiy Bay from Cape Vinogrodniy to Cape Breskens and in Prostor Bay between Cape Shpora and Cape Friza. A total of 18 significant rivers and streams with anadromous fish populations are located in or near the fishery areas. The 4 largest systems include the Kurilka River (with hatchery and Lebidinoe Lake), Reydovaya River (with hatchery), Rybatskaya River (without hatchery), and Olya River (without hatchery, though Olya Bay does have a segregated hatchery). The rest of the rivers and lakes are smaller in size, with the exception of Slavnaya, Glushj, and Sopochnoye Lake. The fishery area excludes a small section of the coast near Dobryninya Bay where two fish traps are operated by another company. Other smaller fisheries (not subject to certification) occur to the north and south of the Gidrostroy fishery.

Eligible fishers are those that fish by set trap net within the area described with valid fishing licenses. This area is leased to JSC Gidrostroy by the Russian government.

Table 1. Two Units of Assessment under re-assessment.

Two Units of Assessment based on two species	
Species	Pink Pacific salmon (*Oncorhynchus gorbuscha*) and Chum Pacific salmon (*O. keta*)
Geographical Area	Iturup Island, Russian Far East. FAO Major Fishing Area 61 (Northwest Pacific).
Stock	2 stocks based on 2 different species
Gear Type	set nets/fish trap
Management System	Terminal fishery with escapement goals for individual streams. Managed by SakNIRO, Russian Federation Far East Fisheries Agency
Client Group	J.S.C. Gidrostroy

3.1.1 Scope of Assessment in Relation to Enhanced Fisheries

The Iturup pink and chum fisheries operate within an enhanced system but maintain enough of a link with the wild environment that the populations are within the scope of MSC assessments. The fishery meets the criteria of Table C1 in the MSC Certification Requirements v1.3 in the following ways:

Linkages to and maintenance of a wild stock:

A1. Broodstock is collected from wild streams and naturally spawning salmon in the integrated hatchery systems.

A2. Both pink and chum Pacific salmon are native to the Pacific and were found naturally on Iturup Island before enhancement began.

A3. Otolith thermal marking success at Olya Bay and Kitovyy hatcheries is 100%. Marking success at Kurilskiy Bay hatchery is less (10 to 15%) due to natural spring water temperatures being difficult to control. Based on recent tag recapture studies for both pink and chum salmon (Akinicheva 2012, Akinicheva 2013), the majority (nearly 80%) of the salmon returning to the fishery are un-marked providing evidence that there are non-hatchery origin salmon returning to Iturup island.

A4. Stocking does not form a major part of any rebuilding plans. None of the stocks are considered by SakhNIRO to be depleted at this time. Lebidinoe Lake continues to be studies to determine whether a unique lake spawning chum salmon population may be depleted. In the interim, increased enforcement on the lake to prevent poaching is currently a precautionary measure being employed while the study is in process.

Feeding and husbandry:

B1. Juveniles are raised to a small size (about 4 cm) before being released to the natural system. Some feeding of chum salmon takes place at the hatchery to support growth, but this is minimal compared with feeding in the wild. After release, the salmon spend several years at sea foraging a natural diet.

B2. This is a Hatch and Catch system (HAC). No antibiotics are used at the hatchery.

Habitat and ecosystem impacts:

C1. Potential impacts to the habitat and ecosystem include a small amount of water diversion at the Kurilsky hatchery and effluent water that runs through the hatcheries. Water temperature and contaminants are tested regularly and have been found to be within acceptable limits. No antibiotics are used and water temperature is equivalent to the natural system. A small amount of water is diverted from a creek near the hatchery site. This creek is very small and has not historically supported fish species. Water is filtered naturally through gravel before entering the hatchery and could be restored.

3.2 Overview of the Fishery

Iturup is located near the southern end of the Kuril chain, between Kunashir (19 km to the SW) and Urup (37 km to the NE). It is the largest island located between the Okhotsk Sea to the west and the north Pacific Ocean to the east with a total area of 6,725 km^2. The island is 203 km in length and 6 to 36 km in width. The landscape includes a series of volcanoes and mountain ridges connected by hilly or low-laying isthmuses running NE to SW on this elongated island. The highest is point is Stokap (1,634 m. Most of the island is wild and remote. The vegetation mostly consists of spruce, larch, pine, fir, and mixed deciduous forests with alder, lianas and Kuril bamboo underbrush. The mountains are covered with birch and Siberian Dwarf Pine scrub, herbaceous flowers or bare rocks.

Abundant rainfall feeds about 200 small rivers and streams which support abundant salmon runs. Streams are also fed by snow melt and springs. Small lakes, including Lebidenoe Lake (Swan Lake) and Sopochnoye Lake are located near streams. The shores of the island are high and abrupt on the Pacific side and do not generally support salmon populations. The lowlands allow streams to meander. Some salmon occur to the north and south of the unit of certification, but the majority return to Kurilskiy and Prostor bay tributaries.

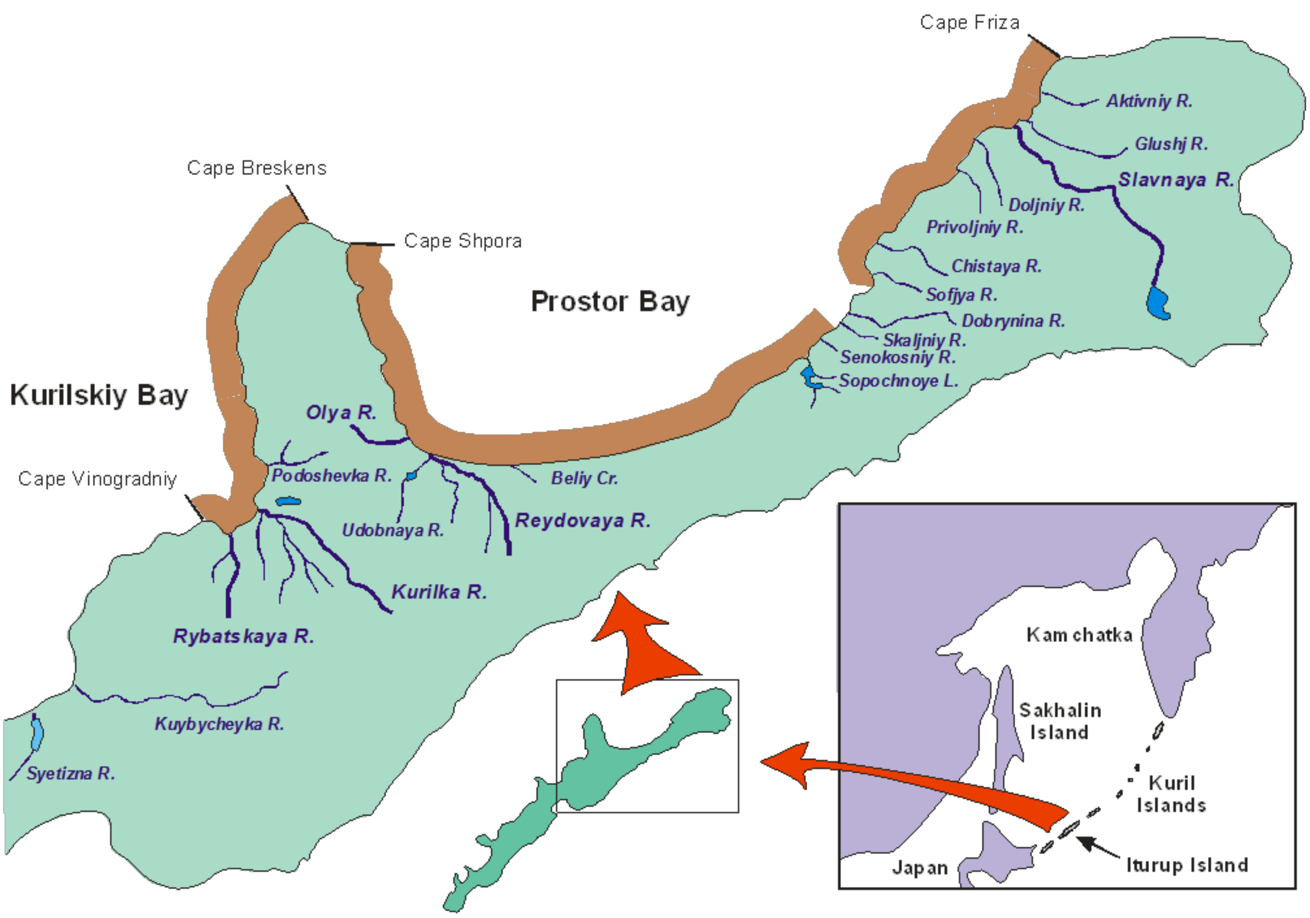

Figure 1. JSC Gidrostroy fishery areas in Kurilskiy and Prostor Bays (shaded) and associated rivers on the northern coast of Iturup Island, Kuril Islands, Russia.

Salmon have been harvested on Iturup for more than a century. The Japanese harvested salmon and built the first hatcheries during the 1800s. Iturup Island came under Russian Jurisdiction after World War II. During the war, the fisheries and hatcheries fell into disrepair but were subsequently rebuilt. The local village communities of Kurilsk and Reydova on Iturup Island depend almost exclusively on this fishing as their livelihood. Development is concentrated in these two small towns which are connected by road to various locations used for fishing, hatchery operations, processing operations, and power generation. The town of Kurilsk, is the administrative center of the Kurilsky District. A military base is also located near the Pacific Coast. The human population of Iturup reaches about 2,000 at its seasonal peak in summer and early fall with an influx of temporary fishery workers. Fewer people inhabit the island in the winter.

JSC Gidrostroy is a private company, established in 1991, that owns and operates the fishing, processing and shipment operations for much of the salmon at Iturup Island. JSC Gidrostroy is also responsible for much of the infrastructure (housing, hospital, schools, roads, housing, etc.) on the island. Gidrostroy operates two processing facilities on the island, which directly employ almost half of the local population. Wild and hatchery pink and chum salmon are caught, processed and exported. The catch is sold in the Russian, Chinese, South Korean and Japanese markets. Products are then redistributed in North America and Europe.

3.3 Principle One: Target Species Background

3.3.1 Pink Salmon Description

Pink salmon are the smallest but most abundant of the Pacific salmon and are found throughout the north Pacific. Iturup pink salmon typically average about 1.5 kg and 50 cm. Pink salmon return to Iturup Island to spawn from July until October with a peak in August (Figure 2). Spawning typically occurs in small to moderate-sized streams within a few miles of the sea or and in the intertidal zone at the mouths of streams. Juvenile pink salmon do not rear for significant periods in freshwater as fry migrate to the sea soon after emergence in the spring.

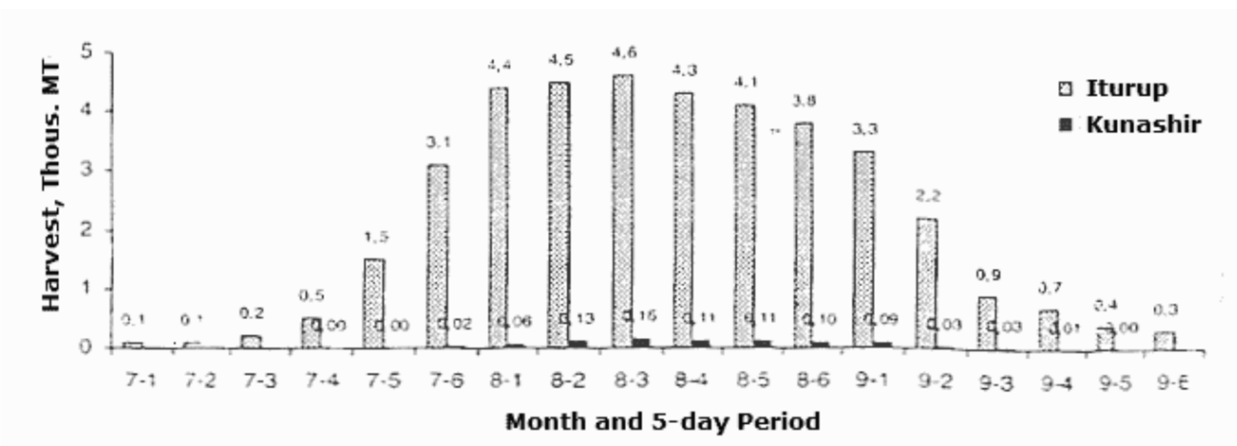

Figure 2. Run timing of Iturup island pink salmon based on forecast harvest patterns in 2008 near-shore fisheries.

Pink salmon mature at two years of age which means that odd-year and even-year populations are essentially unrelated. Frequently in a particular stream the other odd-year or even-year cycle will predominate, although in some streams both odd- and even-year pink salmon are about equally abundant. Occasionally cycle dominance will shift, and the previously weak cycle will become most abundant. Odd-year returns dominate the pink return throughout most of the Sakhalin-Kuril Island area outside Iturup (Smirnov 2006). On Iturup, both even and odd-year pink salmon runs are significant (Kaev et al. 2006). Prior to the 1980s, inter-annual differences were not great. In 1982-1991 odd year runs were typically double the size of the even year runs. Since the early 1990s, even year run sizes have been generally larger than the odd year runs.

3.3.1.1 Distribution

Pink salmon spawn in almost all water bodies of Iturup Island, except for those with acidic water and streams ending in waterfalls. Spawning occurs in 54 rivers. Of these, only three rivers are over 20 km long; six rivers are from 11 to 20 km long; and the rest are referred to as small rivers and streams. The majority (80%) of the salmon spawning habitat (an estimated total of 600,000 m^2) occurs on the Okhotsk Sea coast (Kaev et al. 2006). Natural production areas, hatcheries, and fisheries for pink salmon, including those of Gidrostroy, are concentrated on the Central and Northern Okhotsk Sea coasts. Approximately 95% of the total pink salmon catches occur in central and northern parts of the Okhotsk Sea coast of the island, primarily in Prostor and Kurilskiy bays. Little fishing occurs on the Pacific side.

High seas tag-and-recapture experiments have revealed that pink salmon originating from specific coastal areas have characteristic distributions at sea which are overlapping, nonrandom, and similar from year to year. Pink salmon from Iturup Island range into ocean waters of the Okhotsk, and Bering seas. The deep-water part of the Okhotsk Sea that is the major feeding ground of juvenile salmon within the Russian EEZ – The western Bering Sea has a low foraging importance for juveniles (Temnykh and Kurenkova 2006; Shuntov and Temnykh 2008a).

3.3.1.2 Stock Structure

The first Russian data on run timing and biological indices of Iturup pink salmon were obtained in the second half of the 1940s (Vedensky 1949). Quantitative assessments of pink salmon abundance began in the 1950s (Pavlov 1954). In the 1960s, Ivankov (1967a, 1967b; 1968) determined from migration and biological data that pink salmon have an intraspecific structure coherent with the ability of this species to form local populations and seasonal forms. Assessments of abundance and biological characteristics of Iturup pink salmon have been routine since 1967 (Chupakhin 1973a, 1975).

Iturup pink salmon reportedly include early and late runs. Early and late runs generally occur in most rivers. One or the other may predominate. Northern tributaries (middle of Prostor Bay and north) tend to support more late-run fish. Early run fish tend to make up a higher proportion of the run in the southern portion of the Island. Run timing productivity has shifted over the last 30 years from predominately late run (75% of production during the 1970s) to predominately early run (60% of production during the 1990s). This change in productivity patterns has occurred island-wide and is not related to local hatchery effects.

Fish returning at different times typically utilize different portions of any given river system. In the Reydovaya, returns to the east fork (Udobnaya) are typically earlier timed, peaking around June 20. Returns in the lower mainstem typically peak around July 20. Returns to the upper portion of the system, including the area of the hatchery, peak around August 10-15. In the Kurilka, approximately 25% of the natural production capacity is in the middle tributary (Kurilskaya) and this portion of the run is early-timed. Approximately 50% of the natural production capacity occurs in the mainstem (east fork) where the hatchery is located and this portion of the run is intermediately-timed. The remaining 25% of the capacity is in a west fork tributary (Lorka) and this portion of the run is late-timed.

Genetic analyses of pink salmon stock structure have generally identified broad geographical patterns but little or no difference among local populations in any given region. No major local differences were observed among 5 loci analyzed by Glubokovskiy and Zhivotovsky (1986) or among 76 loci from broadly-distributed populations on Sakhalin analyzed by Matsak (Noll Claire et al 2001). Genetic differences appear to be less in Asian pink salmon than in North American pink salmon (Zhivotovsky, personal communication). Natural straying among local populations of pink salmon is generally assumed to be more significant than in other salmon species (Sharp et al. 1994; Zhivotovsky et al. 2008). However, the available information on pink salmon genetic stock structure and straying patterns is not conclusive. Genetic results to date are difficult to reconcile with patterns in run timing and distribution of pink salmon population components on Iturup Island. It remains unclear where historical genetic methods found no stock structure because none existed or because the available methods lacked sufficient power to identify differences. More recent genetic analyses of pink salmon using microsatellites have been similarly inconclusive.

3.3.1.3 Life History

This species typically spawns in small to moderate-sized streams within a few miles of the sea or in the intertidal zone at the mouths of streams. Eggs buried in redds excavated by the females in coarse gravel or cobble-size rock, often of shallow riffles and the downstream ends of pools. Fecundity typically averages about 1,500 eggs per female. All pink salmon die after spawning. Embryonic development takes several months. After hatching, fry spend several weeks in the nest before emerging from the gravel in late winter or spring to migrate downstream into salt water, typically during hours of darkness.

Extensive research has been conducted on biology, ecology and habitats conditions (hydrology, forage base) of the early marine life period of juvenile salmon in the coastal waters (Kolomeytsev 2009; Temnykh et al. 2010). Following entry into salt water, the juveniles move along the beaches in dense schools near the surface, feeding on plankton, larval fishes, and occasional insects. Fry remain in coastal waters for several weeks or months before migrating to open sea. Temnykh et al. (2010) reported that juvenile pink and chum salmon from southeast Sakhalin spend 1.5-2.5 months in the coastal zone before moving into the ocean feeding grounds by fall.

3.3.2 Chum Salmon Description

Chum salmon are larger but less abundant than pink salmon on Iturup. Chum salmon typically mature at 2 to 5 years of age (primarily at 4 years of age). Iturup chum generally average about 3.5 kg. Chum returns and fisheries are typically greatest in September and October (Figure 3). On Iturup Island, chum populations are generally restricted to the larger systems and spawning occurs in upwelling areas in the lower reaches of rivers or in lakes. Juvenile chum salmon do not rear for significant periods in freshwater as fry migrate to the sea soon after emergence in the spring.

3.3.2.1 Distribution

Chum salmon have the widest distribution of any of the Pacific salmon. They range south to the Sacramento River in California and the island of Kyushu in the Sea of Japan. In the north they range east in the Arctic Ocean to the Mackenzie River in Canada and west to the Lena River in Siberia. Ten significant chum populations are identified within the certification area on Iturup.

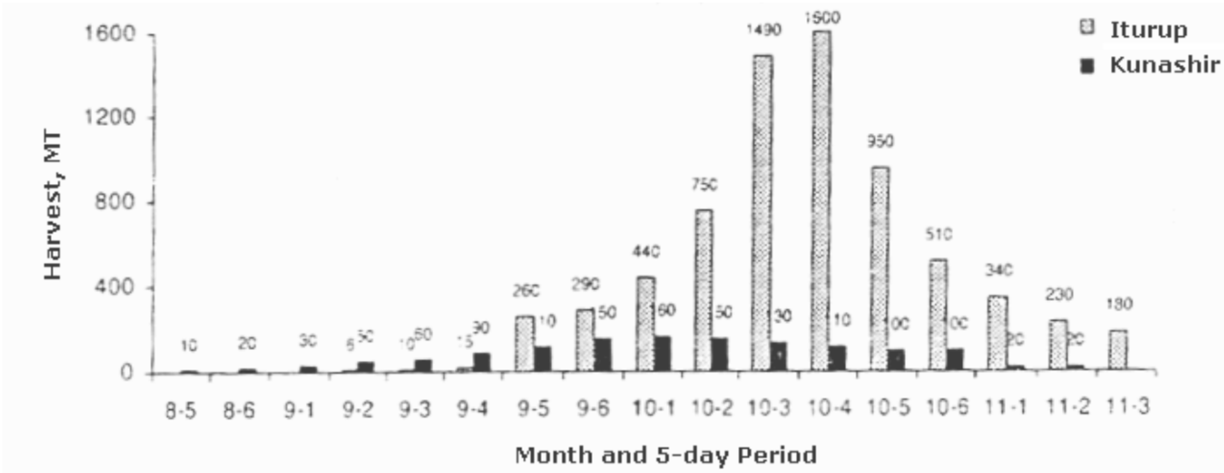

Figure 3. Run timing of Iturup island chum salmon based on forecast harvest patterns in 2008 near-shore fisheries.

3.3.2.2 Stock Structure

Asian chum include summer and fall runs. Iturup chum are a fall run which return in October and November. Fall chum are found in Japan, the west coast of Sakhalin Island, the southern Kuril Islands, and the Amur River (Salo 1991). Chum runs on Iturup are very diverse with a variety of run timing as well as river and lake forms.

Detailed genetic studies have recently been completed for Iturup chum populations using microsatellite analysis (Zhivotovsky et al. 2008). Groups of chum from Kurilka and Reydovaya populations are clearly differentiated from each other and from other Iturup chum populations, confirming their individuality as populations. Differentiation was attributed a highly developed homing sense of chum. Samples from tributaries closely associated with the hatchery continue to show differentiation. Microsatellite DNA analysis has also determined that a shoreline-spawning population in Lebedinoe Lake was genetically different from stream-spawning chum in the Kurilka system (Zhivotovsky et al. 2011).

3.3.2.3 Life History

Chum salmon generally spawn in low gradient temperate and subarctic rivers and streams, not far from the ocean. Spawning areas often include small streams, intertidal zones, and small side channels and other areas of large rivers where upwelling springs provide excellent conditions for egg survival. Fecundity typically ranges between 2,400 and 3,100 eggs. Chum fry migrate into marine waters emerge from the gravel in the spring and rear briefly in freshwater before migrating to the ocean. They feed on small insects in the stream and estuary before forming into schools in salt water where their diet usually consists of zooplankton. Recent fry-to-adult survival rates have averaged about 5-10% based on numbers from the Reydovo Hatchery.

3.3.3 Stock Assessment & Status

3.3.3.1 Assessment Methodology

Spawning escapement of Iturup salmon is monitored through a combination of visual ground surveys of spawners and weir counts. Escapement data is collected for 14 pink and 6 chum populations, including hatchery and wild production rivers (Table 2). Escapement estimates are based on fish counts in areas of suitable spawning habitat. Surveys also assess the rate of movement and distribution of the spawner fish. Both government and Gidrostroy biologists conduct surveys 3 to 4 times per season on dates established based on historical average run timing. More frequently on major systems surveys may be conducted in major systems. Official estimates typically reflect spawner numbers at the time the fishery ends and are regarded as a minimum index of escapement. Additional fish regularly return following the completion of the official counts, especially in years when the run timing is late. Additional information on total return is compiled by Gidrostroy biologists based on stream surveys conducted after the completion of the fishery and the official index counting periods.

Escapement is also estimated at weirs at the mouths of key rivers. Weirs have been operated since the 1990s. A total of eight are currently operated on the island. These include Reydovaya, Olya, Kurilka, Rybstkaya, with two more on the northern part of the Island and two to the south. Weirs are opened and closed to regulate escapement in key production areas. Numbers of fish passing are counted when the weirs are opened. Spawning ground surveys estimate fish densities visually relative to escapement goals and weirs are closed when spawning grounds are filled to 70% of capacity. The weirs are maintained by the fishing brigades. Hatchery staff are responsible for opening and closing weirs. Openings on rivers with hatcheries are monitored by fish inspectors. Weir operations are logged and reported. Openings are typically for 1-2 day periods on the ends of the run and for a few hours during the peak.

Annual escapement benchmarks are established for significant wild populations harvested by the fishery. Escapement benchmarks are established based on target fish densities in areas determined to be suitable for spawning. These benchmarks represent the production capacity of each system under optimum environmental conditions. These numbers as used as reference points rather than hard objectives.

The management system has inventoried the amount of spawning habitat available for each salmon species in streams throughout the Island. Estimates of suitable spawning areas were defined based on general habitat characteristics and areas where spawning occurs. Habitat availability and corresponding escapement benchmarks are periodically reassessed in specific areas as information indicates that historical estimates were outdated. Spawning areas and corresponding escapement reference values are formally established for the region by the federal scientific authority (SakhNIRO).

Long-standing spawner density targets are specified by the governmental science agency (SakhNIRO) for regional application based on historical studies of redd sizes in various Sakhalin and Kamchatka rivers (Rukhlov 1968, 1972). Corresponding fish spawning densities are 2 spawners/m^2 for pink salmon and 1.5 spawners/m^2 for chum salmon. These densities are applied the estimated area of suitable spawning habitat in each stream determined by the regional scientific agency in order to establish spawning "optimum" spawning escapement objectives. The suitability of these generalized spawner densities to Iturup salmon populations has been validated by long term monitoring results of spawner, fry production, and adult return data (Kaev et al. 2007).

Salmon escapement goals are typically managed based on production functions defined by stock-recruitment curves relating spawner numbers with adults produced in the next generation of return. Escapements greater than the habitat capacity will reduce productivity due to density-dependent regulating factors involving competition for limited space and food. Escapements substantially less than capacity reduce fishery yields. Maximum sustainable yield typically occurs somewhere between 50% and 100% of the habitat "capacity" where capacity is defined based on the point of maximum production in the stock recruitment curve.

Discussions with regional fish managers indicate that the spawning escapement goals for salmon are effectively treated as the point of maximum production beyond which the capacity of the habitat is exceeded and future returns of salmon decline. Thus, fisheries are managed for a stream-specific range of spawning escapements estimated to provide maximum recruitment and yield at spawner numbers between 70 and 100% of capacity (S. Makeyev, SahkRyvod, personal communication). A. Buslov (SakNIRO, personal communication) supported this interpretation, stating that it was better to fall below the goal than above it due to the potential for catastrophic mortality due to high escapements.

In practice, escapements target may vary at the discretion of local managers based on in-season determinations of spawning conditions which can vary substantially within and among years depending on local weather patterns. Temperature and oxygen levels are monitored and used as a basis for establishing escapement levels appropriate to the prevailing conditions. Escapements within each stream or river system are also managed to distribute escapements to specific areas or tributaries within each system. In any given year, numbers might exceed reference levels in some portions of the stream and be less than reference levels in other portions of the stream.

Table 2. Populations of pink and chum salmon in rivers and streams contiguous with JSC Gidrostroy fisheries on Iturup Island. Area is the estimated availability of suitable spawning habitat.

English	Russian	Length (km)	Area (m^2)	Pink Salmon *(O. gorbuscha)* Type	Pink Salmon *(O. gorbuscha)* Area (m^2)	Pink Salmon *(O. gorbuscha)* Capacity[b]	Chum salmon *(O. keta)* Type	Chum salmon *(O. keta)* Area (m^2)	Chum salmon *(O. keta)* Capacity[b]
Kurilskiy Bay	**КУРИЛЬСКИЙ**								
Rybatskaya R.	Рыбацкая Р.		15,600	Wild	12,000	24,000	Wild	3,600	5,760
Kurilka System	Курилка Р.	22	121,900[c]	Mixed[a]	101,650[c]	203,300	Mixed[a]	20,250	32,400
Kurilka main	*Курилка R*		--	--	*78,650*	--	--	*11,500*	*18,400*
Lebidinoe Lk.	*Оз. Лебединое*		--	--	*4,650*	--	--	*6,750*	*10,800*
Kurilsky	*Курильский*		--	--	*11,000*	--	--	*2,000*	*3,200*
Lorka	*Лорка*		--	--	*12,000*	--	--	--	--
Podoshevka R.	Подошевка Р.	6	5,500	Wild	10,000	20,000	--	--	--
Prostor Bay	**ПРОСТОР**						--		
Aktivniy R.	Активный	8	6,000	Wild	6,000	12,000	--	--	--
Beliy Cr.	Белый Руч..	6	3,000	Wild	1,000	2,000	--	--	--
Chistaya R.	Чистая	8	14,500	Wild	11,500	23,000	--	--	--
Doljniy R.	Дольный руч	7	3,500	Wild	3,500	7,000	--	--	--
Glush R.	Глушь	14	--	Wild	18,000	35,000	--	--	--
Lk. Sopochnoye	Оз. Сопочное		37,500	Wild	11,000	22,000	Wild	26,500	42,400
Lovushka R.	Ловушка Р.		--	Wild	1,000	2,000	--	--	--
Olya R.	Оля	8	17,500	Wild	17,500	35,000	Wild	650	1,040
Privoljniy R.	Привольный руч.	6	No data	Wild	2,000	4,000	--	--	--
Reydovaya System	Рейдовая	18	44,000	Mixed[a]	25,500	51,000	Mixed[a]	14,600[c]	23,360
Reydovaya R.	*Рейдовая*		--	--	--	--	--	*2,500*	*4,000*
Reydovaya Lk.	*Оз. Рейдовое*		--	--	--	--	--	*7,500*	*12,000*
Argyn	*Аргунь*		--	--	--	--	--	*4,600*	*7,360*
Senokosniy R.	Сенокосный Руч.	3	1,100	Wild	1,200	2,400	--	--	--
Skaljniy R.	Скальный руч.	9	800	Mixed[a]	8,000	16,000	--	--	--
Slavnaya R.	Славная	23	196,000	Wild	185,000	370,000	Wild	11,000	17,600
Sofjya R.	Софья	5	2,000	Wild	2,000	4,000	--	--	--
Udobnyi R.	Удобный руч.	6	1,200	Wild	1,300	2,600	--	--	--

[a] *Hatchery and wild production of both O. gorbuscha and O. keta*

[b] *based on target densities of 2 spawners/m² for pink salmon and 1.5 spawners/m² for chum salmon)*

[c] *Number revised in 2009 based on new assessment by SakRbyVod.*

3.3.3.2 Pink Salmon Status

The Iturup Island pink salmon return currently averages about 20 million fish per year and has varied from 6 to 32 million (Figure 4). Combined annual escapements of hatchery and natural origin fish are typically average over 1 million fish (Kaev et al. 2006). Historical escapements ranged from 845,000 to 2,467,000. Combined wild and hatchery production is estimated to average 360 million fry per year. Annual fry-adult survival of Iturup pink salmon is typically 2-10% and is among the highest in the Russian Far East (Kaev et al. 2006, Smirnov et al. 2006).

Fluctuations in pink salmon abundance on southern Sakhalin and Iturup Islands are more dependent on marine survival than on the abundance of fry migrating downstream (Kaev et al. 2007). Ocean productivity and temperatures are reported to be particularly favorable for juvenile pink salmon along the Okhotsk sea side of Iturup Island due to a convergence of warm and cold currents (Kaev et al. 2006). Iturup Island's rivers, as a rule only freeze during periods of low discharge, whereas other rivers in the region are almost completed covered with ice during the winter (Kaev et al. 2007).

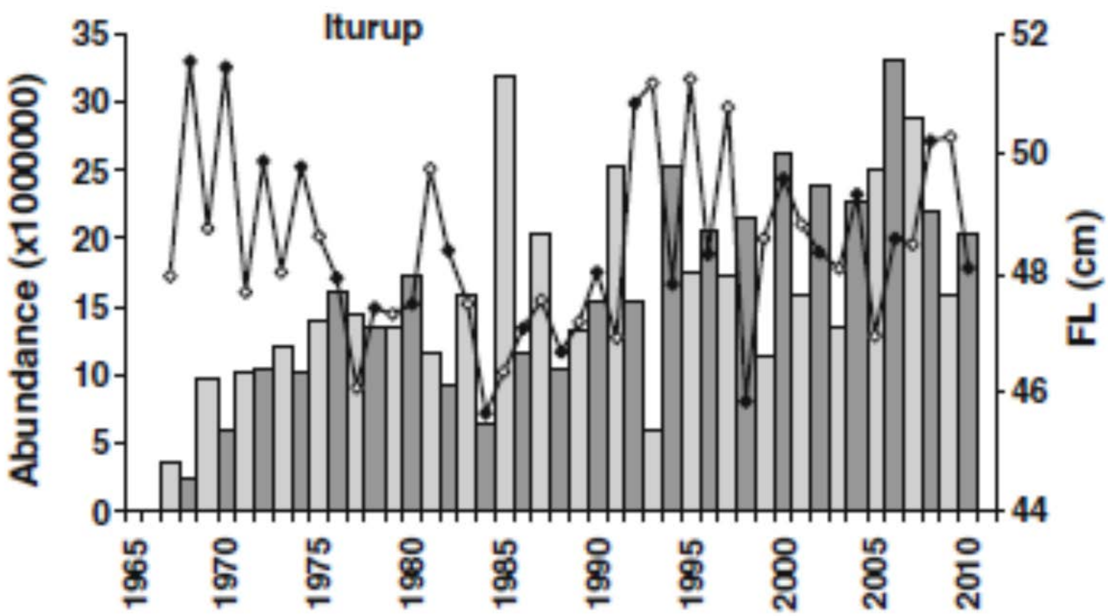

Figure 4. Changes in abundance (catch and escapement, bars) and fork length (line) of pink salmon on Iturup Island in 1967-2010. Dark Bars are even year returns and light bars are odd year returns. (Kaev 2011).

Total pink salmon escapements averaged approximately 900,000 fish per year from 2005-2012 (Table 3). Numbers consistently approach or exceed optimum levels for all major populations (Figure 5). Optimums are generally reached on average and in individual years. Patterns are consistent in mixed production areas (Kurilka, Reydovaya) and natural production areas (Rybatskaya, Olya, Slavnaya). Exceptions are limited to very small systems with variable habitat availability from year to year (Podoshevka, Udobnaya, Beliy). The Podoshevka, Gushj, Privoljniy and Udobnaya Rivers consistently fall under 50% of the optimum level.[1] High levels of escapement were consistently achieved again in 2012 despite an abnormal run timing. Escapements reached greater than 50% of optimum levels in all but three of the 15 monitored streams. Preliminary information also indicates that most escapement goals were met in 2013 despite the abnormal run timing.

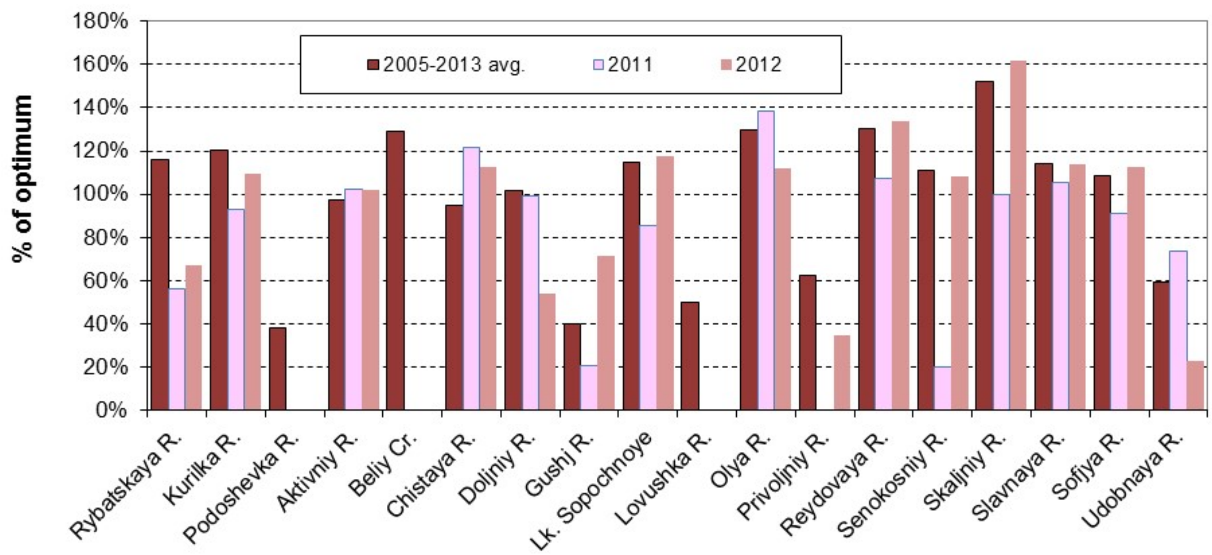

Figure 5. **Recent average escapements (2005-2013) of pink salmon in Iturup streams expressed as a percentage of optimum levels compared with the most recent (2012 & 2013) escapement. (Analysis by re-assessment team of escapement data provided by the client included in Table below).**

[1] *The re-assessment team identified 50% of optimum as a reference point for identifying low escapements that on average would be expected to substantially reduce future returns based on typical stock-recruitment relationships observed among salmon. This reference point was inferred from salmon population dynamics theory as the point in the stock-recruitment relationship where spawning escapements may result in significantly lower production than maximum levels.*

Table 3. Recent spawning densities of pink salmon in rivers and streams contiguous with Gidrostroy fisheries on Iturup Island (thousands).

		Year								
		2005	2006	2007	2008	2009	2010	2011	2012	2013
Fish numbers (x1,000)	***Kurilskiy Bay***									
	Rybatskaya R.	38.4	36.5	37.2	28.5	25.4	26.8	13.5	16.1	27.5
	Kurilka R.	355.2	197.8	198.1	255.9	247.1	234.1	189.3	221.9	300.3
	Podoshevka R.				1.0	2.4	26.8	--	--	0.2
	Prostor Bay									
	Aktivniy R.	12.0	15.4	9.1	6.6	12.5	12.8	12.3	12.2	12.5
	Beliy Cr.				1.0	6.2		0.5		
	Chistaya R.	14.3	17.1	13.0	17.1	31.1	24.0	28.0	25.9	25.8
	Doljniy R.	9.0	10.2	7.1	3.5	7.8	8.5	7.0	3.8	7.5
	Gushj R.				36.4	36.7	18.2	7.6	25.7	6.5
	Lk. Sopochnoye	24.0	32.6	27.7	24.6	23.7	23.4	18.9	25.9	26.5
	Lovushka R.						2.6	1.5		
	Olya R.	57.8	51.8	51.8	38.5	37.1	35.7	48.5	39.1	47.5
	Privoljniy R.				2.0	0.3	3.6	--	1.4	--
	Reydovaya Lk.									
	Reydovaya R.	77.3	75.7	68.2	64.9	74.7	58.2	54.8	68.1	55.8
	Senokosniy R.	3.6	3.3	3.5	2.5	2.7	2.5	0.5	2.6	2.9
	Skaljniy R.	28.8	25.6	25.4	26.6	28.0	23.5	15.9	25.9	19.5
	Slavnaya R.	410.7	407.0	414.4	290.1	589.8	418.5	390.6	420.1	460.8
	Sofjya R.	6.0	5.7	5.0	1.1	4.5	4.2	3.7	4.5	4.4
	Udobnaya R.		1.4		1.0	2.5	1.2	1.9	0.6	2.1
	Total	***1,037.1***	***880.1***	***860.5***	***762.9***	***1,095.5***	***924.6***	***794.5***	***893.8***	***999.8***
% of reference escapement	***Kurilskiy Bay***									
	Rybatskaya R.	160%	152%	155%	119%	106%	112%	87%	104%	115%
	Kurilka R.	175%	97%	97%	126%	122%	115%	93%	109%	148%
	Podoshevka R.				12%	30%	41%			1%
	Prostor Bay									
	Aktivniy R.	100%	128%	76%	55%	105%	107%	103%	102%	104%
	Beliy Cr.				49%	311%		27%		
	Chistaya R.	62%	75%	57%	74%	135%	104%	122%	113%	112%
	Doljniy R.	128%	145%	101%	50%	111%	122%	99%	54%	106%
	Gushj R.				36%	37%	51%	21%	71%	107%
	Lk. Sopochnoye	109%	148%	126%	112%	108%	106%	86%	118%	120%
	Lovushka R.						128%	73%		
	Olya R.	165%	148%	148%	110%	106%	102%	139%	112%	136%
	Privoljniy R.				50%	7%	90%		34%	--
	Reydovaya Lk.									
	Reydovaya R.	151%	148%	134%	127%	146%	114%	107%	133%	109%
	Senokosniy R.	150%	136%	145%	106%	110%	105%	20%	105%	123%
	Skaljniy R.	180%	160%	159%	166%	175%	147%	100%	163%	122%
	Slavnaya R.	111%	110%	112%	78%	159%	113%	106%	114%	124%
	Sofjya R.	150%	144%	126%	28%	113%	105%	91%	111%	111%
	Udobnaya R.		55%		39%	95%	47%	73%	22%	81%
	Median	***150%***	***144%***	***126%***	***78%***	***111%***	***107%***	***92%***	***109%***	***111%***

Kaev et al. (2006) evaluated stock-recruitment relationships for the aggregate return of pink salmon to Iturup Island. Fry production was weakly correlated with spawner abundance (R =-0.02). Adult returns were strongly correlated with fry numbers (R = 0.43) and fry to adult survival (R = 0.83). Survival of migrants was estimated to average 4.6% per year. This high rate for fry migrants accounts for the high productivity of this pink salmon stock. Differences in productivity of odd and even year runs were small. Annual fry-to-adult survival was highly variable, ranging from 1.8% to 9.7%. Kaev et al. (2006) concluded that abundance of returning adults was mostly dependent on environmental conditions in the early marine life period.

On average, Kaev et al. (2006) estimated that 1.438 million natural spawners entered rivers which is very similar to escapements producing maximum sustained yield (1.6 million) that we estimated from a Ricker stock-recruitment curve derived from data reported by Kaev (Figure 6. Stock-recruitment relationship of wild pink salmon for aggregate Iturup Island run based on information in Kaev et al. (2006). Hatchery fish are removed from adult recruits based on relative proportions of wild and hatchery fry). Average annual exploitation rates at MSY based on the stock-recruit analysis are approximately 82% although the broad, flat shape of the curve and annual variability in production suggest little effect on future returns from observed exploitation rates around 90%.

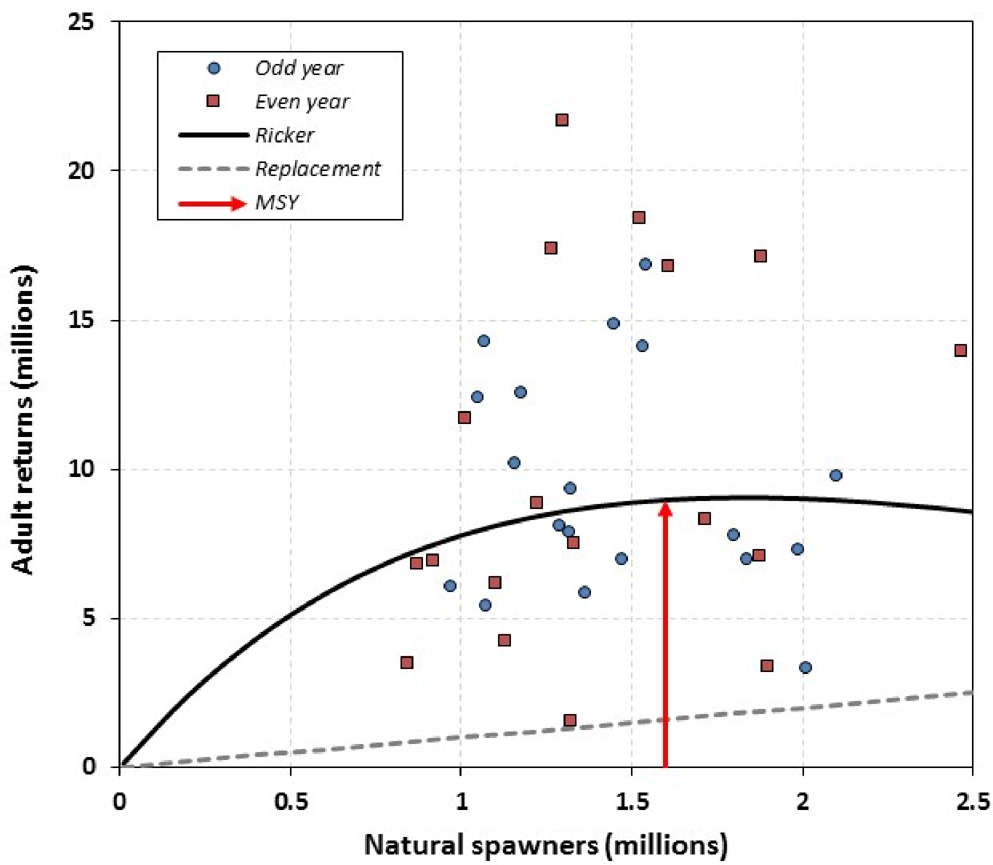

Figure 6. Stock-recruitment relationship of wild pink salmon for aggregate Iturup Island run based on information in Kaev et al. (2006). Hatchery fish are removed from adult recruits based on relative proportions of wild and hatchery fry

Chum Salmon Status

Historical natural populations of chum salmon on Iturup Island were relatively small but numbers have been building island-wide over the last decade. This increase has been attributed to the combined effects of reduced high-seas harvest, management that prioritizes spawning escapements, and enhancement activities. Until the 1990s, management practices favoring pink salmon purposely reduced chum salmon escapements in order to reduce perceived competition (V. Pagodin, personal communication). Increases in chum salmon abundance are greatest in in the hatchery streams. For instance, Reydovaya chum numbers averaged approximately 1,000 fish per year prior to rebuilding of the hatchery chum program but have since increased substantially. The numbers of chum salmon reaching natural spawning grounds on Iturup Island are estimated at about 100,000.

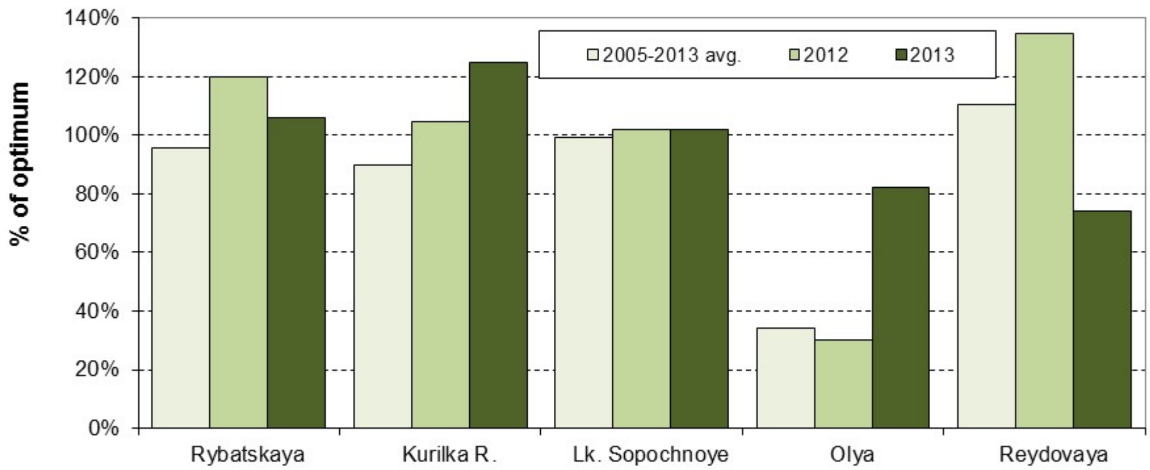

Figure 7. Recent average escapements (2005-2013) of chum salmon in Iturup streams expressed as a percentage of optimum levels compared with the most recent (2013) escapement. (Analysis by surveillance team of escapement data provided by the client included in Table 4).

Table 4. Recent spawning densities of chum salmon in rivers and streams contiguous with Gidrostroy fisheries on Iturup Island (thousands).

		Year								
		2005	2006	2007	2008	2009	2010	2011	2012	2013
Fish numbers (x1,000)	***Kurilskiy Bay***									
	Rybatskaya R.	1.9	2.7	7.8	6.5	6.5	6.5	5.8	6.9	6.1
	Kurilka R.[a]	11.1	15.5	25.9	35.6	35.6	35.3	33.6	33.9	40.5
	Kurilka main				22.6	22.4				25.3
	Lebidinoe Lk.				11.1	10.9				10.1
	Kurilsky				1.9	2.3				5.1
	Prostor Bay									
	Sopochnoye Lk.	42.0	27.1	43.2	48.9	46.2	42.5	43	43.2	43.3
	Reydovaya R[b]	25.3	21.8	34.4	22.3	23.1	37.1	34.9	39.9	17.3
	Reydovaya main				4.4	4.6				6.0
	Reydovaya Lk.				10.2	10.7				4.2
	Argyn				7.7	7.8				7.1
	Olya R.				0.2	0.2	0.3	0.3	0.3	0.9
	Kroxalynyj									
	Total	***94.7***	***67.0***	***111.4***	***113.2***	***111.5***	***119.4***	***113.7***	***124.2***	***108.1***
% of reference escapement	***Kurilskiy Bay***									
	Rybatskaya R.	33%	47%	136%	112%	112%	112%	101%	120%	106%
	Kurilka R.	32%	44%	75%	102%	102%	97%	86%	97%	116%
	Kurilka main				123%	122%				137%
	Lebidinoe Lk.				103%	101%				94%%
	Kurilsky				58%	72%				160%
	Prostor Bay									
	Sopochnoye Lk.	99%	64%	102%	115%	109%	100%	101%	102%	102
	Reydovaya R.	108%	93%	147%	95%	99%	125%	118%	135%	74%
	Reydovaya main				109%	114%				125%
	Reydovaya Lk.				85%	89%				29%
	Argyn				104%	106%				80%
	Olya R.				20%	21%	25%	26%	30%	82%
	Kroxalynyj				64%	76%				
	Median	***67%***	***56%***	***119%***	***104%***	***106%***	***101%***	***99%***	***105%***	***102%***

[a] *Includes Kurilka River, Kurilsy River and Lebidinoe Lake..*

[b] *Includes Reydovaya River, Argun River and Reydovaya Lake.*

3.3.4 Fishery

3.3.4.1 Gear

Fishing by Gidrostroy currently takes place using stationary fish traps set along the coastline and in the bays near the mouths of the rivers. Coastal trap nets typically consist of a mesh lead set perpendicular to shore to guide fish into one or more mesh wing-style traps where narrowing mesh fykes make it difficult for fish to exit. Fish traps are attached to the shoreline with net leads which are typically 200-600 m in length. Leads may or may not extend to shore. Mesh size of leads and wings is typically 75 mm to 100 mm – these sizes are small enough to avoid gilling of target species. The wing is hung of web of a brighter color, which is a visual (not physical) barrier. Traps are typically constructed of 30 mm web mesh size for pinks and 38 mm for chum. The set nets are put in place seasonally. The stationary nets are anchored into the soft or gravel sediments with sand bags and anchors.

Fish are collected from trap boxes into the live hold of small boats, called "kungas." Kungas are small dories which are essentially floating fish tanks with water-filled hulls towed by small tugboats. Fish are hauled into the kungas by 4 or 5 fishers by hand gathering the trap mesh to crowd fish and spill the catch. Minimal fish sorting occurs at the traps when the nets are hauled and fish are poured into the kungas. Some sorting at the traps occurs when fish are moved from the traps into kungas by lifting nets by hand. The fishermen can release non-target species as they are visible in the shallows of the nets or when in the kungas. All fish retained are required to be delivered to the fish plants. Seal-killed fish and other mortalities are not retained or counted (although these typically comprise a very small portion of the total).

Once in the kungas, the kungas may come into port directly or may be escorted by tenders. The tenders may use a fish pump to pump the fish into their receiving hulls so that the kunga may tend to another set net. Fish are taken from the kungas or tenders by fish pump directly into the processing facilities. Fish are pumped directly from the kungas into shoreside processing facilities and they are processed the same day. If there is additional bycatch that comes into the processing plant, it is sorted and recorded there. Gidrostroy processors are located in Kurilsk and Reydovo. The processor location near the fishing zone permits the production of high quality fish products. Because fish are live trapped, traps can be checked and fish delivered by schedule in order to maintain a regular supply to the processing facilities. At the new Reydovo facility which is capable of processing 400 tons of frozen fish per day, the whole production cycle typically requires just 3 to 9 hours from catching to packing.

Mates' receipts accompany each set net catch which indicates which net the catch came from, weight, date and fisher license information. Catch is landed daily during salmon season at one of two processing plants which are located in Prostor and Kurilskiy Bays on Iturup Island. Fish are never taken to other islands for landing as they are too far away.

3.3.4.2 Seasons

The fishery targets pink salmon from mid-July to September and chum salmon in September and November.

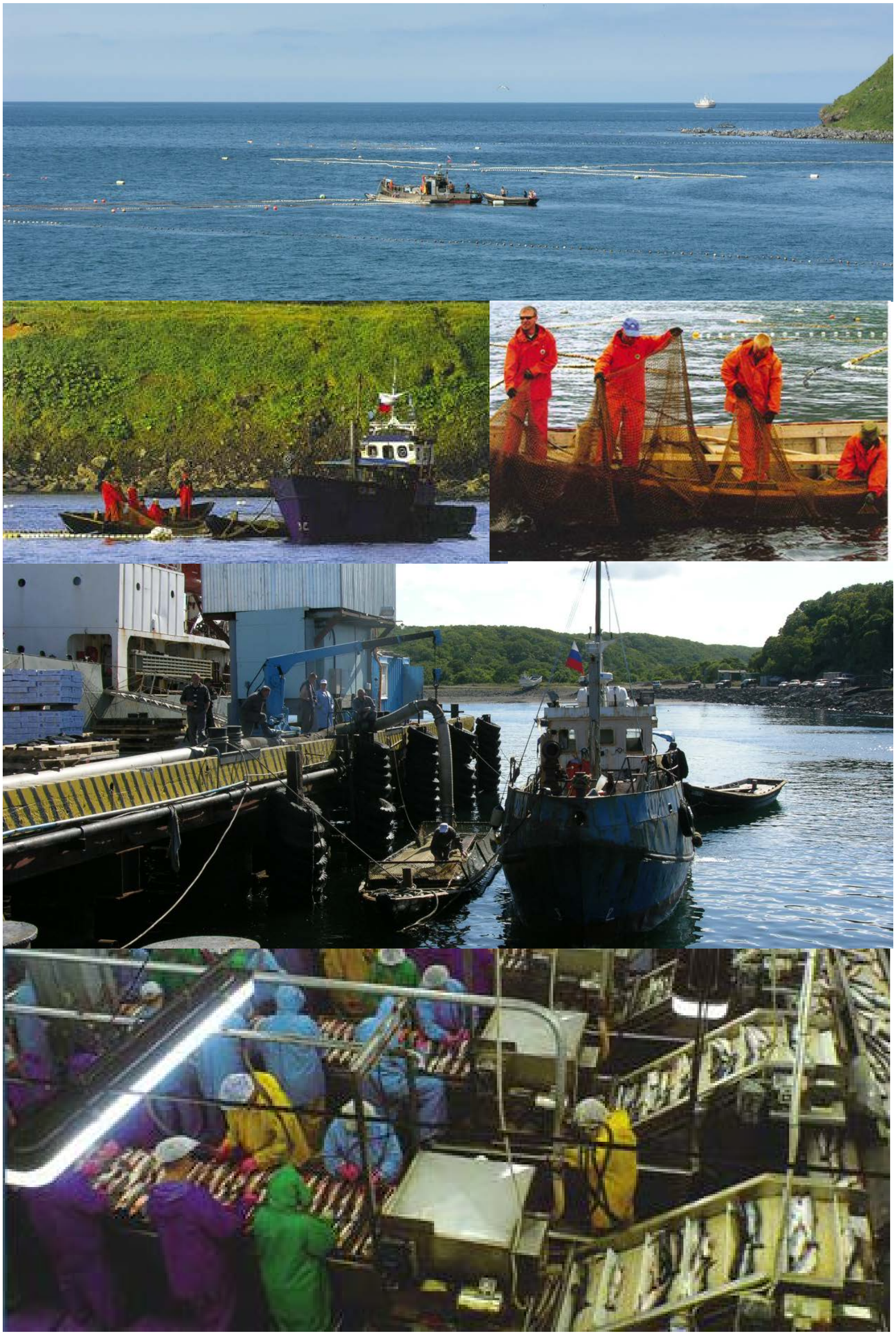

Figure 8. Commercial salmon fishery operations on Iturup Island, Kuril Islands, Russia. ***(Photos courtesy of JSC Gidrostroy)***

3.3.4.3 Organization

Fishing areas in the region are licensed by the government to fish companies for a 20-year period. On Iturup, the license for each trap establishes an exclusive use of a fishing area. There are five fishing regions on the Island (North Iturup, Prostor, Kurilskiy, Kuibyshev, and South Iturup). Gidrostroy operates the Prostor and Kurilskiy areas which are by far the largest salmon fisheries on the island. Fishing areas target local populations and are thought to catch few fish destined for other fishing areas. Fish generally enter the Gidrostroy fishing areas from the north (although in 2007 they entered from the south).

All fisheries are concentrated on the Okhotsk Sea coast. There are a number of rivers on the southern part of Iturup Island that are fished by a small community in that area. The southern Iturup fishermen do not fish in any areas near the fishing areas fished by JSC Gidrostroy. Coastal salmon fisheries are on the Pacific side are not significant. There are a number of rivers on Pacific side of the island, but the runs are too small and too far from the processing facilities to be useful. Some fishing for species other than salmon also occurs off the coast of the island but this fishing occurs at other periods, different from the Iturup Island commercial salmon fishery.

Traps are assigned to specific groups or brigades of fishermen based on seniority, historical precedence, and other parameters. Fishermen are hired personnel by the company. Each brigade may operate one or more traps. Each trap is licensed to the company, with the license stipulating all aspects of the trap from trap design to the specific location on the island. Trap locations are regularly monitored by enforcement officials on the island.

The fishing brigades also maintain weirs on eight rivers. Weirs have been operated on several systems since the 1990s to regulate escapement. A total of 8 are currently operated on the island. Within the Gidrostroy areas there is one weir on the rivers Reydovaya, Olya, Kurilka, Rybstkaya rivers, two more are on the northern part of the Island on the stream Skaljniy and the river Tsirk and two more in the south of the island on the rivers Kuybishev and Osennyaya.

Small sport fisheries also occur on Iturup Island for char, surf smelt, and red fin (Borzov 2007b). River mouth fisheries also occur during the chum season in September and October. There are an estimated 300 sport anglers on the island. Approximately 150 local residents pursue ice fishing. Fisherman numbers may reach 350-400 during summer with the arrival of tourist fishermen. Local sport and subsistence fisheries occur with rods and hand lines. Licenses are required and fisheries are limited to designated areas. Sport fisheries for char in rivers also catch some young masu salmon (Borzov 2008). Ice fisheries for char on Sopochnoye Lake in February and March also catch some chum salmon. Sport fishery impacts on fish populations are generally not significant due to the low numbers of sport fishermen. However, fishing pressure in population areas has been reported to have reduced numbers and average size of arctic char in the Kuirlka, Redovaya, and Olya rivers (Borzov 2007b). Small levels of illegal harvest of chum and masu salmon by the local populace with nets or rod-and-reel has been reported but is not a significant impact on fish populations in the fishing area being certified (Borzov 2008). In 2008 for instance, poachers were apprehended on the Rybatskaya River on two occasions with a total of 4 masu salmon. Poaching with dip nets and trap nets in the autumn and winter in other areas of the island might be a significant negative impact on some populations (Borzov 2007b).

3.3.4.4 Harvest

Commercial salmon fisheries in the Russian Pacific have a long history, with official harvests documented since 1876. Harvest of pink salmon in combined Russian commercial fisheries is currently at or above record historical levels (Figure 9. Annual catches of pink salmon in Russian commercial fisheries (Irvine et al. 2009).). Catches increased following the 1977 regime shift in ocean conditions which provided very favorable conditions for salmon survival throughout the North Pacific (Irvine et al. 2009). High levels of hatchery production have also contributed to continuing high catch levels. Catches have remained high since the 1990's with no indication of decline (Irvine et al. 2009) although numbers can vary substantially from year to year.

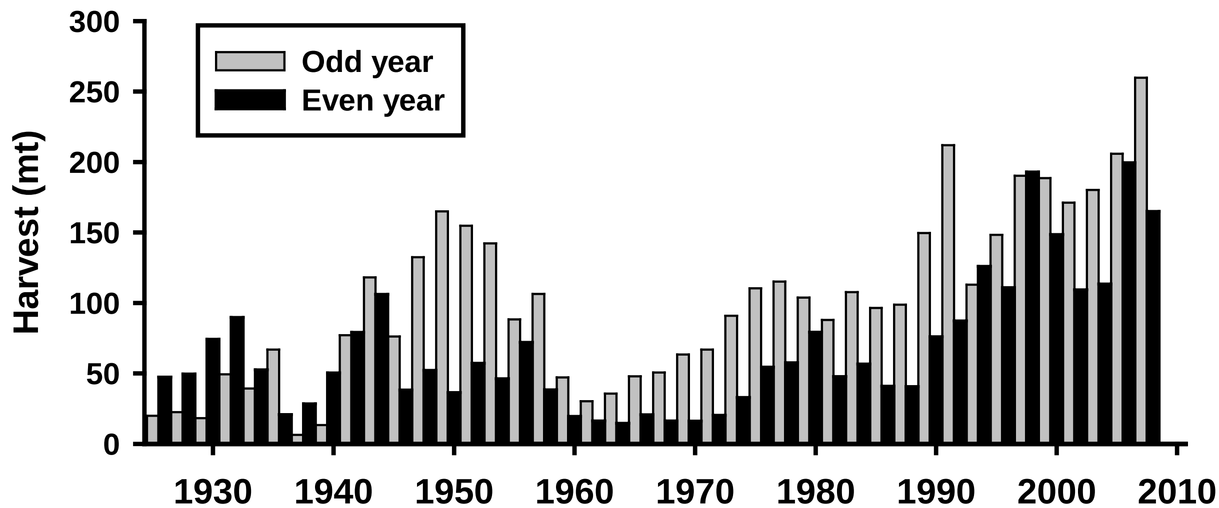

Figure 9. Annual catches of pink salmon in Russian commercial fisheries (Irvine et al. 2009).

Recent 5-year average harvest by Gidrostroy on Iturup has averaged approximately 170,200 mt of pink salmon and 6,500 t of chum salmon (Figure 5). Based on average weights in this harvest, this is approximately 12.2 million pink and 1.8 million chum per year. Gidrostroy accounts for about two thirds of the Iturup pink harvest (Figure 10) and 90% of the chum harvest. Annual exploitation rates in combined Iturup Island fisheries average about 90% on pink salmon (Kaev et al. 2006).

Catches of pink salmon at Iturup Island fisheries increased progressively beginning in the late 1960s in response to improving climatic conditions for pink salmon across the North Pacific and increases in artificial production (Smirnov et al. 2006). Harvest peaked during the late 1980s during a period of record hatchery production but declined during the 1990s following a decline in hatchery production after the dissolution of the Soviet Union. Harvest increased again after 2000 to current levels following the revitalization of the fishery and hatchery system led by Gidrostroy.

Chum salmon harvest has varied considerably over the years in response to wide swings in abundance driven by overfishing and hatchery production. Russian fishermen have operated chum fisheries in the waters of Iturup Island since 1946. Average annual average catch of chum salmon grew steadily over the next 30 years from 171 mt in 1946-1955, to 248 mt in 1955-1965, to 383mt in 1965-1975. But in the next decade, (1976-1985) the annual harvest of chum reached 1916 mt, which was attributed to the increase of the numbers of returning hatchery fish, as well as the increase of the fishery effort. Chum salmon were harvested with purse seiners beginning in 1976. However, poor regulation of the vessel fishery began to result in over fishing by the 1980s. At the same time, hatchery production shifted to pink salmon, in part because the Soviet system incentivized net production rather than net returns. Chum harvest declined to 153 tons in 1989. The directed vessel fishery on chums in the near coastal waters of Iturup was prohibited beginning in 1992. From 1992-1994, chum harvest in the fish trap fishery runs was very poor, varying between 8 and 98 tons.

Table 5. Annual harvest of pink and chum in Gidrostroy salmon fisheries.

Year	Pink		Chum	
	kg	Number[a]	kg	Number[a]
1998	15,650,211	11,178,722	419,805	119,944
1999	10,422,707	7,444,791	872,018	249,148
2000	29,452,129	21,037,235	878,170	250,906
2001	15,081,190	10,772,279	1,369,904	391,401
2002	24,180,131	17,271,522	3,157,866	902,247
2003	10,541,711	7,529,794	4,496,341	1,284,669
2004	20,153,990	14,395,707	2,849,466	814,133
2005	21,703,700	15,502,643	1,157,440	330,697
2006	30,699,000	21,927,857	2,967,400	847,829
2007	24,062,378	17,187,413	5,043,787	1,441,082
2008	22,235,128	15,882,234	10,302,337	2,943,525
2009	16,869,773	12,049,838	9,623,381	2,749,537
2010	21,430,000	15,307,143	5,518,000	1,576,571
2011	3,451,126	2,465,090	3,382,895	966,541
2012	22,007,069	15,719,335	3,468,524	991,007
15 yr avg.	19,196,016	13,709,427	3,700,489	1,045,577
5 yr avg.	17,198,619	12,288,281	6,459,027	1,836,731

[a] Number of individuals estimated from assumed average annual weights of 1.4 kg for pink and 3.5 kg for chum salmon.

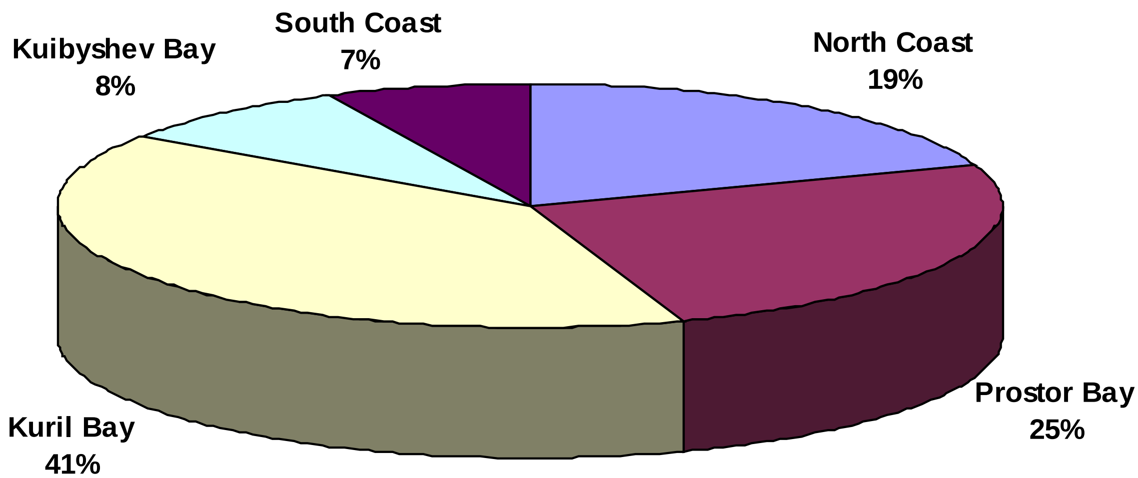

Figure 10. Distribution of average annual harvest of pink salmon among Iturup fishing areas, 2001-2005 (Kaev et al. 2006).

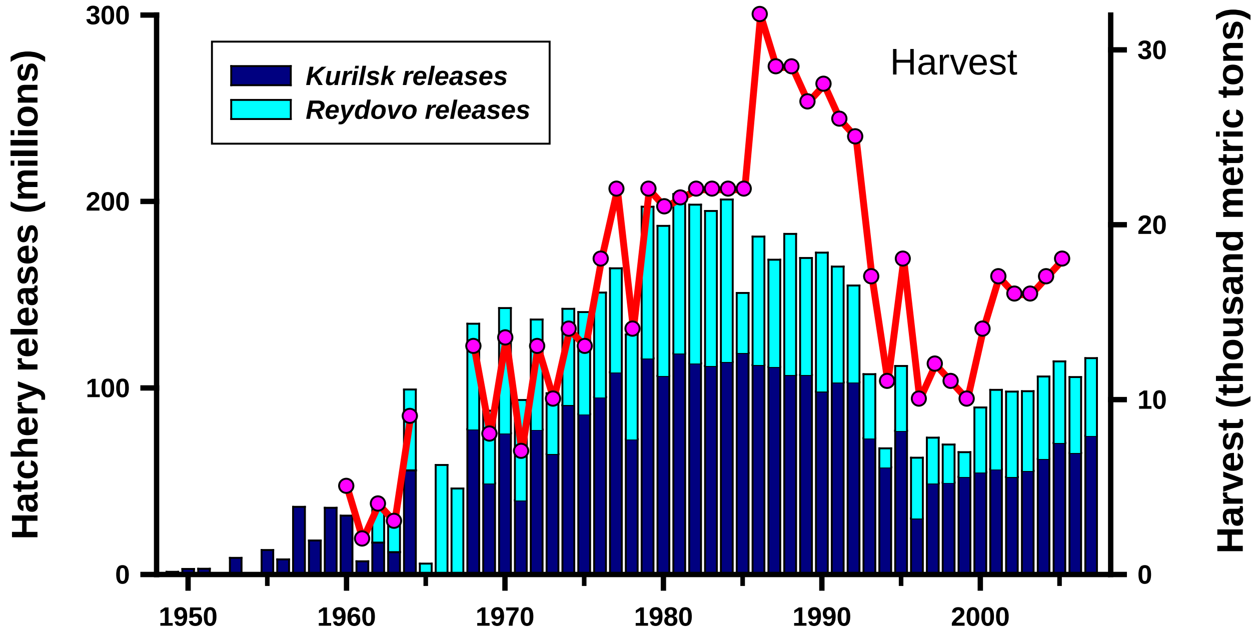

Figure 11. Annual pink salmon releases from the Kurilsk and Reydovo hatcheries and total harvest from the Iturup Island area (harvest data from Smirnov et al. 2006; release data from Gidrostroy, unpublished).

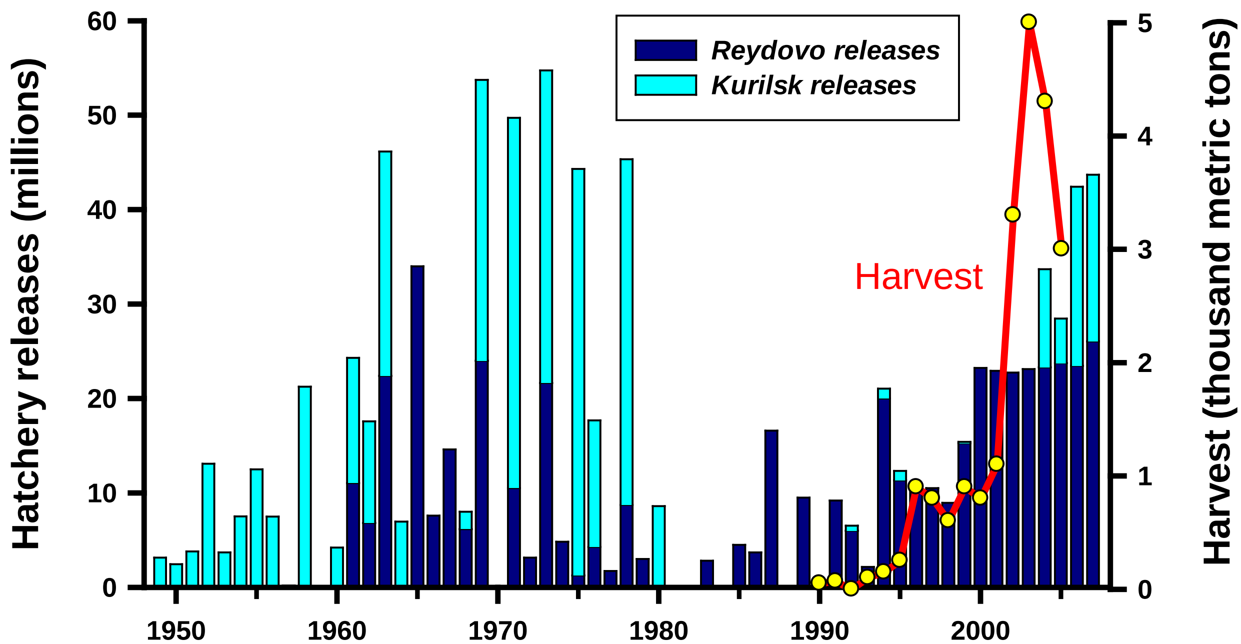

Figure 12. Annual chum salmon releases from Kurilsk and Reydovo hatcheries and total harvest of chum salmon in Iturup Island area (harvest data from Smirnov et al. 2006; release data from Gidrostroy, unpublished).

Chum salmon harvest gradually began to increase after 1995 following redevelopment of chum hatchery programs and a more concerted effort to provide natural escapement. Production from Reydovo hatchery has increased chum harvest in Prostor Bay from about 100 t prior to 1996 to 5,000 t in 2003 (Figure 12). In Kurilskiy Bay, no traps were operated during the chum return period from 1984-2006. In 2007, following reestablishment of chum hatchery production, two traps were fished.

Tagging data indicate that the pink salmon harvest in Iturup fisheries is primarily comprised of local stock (Kaev et al. 2006). This conclusion was based on the coincidence of fishing sites and spawning streams and results of tagging adults in coastal waters along the northern extremity of the island – tagged fish were recaptured only in bays and rivers of Iturup Island. The Iturup fishery also apparently intercepts small numbers of Sakhalin Island pink salmon because this area is on the migration routes from wintering areas to spawning grounds. High straying between Sakhalin and Iturup pink salmon was reported in fin marking studies of pink salmon released from Kurilskiy Hatchery in 1976-1977. Tagging data of pink salmon during the 1980s and 1990s showed significant numbers of Iturup Island fish being intercepted off Sakhalin Island (Lubaev 2005). However, these findings have been called into question by subsequent analysis of this information (Kaev et al. 2006).

Sakhalin salmon are also subject to some harvest by Russian and Japanese fisheries on the high seas. For instance, Japan has secured quota from the Russian Federation for 10,275 tons of salmon in 2007 and 9,735 tons of salmon in 2008 from the Russian EEZ. These fisheries primarily target sockeye. By-catch of pink, chum, and cherry salmon taken in high seas drift nets is typically discarded. The combined chum and pink bycatch is reportedly significant in some years. High seas harvests of Iturup salmon are not directly accounted for by the management system but are reflected in marine survival rates estimated for local stocks. Pressure of ocean driftnet fishing is stable in recent years, which makes it easier to account it for.

3.3.4.5 Management

In-season escapement data of target stocks is used to regulate the fishery. The fishery is intensively managed on a daily basis using in-season spawning ground, weir, and harvest data. Escapement monitoring is also used to determine when returns can be directed to hatcheries and when and where fishing can and cannot take place. Escapements are provided in accordance with an annual schedule that provides for escapement times, daily escapement amounts and the locations where the fish-escapement devices are to be installed. The results of monitoring are used as necessary to adjust the escapement schedules for the spawners. The numbers of fish designated for escapement include the number of spawner fish necessary for artificial reproduction in the fish hatcheries as well as the number of productive fish to be allowed to proceed to the natural spawning grounds. Local fish trap and weir operations are managed on a daily or hourly basis to ensure that escapement objectives are met for every individual population. Fish numbers, distribution, and movement patterns observed in ground survey and weir monitoring are used as necessary to adjust the escapement schedules for the spawners. Fish traps and weirs are opened and closed to ensure escapement adequate to reach but not exceed optimum spawner densities. The effectiveness of this management approach is facilitated by the close proximity of the fishery and the spawning areas.

Escapements are provided in accordance with an annual schedule that is compiled by the employees of the fish hatchery companies based on recommendations from the scientific organizations (SakhNIRO), and ichthyological section of Sakhalinrybvod and is approved by the government agency responsible for control, currently, Sakhalin-Kurilskiy Territorial Management, which is under the Federal Fisheries Agency (Rosrybolovstva). Each escapement operation is documented with an escapement certificate compiled by the representatives of the fish hatchery and the controlling agency. Every week, the hatchery specialists conduct visual observation of the rivers jointly with the representatives of Central Northern Kuril ichthiological department of SakhRybvod, to monitor aquatic biological resources and their habitats by SakhalinRybvod to determine the rate of movement and distribution of the spawner fish. Every week, written reports are submitted to the state-owned enterprise “SakhalinRybvod” and Sakhalin- Kuril Territorial Management both on the numbers of productive fish allowed to pass into the rivers and those harvested in the fishing operations.

On rivers with hatcheries, the data is collected by the hatchery specialists. Bio-statistical material on the other rivers is collected by the Scientific Research Institute and ichthyological service of Sakhrybvod. Control over escapement of spawners to the spawning grounds is maintained jointly by the Scientific Research Institute and the ichthyological service. Escapement for the river Olya is controlled by the specialists of the ichthyological service of Sakhalinrybvod.

Fishery catch data is recorded for every delivery, compiled daily, and reported every 5 days to the governmental monitoring agency. Weights are recorded for each delivery. In addition, each vessel captain keeps a fishing log, issued by fish inspection. Each page is stamped, so that pages cannot be removed. Net check times and deliveries are logged. At the end of the fishing season, the logbook is turned over to fish inspection. Biological data such as length, body weight and sex are collected from pooled daily deliveries to the fish processing facilities.

Age, sex and size information is collected every 5-7 days at the fish processing plants, the hatcheries, the hatcheries and in major river systems. Biological data is collected from natural spawners collected by beach seine (Kaev et al. 2007). Biological data is also collected at the weirs from a sample of fish (at least 100) removed when the weir is opened for fish passage.

Monitoring activities also include juvenile sampling in selected systems to estimate migrant numbers from natural production. Sampling work for migrating salmon young in the rivers is an integral part of the annual scientific research work and is provided for in the "Plan for resource research and government monitoring of aquatic bioresources" for the current year. In order to carry out such counting work, traps and other counting devices are used, and data must be collected on the time frame of the migration, numbers of young, the size composition, biological condition, etc.). Historical monitoring activities from the 1970s until the 1990s also included near shore, marine environmental and juvenile sampling during Mary and June (until fish leave shore in late July).

Operation of the management system is illustrated by recent annual fishing patterns. Harvest of pink salmon during the 2010 fisheries was similar to the long term average for the fishery. The harvest of 22,000 t was slightly greater than forecast. The pink salmon run typically peaks in early August and is largely complete by mid-September. However, run timing in 2010 was approximately 20 days late. As a result, early season catches were low but initial concerns of the fishing community were assuaged by strong later catches. Harvest of chum salmon in 2010 was less than average and less than forecast, and run timing was abbreviated. The typical run begins in mid-September and ends in early December but the 2010 run began late and ended early.

The 2011 pink salmon return was the lowest in 95 years. The low run size of pink salmon was recognized early in the season when the sex ratio shifted prematurely from predominately males to predominately females. Based on these indicators, sea nets were completely removed in areas away from the rivers and leads were pulled up in closer nets. River mouth harvest was closed or limited to that needed for biological monitoring only. The chum run began normally but numbers never increased around the normal peak of the run. Substantial in-season restrictions were also implemented for the chum run. Abnormal numbers and run dynamics were believed to be related to anomalous ocean conditions but a complete assessment has not yet been made. As a result, the 2011 harvest of both pink and chum salmon was substantially less than forecast and the long term average. A harvest of 42,000t of pink salmon was forecast but actual harvest was only 5,500t. Chum harvest was only 3,500 t compared with a forecast of 12,000 t.

More typical pink salmon returns were seen in 2012 than in the 2011 season. In 2012, pink salmon harvest was slightly above the 5-year average and chum salmon harvest was below the 5-year average. The pink salmon return was also later than average and the period of return was contracted but intense. Pink salmon typically begin returning in July but this year significant numbers were not seen until the middle of August. Sampling by SakhNIRO indicated that significant numbers were present in marine waters and so, no precautionary fishery restrictions were adopted for the leading edge of the run. However, the fishing season for pink salmon was extended for 5 days due to the lateness of the run. The run timing did cause processing problems. Some seasonal workers left early as there was no work during July. Then when large numbers of fish returned over a brief period, the shore-based processors were unable to handle the catch and ship based processors were enlisted. Despite the non-typical run pattern, the stock included fish from the typical early, middle and later portions of the run that distribute themselves throughout the spawning grounds from the river mouths to the upper reaches. Numbers were sufficient to meet natural spawning and hatchery requirements. Reasons for the late run timing are unknown but suspected to be related to cooler-than-normal ocean temperatures which delayed maturation. Chum run timing and fishing season dates were normally timed in 2012. Numbers and harvest were less than average but within the normal range of harvest in recent years (Table 2).

3.3.5 Enhancement

3.3.5.1 Objectives

Large hatchery programs are operated on Iturup by Gidrostroy for the primary purpose of enhancing fishery harvest of pink and chum salmon. Gidrostory has identified the following objectives for operation of their hatchery programs:

1. The salmon hatcheries are designed to complement the river ecosystem.
2. Hatchery workers are to view their work primarily from the perspective of helping to reinforce the natural spawning grounds, rather than just in terms of the numbers of fish returned from the fish released from the salmon hatchery.
3. The salmon hatcheries must serve as a means of preserving the genetic fund of the population, conserving the environment and restoring populations that have been lost. The salmon hatchery system must be seen as one of the components of the ecosystem as a whole. Consistent with these objectives, hatcheries are operated for:
    a. conformity with legislation aimed at preserving the environment,
    b. structure of operations at the salmon hatchery based upon scientific developments,
    c. funds and number of personnel adequate to meet the goals set for each individual salmon hatchery.

3.3.5.2 Facilities

The southern Kurils were inhabited from the 1800s until 1945 by the Japanese who fished for salmon and built the first salmon hatcheries sometime between the late 1800s and the early 1900s. Prior to 1940, the Japanese operated 10 hatcheries on the island with a total capacity of over 180 million eggs (Smirnov et al. 2006). Iturup Island came under Russian Jurisdiction after the World War II. After Russia assumed control in 1946, only one hatchery was operated until 1956.

A total of eight hatcheries are currently operated on Iturup Island (Figure 12). All hatcheries are either under lease from the government or belong to private companies. The government approves production numbers make scheduled inspections, controls all release of fish releases, and also makes orders to the leasing companies for facility maintenance and repair.

Four of these are operated by Gidrostroy in the fishery certification area. The Kurilsk Hatchery, located on the Kurilka River, has been in operation since the return of the Kuril Islands to the Russian Federation after the war and release records are available since 1949. The Reydova hatchery, located on the Reydovaya River, was rebuilt and resumed operations in 1962. Operations of the Kurilsk and Reydova hatcheries were assumed by the company in 1999. Both hatcheries are owned by the government but contracted to the company. All hatchery personnel are company employees. Two new hatcheries have been developed by Gidrostroy since 2010. The Olya Bay hatchery began releasing chum salmon in 2010. The Kitovyy Bay hatchery began operation in 2011 and began releasing fish in 2012.

A total of six additional sites were being evaluated by the government as possible sites for future hatchery development by SakhNIRO. Kaev (2012) has recommended increases in releases of chum salmon in the Sakhalin-Kuril region to provide commercial fishing benefits and reduce fishing pressure on wild populations. Sites identified for evaluation of hatchery potential include Konservnaya Bay, Mineralnaya and Sopochnaya in Prostor Bay, Lebedinaya in Kurilsky Bay, and Saratovka and Blagodatnoe in Kuibyshev Bay. Initial evaluation of these sites is led by the government. The primary focus is on chum salmon although other species may also be considered. Any new facilities ultimately constructed could be operated by the government, leased to Gidrostroy or leased to other companies. Pink and chum salmon are more likely to be leased to private companies because the limited juvenile rearing period makes hatcheries for these species economically viable. Coho and sockeye salmon which require extended juvenile rearing will more likely to be operated by the government.

Current plans to develop an additional chum hatchery – Yankito hatchery, beginning in 2015. The site in Konservnaya Bay is located in Gidrostroy's Prostor fishery area. Under the current system, if a private company is willing to fund hatchery construction within their fishing area, and plans are approved by the regional scientific agency, the company then operate the facility under government oversight. This hatchery would utilize surface water and be operated as segregated program. In the 2011 surveillance, it was reported that planning schedules called for completion by 2014. Schedules for development of this facility have changed in the interim as efforts and funds have been reallocated to building a new paved road, parks, and a more modern airport.

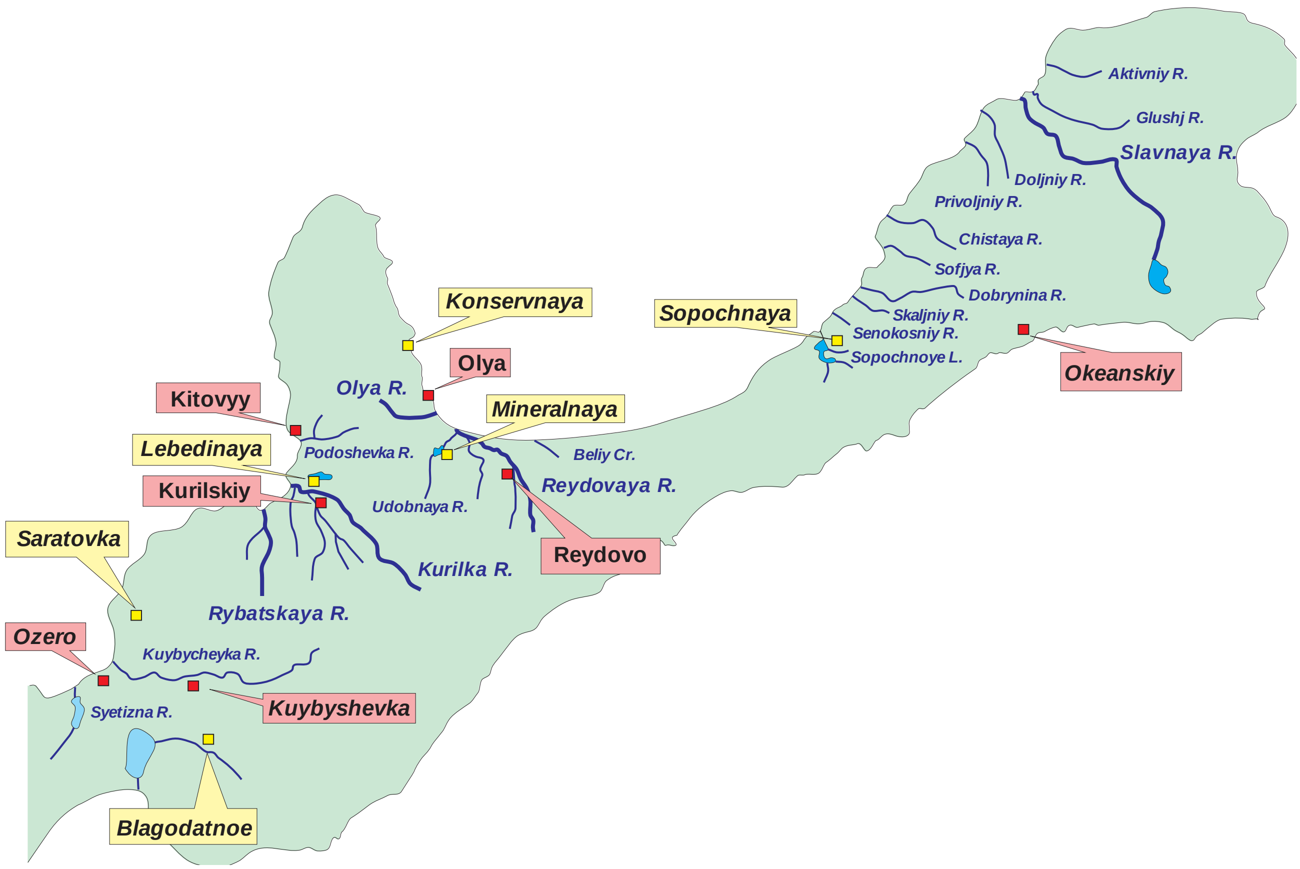

Figure 13. **Locations of current salmon hatcheries (red) and other hatchery sites that were under evaluation by SakhNIRO (yellow) on Iturup Island. Funding has not been secured for the evaluated sites. No new plans for breaking ground to build the hatcheries have been approved to date (2013).**

Table 6. **Production by hatcheries currently operated on Iturup Island (2012 releases).**

Hatchery	Area	Operator	Pink		Chum	
			No. (millions)	% of total	No. (millions)	% of total
Kurilsk	Kurilskiy Bay	Gidrostroy	51.3	55%	32.8	23%
Kitovyy	Kurilskiy Bay	Gidrostroy	0	0%	17.6	12%
Reydovo	Prostor Bay	Gidrostroy	27.7	29%	35.8	25%
Olya Bay	Prostor Bay	Gidrostroy	0	0%	29.9	21%
Skalnyy	Prostor Bay	Other	8	9%	1.7	1%
Osennyy	Osennyaya	Other	0	0%	9.7	7%
Kuibyshevka	Kuibyshev Bay	Other	6.8	7%	8.9	6%
Ozero	Kuibyshev Bay	Other	0	0%	4.8	3%
Okeanskiy	Pacific side	Other	0	0%	3.2	2%
			93.8	100%	144.4	100%

3.3.5.3 Production

Gidrostroy facilities accounted for 85% of the pink salmon and 81% of the chum salmon releases on Iturup (Table 6). Production of pink salmon from Gidrostroy Hatcheries currently averages about 100 million per year. Production of chum salmon from Gidtrostroy Hatcheries reached 116 million in 2012. Hatchery production of both species had declined by the 1990s but has increased in the interim. Pink salmon production has now stabilized at levels below historical maximums – larger historical releases were believed to exceed the production capacity of near-shore marine waters. Chum salmon releases have grown considerably from very low levels in the 1990s with the development of dedicated new facilities. Chum releases have increased 5-fold since 2003 with the completion of two new hatcheries at Olya Bay and Kitovyy.

Enhancement activities of the Kurilsk and Reydovo hatcheries are similar to those reviewed in the original certification (SCS 2009). These hatchery programs operate as "integrated" systems intended to maintain the genetic characteristics of the local natural populations among hatchery fish by minimizing the genetic effects of selection or domestication. The hatchery programs employ a mixture of hatchery and natural-origin fish as broodstock, include large effective population sizes of broodstock, spawn fish over the duration of the run, avoid selective incubation and rearing practices, and minimize the duration of hatchery rearing.

The Olya Bay hatchery began operation in 2009. Fish were first released in 2010. This hatchery releases chum salmon in a small artificial lagoon at the site of the hatchery which is right next to the Prostor Bay processing plant. Production capacity is 27 million with a goal of 1,000 to 2,000 tons of return. Production was established with broodstock from Reydovo hatchery and will rely on its own broodstock collected from the hatchery lagoon. The facility is being operated as a segregated program where the hatchery production will be maintained as a genetically distinct population from natural chum populations in the area. The hatchery utilizes spring water which provides a stable year-round temperature of 6-7°C and allows release in May-June at a larger average size. Early rearing will also utilize saltwater which is further expected to increase size at release, survival, and returns. The production is 100% otolith marked so that fishery contribution and straying can be assessed (Smirnov and Bubunets, 2008).

The Kitovyy Bay began operation in 2011 with Kurilsk hatchery broodstock. The production target will be 25-30 million chum initially. Fish were released in 2012 for the first time. This hatchery utilizes surface water from the adjacent Podsheka River. This is a small stream with very limited natural production potential for salmon. The facility is being operated as a segregated program where the hatchery production will be maintained as a genetically distinct population from natural chum populations in the area. An assessment of the hatchery feasibility prepared by the science branch of the Federal Fisheries Agency (VNiro) is also included on the web pages for this fishery (Smirnov and Bubunets, 2009). Available at: http://gidrostroymsc.com/Home_Page.html.

Table 7. Annual numbers (millions) and mark rates (%) of juvenile salmon released from Gidrostroy hatcheries (JSC Gidrostroy unpublished data).

	Pink						Chum									
	Kurilsk		Reydovo		Total		Kurilsk		Reydovo		Olya Bay		Kitovyy		Total	
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1991	103.0	--	62.1	--	165.1	--		--	9.2	--	--	--	--	--	9.2	--
1992	103.1	--	51.8	--	154.9	--	0.5	--	6.0	--	--	--	--	--	6.5	--
1993	73.0	--	34.4	--	107.4	--	0.0	--	2.2	--	--	--	--	--	2.2	--
1994	57.4	--	10.2	--	67.6	--	1.0	--	20.0	--	--	--	--	--	21	--
1995	77.0	--	34.8	--	111.8	--	1.0	--	11.3	--	--	--	--	--	12.3	--
1996	30.0	--	32.5	--	62.5	--	0.0	--	10.7	--	--	--	--	--	10.7	--
1997	48.8	--	24.5	--	73.3	--	0.0	--	10.5	--	--	--	--	--	10.5	--
1998	49.2	--	20.4	--	69.6	--	0.0	--	8.9	--	--	--	--	--	8.9	--
1999	52.3	--	13.3	--	65.6	--	0.1	--	15.3	--	--	--	--	--	15.4	--
2000	54.8	--	34.7	--	89.5	--	0.0	--	23.2	--	--	--	--	--	23.2	--
2001	56.4	--	42.5	--	98.9	--	0.0	--	22.9	--	--	--	--	--	22.9	--
2002	52.2	--	45.8	--	98	--	0.0	--	22.7	--	--	--	--	--	22.7	--
2003	55.5	--	42.8	--	98.3	--	0.0	--	23.1	--	--	--	--	--	23.1	--
2004	61.9	--	44.2	--	106.1	--	10.4	--	23.3	--	--	--	--	--	33.7	--
2005	70.5	--	43.8	--	114.3	--	4.7	--	23.8	--	--	--	--	--	28.5	--
2006	65.2	--	40.7	--	105.9	--	19.0	--	23.5	--	--	--	--	--	42.5	--
2007	74.4	--	41.7	--	116.1	--	17.7	--	26.0	--	--	--	--	--	43.7	--
2008	73.0	--	42.1	--	115.1	--	20.6	--	25.2	--	--	--	--	--	45.8	--
2009	73.1	*11*	42.2	*100*	115.3	*45*	20.4	*12*	23.9	*100*	--	--	--	--	44.3	*61*
2010	58.0	*84*	42.2	*100*	100.2	*91*	27.0	*20*[a]	26.4	*100*	19.5	*100*	--	--	72.9	*79*
2011	73.3	*100*	42.9	*100*	116.2	*100*	20.6	*20*[a]	26.6	*100*	26.2	*100*	--	--	73.4	*100*
2012	51.3	*100*	27.7	*100*	79.0	*100*	32.8	*20*[a]	35.8	*100*	29.9	*100*	17.6	15	116.1	*87*
2013	71.6	*100*	43.7	*100*	115.3	*100*	20.4	*20*[a]	29.4	*100*	35.4	*100*	28.4	100	113.6	*84*
Avg.	**64.6**		**37.4**		**102.0**		**8.9**		**19.6**		**27.8**		**23.0**		**34.9**	

[a]*Assumed from production plan.*

3.3.5.4 Practices

The client reports that current protocols are generally designed to avoid divergence between hatchery and wild fish. These include collection of hatchery broodstock throughout the period of wild return, use of natural water sources and creation of incubation and rearing conditions like those found in the river, avoidance of significant mortality, sorting, or grading in the hatchery that might introduce selection, and release of fish at small sizes to complete the balance of their life cycle under natural conditions. The primary difference between hatchery and wild fish is that the hatchery fish are held slightly longer and are slightly bigger on average than the wild fish at emigration. However, the average size of hatchery fish is still within natural range of wild out-migrants. If these hatchery practices are adequate to ensure that no directed or inadvertent selection or domestication results from hatchery practices, then this approach would be adequate to ensure that enhanced fish do not adversely affect the wild stock in mixed systems.

Pink hatchery fish typically enter the rivers from mid-July through early October. Pink salmon egg take occurs from September 12-14 through October 10-14. Incubation is from November through January. Hatch is from the end of November through January. Fish are incubated with ambient river water and emergence timing is similar to that of wild fish. Post-hatch, larvae typically lay on the bottom until April or May. Natural out-migration occurs from the end of April to the end of May. Snow melt occurs around the end of April and river temperatures are typically 1.5°C at that time.

Fry are fed for 25-30 days before release between May 25 and June 25. Daily food rations are 2.2%. Daily production cohorts are ponded separately and released sequentially, although late season production groups are sometimes reared together. Fry are volitionally released from each pond in sequence on dates corresponding to egg take dates. Fish are released daily during the evening hours in lots of 1 to 3 million at a time. The beginning of pink salmon releases are timed to correspond to the beginning of the decline in natural out-migrant numbers. Because of feeding, pink fry are larger than natural fry emigrating at the same time, so the timing is offset to avoid competition to the extent possible.

The later release timing also ensures that hatchery fry will enter the ocean after under favorable seasonal temperature and feeding conditions. Research has shown that spring temperatures when fry enter the ocean are strongly correlated with subsequent return rates (Kaev et al. 2006). A significant increase in hatchery chum survival has been achieved since the institution of a program of rearing and releasing young salmon when conditions in coastal waters are optimum (Smirnov et al. 2006).

Chum egg take typically begins October 12-14 and ends November 10-12. Hatch occurs from the end of December to the end of January. Swim-up begins in early April and continues to early May in Reydovaya and from April 20 to May 20 in Kurilka (Reydovaya is warmer). Chum are reared using river and well water. The cooler well water is used beginning in May when the river is 3°C warmer to avoid abrupt temperature changes and influx of dirty melt water. Fish can't be released until the ocean begins to warm. Natural and hatchery outmigration timing is similar (May 25-June 10). Hatchery chum are larger than wild chum because of feeding. The goal of feeding is to improve post-release survival. Chum releases are distributed over an extended period.

Kurilsk and Redova hatcheries were built on tributary streams and small springs or surface water diversion for their operations. These hatcheries are managed as integrated programs where hatchery fish are managed to be the same as wild fish where the hatchery is located. The sole exception concerns feeding and release timing. This is done to reduce the potential for competition and to improve survival. There is no evidence that this activity results in any corresponding changes in life history patterns.

Olya Bay and Kitovyy were sited outside significant salmon-producing rivers and are designed as segregated programs intended to maximize harvest of returns and minimize wild escapement. Instead of being located on a stream, these facilities are located directly on bays adjacent to processing plants and utilize groundwater to run the hatchery. This imprints the groundwater signature on developing salmon. A small lagoon was built at the hatchery site for the salmon to acclimate to saltwater once released from the hatchery. Returning hatchery fish home in strongly back to the lagoon, which has a fish ladder that leads directly to the processing plant.

Only local broodstock were used for the Gidrostroy hatchery programs. Each hatchery functioning on a particular base watershed has its own local school used for purposes of artificial regeneration. Spawning fish from other waters are not used. A paper produced by the National Oceanic and Atmospheric Administration (NOAA) provides a review of chum salmon throughout the Pacific. In this review, the authors' state: "Unlike Japanese programs, Russian hatchery programs were never designed to manage rivers exclusively for hatchery fish. Russian hatcheries have generally used local chum salmon for broodstock, and no attempt has been made to block natural production." Historical operations may have included out-of-basin transfers but in the late 1970s, on the advice of Russian geneticists, hatchery managers reduced the number of egg transfers to reduce the effects of interactions between natural and hatchery fish (Helle 1979). Current hatchery genetics policies recommend taking broodstock from the beginning, middle and end of the run. Small numbers of brood stock are taken per day in consideration of maintaining a natural genetic population structure. Target daily broodstock number is 20 males and 20 females. Early and late season sex ratios might be skewed more to males and females, respectively. Gametes from all fish are mixed. Take for broodstock is regulated by natural escapement.

Current broodstock needs at capacity are approximately 200,000 pink salmon and 140,000 chum salmon (Table 8). Smaller numbers of pink salmon broodstock were collected in 2011 and 2013 due to reduced availability with the poor run size. Chum salmon broodstock numbers have increased substantially with the development of two new hatcheries. Broodstock are collected from throughout the run and held until they ripen. Eggs are collected for the normal period even during late and contracted run timing of pink salmon as occurred in 2012. Eggs are collected without regard for adult size.

Table 8. Annual broodstock collection numbers at Gidrostroy hatcheries.

	Pink			Chum				
	Kurilsk	Reydovo	Total	Kurilsk	Kitovyy	Reydovo	Olya Bay	Total
2007	135,561	79,447	215,008	18,879	--	22,971	0	41,850
2008	109,048	69,468	178,516	19,642	--	30,818	0	50,460
2009	86,669	72,983	159,652	27,793	--	26,607	19,515	73,915
2010	121,852	77,323	199,175	20,635	--	32,097	24,041	76,773
2011	82,926	48,694	131,620	62,225	0	36,576	27,522	126,323
2012	114,940	62,044	176,984	22,237	31,450	32,698	36,674	123,059
2013	78,456	46,134	124,590	23,749	32,130	32,478	50,277	138,634

Source: J.S.C. Gidrostroy

No antibiotics or chemicals are used in the hatcheries. Water that is released from these older hatcheries is tested for several compounds including nitrates, phosphates as well as temperature by government monitors before being allowed back into the natural system.

Hatchery protocols also include removal of char from the hatchery discharge channel at the time of hatchery releases. For instance, in May and June of 2007, 1,718 predators weighing an average of 0.35 kg were removed from the Reydovaya River (Table 15 in Mizina and Molchanov 2007). Fish are caught at night time using portable trap nets (Pogodin, email 6/30/2008). Catches in previous years ranged from zero to 1,600 fish. As many as 50-70 char per week have been caught and used to feed taimen temporarily held in captivity. As to the river proper there are only sport fisheries for char using fishing rods. Rivers with no hatcheries are characterized with only a small scale sport fisheries for char therefore their stocks are stable and very abundant.

3.3.5.5 Regulation

Hatcheries production and practices are regulated by the government. Federal regulation and Company policy both establish goals and objectives for ensuring that natural spawning escapement is adequate to seed the available spawning habitats (L. Voronova, personal communication). Neither current practice nor the management system distinguish between "hatchery" fish released to complete their life cycle in the wild before returning to spawn in the wild, "wild" fish that never enter a hatchery, and "natural" fish that may include progeny of hatchery fish spawning in the wild. Spawning populations consisting of hatchery, wild and natural fish are described as "mixed." Escapement in mixed systems is not managed to control the incidence of hatchery or natural fish spawning in the wild although some degree of spatial separation apparently occurs in mixed systems due to homing of hatchery fish to specific streams and temporal run patterns throughout the drainage.

3.3.5.6 Evaluations

The significance of hatchery risks to wild fish is a subject of growing debate within the Russian management system and scientific community but the subject remains controversial. The current scientific literature regarding management of salmon hatchery programs highlights the importance of avoiding divergence between hatchery and wild population characteristics in integrated systems like those operated within Iturup rivers (e.g. Busack and Currens 1995, NRC 1996, Lynch and O'Hely. 2001, Ford 2002, Kostow 2009). There is an emerging consensus that competition with hatchery fish can affect wild fish in some near-shore ocean areas due to limitations in the carrying capacity of the ocean ecosystem. Significant questions and disagreements exist regarding: 1) differences in survivorship between hatchery and wild salmon at sea; 2) the significance of specific selection and thus in genetic changes in population which may accumulate in generations; 3) the magnitude and effect of straying by hatchery and naturally-produced salmon; and 4) the impact of high exploitations rates for hatchery-enhanced runs on wild populations. Kaev (2012) recently highlighted potential ecological risks associated with hatchery salmon production in the Sakhalin-Kuril region.

Hatchery rearing clearly increases survivorship in the freshwater phase of the life cycle. The hatchery is estimated to increase net survival of pink salmon by approximately ten-fold relative to the wild. Thus, one female typically produces about 1,500 juveniles in the hatchery relative to about 150 juveniles in the wild. Post release survival is also increased in some areas by increasing fish size at release by incubation and early rearing at warmer temperatures and feeding for one to two weeks (pink salmon) or months (chum salmon) prior to release. However, differences in ocean survival of hatchery and wild fish are unclear. Current assessments of survival and productivity typically assume similar rates for hatchery and wild fish (Kaev et al. 2004; Kaev and Geraschenko 2008).

The management system generally believes that artificial hatchery selection is limited by the short period of the life cycle spent in the hatchery and practices intended to emulate natural conditions. Geneticists working in the management system have also concluded that high natural stray rates of pink salmon help buffer wild populations from significant hatchery effects (although high stray rates would also increase hatchery influences on more distant wild populations as well).

Relative run sizes have been estimated based on hatchery release numbers and wild production inferred from natural escapements and juvenile monitoring (Kaev et al. 2006). These estimates suggested that hatchery production accounted for 37 to 70% of chum salmon in the annual average run (combined harvest and escapement). Current hatchery contributions to the pink salmon return were reduced from about 55% during 1976-1984 by a reduction in hatchery production since the 1980s (Figure 14).

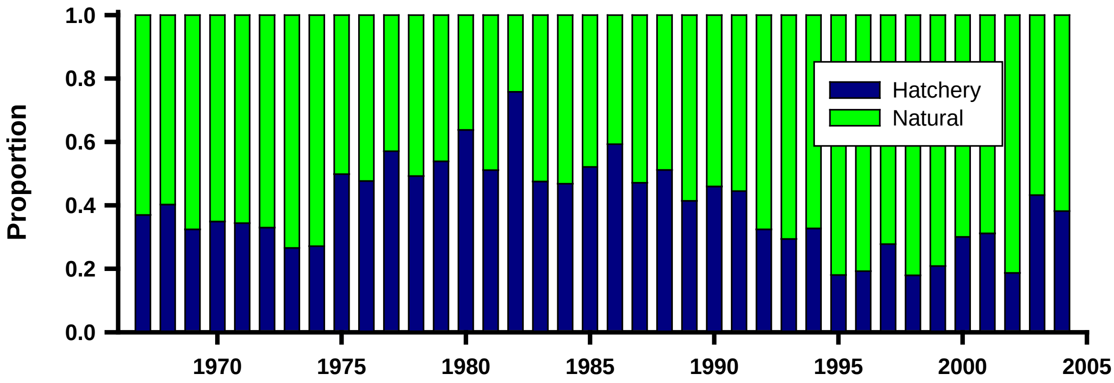

Figure 14. Estimated annual hatchery and natural proportions in juvenile fry production of pink salmon from Iturup Island (Kaev et al. 2006).

At the time of the 2009 certification, estimates of hatchery stray rates into natural spawning areas had not been quantified but run timing data provided strong evidence that stray rates were not significant. Pink salmon run timing varies in different portions of both the Kurilka and Reydovaya systems. For instance, spawners in the Kurilka River mainstem where the hatchery is located, predominately return during the peak of the run. About 50% of the natural production capacity in the Kurilka comes from the mainstem. Spawners in two downstream tributaries, each comprising about 25% of the productive capacity, are earlier-timed and later-timed on average than the mainstem spawners. This difference is consistent over time which would be unlikely if hatchery stray rates among tributaries were high.

Hatchery and natural population characteristics including run timing, age, sex ratio and size are also being monitored for potential hatchery-related changes. Significant annual variation in age composition has been observed in the chum return but hatchery fluctuations characteristically coincide with those of naturally spawning chum. Similarly, there has been no trend towards a change in the average age of maturity, or any relationship between age of maturity and number of fish released or the size of the spawning population of chum. Sex ratio and fish size typically vary over the duration of the annual spawning return. Selective egg take from early or late portions of the run can result in corresponding changes in timing or fish size in the return but the lack of any shift among Iturup chum suggests that the current broodstock collection practice has effectively avoided a hatchery selection effect (Smirnov et al. 2006).

To better address the questions regarding the contribution of hatchery-produced fish in the harvest and the natural spawning escapement, otolith marking of pink and chum hatchery production was initiated in 2009. Marking of hatchery fish with year and hatchery-specific otolith patterns was initiated by Gidrostroy hatcheries (Akinicheva 2011) with a goal of 100% marking of both pink and chum. Marking is accomplished using the dry method except at Reydova the water system allows for use of the wet method. All Reydovo and Olya pink and chum hatchery releases and a portion of the Kurilsk and Kitovvy hatchery releases are currently being otolith-marked (Table 7). Marking at Kurilsky is constrained by technical issues - incubation ponds for a portion of the chum production have gravel bottoms subject to upwelling which complicates marking efforts.

A sampling program was initiated in 2010 which provided the first opportunity to recover marked adults. Marked pink salmon began returning in 2010. Chum salmon, which spend longer periods of time at sea, began returning in 2012. Samples were collected from sea nets, hatchery broodstock, and natural spawning areas. Similar sampling was also conducted in 2013. Results of sampling in 2010, 2011, and 2012 were reported by Akinicheva (2011, 2012, 2013).

Results of 2010 sampling (Akinicheva 2011) found that:

1) hatchery-origin spawning stock includes some number of naturally-produced pink which reduces the potential for domestication,
2) substantial numbers of hatchery-origin fish spawn naturally in rivers where hatcheries are located,
3) hatchery-origin pink salmon comprise a relatively small fraction of natural spawners in rivers not connected to hatchery rivers, and
4) the number of hatchery-origin fish is reduced with ever-increasing distance from the mouths of rivers with hatcheries. These results corroborated information on run timing of fish in hatchery and non-hatchery rivers, and supported conclusions regarding limited hatchery contributions to wild populations in the original assessment.

Results of 2011 sampling (Akinicheva et al. 2012) found that:

1) As a result of the tagged pink salmon identification in the return of the years 2010-2011, data was obtained about the proportion between wild and hatchery-origin pink salmon in the areas of Reidova and Kurilka salmon hatcheries; in Prostor and Kurilskiy Bays; as well as the ways of migration to the spawning grounds of the Northern part of Iturup Island.
2) A significant portion of hatchery-origin pink salmon was registered in approaches to the basic rivers of hatcheries.
3) A significant part of catches in the year of 2011 was provided by the hatcheries activities.
4) In 2011 the straying portion for pink salmon from Kurilka Salmon Hatchery was larger than for the pink salmon from Reidova Salmon Hatchery; it may be connected with the longer period of spawning migration along the Iturup Island coast.
5) The initial data provides a supposition that a significant portion of hatchery-origin pink salmon migrate through the Friz Strait. At the same time, the registered presence of spawners with tags from Reidova Salmon Hatchery in net catches in Kurilskiy Bay, without visiting Kurilka River, can be explained by straying in the rivers of the Bay, or by the existence of other paths of migration.
6) The obtained data will become a basis for the development of calculation methods for counting quantity of the return of hatchery-origin pink salmon to Iturup Island.

Results from sampling in 2012 saw the first returns of chum salmon that were marked in 2009 (Akinicheva 2013), and found that:

1) In 2009, 23.89 million chum were released from Reydova and 18.7 million chum were released from Kurilsky hatchery. The paper notes that marking success for chum salmon was 100% from Reydova hatcheries while marking success from the Kurilsky hatchery system was 12.3% or roughly 10 times more chum salmon were marked from Reydova than Kurilsky hatchery. This was due to natural upwelling from a spring at the Kurilsky hatchery site influencing hatchery water source temperature. Those that were marked were clearly identifiable for hatchery origin.

2) Samples were collected from purse seines within the bays, at the mouths of rivers, within the river systems and some samples were taken from the lakes. Ten different systems were sampled more than once from September through November 2012. Of 2,893 chum samples collected, 526 were of hatchery origin indicating that almost 82% did not have marks.

3) Of the chum salmon that did contain marks (~18%), ~16% were from Reydova, ~1.6% were from Kurilsky and one sample was intercepted from Japan (purse seine). These results indicate that returns from Reydova and Kurilsky are in about the same proportions as releases (~10X as many from Reydova).

4) There were a small proportion of marked chum salmon found at the approaches to Slavnaya River (2.5% from Kurilsky and 3.8% from Reydova). There were no marked samples found in Lebidinoe lake samples (n=54) or Sopochnoe lake samples (n=99).

Since the previous assessment, Zhivotovsky et al. (2011) reported results of a genetic evaluation of hatchery impacts to wild chum in the Kurilla system. This study found that, following releases of chum salmon from Kurilsk hatchery beginning in 2004, the more numerous river-spawning form of chum salmon produced by the hatchery had strayed in significant numbers into nearby Lebedinoe Lake and may have swamped a genetically-distinct beach-spawning population. This conclusion was based on comparisons of age composition and microsatellite DNA information between the two populations before and after hatchery fish began to return in large numbers. To address this issue, the paper recommended: 1) careful estimation of the carrying capacity of the natural spawning ground, 2) concerted efforts to restore and conserve the unique population characteristics, 3) development of a marking program for direct estimation of straying, and 4) evaluation of ecological and genetic impacts of hatchery fish on neighboring wild and natural populations. These results are not definitive. Sample sizes and dates were limited, the degree of interaction between wild and hatchery spawners was not assessed, contributions of hatchery and wild chum to production for this system is unknown

The microsatellite DNA and the otolith mark recapture studies appear to have conflicting results regarding the hatchery influence on Lebidinoe Lake. Both Zhivotovsky et al. (2011) and Akinicheva (2013) reported that results were based on limited sample numbers and dates. The relative contributions of natural and hatchery fish to chum production were not assessed. It is unknown if reproductive success of hatchery and wild is similar in the conditions endemic to Lebedinoe Lake. Both studies will continue and increase sample sizes and the period over which samples are taken to determine the level of impact of hatchery origin spawners on natural spawning populations.

In the 2010 surveillance Gidrostroy was directed to prepare an action plan for addressing the issue of stray hatchery chum into the unique wild population of Lebedinoe Lake. This plan was to include:

1) an assessment of the significance of the problem,
2) a description of interim remedial measures for addressing the issue using current management tools,
3) additional information on current wild population status, incidence of hatchery strays based on marking data, and the occurrence of other lake-spawning populations on Iturup, and
4) identification of a long term strategy for identifying, evaluating and implementing appropriate conservation alternatives.
5) A plan for implementation with timelines and responsible parties

An interim assessment plan was developed and substantive assessment measures were implemented in 2012 (Pogodin 2012). New assessments included supplemental spawning ground surveys to estimate Lebedinoe Lake spawner numbers at intervals throughout the duration of spawning and collect ototlith from carcasses. These activities indicated that a substantial population might still remain and that the potential for detrimental hatchery effects may be mitigated by differential run timing of the wild fish. Historical information on the status of this population has been identified in governmental records and is currently being reviewed and evaluated.

In addition, consideration of hatchery development at the Lebedinoe Lake was suspended based on recognition of the significant of the local chum population. Fishery managers continue to monitor escapement and have increased enforcement to prevent poaching on the lakes. Fishery and hatchery operations have been adopted to limit overescapement of hatchery chum salmon into Lebedinoe Lake to help protect the beach-spawning population. The weir at the mouth of the Kurilka River is operated to limit the influx of large numbers of fish into natural spawning areas. A weir in the hatchery tributary stream is operated to maximize collection of hatchery fish. Hatchery weir closures are avoided to reduce the likelihood of hatchery fish straying into other portions of the system.

A more-intensive annual monitoring program was implemented beginning in 2013 for chum salmon in Lebedinoe Lake by formal agreement between Gidrostroy and VNIRO (http://www.gidrostroymsc.com/uploads/ENG_Calendar_work_plan_for_Lake_Lebedinoye.pdf). According to a survey done by the experts of FGBU “Sakhalinrybvod”, the number of chum salmon spawning in the lake was 10-12 thousand fish in 2008 and 2009 (102-107%). In the interim from 2009 to 2013, the ichthyologists of FGBU “Sakhalinrybvod” did not conduct a survey of the spawning grounds of the lake. Fish counts and carcass sampling was scheduled from mid-October until December. Results of the study were to provide a basis for a population assessment and a plan for its preservation.

Otolith sampling results in 2013 included returns of 2+, 3+ and 4+ chum salmon.

1) Reidova hatchery origin chum salmon comprise 80-90% of the total return to the hatchery Reydovaya River mouth and broodstock collection site.

2) Kurilsky hatchery origin chum salmon comprise about 90% of the total return to the hatchery Kurilka River mouth and broodstock collection site. Tagged fish comprised only about 13% of the total sample but are expanded to account for the 12-20% hatchery mark rate. The percentage of Kurilsky hatchery in the run decreases from 100% in early October to about 60% by the end of October.

3) No significant exchange of Reidova and Kurilsky hatchery chum was observed between Reydovaya and Kurilka systems.

4) Straying of Kurilsky hatchery chum salmon into natural spawning areas of the Kurilka system was documented.

5) Straying of Kitovvy Hatchery chum salmon was also observed in the Kurilka system. These fish were incubated at the Kurilsky hatchery prior to feeding and release at Kitovvy. This interim production strategy for Kitovvy likely increased the propensity to stray.

6) Hatchery origin chum salmon were documented in Lebedinoe Lake and tributaries. The majority of these were Kitovvy Hatchery origin but Kurilsky Hatchery fish were also observed. Approximately 30% of the chum sampled from October 18 through November 13 were of hatchery origin. Hatchery percentages dropped substantially by the end of October although sample sizes were low.

With respect to Lebedinoe Lake chum, spawning ground surveys and otolith sampling conducted to date support a conclusion that a significant natural spawning population exists in this system.

Hatchery-origin strays occur primarily during October while the natural population returns primarily in November to spawn after lake temperatures cool.

While sampling of widely distributed streams has been limited, the lack of straying of hatchery chum salmon outside the river system of origin indicates a high level of homing fidelity (with the exception of the Kitovyy anomaly related to the first year of the program). All sampling to date in non-hatchery rivers and lakes suggests that populations in these areas are almost entirely comprised of natural-origin fish.

3.4 Principle Two: Ecosystem Considerations

3.4.1 Retained Species

Other species retained in the fishery primarily include sockeye salmon and char. Small numbers of other species including flatfish, cherry salmon, and coho salmon might also be retained. Records of all non-target species are available from the processing plants where fish are offloaded. Limited sorting of species takes place prior to delivery due to the volume of the catch and the fishing method that involves crowding of fish from the fish traps into the kungas (net-bottomed boats) used to deliver fish to the plants. Detailed records are maintained at the plants of the volume of significant non-target species such as char and sockeye that are retained, processed, and sold. Harvest of these species is incidental to harvest of target pink and chum salmon.

Additional information on harvest significant other retained species (sockeye and char) is also being collected annually by the government due to a 2011 change in fishery regulations. Current regulations require permits by volume for each non-target species that is sold. Current regulations limit harvest of non-target species to no more than 49% of the total. This replaces a historical limitation of 2% which was difficult to monitor and enforce. This change has proven to be popular with the fishers because they are now allowed to legally sell non-target species as long as they obtain the proper permits. The accuracy of catch reporting has been reported to have improved substantially as a result of the new regulation.

The MSC assessment criteria distinguish levels of impact on other retained and bycatch species not already evaluated under Principle 1 by designating these species as ‘main’ or ‘not main retained or bycatch. Species that are not evaluated under principle 1 and that constitute 5% or more of the catch by weight are considered ‘main’ all others are ‘not main.’ There are also provisions for including a species as a ‘main’ retained species if there is concern that the fishery is having a negative impact on the stock status or if the volume of the fishery is very large.

The average total weight of the fishery includes the retained target species of pink and chum salmon as well as the weight of other encountered species. To calculate the percentage each species contributes to the fishery, the total weight of the fishery was divided by the weight of the species. Only sockeye and char are retained in any large volume (though they are still a very minor component of the fishery). In no year since records dating back to 1998 did either sockeye or char catch reach 1% of the total. The total fishery volume is also considered relatively low at 11.3 to 33.7 metric tons (5 year average of 23.7mt) per season. By these criteria, no main retained species are identified in this assessment, though sockeye and char are considered lesser or ‘not main’ species.

3.4.1.1 Sockeye Salmon

Small numbers of sockeye are produced in several Iturup Lake systems including Krasivoye which is located on the southern part of the Island (outside the fishery area). The 2007 escapement was estimate at about 15,000. Sockeye numbers have increased in recent years due to a decrease in ocean fisheries (Borzov 2007). Sockeye are considered a minor component of the fishery.

3.4.1.2 Char

East Siberian char or Kundscha are abundant in rivers and streams of Iturup Island (Pogodin, pers. comm. 06/26/08). Char densities in the Reydovaya River System are estimated to reach 1,000 – 1,500 individuals per 100 m^2 of the river area during the downward migration of salmon fry. Char densities increase and their body length decrease with the distance from the river mouth area towards the spawning grounds (maximum density is at the reeds in the spawning grounds area). Char are also considered a minor component of the fishery.

Table 9. Relative percentage of total harvest comprised by non-target retained species.

Year	All retained	Sockeye		Char	
	kg	kg	%	kg	%
1998	16,078,657	0	0.00%	8,641	0.05%
1999	11,302,160	0	0.00%	7,435	0.07%
2000	30,335,979	0	0.00%	5,680	0.02%
2001	16,465,818	3,279	0.02%	11,445	0.07%
2002	27,343,679	1,192	0.00%	4,490	0.02%
2003	15,059,317	741	0.00%	20,524	0.14%
2004	23,019,374	5,800	0.03%	10,118	0.04%
2005	22,870,193	563	0.00%	8,490	0.04%
2006	33,685,302	3,535	0.01%	15,367	0.05%
2007	29,121,834	4,363	0.01%	11,306	0.04%
2008	32,550,839	475	0.00%	12,899	0.04%
2009	26,513,107	845	0.00%	19,108	0.07%
2010	26,967,898	4,535	0.02%	15,363	0.06%
2011	6,838,184	450	0.01%	3,713	0.05%
2012	25,497,423	4,400	0.02%	17,430	0.07%
15 yr AVG	22,909,984	2,012	0.01%	11,467	0.07%
5 yr AVG	23,670,815	2,141	0.01%	13,703	0.05%

3.4.2 Bycatch Species

By-catch comprises a negligible portion of the harvest in the trap net fishery. Due to the very low percentage of bycatch relative to the total fishery, no 'main' bycatch species are identified. According to company biologists, "The fishing area cannot be considered to be a location where non-commercial salmon species would gather. The occasional incidence of char and sockeye is of an accidental and insignificant nature due to the later timing of runs and fisheries for pink salmon compared to the above-listed species."

The design of the traps allows keeping the entire catch of pink salmon and all by-catch species alive until it gets loaded into boats for delivery to a shore base. By-catch can be returned to the sea alive or used for commercial purposes or personal consumption. Some bycatch can be sorted when the trap catch is manually loaded into the boats but the large volume of salmon catch can also make it difficult to sort small amounts of by-catch. Sorting of bycatch and retained species is very different in periods of large and small catches of pink salmon. When pink catches are large, most sorting takes place in the processing plant. While pink catches are small, bycatch and retained species are sorted when nets are pulled out of the water.

An assessment of all non-target and bycatch species was conducted in 2009 and 2010 (Smirnov and Tochilina 2011). The study also compared bycatch with total allowable catch limits identified by the government for a number of commercially valuable species. This assessment was implemented to meet imposed Conditions from the original certification. Results of bycatch assessments in the pink salmon fishery period confirm that non-target species comprise a very low percentage of the total landings (Table 10). Similarly low bycatch levels are reported for the chum salmon period (Smirnov and Tochilina 2011). All additional species combined accounted for an estimated 1.3 mt for the fishing year. The study also concluded that:

1. 122 species of fishes from 37 families have been identified in waters of the Southern Kuriles,

2. Of these, 41 species of fishes from 18 families were observed in pink and chum salmon fisheries in Prostor and Kuril Bays,
3. The main volume of non-target catch consists of sockeye (*Oncorhynchus nerka)* and Iwana or whitespotted char (*Salvelinus leucomaenis)*, the total combined bycatch of which makes < 0.1% of the total catch.
4. The total amount of bycatch does not exceed recommended volumes of catches or "General admissible catch" of any species in bycatch.
5. The fishery does not render any influence on the number and condition of stocks of any species of the water biological resources found in coastal waters of Iturup Island. This includes the rare taimen.

There have been no significant changes to the composition of the bycatch since the 2011 and 2012 surveillance audits (SCS 2011 and SCS 2012). Relative proportions of bycatch that were reported in the 2009 fishery do not indicate any changes in outcome indicators for the non-target species (retained or bycatch).

Table 10. Primary species of fish bycatch (tons) in sea nets fished for pink salmon, 2009-2010 (Smirnov and Tochilina 2011). Pink salmon, chum salmon, char and sockeye salmon values taken from 2009 data presented in Table X. They are considered under the retained species indicators (shaded) as minor species. Other species in this table are considered under the bycatch indicators as minor species.

Species		Prostor in kg	Kurilsky Bay in kg	TOTAL in kg	Relative %
Pink salmon	*Oncorhynchus gorbuscha*	6,575,751	10,294,002	16,869,753	63.6%
Chum salmon	*Oncorhynchus keta*	6,982,333	2,641,048	9,623,381	36.3%
Char	*Salvelinus leucomaenis*	14,090	5,018	19,108	0.1%
Sockeye salmon	*Oncorhynchus nerka*	845	-	845	<0.01%
Greenling	*Hexagrammidae*	299	24	324	<0.01%
Flatfish	*Pleuronectidae*	210	164	374	<0.01%
Dolphin fish	*Coryphaena hippurus*	2	103	104	<0.01%
Bull-head	*Hemitripteridae*	34	159	193	<0.01%
Rockfish	*Scorpaenidae*	180	31	211	<0.01%
Eastern dice	*Tribolodon brandtii*	0	16	16	<0.01%
Blennies	*Stichaeidae*	2	2	4	<0.01%
Saffron cod	*Eleginus gracilis*	41	11	52	<0.01%
Sandfish	*Arctoscopus japonicus*	76	0	76	<0.01%
TOTAL (kg)		**13,573,864**	**12,940,577**	**26,514,441**	**100**

Additional information on harvest by-catch species (sockeye and char) is also being collected annually by the government due to a 2011 change in fishery regulations. New regulations require permits by volume for each non-target species that is sold. Related sampling also provides information on the size composition of these bycatch species that will provide a basis for long term evaluations of the status of these species.

Finally, the regional scientific agency (Niro) conducted a survey of the freshwater fauna in the region including some rivers on Iturup Island (Tumanov et al, 2011). This information established environmental baseline conditions. The survey evaluated the distribution and abundance of 20 species of fish including widely distributed species, species occurring primarily in lake & river systems, and species limited to specific areas. Surveys also characterized physical conditions including Lebinaya, Reybodina, Sopochnaya lakes and Reydova, and Rybatska rivers on Iturup Island.

Subjects also included the effects of predators (trout & char) on salmon and selected information on food habits and species condition.

3.4.2.1 Cherry salmon

Cherry (Masu) salmon populations are found on Iturup in any river where significant ground water inputs provide warm water in winter. These include the Reydovaya and Kurilka rivers (Smirnov et al. 2006; Pogodin, pers. comm., 8/1/13). Borzov (2007), reports that masu populations on Iturup are relatively small. Adults typically return to freshwater from March through May at three or four years of age and spend the summer in freshwater before moving to headwaters to spawn in September and October (Groot and Margolis 1991). Adults feed actively while in freshwater. Juveniles typically rear in freshwater for one year before smoltification and seaward migration in the spring and early summer. Ocean distribution is primarily in the Sea of Japan. Due to their early run timing, there is no marine harvest of salmon. Also due to a small local human population there is no mass-scale masu salmon harvesting in the rivers themselves. Because of this, masu salmon populations on Iturup including those of the Reydovy and Kurilka river systems are believed to be stable and self-sustaining (Pogodin, pers. comm., 8/1/13).

The timing of masu spawning in rivers coincides with that for the first spawning of pink salmon. These two species get separated according the species-specific spawning habitats (pink spawn in the shallow water rapids with underflow and masu migrate to the groundwater and spring fed streams or brooks. Masu often enter hatchery weirs during the start-of-the-run's pink collection for brood stock. They are caught together with pink using dip nets. Because no spawning habitat for masu salmon exists upstream from the Reydovo hatchery weir and survival after being caught in a dip net is low, their eggs are collected and reared at Reydovo hatchery. Releases have included 11,000 to 63,000 age-0 fish and 18,000 to 41,000 age-1 fish per year in 2003-2005. In light of the artificial enhancement efforts by the Reydovo Salmon Hatchery, an increase has been noted in the numbers of spawner fish in the river basin (Brozov 2007).

3.4.3 ETP Species

For the purposes of this assessment, endangered, threatened, or protected species are those that are recognized by national legislation and/or binding international agreements (e.g., CITES) to which jurisdictions controlling the fishery under assessment are party. The incidence of endangered, threatened or protected (ETP) in this fishery is reported to be negligible.

In this case, national legislation provides for protection of ETP species identified in the Russian Federation *Red Data Book,* also known simply as the *Red Book*. The Red Book is based largely on the International Union for Protection of Nature and Natural Resources (IUCN)[2], which formally designates protected species subject to enhanced regulatory protection. The Red Book also contains species for which the population status is not well understood as a precautionary measure.

Related natural conservation legislation was adopted in 1980s-1990s including laws for protection of natural environment and fauna, natural (wildlife) areas under special protection, ecological expertise along with a number of various decrees by the Russian Federation Government. These regulations established conservation priorities for the Red Book's rare fauna and flora species and liabilities for damage inflicted to the species and their habitats. State legal recognition of the Red Book is provided by the Russian Federation law "About protection of the natural environment" (1991), and by the Russian Federation law "About the animal world" (1995). According to the Article # 65 of the "Law on protection of natural environment" flora and fauna species entered into the Red Book shall be prohibited from economic activities. Activities leading to declining abundance of such flora and

[2] *The MSC did not recognize IUCN vulnerable in v1.3.*

fauna species and to deterioration of their habitats are prohibited. Article 24 of the Federal Law on fauna reads as follows: "Activities, which can lead to death, abundance reduction or deterioration of habitats of the Red Books' fauna species, are not allowed."

In pursuance of the Russian Federation Government's Decree of February 19, 1996, "On the Red Book of the Russian Federation," the list of fauna species to be entered into the Red Book of the Russian Federation was established by the special ordinance # 569 of December 19, 1997 issued by the Russian Federation Committee on Environmental Protection. Upon the recommendation of the Commission on rare and endangered animals, plants and mushrooms, as many as 415 fauna species, needing special protection, were entered into the list.

Simultaneously with the development of legislative base and formation of the Russian Federation Red Book, a process of creation of regional Red Books was underway. On March 16, 1999, a Sakhalin Region law "On Red Books of the Sakhalin Region" came into effect. To this end, a Commission on protection of the rare and endangered animals, plants and mushroom species was founded incorporating research scientists and specialists from the state environmental agencies. Upon the recommendation of the Commission, the State Ecological Committee of the Sakhalin Region prepared the list of fauna species to be entered into the Red Book of the Sakhalin Region, which was approved by the Regional's Governor Ordinance # 230 of May 29, 2000. As many as 18 mammal species, 105 bird species, 4 reptilian species, 7 fish species, 10 insect species, 18 mollusk species and 6 crustacean species are entered into the Red Book of Sakhalin Region. These numbers include all the fauna species entered into the International Red Book, Red Book of the Russian Federation, the species found on the territory of the Sakhalin Region, the species rare for the far-Eastern Area, and also newly identified species the range and abundance of which are not known.

ETP species considered in this re-assessment are identified in Table 11. None have had reports of interactions with the fishery in the past 10 years other than some anecdotal reports with seals jumping in and out of fish pens. Due to the passive fishing gear, proximity to shore and allowing sufficient biomass into fresh water systems, the fishery is not considered to impact ETP species listed on CITES Appendix I or listed on the Russian Federation Red Book.

Table 11. ETP species considered in this assessment.

Scientific Name	Common Name	Listing	Interaction
Ursus thibetanus	Asian black bear	CITES Appendix I	no
Balaena mysticetus	Bowhead whale	CITES Appendix I	no
Eubalaena japonica	North Pacific right whale	CITES Appendix I	no
Balaenoptera borealis	Sei whale	CITES Appendix I	no
Balaenoptera musculus	blue whale	CITES Appendix I	no
Balaenoptera physalus	fin whale	CITES Appendix I	no
Megaptera novaeangliae	humpback whale	CITES Appendix I	no
Eschrichtius robustus	grey whale	CITES Appendix I	no
Physeter macrocephalus	sperm whale	CITES Appendix I	no
Berardius bairdii	giant beaked whale (Baird's)	CITES Appendix I	no
Phoebastria albatrus	Short-tailed albatross	CITES Appendix I	no
Dermochelys coriacea	leatherback sea turtle	CITES Appendix I	no
Phoca vitulina	Harbor seal	Russian Red Book	yes[a]
Hucho taimen	Sakhalin taimen	Russian Red Book	no

[a] *they are capable of swimming in and out of set nets. No mortalities reported.*

3.4.3.1 Marine Mammals

Several species of whales are listed for the Russian Federation on CITES schedule I. These whale species do occur in the Pacific, but do not come near the set fishing nets, lest they become stranded in shallow water. Whales are not considered to be threatened by this type of salmon fishing. According to the company biologist, there are few protected, threatened, or endangered species in the waters around Iturup Island that interact with the fishing operations. Species found in the waters around the island include 20 kinds of Cetacea (examples include grey whale, southern whale, humpback whale, finback, killer whale, Pacific whitesided dolphin, butterfly dolphin), six species of pinniped (mainly an eared seal and two forms of common seal) and one unique species of Marten family (kalan or sea-ape). Interactions of the fishery with marine mammals are negligible except for the ringed seal (*Pusa hispida*) which occasionally enter the trap nets to eat salmon. The seals can enter and exit the fish traps at will over the float lines.

3.4.3.2 Birds

The birds on Iturup island number about 200 species. About 100 species of those build nests on the island. Some birds of concern due to their rarity include whiteback albatross, petrel, mandarin duck, golden eagle, white-shouldered and whitetail eagles, merlin, peregrine, Japanese crane and snipe, fish eagle owl. Providing protection for birds is of high priority. The government has set up a reserve "Ostrovnoy" which occupies practically the entire southern half of the island. Habitual wintering birds here are different species of ducks - mallard, whistle teal, middle and big merganser, white swans and some predatory birds such as eagles. Short-tailed albatross nesting sites are in southern Japan where populations have recently been increasing (BLI, 2012). Fishing with passive gear on Iturup is unlikely to interfere with short-tailed albatross access to breeding grounds. Occasionally, SakNIRO observers will observe the hauling of the nets into the kungas. No reports of bird mortalities at the nets or at the processing plant were reported from 2009-2012 from SakNIRO or in the Gidrostroy 2009/2010 extensive bycatch sampling survey.

3.4.3.3 Sea Turtles

Leatherback sea turtles also occur in the Pacific, but no reports of entanglement have ever been reported on Iturup.

3.4.3.4 Sakhalin Taimen

Sakhalin taimen (*Hucho perryi*) are a fish species of concern. They are entered as a category 3 species in the 2000 Red Book for the Sakhalin Region of the Russian Federation. Category 3 is defined as (a local endemic species characterized by dwindling abundance and in need of protection). In 2006, the IUCN listed Sakhalin taimen as a critically endangered (Rand 2006). This designation represents the highest potential risk of global extinction to the species. The assessment indicated that the range-wide population has dropped in size to less than 5% of historic levels based on declining catches in pink salmon fishery bycatch data from Sakhalin Island (Rand 2006). Similar declines in harvest and catch rates were reported since the 1970s by Safronov and Makeev (2000). Overfishing

Figure 13. Range Map for Sakhalin Taimen.
source: Rand (2006) www.iucnredlist.org

by various sectors (commercial, recreational, and illegal take) and habitat development have been identified as significant threats to this species (Safronov and Makeev 2000; Rand 2006). Fukushima et al. (2011) estimated that many or most Sakhalin taimen populations are extinct or endangered throughout their historical range on Sakhalin Island, the Russian Far East, and northern Japan surrounding the Sea of Japan.

Taimen are a large migratory fish that can reach 2 m and 60 kg in size (Safronov and Makeev 2000). The species is known to exhibit both freshwater and anadromous life histories. They have been known to inhabit near-shore areas and freshwater systems of the northern Sea of Japan and southern Sea of Okhotsk and including in rivers of Primoriye, Sakhalin, the southern Kurils, Hokkaido, and northern Honshu. Typical habitats are near-shore marine waters, low gradient coastal rivers, estuaries, and large brackish estuarine lakes or lagoons. Fukushima et al. (2011) found that Sakhalin taimen populations are more likely to persist if they are present in rivers with wetlands and lagoons. Juveniles as large as 9-20 cm typically feed on insects but fish dominate the diet of larger taimen.

Figure 15. Educational poster on taimen catch-and-release posted in a Yuzhno-Sakhalinsk fishing tackle store.

Abundance of taimen on Iturup Island has not been formally evaluated but some anecdotal information on occurrence is available. On Iturup Island, Sakhalin taimen have been seen over the years in the Kuibyshevka, Reydovaya, and Kurilka rivers and the Dobroye, Kuibyshevskoye, Blagodatnoye, Osenneye, and Maloye lakes (Borzov 2006). The range is typically confined to lake-river systems and is characterized by a patchy distribution. Taimen are not abundant in the Reydovaya or Kurilka rivers, and none have been recorded there for a number of years. Taimen are also occasionally seen in the Rybatskaya and Slavnaya rivers.

Dr. Lev Zhivotovsky of Vavilov Institute of General Genetics, Russian Academy of Sciences provided an informal verbal summary of results of genetic analysis of Sakhalin taimen population structure during a site visit in 2013. Dr. Zhivotovsky highlighted the difficulty of sampling this species due to current status and protective regulations. However, sufficient samples were available from Sakhalin

30 populations to conduct an analysis based on 20 microsatellite loci. This analysis found clear genetic differences among taimen at the population level. Every population was distinct from every other. Genetic indicators were also consistent with a depleted status for many taimen populations. The article has been submitted for publication in the peer-reviewed scientific literature.

Taimen spawn in the middle and lower reaches in small rivers and in the upper reaches of large rivers from late April through early June at the peak of high water (Safronov and Makeev 2000). Spawning behavior and spawning habitat are typical of salmon. Juveniles spend 2 to 7 years in freshwater and often rear year-round in lagoons with brackish water and estuarine lakes. Juveniles as large as 9-20 cm typically feed on insects but fish dominate the diet of larger taimen. Juveniles typically migrate to the sea at sizes of 10-50 cm and subsequent rearing takes place in the inshore waters. The species is iteroparous and sexual maturity is typically reached at 2 to 10 years of age at sizes of up to 90 cm and 6 kg (Safronov and Makeev 2000; Rand 2006). Males typically mature at age 7-9 years and a body weight of 1800-2100 g (Borzov 2006). Females mature later typically at the age of 9-10 years. Adults can reach ages of 16 or greater (Safronov and Makeev 2000). Taimen often enter estuaries of large rivers or lakes in late November to overwinter in deep-water river areas with an adequate flow. In spring, adults might migrate from rivers into the sea for a short period of time before migrating into rivers to spawn. Taimen do not make migrations over long distances and often enter fresh water during summer. Rivers with indigenous taimen stocks interchange with rivers with no taimen.

On Iturup Island, migration and freshwater residence of taimen vary from river to river depending on the availability of overwintering space, critical summer temperatures, availability of food and other factors (Voronova, 7/16/08). The Kuibyshevka River south of the Gidrostroy fishing area has been identified from past evidence as one of the best known taimen locations on Iturup. This system includes the river proper, Maloye Lake, (connected with the river via a channel) and several small meanders in the lower reaches. River gradient is low in the lower 5 km reach of this 26 km river. Upstream portions are steeper with habitat comprised of deep (3-4 m) pools interspersed with shallow rapids. Maloye Lake is 54 hectares, shallow, and overgrown with aquatic vegetation in summer. Summer river temperatures don’t exceed 16-17ºC but water temperature in the lake can be over 20ºC as early as mid-June.

Taimen adults and juveniles are thought to be present in the Kuibyshevka River year-round but abundance and distribution is seasonally variable. Adults typically overwinter from November until April in deep pools at river kilometers 4-7 and 16-18. They become sluggish, and won’t react to baits and stay in holes with felled trees often together with kundzha. Fish can be readily observed during this period in the low clear water. At a body length of 80-130 см mature taimen are easily recognized due to their specific coloring and body shape. Catches of large taimen individuals in lakes of the island in winter are uncommon. Adult activity increases as stream flow increases around April with migrations downstream into the lower portion of the system and marine waters, and upstream into spawning areas in the middle and upper portion of the system. Adult abundance in fresh water peaks in the spring-summer period, from March to June. In lakes, peak numbers occur right after removal of the ice cover (early May). Spawning occurs in May and early June generally between river km 5 and 18. During summer and fall, adult taimen are typically found in the lower and middle reaches where fish prey are abundant including smelt, redfin, lamprey and juvenile salmon. Taimen migration to the upper reaches in October corresponds to the spawning migration of char.

Juvenile taimen have been found throughout the lower and middle reaches of the Kuibyshevka River from May to October. Juveniles 25-50 cm long typically migrate around November into the lake and cut-off meanders where they overwinter until April. In May-June juvenile taimen may be found in the lakes and lower reaches of the river and also frequently enter and exit marine waters. Also, with warming of the water, the larger juveniles in the 4 to 8-year age class start to migrate to the marine environment.

Some biometric data are available from taimen collected in lakes Reydovoye, Lebedinoye and Maloye in May-June, 1995-1996 by gillnet (40-50 мм mesh size). Difficulties in obtaining sampling permits following listing of Sakhalin taimen in the Red Book for the Sakhalin Region have limited subsequent monitoring and study on Iturup Island. Growth data are available from fish 34 - 114 см long, 240 to 17,000 g in body weight, and age 4 to 13 years (Table 12). The diet of taimen sampled in Reydovoye and Lebedinoye lakes was broad, including pond smelt, lamprey ammocoetes, stickleback, goby, scud and freshwater prawn.

Table 12. Growth of Sakhalin taimen on Iturup Island based on back-calculation from scale samples.

Age	1	2	3	4	5	6	7	8	9	10	11	12	13
Length (cm)	6	14	22	32	40	48	56	67	79	93	97	106	114

Adult taimen were observed during winter – each in deep pools on the Kuibyshevka River. Normally at a distance 3-5 км upriver from the river mouth as many as two taimen individuals of approximately the same size could be observed within each still deep water area (pool) 300-350 m. long. On some days as many as 4-8 individuals had been observed within a compact deep hole with a reach of 100-150 м. The number of adults, observed in one boat trip, fluctuated from 2 to 14 individuals. Relative abundance of the taimen fry in the period May to June, 1995-1996 (catch per unit effort) was equal to 6.2 individuals for Lebedinoe lake, 0.06 individuals for Reydovoye lake per one net and one day of net being in operation. In 2000 the same value was 0.05 individuals for Reydovoye Lake, 0.2 individuals for Lebedinoe Lake, 2 individuals for Maloye Lake and 2.75 individuals for the Kuibyshevka river cut-off meander. Taimen catch per unit effort in Lebedinoe Lake was substantially lower in 2000 as compared to 1996. Fry abundance in the Reydovoye Lake stayed at the same depressed level.

Taimen are occasionally caught in Sakhalin Region commercial fisheries for pink salmon. Spawning migrations of taimen are substantially earlier than the period of the pink salmon fishery. Significant numbers may occur in local rivers but move directly to the sea and do not appear subject to high harvest rates in current pink salmon fisheries. However, taimen are susceptible to incidental harvest in commercial salmon fisheries during their nearshore marine feeding period which occurs from June to mid-September. In the northeast region, catches are thought to average approximately one to two fish per stationary net per year although no taimen were observed in the 2010 bycatch monitoring program. In 2013, the regional governmental scientific agency (SakhNIRO) published a review of current information on the status and limiting factors of taimen on Sakhalin Island. This report concluded that the primary threat to taimen is illegal harvest by the general populace in readily-accessible rivers.

Taimen catches in Gidrostroy fisheries are reported to be very rare or nonexistent. No taimen have been observed in the bycatch at the processing plants operated by the company for more than 10 years. Adults are large and conspicuous, so identification is readily made. Spawning is completed in May and June before the beginning of the salmon fisheries in July. Taimen are required by law to be released alive and compliance is assured by the Company, and controlled by fishery observers from the governmental agencies for fishery monitoring (SakhalinRybvod) and science (SakhNIRO). As a result, close to zero mortality is expected for these fish as well.

Taimen are incidentally caught by sport anglers on Iturup and are subject to illegal harvest in fresh water. Adults are easily located and caught using all types of lures in the sport fishery. Juveniles are also regularly observed in sport fishermen catches, and should be released alive upon being caught.

As of May 2008 the following catches of the Sakhalin taimen were registered: May 13, Argun river, 300 m. from the river mouth, body length 40 см; May 10, Kuibyshevka river, 250 m. from the river mouth (Borzov 2007a). It appears that Sakhalin taimen continue to be vulnerable to illegal harvest due to inherent biological features (long freshwater residence period, late maturation, large body size). Inclusion of Sakhalin taimen in the Red Book didn't change this situation to the better and their abundance continues to drop markedly. A possible solution to the issue of the species' conservation would be to set up the following measures: 1) Establishment of wildlife territories (preserves) under special protection within the species' range; 2) Creation of reserve gene pool, and 3) active information and education aimed at conservation of the species.

The feasibility of taimen aquaculture has been periodically explored by several hatcheries in the Sakhalin region (Safronov and Makeev 2000) and experimental activities continue at several locations. Seven individual taimen were held at Reydovo Salmon Hatchery from 2000 to 2007 in order to preserve genetic material and work out holding and feeding techniques (Pogodin, pers. comm. 6/26/08). These taimen were collected with a beach seine at the mouth of the Kuibyshevka River in May 2000 and averaged 30 cm in length. In the period 1999-2000, taimen in the Kuibyshevka River System was poorly protected and subject to significant poaching pressure. Guardianship of the Kuibyshevka River has improved in the last five year period under management by the private security Company OOO Continent and the taimen population has begun to recover. Due to this reason, the taimen held at Reydovo hatchery were released into their native river in July 2007 at an average size of 80 cm. A Sakrybvod taimen hatchery project is also being conducted in southeast Sakhalin.

3.4.4 Habitats

Salmon habitat extends from rearing natal stream areas and bays to the open ocean. Most of Iturup Island is uninhabited and the streams are largely considered pristine. There is very little industry other than salmon fishing on the island. Most items must be brought to Iturup from Sakhalin or the mainland by the overnight ferry that travels between the Kurils and Sakhalin once or twice a week.

Gidrostroy and the Russian Federation government of the Far East are in the process of building new infrastructure including a new airport, a deeper harbour and a series of roads (to the airport). There are a few small quarries on the island for this purpose, but the quarries are not located near the rivers so pollution and siltation in the rivers is not a threat to fresh water habitats. Some modification of the environment has taken place to improve vessel accessibility in ports. There are also a few cattle and sheep that were brought by Russian settlers. These are also not near the salmon spawning grounds and are not believed to contribute to fresh water habitat degradation. Oil and gas development has not come to Iturup either.

The set nets themselves are seasonally installed. Anchors, sandbags or moors have very little impact as they are localized, stationary, and are set on substrate not considered vulnerable (i.e. on dynamic sand, gravel and mud flats; not on any coralline structures).

Hatchery construction on the river systems may have had some impacts during construction, but operational impacts are currently small. Small non-salmon bearing tributaries were diverted from their natural course to supply the hatcheries with a water source, but there is still plenty of water volume to support natural spawning and ecosystem function. The water from these tributaries is filtered through a natural gravel seep before entering the hatchery. Water quality and temperature is tested regularly before being released into the stream systems again. Small weirs may be installed, which may impede upstream movement of returning salmon, but these are on the banks and not considered to be negatively impacting the habitat in any permanent way.

3.4.5 Ecosystem

The salmon life cycle encompasses a vast ecosystem including natal rivers and lakes, the nearshore ocean, and the high seas of the North Pacific Ocean. Salmon migrate across large areas of the North Pacific Ocean, which provides major feeding habitats for various salmon stocks originating from Asia and North America (Myers et al. 2009; Urawa et al. 2009). Juveniles gain over 90% of their biomass in the ocean before returning to freshwater to spawn (Groot and Margolis 1991). Ecosystem effects of salmon harvest and enhancement can be significant.

Upon their return, pink and chum salmon spawn in their natal streams and do not return to sea. Their carcasses provide important marine-derived nutrients to the fresh water system. Influx of nutrients can be substantial (Gende et al, 2002). Returning salmon can also be prey items for terrestrial mega fauna including bears. Marine-derived nutrients from salmon carcasses can have a significant impact on freshwater communities as well as those communities in the freshwater to terrestrial interface (Wilson et al. 1998). The flux of salmon biomass entering fresh water from the ocean can be massive (Gende et al. 2002). Removal of salmon that would otherwise die naturally in the river can affect food and productivity of freshwater ecosystems either directly by reducing prey availability to species like bears and eagles, or indirectly by reducing delivery of marine derived nutrients that feed the food chain. The relationships between salmon and the population dynamics of their terrestrial predators has been well documented (Gende et al. 2002). It has been reported that these nutrients also form a base for rich development of zooplankton in coastal area, which serves as food for young salmon just after downstream migration. On the other hand, active fishery management might also help stabilize returns by avoiding excessively large escapements which can depress future returns under some conditions.[3] Enhancement with hatcheries can substantially increase salmon numbers in certain times (Kaev 2011).

Enhancement of Pacific salmon across the Pacific Rim since the 1970s has resulted in very large abundance in the North Pacific Ocean (Mahnken et al. 1998; Irvine et al. 2009; Ruggerone et al. 2010). There is some evidence that high salmon abundances in the ocean might adversely affect wild salmon through competition (Peterman 1991). Ocean growth of pink salmon is inversely correlated to their own abundance, and survival of chum, Chinook, and sockeye appears to be reduced in years of high pink salmon abundance (Ruggerone et al. 2003, Ruggerone and Goetz 2004, Ruggerone and Nielsen 2004, Ruggerone et al. 2005; Ruggerone et al. 2010; Ruggerone and Connors 2015). There is growing concern from stakeholders that the ocean carrying capacity of pink and chum salmon has been globally reached.

It is clear that salmon influence the food webs in the North Pacific although the effect varies widely between systems and is dependent on many factors like timing, scale and alternative nutrient sources, etc. (Naydenko 2009; SCS 2011). In addition, like most large marine ecosystems, resolving interactions strengths among food web constituents is made difficult by limited data and confounding effects of environmental forcing (Essington 2009). Ecosystem models that have been developed for the Eastern Bering Sea, Aleutian Islands and the Gulf of Alaska (Gaichas and Francis 2008, Aydin et al. 2008) do not suggest a critical or unique role of salmon in respect to the structure of the food web in the ocean. Gaichas and Francis (2008) used network theory to identify potentially key species in the Gulf of Alaska food web on the basis of high connectivity and four species were identified (Pacific cod, Pacific halibut, walleye pollock and arrowtooth flounder) as highly connected species. Other predatory species, such as Pacific halibut, walleye Pollock and arrowtooth flounder were found to be highly connected.

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[3] *The significance of effects of large escapements remains a subject of considerable debate among fish scientists.*

Extensive research has been conducted by the Russian Scientific Institutes on (1) Juvenile Anadromous Stocks in Ocean Ecosystems; (2) Anadromous Stocks in the Bering Sea Ecosystem (BASIS); and (3) Anadromous Stocks in the Western Subarctic Gyre and Gulf of Alaska Ecosystems (Temnykh et al. 2010. This work also involved substantial monitoring and research of related ecosystem components including food web composition, production and dynamics. Based on this work, the Russian management system has generally concluded that there is no capacity limitation based on oceanographic data which indicates that pink salmon utilize only 20% of the plankton in the ocean (Shuntov and Temnykh 2004; Shuntov et al. 2010).

A workshop was conducted in 2011 to identify and consider potential ecosystem risks in the fishery (if any). This workshop addressed a condition in the previous assessment. The purpose of the required workshop was not simply to know what species are present but rather to consider what the potential species or habitat effects may be from the fishery, hatchery, or fishing gear. The format of the workshop used the format patterned after stakeholder engagement meetings to assess ecological risk. The methodology used for the meeting was the same format used by Hobdday et al (2007). Meetings took place in the fall of 2011 and held in areas where significant stakeholder engagement has been centred including Yuzhno, Sakhalin Island, Russia and in Portland, Oregon USA. The meetings focused on the main components of the fishery including the target species, non-target species (with a special emphasis on ETP species), habitat impacts and the ecological community in which these components come together. For each of the main components, sub-components, or measurable metrics of the components, were identified. Stakeholders were asked to provide input on areas of interest or concern for each of the sub-components. Local stakeholders and authorities did not have significant concerns on the ecological impacts of the fishery. In contrast, biologists from the Wild Salmon Center based in Portland OR, USA did express concern that warrant further investigation. These have been highlighted in the report to Gidrostroy resulting from the meetings and provided to the assessment team.

3.5 Principle Three: Management System Background

3.5.1 Fishery Governance and Management Objectives

Management of Sakhalin-Kuril Region is administered by Federal and Regional governmental agencies. Sakhalin Island is the subject of the Russian Federation under the direction and control of the Government of the Russian Federation. Fisheries of the Russian Federation are managed and controlled by Fisheries Agency of the Russian Federation, which is located in Moscow and also represented by a local office on Sakhalin Island. Operational management of all activities on the island is performed by the Governor of the Sakhalin Region (Alexander Khoroshavin).

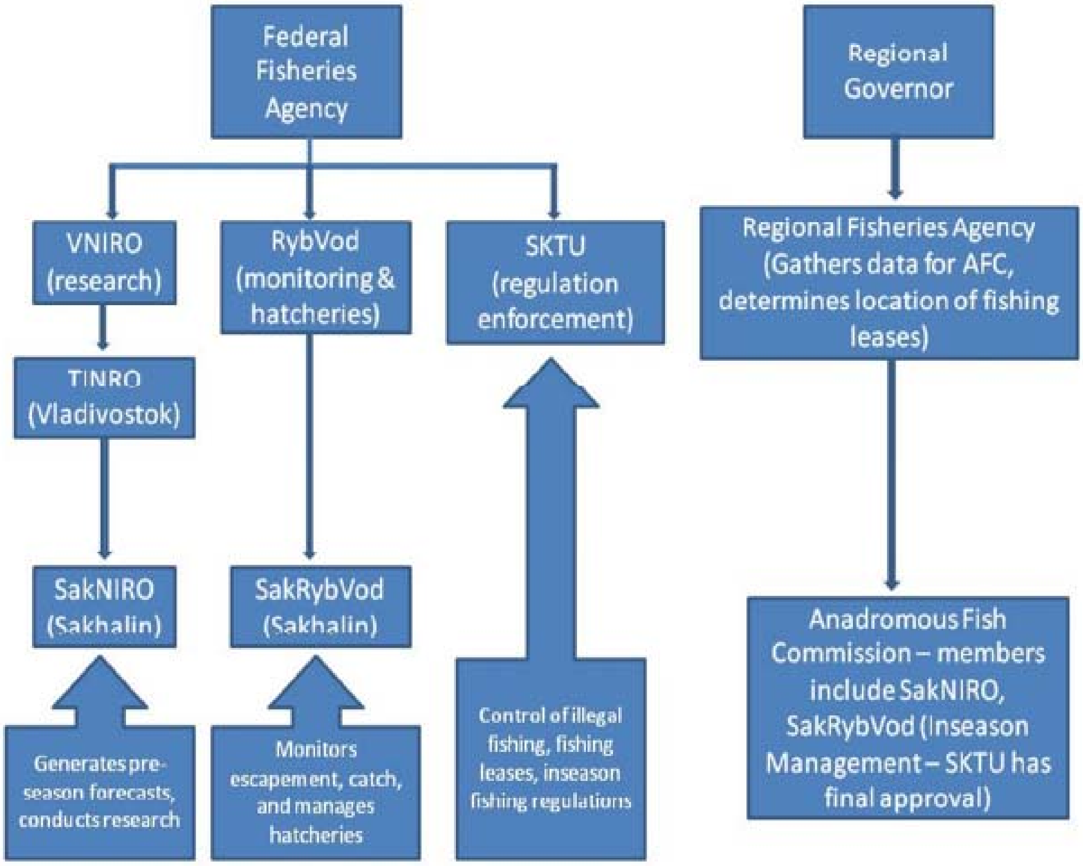

Figure 15. Organization of Federal and Regional salmon fishery management structure of Sakhalin-Kuril Region (source: Wild Salmon Center, Portland, Oregon).

Throughout the last 20 years, the Fishery Agency of the Russian Federation has been restructured 15 times. Prior to April 2004, fisheries were under the aegis of the State Fisheries Committee, whose chairman was subordinate to the prime minister. Russian fisheries organizational structure may appear complex. But the roles and responsibilities within the management framework of Russian fisheries are clearly defined.

Upon restructuring between April 2004 and November 2007 the Federal Agency for Fisheries was moved under the auspice of the Ministry of Agriculture. In November 2007 the State Committee for Fisheries was re-established by decree and then since May 2008, per Presidential Executive Order No. 863, the Russian Fishery Agency has acted as an independent agency, reporting directly to the government. But by a Presidential Executive Order (Ukaz) “On the Structure of Federal Executive Bodies” issued on May 21, 2012 it was placed back under the control of the Ministry of Agriculture.

This Presidential Executive Order includes some changes in the structure of the Federal Government concerning agriculture, fisheries and forestry. According to this Order the Federal Fishery Agency will now be subordinated to the Ministry of Agriculture. Article 12 of the Order grants the Ministry of Agriculture the right to set and implement state policies and legal regulations pertaining to the fishery, as well as jurisdiction over production activities on fishing vessels, protection and the rational use and reproduction of water biological resources.

Russian fisheries management is organized through the Federal Fisheries Agency (FAR) that operates with executive power under the Ministry of Agriculture and manages five regional offices in the Russian Far East. FAR administers the Federal law and policy on fisheries on a region by region basis through the Regional Divisions, responsibilities of which are based on clearly defined fishery zone basis.

Russia has a network of fishery scientific institutes conducting survey, research and monitoring. The fishery scientific function is coordinated by FAR and VNIRO (All-Russian fishery Scientific Institute). TINRO is the leading scientific institute within the Russian Far East. Survey and research activities are carried out by TINRO and its regional research centers, such as KamchatNIRO, MagadanNIRO and SakhNIRO, which are inter-connected and coordinated through the formal discussion and decision making processes and, federally, through the coordinating research center of VNIRO in Moscow.

Enforcement of fishery law and regulations is under the responsibility of a separate service, the Federal Security Service (FSB). The FSB Coast Guard and Government Marine Inspection (GMI) conduct inspections and issue violation citations to law breakers. They conduct at-sea inspections including trans-shipments at sea, document reviews, VMS (Vessels Monitoring System) devices check, fish cargo inspections, the fishery observations and port control inspections. Information systems tracks vessel positions and fishing efforts and provide up-to-date fishery information to management agencies.

Recent implementation of Fishery Monitoring System (FMS) integrates fishery information into a transparent, modern information system. It allows for centralized collection, storage and data processing on fisheries statistics and volumes of aquatic bio-resources harvested, processed, transshipped, transported and landed by individual vessels. Besides, the Fishery Monitoring System maintains satellite vessels monitoring (VMS).

The Russian Fishery Management System provides a set of opportunities for public participation in fishery management. The Federal Law “On fisheries…” sets that all citizens, public organizations, and associations have the right to participate in decision making process. For these purposes the FAR maintains a multi-level system of public (community) and scientific fishery councils providing opportunities to participate and influence on decision process and regulations. There are several fishermen associations and unions in Russia based on fish species or regional principle.

Current management system is regulated according to the federal law “On Fishery and Conservation of Aquatic Biological Resources” which was amended in 2008 to reflect changes regarding fishery of anadromous fish in inland waters of Russian Federation and territorial seas of Russian Federation (Article 291 of the Federal Low of December 20 2004 № 166-FZ). This law gave the government the authority to assign fishery sections to individual lease holders for up to 20 years, and salmon fisheries management was entrusted to the regional executive authorities. This regulation replaced the previous system which was based on Total Allowable Catch allocations and centralized fishery management decisions through Moscow with a much more responsive and effective regional system. The current system is widely viewed as an improvement for fisheries management as it can react more quickly to changes in run strength. In addition, fishing companies no longer have an incentive to under-report their catch since they are not limited to a quota.

3.5.1.1 Federal Fishery Agency

The Federal Fishing Agency, FAR (or *Rosrybolovstvo)* plays the central role in managing of the Russian fisheries. Established by the Presidential Decree No. 724 on 12 May 2008, FAR replaced the pre-existing State Committee for Fisheries under the Ministry of Agriculture. Due to recent changes in the Russian Government structure (May 2012), the FAR has gotten back to operating under the Ministry of Agriculture. The key functions and organization structure have remained unchanged.

FAR interacts with various agencies at the federal level while controlling its territorial departments. It is responsible for oversight of departments under its jurisdiction, which define the rules, the annual Total Allowable Catches (TAC) and Possible Catches (PC), as well as define the areas of fisheries. In the current system, TACs do not apply to salmon fisheries. Also FAR conducts communication and coordination with foreign government agencies, international committees and international organizations on issues of fisheries, policy and technical programs related to the application of innovative technologies in the fisheries complex, and prepares federal-level and agency-level reports on the fishing industry. FAR also provides related to fisheries social services, conducts research and engineering, directs federal fishing vessel and fishing ports, and controls hatcheries activities.

By decrees and recent amendments, FAR:

- develops laws, orders, and rules related to fishery management;
- manages the protection, rational use, study and reproduction of aquatic biological resources and their habitats;
- delivers public services in the area of fisheries, conservation, sustainable use, study, preservation and reproduction of aquatic biological resources and their habitat;
- provides safety and rescue operations in the fishing areas;
- coordinates production activities related to ports and vessel maintenance.

Specific decrees that define provisions, powers and structure of FAR include:

- President Decree No. 724 of 12.05.2008 to establish FAR (*Rosrybolovstvo*);
- President Decree No. 636 of 21.05.2012 to put the FAR under Ministry of Agriculture;
- Presidential Decree № 863 of 30.03.2008 (as revised in previous decree) to guide FAR;
- Government Decree of 11.06.2008 № 444 specifying regulations for FAR;
- Russian Government Decree from appointed Ilia Shestakov as director of *Rosrybolovstvo*;
- Government Regulations 13.10.2008 N 753, 07.11.2008 N 814, 27.01.2009 N 43, 15.06.2010 N 438, 26.07.2010 N 553, 02.08.2010 N 589.

FAR sets and allocates TAC/PCs each year for the fish species in the Russian Far East basin. In setting TAC it cooperates with the scientific research institutes such as VINRO, TINRO and regional scientific centers such as KamchatNIRO, MagadanNIRO and SakhNIRO to determine TACs for each sub-zone in the fishery.

The FAR cooperates with the Federal Security Service (FSB) in terms of monitoring, control and enforcement responsibilities. FAR issues fish permits, collects and processes daily vessel catch (DVR) reports, monitors satellite based VMS data, and manages the Center of Fishery Monitoring and Communications (CFMC). FAR maintains a Fishery Monitoring System (FMS) and supports the CFMC, collects, stores, processes, and distributes all fisheries data. It includes daily statistics about the volumes of ABRs harvested, processed, trans-shipped, and transported by individual vessels. It provides real-time vessel position and allows authorities to spot distortions suggesting illegal activities. While the FSB conducts enforcement and inspections at-sea and in-port, it cooperates with FAR to share data through the CFMC.

The FAR assigns fishery management and control functions to Territorial FARs. Territorial FARs are responsible to issue fish permits, monitor fish catches and process operational reports. They also help maintain regional FMS centers. The hub of the Far East Fisheries Basin FMS network is the Kamchatka FMC and its Territorial administrations (Magadan, Primorsky, and Sakhalin regions). Territorial divisions of the FAR are also responsible for issuing EU Catch Certificates for all export shipments in accordance with EU Council Regulation (EC) No. 1005/2008 establishing a community system to prevent, deter and eliminate illegal fishing.

The FAR coordinates fishery management during the fishing season. FAR manager hold regular (weekly) conference calls with heads of FAR territorial administrations, FSB/GMI departments, scientific institutes, observers at sea, and fishing companies to review and forecast fishing conditions.

The FAR advocates the right for public participation in the fishery management process which is set out in the Federal Law on Fisheries. The FAR has Community Council as a way to promote transparency, cooperation and dialogue with scientific, non-governmental, and public organizations. The FAR establishes the regional fishery & scientific council, which coordinates proposals from the fishing industry and adopt them to the management system.

The Federal Law №166 "On Fisheries and Conservation of Aquatic Living Resources" (2004) sets that "*…citizens (individuals), public organizations, unions of legal bodies (associations and unions) have the right to participate in decision making process* …" in the fishery. The fishery management agencies "… *must provide an opportunity for public participation in any ways and forms set by the regulations*" (article 2, item 5). The public participation in the fishery management process is provided at three levels. These are: 1) at the federal level (FAR Community Council), 2) at the fishery districts level (basins – e.g., Far Eastern Fishery Basin), and 3) at the regional level (constituent entities of the Russian Federation, e.g. Sakhalin-Kuril Region).

In general, these three advisory bodies can be further divided into two groups based on their legal provisions of establishment. The establishment of the FAR Community Council is based on a general requirement to have public access to the decision making process for the majority of state authorities. The remaining two fisheries councils are based on the Federal Fisheries Act and are established in addition to the FAR Community Council.

Table 13. Structure of the Advisory Bodies

Level	Advisory body	Authority
Russian Federation	FAR Community Council	Federal Agency for Fisheries
Federal fishery district	Basin Scientific and Fishery Council (Far Eastern Scientific & Fishery Council, DVNPS)	Federal Agency for Fisheries
Sakhalin-Kuril region	Territorial Fishery Council	Sakhalin Territory Government

VNIRO, TINRO, SakhNIRO

FAR provides legal and administrative mandate for scientific survey, research and monitoring to be conducted through the Federal research centers of VNIRO, TINRO and regional research centers, such as KamchtNIRO, MagadanNIRO and SakhNIRO. Survey and research activities in the fisheries are carried out through these regional expert centers, which are inter-connected and coordinated through the formal discussion and decision making processes, and federal coordinating research center VNIRO in Moscow. TINRO-Center and regional scientific centers publish substantial amounts of research results through the internal publishing.

SakhRybvod

SakhRybvod is directly managed by the Federal Fisheries Agency. SakhRybVod collects in-season information on catch and escapement, and controls hatchery permitting and management in the Sakhalin area (including the Kuril Islands). SakhRybVod operates a number of hatcheries in Sakhalin region. The structure of SakhRybVod includes ichthyologic service and Control and Monitoring Stations (KNS) located on the main rivers in each administrative district of Sakhalin. Total staff of Ichthyologic service is 125 people. SakRybVod monitors escapement and juvenile outmigration on most of the streams which include both hatchery and non-hatchery systems of Sakhalin region.

Sakhalin Kuril Territorial Administration of FAR (SKTU)

FAR has territorial departments in all regions of Russian Federation, which have been created in order to accelerate the implementation of many of the functions of the FAR on the level of Russian Federation subjects. Sakhalin-Kuril territorial office of the Federal Agency for Fisheries (SKTU) is a territorial authority of the Federal Agency for Fisheries and has been created for implementation of the functions of monitoring and oversight of water biological resources, environment and their habitats in the internal waters of Russian Federation, the delivery of public services, state property management in the fisheries activities, conservation, sustainable use, study, reproduction of water biological resources and their habitats, as well as hatchery activities and processing.

SKTU is the local management and enforcement arm of FAR located in Yuzhno-Sakhalinsk. SKTU has final approval of fishing concessions and in-season fishery management regulation actions (to open and close fisheries). They give fishing companies permission to harvest, monitor fishing companies and processors to ensure regulation compliance, and patrol streams to reduce poaching activities. SKTU posts all approved management decisions of AFC (*Commission on the Regulation of Harvesting Anadromous Fishes)* on its website.

Public Advisory Bodies

The FAR Community Council was established according to the FAR Order N 301 1st of November 2008 “On Establishment of the Community Council at the Federal Fishing Agency”. The key goal of the FAR Community Council is to support transparent and cooperative dialogue with all stakeholders in order to shape FAR fishery policies and activities. The Public Council at the Federal Agency for Fisheries is established with the aim to:

- improve the work of the FAR and fishery management system;
- consolidate state policy and economic potential of the fishery sector; and
- ensure comprehensive cooperation with non-governmental organizations and fishery experts.

The base of the FAR Community Council is described in the Provisions. The key states of the Provisions are as follows:

2. The Community Council is an advisory body for the Federal Agency for Fisheries.
3. The Community Council shall ensure compliance with the public interests while the Federal Agency for Fisheries implements measures to improve the state fishery policy.
…
5. The Community Council shall act under the principles of transparency, openness, cooperation and constructive dialogue with scientific, non-governmental, non-commercial and other organizations regarding issues of fisheries.
…
9. The Community Council shall be formed for a 2 year period based on voluntary participation of the citizens of the Russian Federation. The number of members shall not exceed 50.

10. The list of the Community Council members shall be made with consideration to the applications received from non-governmental, non-commercial and other organizations of the fishery sector in writing.
11. The members list of the Community Council shall be approved by the order of the Federal Agency of Fisheries.
…
15. The members of the Community Council shall act pro bono and on a grant basis.

The *FAR Community Council* includes the representatives of the fishery management authorities and bodies, fishery unions and associations, fishing and processing companies, indigenous groups, ecological organizations (NGOs – i.e., WWF-Russia, and Russian Committee on UN environmental program), retailers, transport companies and representatives of mass-media. The FAR Community Council provides an effective mechanism for public organizations to participate in the decision making process, and formally express their view to any issues. The public organizations take an active part in the work of the FAR Community Council. All minutes of the FAR Community Council meetings (and all documents mentioned above) are available on the FAR official web page.

The Fishery Basin - Far Eastern Scientific & Fishery Council, DVNPS (FESFC) is established_in the Federal Law "On Fisheries and Conservation of Aquatic Biological Resources", No. 166-FZ Article 33. Basin Scientific and Fishery Councils and Territorial Fishery Councils.

1. Basin scientific and fishery councils shall be set up for each fishery basin to make proposals for conservation of aquatic biological resources, in particular, proposals for distribution of quotas of capture (fishing) of aquatic biological resources among the persons who enjoy the right to capture (fish) aquatic biological resources.
2. The list of members and rules of procedures of basin scientific and fishery councils shall be approved by the federal executive body in charge of the fishery.
3. Territorial fishery councils can be set up in constituent entities of the Russian Federation.
4. The list of members and rules of procedures of territorial fishery councils shall be approved by the executive body of the respective constituent entity of the Russian Federation.

Basin Scientific and Fishery Councils (the Councils) have an advisory role. The Councils advise on a wide range of fishery issues including:

- execution of fisheries in the corresponding regions,
- control and surveillance,
- conservation,
- recovery and harvesting of bio-resources;
- TAC/PC and distribution of quotas, and
- other issues of importance to insure a sustainable management of fisheries.

The Councils shall advise on all issues regarding recovery and rational (sustainable) exploitation of the aquatic biological resources and environmental state of the waters used for fishery purpose (Rules of Procedures for Basin Scientific and Fishery Councils in the Russian Federation). According to item 6 of the Rules of Procedures, the members of the Councils shall represent federal executive bodies, executive bodies of the constituent entities of the Russian Federation, research institutions, federal institutions of basin authorities for conservation, recovery and fisheries as well as non-governmental organizations including native minorities of the North, Siberia and the Far East. The Councils may also involve other experts if necessary.

The Basin Scientific and Fishery Councils are the main forums for discussions of the federal fishery issues and the decisions of the Councils having an advisory role shall be submitted to the FAR. The

Far Eastern Basin Scientific and Fishery Council (DVNPS) is responsible for fisheries conducted by companies registered in the Primorsky, Kamchatka, Sakhalin-Kuril, Magadan, Khabarovsk, and Chukotka regions (Far Eastern Fishery Basin). Each fishing basin in Russia has such council. The objective of DVNPS is to provide a forum for proposals on the rational use of the aquatic biological resources (ABR) including proposals on quota allocation issues. It does not take final decisions on TAC/PC as this is the role of FAR, supported by the scientific institutions and federal law for the conservation of aquatic biological resources. The Main functions of DVNPS include:

- Coordinate the activities of the regional fishery councils;
- Receive and analyze the info;
- Analyze the regulation acts, instructions and laws;
- Consider and prepare materials and proposals regarding TAC/PC and quota allocation;
- Work out recommendations aimed at rational use of quota;
- Prepare proposals on environment protection and preservation;
- Make proposals on fishing fleet development and modernization, technology modernization;
- Consider aquaculture projects.

DVNPS is a collegiate (advisory) consultative body. It is formed with the representatives of FAR, FSB, Ministry of Agriculture, Veterinary Agency (RosSelkhozNadzor), Antimonopoly Agency, Ministry of Natural Resources, and representatives of its territory divisions; fishery scientific institutes, fishing companies and associations, and representatives of indigenous of the Russian Far East and North. The membership list is approved by the FAR decree. The chairman of the DVNPS is a FAR deputy. DVNPS decisions have an advisory character (made by a voting majority), and are put in force by the FAR approval.

The Fishing Rules can be modified through a review process coordinated by the Far Eastern Scientific and Fishery Council (DVNPS). DVNPS considers proposals from fishers and acts as a coordinating body to communicate debate and confirm the options and decisions. This way, it takes advantage of local knowledge and broadens public participation in fishery management within the context of the Federal Law and policy for Russian Fisheries.

Meetings are held in Vladivostok at least twice a year. The DVNPS meetings can be attended by any interested party, where they may express their opinions and participate in the discussions. Central to the responsibilities of the DVNPS is the compilation of scientific information concerning the management of marine bio-resources in the Russian Far East for submission to the Federal Fisheries Agency for final approval. In addition, it reviews and submits its recommendations on fisheries regulations, construction of fish hatcheries and the recommendations for the distribution of quota among its subjects.

3.5.1.2 Regional Fisheries Administration

<u>*Sakhalin Fisheries Agency (SFA)*</u>

Each fishing region within the Russian Far East has regional public council. For example, The Territorial Fishery Council of Sakhalin-Kuril region is established to provide a coordination of the fishery activities in the region. Under the new management system, the regional government has the responsibility for in-season management of fisheries (although SKTU has final approval).

The Regional Fishery Council develops harmonized fishery policy and implements fishery developments in accordance with Federal and regional regulations in the region. This includes "*coordinating and liaising with federal authorities, scientific institutions, non-governmental* *organizations, all fishing companies, fish processing companies in the region in order to make a consolidated advice on state fisheries management, conservation and optimal harvesting of aquatic biological resources in the territory of the region".*

The Fishery Council is a collegial advisory body of the regional Government addressing issues of development and management of fisheries. The decisions of the Fishery Council have an advisory role. The Territorial Fishery Council is a forum for regional fishery issues and its responsibility area does not overlap with that of basin scientific and fishery councils.

Commission on the Regulation of Harvesting Anadromous Fishes (AFC)

The SFA is responsible for establishing the Commission on the Regulation of harvesting (catch) Anadromous Fishes (AFC) and providing information on the fishery (such as catch and escapement data collected by SakhNIRO and SakhRybvod). The AFC has the responsibility for the distribution of expected yearly catch of salmon among users in Sakhalin-Kuril region and identifying areas of commercial fishery, recreational fishing, and traditional fishery of the indigenous population. The AFC was established by regional authorities in 2008 to implement management changes identified in new federal regulation. 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. The list of AFCs members is suggested by the Governor and approved by the Territorial Administration of FAR (SKTU).

Upon the request of companies, the AFCs distribute the annual quotas among the users. The total amount of the quotas is authorized by FAR and accounts for the number of salmon required for filling in the spawning areas and broodstock hatcheries, as well as quotas for sport fishing and harvest by the indigenous population. The AFC meets regularly and makes in season fishery management decisions. Based on the reports about filling of the spawning grounds (prepared and submitted by SakhNIRO and SakhRybvod), the AFC makes operational decisions on the time and duration of fishing by either closing fishing in spawning grounds in case of insufficient filling or by increasing the quotas in order to harvest excessive spawners from the mouths of rivers to avoid overflow of spawning grounds. The AFCs' decisions are made through discussions and consultations with stakeholders. All meetings are open to the public. All decisions of AFCs on fisheries management are subject to final approval by Territorial Administrations of FAR. Meeting minutes and decisions are posted on the Territorial Administration website.

3.5.2 Management Measures

3.5.2.1 Fishing Rules

Fisheries management is regulated by Russian federal laws. The federal law "On Fisheries and Protection of Aquatic Biological Resources" of December 2004 (referred to below as the *Law on Fisheries*) divides fisheries into three main categories" - industrial, recreational, and subsistence fisheries of indigenous groups. Industrial fisheries includes coastal fisheries.

The *Law on Fisheries* requires that total allowable catch (TAC) levels are set for fishery stocks. It defines these levels as the "scientifically justified annual catch of aquatic biological resources of particular species in a fishing area". However, the *Law on Fisheries* then goes on to state that the industrial fisheries are not necessarily required basing their catch on TAC. The *Law* does not explain this further, but calls for the federal government to issue a special TAC setting statute. Pacific salmon is the main stock that will not have TAC, but will have based on PC (possible catch) regulated fishing effort instead. Therefore allowed bycatch in salmon fishery becomes 49% (under PC, no TAC) instead of 2% (under TAC) (according to FAR order #1271 from 12/21/2011).

The *Law on Fisheries* also gives a definition of a fishing unit area and sets general principles for their use. The compiling of lists of fishing unit areas is delegated to the regional authorities.

FAR adopts the *Fishing Rules* that define catch limits, seasons, gears, and areas for legal fishing. The Fishing Rules include standard fishery regulations describing the responsibilities of the fishing operator, list of documents to be available onboard, prohibited areas and seasons, species prohibited for fishing, fishing gear regulations, minimal commercial size of fish and other harvestable species, and by-catch regulations. There are requirements to submit daily vessel reports (DVRs), maintain VMS, and follow rules restricting by-catch, minimal catch size, and other operational rules. These Fishing Rules set out the key management measures for the Russian fisheries. These rules are set separately for different geographical regions. Fisheries management has been changing since Soviet times, and further changes are likely.

The latest version of the Fishing Rules for Far Eastern Fishing Basin has been approved by the FAR decree No. 671, July 06 2011. These rules are summarized as follows:

The fishing operator should:

- Keep catch records in the fishing log by species; catch composition records by type of gear and catch area; and records of fish transshipped or received;
- Keep records on daily fishing activities (fishing log) and, where applicable, records of fish processing activities (fish production log);
- Have onboard documentation providing location and records of the volume and size of vessels holds and cargo between deck;
- Have onboard device certified for weighting the fish caught;
- Maintain an operating VMS;
- Submit Daily Vessel Reports (DVRs) on vessel fishing activities to the Regional Information Centre (RIC) using the approved format, all the records in which should correspond strictly to records in the fishing and fish production logs; copies of all DVRs signed by the vessel master be kept on board for a year;
- Submit twice-a-month catch and fishing area reports to the FAR;
- Keep onboard the following documents: fishing permits, fishing and, where applicable, fish production logs, current fishing regulations and technical certificate of the VMS device onboard.

The fishing operator should not:

- Conduct fishing in violation of its fishing permit and fishing regulations in force;
- Transship or receive fish or fish products without recording their species, weight or, where applicable, their quantity;
- Submit false or otherwise incorrect DVRs;
- Have onboard fish or fish products not recorded in vessel logs;
- Have onboard fishing gear which are prohibited in the fishing area and fishing season where and during which the vessels operates;
- Discard fish of targeted species;
- Use fishing gear with mesh size or other parameters not in accord with regulations in force; and
- Cause any damage to the aquatic environment of biological resources.

3.5.2.2 TAC/PC Setting Process.

The TAC/PC setting process involves FAR, scientific institutions, regional management agencies, fishing companies, and NGOs in consultative decision-making process. For external review FAR submits proposed TAC/PCs to the State Ecological Expertise (Ministry of Natural Resources). State

Ecological Expertise is a scientific and expert panel formed of scientists (mostly Russian Academy of Science) independent from FAR management system. Public ecological expertise also seeks opinions from the citizens and NGOs. After the results of ecological expertise are received and taken into account, FAR formally approves the TAC/PCs and distributes them.

There are formal decision-making processes that follow legal and customary standards. TAC/PC setting process allows various groups to influence the important decisions related to the total allowable catch each year. The management system cooperates with fishing companies to make decisions and resolve disputes. The Scientific & Fishery Councils (DVNPS) serve as a regional coordinating body to address operational issues relevant to the fishing community (such as the Fishing rules which are the key regulations for the fisheries). Proposals are only accepted if they are consistent with the Federal law on fisheries and fishing regulations.

The DVNPS coordinates transparent processes to review and adapt fishery rules in response to proposals originating from the fishing companies and associations. Fishermen and fishery management bodies can introduce changes to the *Fishing Rules* and modify other marine resource management regulations. The first review of these proposals comes from the scientific councils of the regional fishery institutes.

If TINRO-Center's scientists agree with regional proposals, the decision moves to VNIRO (All-Russia scientific research institute of the fishery and oceanography) and to the working group of the DVNPS (Far East Scientific Fishery Council). DVNPS coordinates communication among fishermen, scientific, administrative and fiscal bodies to shape the final proposal submitted to FAR. DVNPS advises FAR and FAR makes the final decision.

VNIRO/TINRO play an important role in the TAC and PC (possible catch) setting which includes a carefully prescribed consultative process that takes two years and involves series of steps among various stakeholders. The procedure of determining, discussing and setting TAC/PC is a multi-stage process allowing comprehensive internal and external expertise of the proposed TAC/PC.

The TAC/PC setting procedure is preceded by a considerable amount of work on collecting and analysis of data by the fisheries research institutes - SakhNIRO, KamchatNIRO, MagadanNIRO and TINRO. After analyzing and processing the collected data on the status of aquatic biological resources the experts of the relevant research institutes and laboratories prepare TAC /PC substantiation materials which are subsequently discussed at various levels.

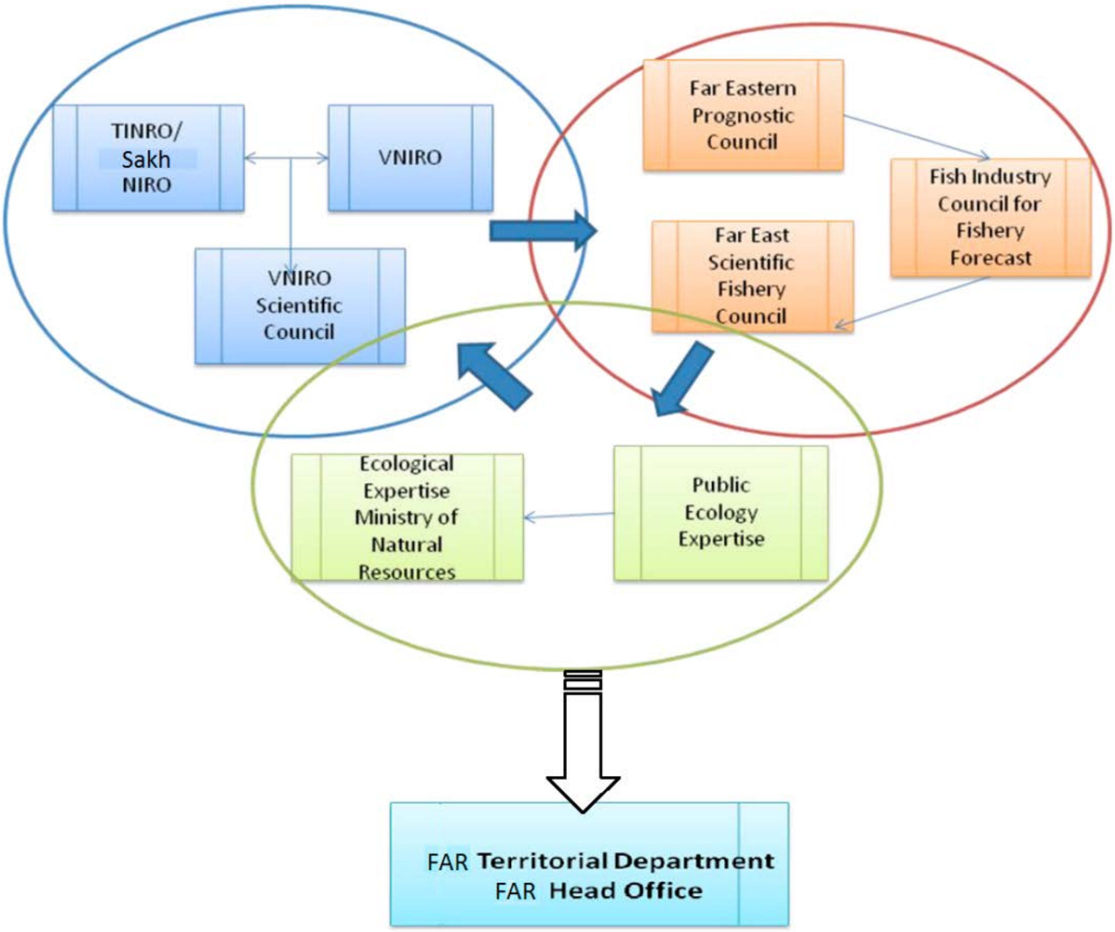

Figure 16. Inter-Organizational relationship of Russian TAC/PC setting process.

The process of TAC/PC determination and quota allocation has several steps and is presented in Figure 17.

Stage 1 of the process is the review of the TAC/PC substantiation materials at the biological subpanel session of a relevant fisheries institute (for example TINRO-Center). At the session the materials on project of TAC and PC (possible catch) in Far East basin for all objects of fishery are presented for review. The session is attended by TINRO Academic Council members as well as the representatives of the Territorial Administration of FAR, Territorial Administration, fishing companies and media. As a result of the review the decision is made to accept the presented materials as a basis for TAC/PC project and forward the materials to VNIRO to continue developing of TAC and PC project and prepare summary documentation for the Far Eastern Forecasting Council.

Stage 2 of the procedure is the meeting of the **Far Eastern Forecasting Council** where materials summary of TAC/PC project is reviewed. This Council is a collegiate authority comprised of the leading forecasting experts in the Far East; it was established and operates within the framework of TINRO Research Technical Society – a public institution uniting all the fisheries institutes of the basin on a voluntary basis. The presented materials summary is initially discussed at specialized councils – similar institutions comprised of main experts on the key objects of fisheries; the councils similarly work within the framework of TINRO Research Technical Society (Pollock Council, Herring Council and Salmon Council). The specialists of all fisheries institutes of FE basin take part in development of the project. After TAC/PC project is reviewed, the Forecasting Council makes a decision to accept the presented materials as a basis for the further review and comments by VNIRO and Far Eastern Forecasting Council for subsequent review by Fish Industry Council on Fisheries Forecast. The Public Council is a consultative body; it does not make any decisions, but gives recommendations. The

Prognostic Council and Council for Forecast – are bodies inside TINRO and VNIRO. Each fishery region has similar public council including Sakhalin-Kuril region.

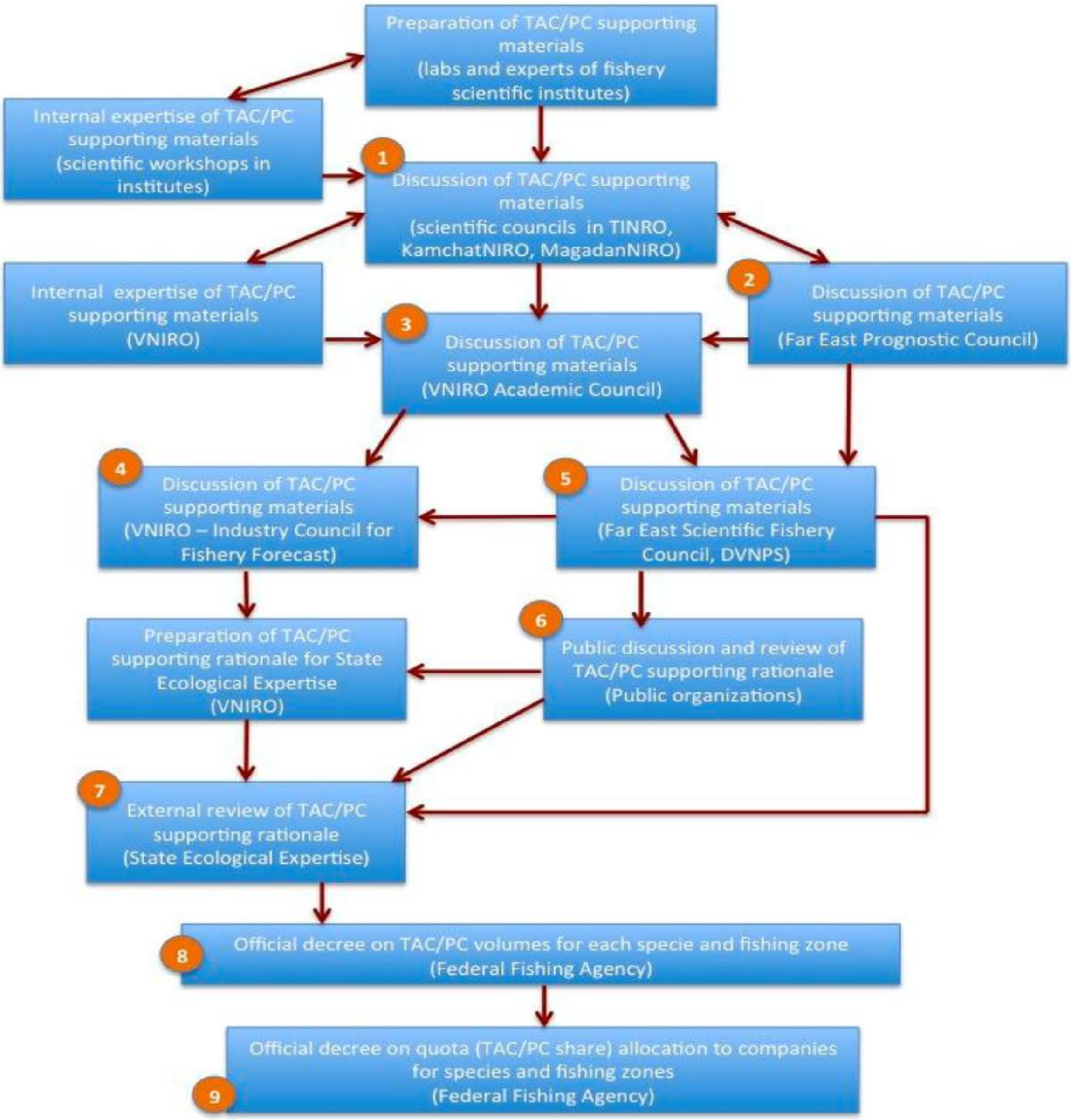

Figure 17. TAC/PC decision making process.

Stage 3. The revised TAC project is forwarded to VNIRO for review. At VNIRO it is first reviewed at the meeting of VNIRO Academic Council**.** The meeting is attended by the members of the Academic Council and by outside scientists. At this meeting the specialists of fisheries research institutes present project of TAC/PC according to their institutes' scope of responsibility. At the Academic Council meeting the TAC/PC project for FE basin is presented by a TINRO-Center specialist and reviewed. As a result of the review the decision to approve the project of TAC is made.

Stage 4 is review of TAC/PC project at **Fish Industry Council on Fisheries Forecast** meeting. Deputy Head of Federal Agency for Fishery acts as the Chairman of the Council. The meeting is attended by the Council members (the members list is approved by FAR order), FAR representatives and outside specialists. The Council meeting results in approval of the reviewed TAC project materials taking into account the discussion conducted.

DVNPS (5) has more authority in decision making process. Prognostic Council and Council for Forecast are mainly scientific bodies. Anyway, they also include representative of the FAR (or its territory department), fishing companies or associations. They are not subsets of the DVNPS, which is established by FAR.

Stage 6. The next stage of TAC/PC setting is public expertise of the proposed TAC/PC project. **Public hearings** are held in each region of the Russian Federation involved in the fisheries in question. The hearings are attended by the representatives of the Territorial Administration of FAR, of the research institute (project designers), fisheries companies and industrial groups (associations). Based on the results the hearings Minutes with detailed record of discussion, questions and answers are produced. Besides, The State Environmental Expertise requires the set of documents substantiating TAC/PC to include letters of concurrence with regional authorities, whose interests are affected by the fisheries in question.

Stage 7 is the review of TAC/PC substantiation by **State Environmental Expertise** (Rostechnadzor Agency, Ministry of Natural Resources of the Russian Federation – **that step can be considered as external expertise of the decision making process**). The set of documents substantiating TAC/PC and supporting documents are forwarded to VNIRO in due order. The commission of experts reviews the substantiating and supporting documents and draws a statement whether TAC/PC project can be approved or it needs further revision. The statement of the expert commission, signed by all its members is approved by Rostechnadzor order.

Stage 8, the Order, approving the TAC/PC volumes is forwarded to the Federal Fishing Agency. Based on the State Environmental Expertise statement FAR draws up and issues Order on approval of TAC/PC for ABR fisheries (8). TAC/PC volumes are set for each fish species (subject to TAC/PC determining procedure) with breakdown by basins and fishery zones.

Next (9), based on the set volumes of TAC/PC and fishery quotas allocation contracts previously signed with fisheries companies, FAR, within the scope of its jurisdiction, issues **Order on distribution of aquatic biological resources catch limits for commercial and offshore fisheries**. FAR issues orders on allocation of commercial fishing quotas, and on allocation of offshore fishing quotas to companies exploiting FE basin resources. This document allocates a set of quota of a certain fishery species to each individual company which has a right to fish in the specified region throughout specified season.

3.5.2.3 Preseason Management

Forecasting the run of salmon to the coasts of Sakhalin and Kuril Islands is based on multi-year statistics of commercial catches, data on filling of spawning grounds, survival of eggs in the spawning mounds, the total number of downstream migration of wild juveniles and number of juveniles released from hatcheries. The forecast is derived using a simple linear regression and does not consider carrying capacity of the ocean. The accuracy of the forecast is +/-20% for Sakhalin-Kuril area but only +/-100% for individual regions on Sakhalin. SakhNIRO sends the annual forecast to the TINRO-center, which summarizes the forecasts from all regional NIROs. Forecasts are discussed on the Far East Salmon Council (FESC), which was created within the TINRO-center with the goal of coordinating the research and forecasting of salmon in the Far Eastern basin. FESC decides on the final value of the forecast of predicted catch and sends the forecast to VNIRO. There the forecast passes through the expert review and gets adopted by the Scientific Council, after which VNIRO sends it to FAR for approval. On the basis of this forecast FAR approves the expected annual catch for Sakhalin and Kuril fishing areas. The pre-season forecast is used primarily for planning purposes and possibly to establish quotas for some non-commercial fisheries.

During fishing season, FAR value of annual expected catch may be adjusted by AFC based on real-time data on the number of the salmon approaching the fishing areas. In order to assist in this adjustment, SakhNIRO monitors the dynamics of catches and biological indicators of salmon in the main areas of operation and the reproduction of the species. The monitoring results are used for developing operational guidelines on salmon fishing.

Additionally, TINRO-center conducts annual counting of salmon fingerlings in the open sea using total trawling method and counting of feeding salmon in the winter areas on the high seas and in the ways of anadromous migrations. The results of these studies are also used for operational adjustments of the expected catch.

Prior to 2008, salmon fisheries were carried out based on TACs, which was offered by the regional NIRO. Proposals of the regional NIROs were approved by Scientific Council of VNIRO and were examined by the inter-agency Commission of Rosprirodnadzor. After the examination, the TACs were being approved by the order of Rosrybolovstvo and sent to the Government of Russian Federation. The RF Government was affirming the orders of Rosrybolovstvo of TAC by its Decrees, at which moment the TACs became effective. Then Rosrybolovstvo was distributing the TACs to the subjects of the Russian Federation. The TACs represented the basis for conducting fishing in all subjects of the RF. In each subject of RF, the regional Departments of fisheries, in conjunction with Territorial Administrations of Rosrybolovstvo, Territorial Administrations of Rybvod, NIRO and representatives of the Fishermen Associations were distributing the TACs among the users of resources. The proposed distribution of TACs was sent to Rosrybolovstvo for approval. The quotas for each company were being determined based on historical data (the average yield for the previous 3 years). In case the return of salmon was observed to be higher than the approved TACs values, the process of increasing the quotas and TACs for individual fishing companies was the same as the original approval and required a long time. The resulting increase of the quotas and TACs were often carried out after the end of the harvest season, which resulted in spawning areas being overwhelmed by spawners and the catch was under-reported by the fishing companies. In 2008, the TAC system for the salmon fishery was canceled.

3.5.2.4 In-season Process

At the beginning of the year the fishing companies submit salmon catch applications to SKTU. Each company purchases a permit based on the number of salmon they want to catch (fee is roughly 3 rubles per 1 kg of fish caught). A company can purchase another permit once the first one is filled.

Each coastal trap is served by a crew of fishermen. The crew leaders report directly to the company's Directors. Each crew keeps fishing log according to the template specified by the FAR.
This log records:

- coordinates of trap;
- daily catch (in metric tons);
- species composition and by-catch;
- return of by-catch or its use.

Daily catch report on the catch volumes and species composition is generated every day for each fishing lot, additional reports are generated and transmitted to SKTU and SFA for the period of 5, 10, 15, and 30 days which is then summarized for reporting t AFC. Numbers are considered to be preliminary, final report is generated for every fishing ticket in the end of the season. Each crew submits information to SKTU and SFA daily which is then summarized for reporting to the AFC.

The AFC opens and closes fishery times and areas based on harvest and escapement relative to expectations and objectives. In cases the run of salmon is lower than forecasted, in order to provide escapement to the spawning areas, the entrances into the traps are being blocked and the central net is being lifted and attached to the top rope. In cases of high abundance of pink salmon there may appear a risk of spawning grounds overflow which leads to suffocation in rivers. In such cases (based on recommendations of SakhNIRO and SakhRybvod) AFC may decide to block the river's mouths with weirs or trap nets. Weirs or trap nets are installed at the moment when spawning ground fill rate reaches 60-70%. Gidrostroy ichthyologists constantly patrol spawning grounds and in case of possible overescapement Gidrostroy submits request to close the weirs to Sakhrybvod staff on Iturup Island. After that, based on recommendations of ichthyologists of SakhRybvod, AFC selects days when the fish are allowed to pass to the spawning grounds in order to fully fill them.

A similar regulatory system of filling of spawning grounds exists on the rivers where the hatcheries are located. At the beginning of the run on such rivers the fish is allowed to pass to the spawning grounds in upper streams of the river (reaching 25% of the total escapement goal). The middle of the run fills the spawning grounds in the middle stream (50% of the escapement goal) and at the end of run the downstream spawning grounds are being filled (25% of the escapement goals). The excess fish is being removed at eggs collecting locations (which use it for hatcheries) or at river mouth weirs or traps.

During fishing season top management of Gidrostroy conducts weekly meetings discussing all incoming information and making operative decisions about all aspects of fishing and hatchery activities. Hatchery personnel monitor the hatchery rivers and submit data to SakhNIRO and Sakhrybvod every 3-4 days. If everything is fine, then no further actions are needed. If fish numbers are above or below objectives, then SakhRybvod and AFC take local action.

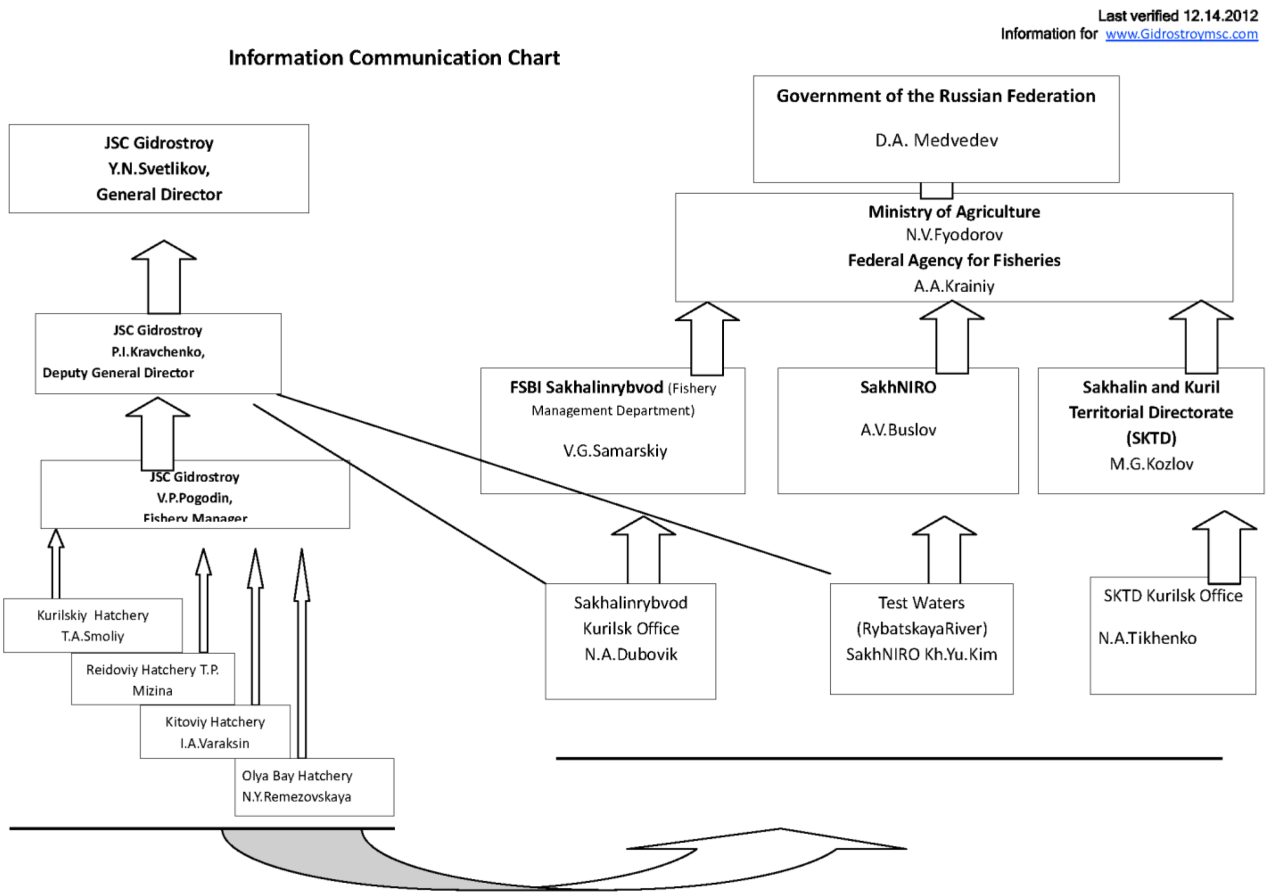

Figure 18. Gydrostroy's Information Communication Chart.

3.5.3 Compliance and Enforcement

3.5.3.1 Federal Security Service (FSB)

According to a 1997 Presidential decree No. 950, the Federal Security Service (FSB) enforces marine fishery laws and rules to protect aquatic bio-resources and their habitats. The FSB Coast Guard department of the Border Control Service supports Government Marine Inspection (GMI) to enforce laws in territorial, EEZ and continental shelf; and also in international waters in cases of fishing on salmon of Russian origin.

FAR handles enforcement duties in inland waters, such as in the Amur River. The FSB enforces marine laws in Russian territorial seas, the EEZ, and the continental shelf.

The GMI Maritime Inspection carries out analytical monitoring of fishing and transshipment activities. In addition to its internal resources (e.g. aircraft, patrol vessels, and radar surveillance), the FSB/GMI has access to both VMS position system and DVR databases (Fishery Monitoring System) held by the CFMC and also to fishing permit database held by the Territorial FAR Department.

GMI fisheries inspectors designated by the Border Control Service have a comprehensive list of duties and rights (FSB Order No. 1 of January 1 2009 "On approval of the FSB administrative provisions on protection of marine bio-resources…") which, in particular, corresponds to the objectives of legally-binding Port State measures being developed by the FAO (FAO Fisheries Report No. 846, 2007).

Duties and responsibilities of GMI maritime Inspectors, in particular, include monitoring and control of fishing and other fishery-related activities both at-sea and in ports in order to:

- enforce and control compliance of the Fishing Rules and regulations;
- check catches of marine biological resources taken by fishing companies (during harvesting, transshipments and unloading in ports) in order to prevent fishing above the approved limits;
- check VMS (satellite control equipment);
- inspect vessels (fishing and transport), inspect holds, check cargoes and products;
- check fishing gears and equipment;
- check fishing and processing logbooks, catch permits, DVR reports, other documentations and reporting;
- identify, prevent or eliminate violations of fishery regulations and fishing rules, and, where applicable, international fishery agreements;
- bring offenders to prosecution in accordance with the law;
- inform state authorities, and their regional bodies, on catches taken by fishing companies, violations identified, penalties imposed and fees paid.

In other words, the GMI inspectors observe and inspect:

- all trans-shipment operations at sea;
- all landings at the port control;
- trawling operations, hauls, processing, and recording when on board.

Starting in 2009, all fish caught in the Russian EEZ must be delivered into the Russian ports for clearance (By Federal Law No. 333-FZ of 6 December 2007 *"*On Amendments to Federal Law On Fisheries and Aquatic Biological Resource Conservation and some Legislative Acts of Russian Federation").

The GMI Maritime Inspection (together with the Customs and Veterinary Control Service) inspects fish products (both for export and for domestic market), and vessels (transport and fishing) and perform port, state, customs, quarantine and veterinary control (Federal Decree No. 184 of 19 Mar 2008 “Provisions for clearance of fishing vessels, catches and marine resources products, and for state control in marine ports of the Russian Federation”).

Being on board, the GMI inspectors observe the hauls (trawling operations) before discarding with respect to the Fishing Rules compliance (such as juvenile by-catch, 2% and 49% by-catch rules for TAC/PC species, sea mammals and birds interaction, bottom interaction (sea ground samples or bottom species), proper recording of by-catch and catches. Making haul observation, the GMI inspectors fill in a special form (Catch Check Act).

Strategic planning and federal target programs committed to strengthening the FSB Coast Guard with 6 new specialized patrol vessels and about 200 speedboats of various types.

Recent directives clarify the roles and responsibilities of state bodies in enforcement activities and provide guidelines for enforcement. Key FSB directives include:

- Russian President Decree No. 960 of 11 August 2003 “Issues of Federal Security Service of Russian Federation.”
- Procedure of State Control Implementation in Area of Marine Biological Resources approved by FSB of Russia directive No. 569 of 26 September 2005. The key objective of the directive seeks to prevent IUU fishing, through a set of inspection, control and analysis procedures, and an administrative basis to enforce legal procedures and law.
- The Administrative Procedures of the Federal Security Service of Russian Federation regarding the ‘Execution of State Function on Protection of Marine Biological Resources and State Control Execution in This Area’ were approved by FSB of Russia directive No. 1 of 11 January 2009. This provides the legal basis for implementation of control measures to protect biological resources by border guard bodies of RF Federal Security Service.
- Federal Decree No. 184 of 19 Mar 2008 “Provisions for clearance of fishing vessels, catches and marine resources products, and for state control in maritime ports of the Russian Federation”.

3.5.3.2 Federal Ministry of Natural Resources and Ecology of the Russian Federation (Rosprirodnadzor)

Federal Ministry of Natural Resources and Ecology of the Russian Federation encompassing the Federal Service for Supervision in the Sphere of Ecology & Natural Resources Use Strategic objective the Federal Service for Supervision in the field of environmental protection is to ensure environmental and economic safety of Russian Federation, compliance management, continuous, sustainable, environmentally sound management of the environment, preservation of all components of the environment from degradation and destruction. The main objectives of control and oversight in the field of environmental protection are the identification, elimination and prevention of offenses, related to the illegal and unsustainable use of natural resources, with a negative impact on the environment in the implementation of all types of environmental activities, including environmentally hazardous.

The Federal Service for Supervision in the field of environmental protection acts on the basis of the Regulations, approved by the Government of the Russian Federation, dated 30 July 2004, No. 400 "On approval of the regulations on the Federal Service on supervision in the field of environmental protection and changes in the regulation of the Government of the Russian Federation of 22 July 2004, No. 370 ", also carries out other functions in the scope of activity, if such functions are provided by federal laws and by the normative legal acts of the President of the Russian Federation or the Government of the Russian Federation.

Structural units and departments are well documented on the basis of rules approved by orders from seer.

The Federal Service for Supervision in the field of environmental protection in its activities is also guided by the Constitution of the Russian Federation, federal constitutional laws, federal laws, decrees and orders of the President of the Russian Federation, regulations and instructions issued by the Government of the Russian Federation, the international treaties of the Russian Federation, normative legal acts of the Ministry of natural resources and the environment of the Russian Federation.

Rosprirodnadzor is the Federal agency responsible for enforcement and control but it also reviews and approves aquatic biological resources TAC/PC on the annual basis. Review is conducted by a Commission of Experts, made up of scientists in all fields of science from different research institutes and independent experts. Before 2008 Rosprirodnadzor's reviews considered prediction of Pacific salmon runs and appropriate justifications and proposals and identifies quantities of salmon required for escapement, hatchery requirements, scientific harvesting, international harvest (per treaties signed by Russia), and commercial harvest in the inshore zone. A 2008 order of Rosrybolovstvo removed salmon from the TAC species and the responsibility for setting annual catch of salmon was removed from the supervision of Rosprirodnadzor. Apart from organization of the Commission of Expert's work, Rosprirodnadzor is also responsible for State supervision of usage and protection of water bodies, wildlife and their habitats, federal level wildlife preserves, and environmental protection status.

3.5.3.3 Veterinary & Sanitary Inspection (RosSelkhozNadzor)

This is the Federal body of executive power, performing the functions of the control and supervision in the area of the animal health, plant protection and quarantine, the safe treatment with pesticides and agrochemicals, to ensure soil fertility, ensure the quality and safety of grain, meat and components for their production, grain processing by-products, and land relations (relating to agricultural land), the functions for the protection of the population from diseases that are common to humans and animals. This enforcement and control agency also ensures safety of aquatic biological resources under the Russian Ministry of Agriculture. Responsibilities include accounting for and analysis of violations of technical regulations and other regulatory documentation, supervision of compliance with Russian Federation laws by the state agencies, local government, and the public, supervision of marine fishery ports and vessels, and administration of the Convention on the International Trade in Endangered Species of Wild Fauna and Flora.

The Federal Service of Veterinary & Sanitary Inspection**,** or *RosSelkhozNadzor,* conducts sanitary inspections of landed fish products before they move into to domestic or export markets. Several Decrees designate the Service to conduct inspections according to administrative procedures defined by Decrees Nos. 184, 990, and 378. Port officials, FSB and Customs staff can also inspect the catch. By decree, port clearance time should not exceed three hours and can be expedited by an advance "notice filing."

3.5.3.4 Customs Service

Among other duties, the **Federal Customs Service** inspects fish cargoes landed in Russia waters and destined for export. Prior to 2009, fish caught in the Russian EEZ could be trans-shipped at sea without clearing customs inspections. Beginning January 1 of 2009, all fish caught in the Russian EEZ must be delivered into the Russian ports for clearance (By Federal Law No. 333-FZ of 6 December 2007 *"*On Amendments to Federal Law "On Fisheries and Aquatic Biological Resource Conservation" and Some Legislative Acts of Russian Federation"). As a result, the Customs Service plays an important role in increasing traceability and cooperates with the FAR and FSB in controlling international transfer and shipping of Russian fishery products.

The Customs Service adopted a normative act (Federal Customs Service Order No. 578 of 14 May 2008) with procedures for Customs clearance of fishing vessels when entering and leaving the Customs territory, in particular, in relation to fish shipments on board of these vessels. The procedures include provision for an advance notification of port calls. Customs clearance will not be required in respect of vessels leaving for fishing in the EEZ or on continental shelf without calls to any foreign port. Also, these vessels will not be subject to Customs control when returning to ports with fish destined for the domestic markets.

Key decrees defining roles and procedures for Veterinary and Phytosanitary Inspection and Customs Service include:

- RF Government No. 184 of 19 March 2008 (as amended on 11.06. 2008) “On Procedure for Clearance of Fishing Fleet Vessels, Aquatic Biological Resource Catches and Processed Products, and State Control in Sea Ports of Russian Federation”;
- RF Government No. 990 of 24 December 2008 “On Bringing In (Out) to\(from) Customs Territory of Russian Federation of Aquatic Biological Resource Catches Harvested (Caught) through Commercial Fishery in Russian Federation Internal Waters, Territorial Sea, Continental Shelf, Exclusive Economic Zone, and Fish and Other Products from Them.” ;
- RF Federal Customs Service directive No. 378 of 4 March 2009 “On Approval of Procedures for Customs Operations Regarding Sea Fishery Produce Being Transferred across Russian Federation Customs Border by Fishing Vessels”;
- RF Ministry of Agriculture directive No. 1 of 9 January 2008 (as amended on 26.06.2008) and with Veterinary Rules on bringing in (out) to (from) Russian Federation territory, processing, storage, transportation, sales of aquatic organisms, fish, seafood and products produced from them approved by RF Ministry of Agriculture directive No. 453 of 6 October 2008 (as amended on 04.03.2009);
- Federal Ordinance No. 486 of 30 June 2008. A provision to reinforce delivering of all harvested aquatic resources and products of their processing to Customs territory.

3.5.3.5 Local Enforcement

SKTU controls the compliance with the law and rules of fishing. SKTU contains the department of state control, supervision and protection of aquatic resources and habitats. The department consists of 18 fish protection inspector squads, which are located in every administrative region of Sakhalin-Kuril region. The total staff of the department is 100 inspectors. Being this number is not enough to ensure comprehensive monitoring, SKTU often asks police, prosecutors of Environmental Prosecutor’s office, private security agencies, fishermen and freelancers to assist. During the harvest of salmon, the anti-poaching brigades, led by the inspectors, carry out regular daily and nightly rounds on majority of spawning rivers in order to prevent poaching. Poaching on Iturup is not a significant problem comparing to Sakhalin Island because of remoteness and difficult access in first place. The government restricts access to the island and monitors all incoming and outgoing visitors and inhabitants. That limits human interactions on the island and prevents illegal fishing both near shore and up-river. Fishery enforcement is conducted by fish inspection. Approximately 8 patrol officers staff the Iturup office. Enforcement on the water is carried out using patrol boats, and on land using enforcement officers that walk the rivers in-season using a pattern of patrols that encompass all times of day and night.

Gidrostroy also employs security division whose primary responsibility includes prevention of illegal fishing in spawning streams and bear protection (Tiger agency). Fishery permit conditions require that the fishing area be kept in order which includes protection against illegal harvest. Rivers in certified unit are guarded by Sakhrybvod in time of salmon run and it is easier for everybody to buy a license to fish and catch the fish in designated area legally than take a risk poaching.

3.5.3.6 Protected, Endangered, or Threatened Species

The Ministry of Natural Resources and Ecology is responsible for managing sensitive species. Oversight is provided by various commissions which also collect scientific data. Guidance is provided in the form of recommendations. In general the Ministry of Natural Resources and Environment (Minprirody) is a federal executive body responsible for drafting and implementing government policy and the legal regulation in the field of the exploration, use, reproduction and protection of natural resources, including mineral resources, water bodies, woodlands, animals and their habitats, and land relations concerned with the transfer of water and forest areas, as well as specially protected areas, territories and sites (as regards specially protected natural areas) to lands of other categories, in forestry relations, hunting, hydrometeorology and related sectors, environmental monitoring and protection, including radiation control regulation and monitoring, as well as developing and implementing the national policy and legal regulations in environment protection, including issues related to the treatment of industrial and consumer waste, specially protected natural territories, and state environmental expert evaluation.

3.5.3.7 Environmental Protection

Protection of the salmon habitat is achieved through observance of the current laws of the Russian Federation. Any type of utilization either of natural resources directly or that impacts them indirectly, including fisheries, water and timber utilization, construction, etc., must be evaluated as to the extent of impact on the environment. The evaluation itself is performed by an expert commission having state ecological expertise, and the main federal agency responsible for conducting the state ecological expert review is the Ministry for Natural Resources of the Russian Federation. In addition, activity related to natural utilization that has already been permitted is regulated to the extent to which it impacts the environment by a series of standards documents at the federal, departmental and local levels. For the protection of fish habitat within the area of its competence, responsibility is borne by the Federal Natural Utilization Oversight Service (Rosprirodnadzor), the Federal Ecological, Technological and Atomic Oversight Service (Rostekhnadzor), the Agency of Fisheries of Russian Federation and local governments of the territorial subjects of the Russian Federation.

The Natural Protection Prosecutor's Office of the Russian Federation is responsible for enforcing laws relating to natural utilization. Rather, building/construction projects are regulated by a governmental agency (Rospotrebnadzor Sanitation Service) which requires completion of an Environmental Impact Study (EIS) prior to approval of a project permit. Projects are monitored and can be delayed by the service if the builder does not fulfill the requirements. Assessments address discharges, disposal, drainage, soil pollution, the burial of wastes in the environment, accidents and catastrophes. The EIS includes a project description, descriptions of the environments subject to impact, and a characterization of the extent of the impact (based on a worst case maximum), including a determination of the subsequent value of the losses, the form of compensation both in kind and in monetary terms, and development of the engineering for loss compensation. Also included are descriptions of the extent to which the conditions for land use and the requirements issued by the respective government agencies of supervision and control have been followed, a study of the risks associated with possible accidents, as well as the adequacy of the anticipated material resources and financial reserves to localize and eliminate the effects of accidents, and a study of the fullness and effectiveness of the anticipated measures for protecting the health of the population living in the surroundings of the environmental area. Decisions adopted must conform to the laws and standards of the Russian Federation and the Sakhalin Region. The main indicator of success with respect to actions aimed at protecting fish (salmon) habitat is the record size of the harvests of pacific salmon in the Sakhalin-Kuril area over the past 8 years.

3.5.3.8 Court System and Dispute Resolution System

The court system provides an effective legal system for dispute resolution among the various commercial fishery enterprises and the management agencies. Enforcement regulations include penal sanctions based on the Criminal Code and administrative penalties under the violations code. Violators convicted of significant harm to the environment face penal (criminal) charges, while less significant violations result in fines and penalties.

To clarify legal procedures in applying various and changing Russian fishery laws, a 2010 Supreme Court decree provided guidance to marine inspectors and prosecutors. By providing legal guidelines for the fishing industry, this decree seeks to harmonize laws and enforcement procedures (Plenum of the Russian Federation Supreme Court. 23.11.2010 No. 27 "On the practice of trial of administrative cases involving violations of rules for harvesting (catch) of aquatic biological resources and other rules governing the implementation of industrial, coastal and other types of fisheries”).

3.5.4 Research

3.5.4.1 Russian Fishery Science & Research Institutes

There is a wide range of scientific research accomplished annually in the north-western part of the Pacific, including the Bering Sea, the Sea of Okhotsk and the Sea of Japan.

Federal Fisheries Agency includes a network of scientific research organizations conducting the research and development of both applied and fundamental nature in accordance with the program entitled “Scientific and engineering support of the Russia’s fisheries industry.” Federal Fisheries Agency has 15 scientific-research organizations under its direct supervision – of which nine are marine scientific research institutes; they are assigned to appropriate regions on the legal basis and are responsible for the state level monitoring of stocks and additional resources and inclusion of the said resources in harvesting process, and also responsible for rational and efficient usage of the bio-resources. The above-mentioned scientific research institutes have a legal status as federal state unitary enterprises (FSUE). Their activities are regulated by the charters approved by FAR. VNIRO of Moscow is a head institute in the field of fishery related research.

Studying of the Pacific aquatic biological resources is performed by TINRO-center (Vladivostok) with branches in Khabarovsk and Anadyr; Magadan-NIRO (Magadan); KamchatNIRO (Petropavlovsk of Kamchatka) and SakhNIRO (Yuzhno-Sakhalinsk). Studying of aquatic biological resources of the Arctic, northern Atlantic Ocean, Baltic Sea and Atlantic Ocean and that of Black, Azov and Caspian seas and studying of aquatic biological resources of internal freshwater bodies is performed by other territorial institutions. SakhNIRO conducts research of marine and freshwater resources in the Sakhalin-Kuril region to monitor the status of commercial species, including salmon, and preparing annual forecasts for commercial species and the proposal on the volume of their potential catch. Each October SakhNIRO issues forecast for expected catch of salmon for the next season. Forecast is developed based on the filling the spawning grounds, migration of juveniles from natural spawning to the sea and the release of juveniles from the hatcheries. These data are collected by both SakhNIRO and SakhRybvod. Upon the request of fishing companies and SakhRybvod, the SakhNIRO also develops technical and biological rationale for salmon hatcheries construction.

Based on the (“*Concept for the Development of the Fisheries Industry for the period until 2020*” (Federal Ordinance No. 681-p of 7 May 2008), the Government adopted a “*Federal Target Program for the development of resources of the fisheries industry complex in 2009-2013*” (Federal Ordinance No. 606 of 12 Aug 2008). In 2010 the FAR approved (FAR decree No.144) a five year *Complex program for scientific research for the interest of the Russian federation fishing industry for 2010 - 2014*.

Until mid-1990’s the studies of salmon in the Far East Russian Federation were performed according to the complex target program “Salmon,” which was controlled by the Committee on Fisheries of Russian Federation (Federal Agency for Fishery). This program was designed for every 5 years starting with mid-1980s. Studies in second half of 1990s were performed according to 5-year programs, which took into account the basin and partly the ecosystem approaches. In 2005, the

TINRO-center with the participation of regional NIROs, developed “The concept of the Far East basin program for the complex study of Pacific Salmon for period 2006-2010”, which was approved by Rosrybolovstvo (now is FAR). In accordance to this concept TINRO-center developed the “Far East basin program for complex study of Pacific Salmon for period 2007-2012”. According to the political course of FAR on the centralization of fisheries research in 2009, VNIRO has developed the departmental comprehensive target research program for fisheries of Russian Federation for 2010-2014 named “Scientific support and monitoring of conservation of reproduction and rational using of resources of fisheries base”. At present such program is being worked out for 2012-2016 period.

Within that program the “Far East basin program of complex study of Pacific Salmon for period 2010-2014” was adopted in which the succession of approach and research directions was preserved. According to this program, the TINRO-center develops its annual program of complex research of Pacific Salmon. Regional institutes, including SakhNIRO, develop their own annual research salmon programs. All annual programs are approved by FAR.

Regional NIROs carry out studies of salmon in the river and early marine life periods, which includes the study of biology, population structure, escapement monitoring, survival of eggs, downstream migration of fry, feeding of juveniles in estuarine period and the collection of statistics of salmon catch. TINRO-center directs and carries out research of marine life period of salmon, including the study of the state of ocean and marine biota in the feeding areas and migration routes of salmon, total trawl counts of salmon juveniles during cathadromous migration and count of salmon in the period of anadromous migration.

At the end of the year, the results of these programs are discussed in the East Salmon Council at TINRO-center and published in the annual edition of The Bulletin of the Implementation of the “Concept of the Far East basin program for the complex study of Pacific Salmon”. A total of 5 bulletins for the period 2006-2010 have been published. Funding for all the programs is provided by FAR from the federal budget.

JSC Gidrostroy invests money into scientific research of resources aimed at verification of the validity of the fishery management by the Company and the government in accordance with MSC principles This have included genetic studies and tagging of the chum population (since 2007), studies of the pink population (tagging since 2007) and others.

3.5.5 Monitoring and management performance evaluation

3.5.5.1 Center of Fishery Monitoring and Communications

The **Center of Fishery Monitoring and Communications (CFMC)** is a state authority established under the executive order of the Russian Government. The CFMC is administered by the Federal Fishing Agency (FAR). Major objectives of the Centre include the monitoring of aquatic bio-resources and fishing activity and the development of onshore facilities for the Global Maritime Distress Safety System (GMDSS).

The CFMC is an operator of the *Fishery Monitoring System (FMS)* used for management purposes by the FAR for ensuring economical safety of the Russian Federation, research and efficient use of aquatic bio-resources. The Fishery Monitoring System (FMS) provides a central platform for data storage, analysis, and dissemination. It is available to FAR, FSB, fishery scientific institutes like VNIRO and TINRO, Customs, plus other users approved by the FAR.

The CFMC structure includes the Moscow Head Office and territorial subdivisions located in Petropavlovsok-Kamchatsky, Vladivostok, Yuzhno-Sakhalinsk, Murmansk, Kaliningrad, Astrakhan, Novorossiysk and St. Petersburg.

The Fishery Monitoring System (FMS) was established in accordance with the Decree of the Russian Government No. 226 dated February 26, 1999 "On establishment of the Fisheries Monitoring System for aquatic biological resources, supervision and control of the fishing fleet activity" in order to provide economic security of the Russian Federation, efficient use, stocks study and preservation of aquatic biological resources of the internal sea waters, territorial sea, continental shelf, exclusive economic zone (EEZ) of the Russian Federation, the Caspian Sea and the Sea of Azov.

FMS is designed to collect, process, store and represent information on the fishing and transport vessels and fishery companies. According to the regulations, each vessel (fishing trawler or transport vessel) and fishing company is obliged to register in the FMS, with unique FMS code being assigned to the vessel (company) which is needed for such vessel's (company's) reports processing. Data of vessels' activity is based on the Daily Vessels Report (DVR). All information is transmitted by satellite or radio communication channels. Information is verified by a quality control check for authenticity and then released for other systems use purposes. In addition to the DVRs, the companies submit their two weeks' routine reports and quarterly statistical reports. Such reports are presented to the Regional Information Centers (hereinafter referred to as RIC) functioning inside of the territorial departments of the CFMC.

DVR includes information on:

- vessel's unique code;
- vessel's status and position coordinates at the moment of report;
- port of destination and estimated date of arrival;
- daily catch regarding each species of harvested aquatic biological resources;
- data on catching operations performed (fishing gear), total quantity of harvest (catch), number of operations and time spent, average depth of the operations, fishing grounds, etc.);
- total volume of the fish and other products produced from each species specifying the source of raw materials (caught or bought at the sea);
- detailed information on accepted on board and transshipped fish products;
- volume of each type of cargo/store on board;
- data on out-of-operation maintenance (type of out-of-operation maintenance, actual date of its start and estimated date of its completion);
- time spent for each type of activity performed by the vessel; etc.

15-days Routine report includes data on:

- name of the reporting company,
- name of fishery vessel carrying out fishing activity,
- type of fishing activity,
- reporting period,
- number of fishing (catching) license,
- volume of quotas regarding the specified aquatic bio-resources species,
- volume of catch on a cumulative total from the beginning of the year regarding the specified aquatic bio-resources species for the reporting period and accumulated from the beginning of the year,
- production output on a cumulative total from the beginning of the year regarding the types of fish and other products of aquatic bio-resources in terms of the raw materials types,
- volume of export and domestic supplies on a cumulative total from the beginning of the year regarding the kinds of fish and other products of aquatic bio-resources; etc.

Quarterly statistical report includes data on:

- name, correspondence address, codes of the reporting company;

- figures of actual catch (from the beginning of the year regarding the species of aquatic bio-resources and according to all types of quotas);
- data on total volume of fish and other products of aquatic bio-resources accepted from outside companies (including half-finished products, give-and-take and bought raw materials) for further processing and finishing according to the specified range in physical and monetary form;
- data on total volume of fish and other products of aquatic bio-resources (including imported products) accepted from the foreign companies for further processing and finishing according to the specified range in physical and monetary form;
- data on manufacturing of certain products released by the fishery company in physical and monetary form;
- data on volume of own-produced goods, works performed and services rendered by means of own resources, shipped or sold and bartered directly (under the barter contract) in actual prices without value-added tax, excise tax and other similar payments in monetary form;
- cost of the other manufacturers' goods sold which were acquired for sale (resale);
- balance of own-produced finished goods available in the warehouses at the period's end in actual production costs (or in book prices).

The vessels' and companies' reports are submitted to those RICs where such vessels or companies were registered in the FMS. On receiving of the vessels' and companies' reports RICs proceed with the following:

1. Data processing which includes:
   - disclosing of errors in the reports;
   - control of the reports data accuracy;
   - requiring of the corrected reports if needed;
2. Control of the reports submission which includes:
   - revealing of fact when the reports are not submitted;
   - informing the vessels (companies) that the reports are to be submitted;
   - advising regional departments of the FAR and FSB Border Guard Service Divisions of the facts when the reports were not submitted.

The CFMC also performs satellite tracking of fishing vessels with mandatory installations onboard of each vessel. Each vessel (fishing or transport) with output at least 55 kW and tonnage at least 80 tons must be equipped with the satellite control equipment (VMS). Information from the VMS is transferred through satellite communication (by means of Agros and Inmarsat systems) to the earth station of the telecom provider and further to the RIC of CFMC.

RIC automatically inserts information on the vessels' positions to the database and automatically controls the vessels' submission of the reports on their positions. When the report on the vessel's position is not submitted, RIC contacts the vessel by any means and requests to fix the VMS troubles and advise data on their position over telephone, fax or telex. If the error cannot be eliminated within 48 hours the vessel should proceed to the port.

The vessel is allowed to sail without working VMS only once during the whole period of the vessel's operation. If VMS breaks down once more, the vessel proceeds to the port for the equipment repair or replacement. According to the regulations, if VMS stops operation for forty eight or more hours without required approval, it leads to forced quota termination.

CFMC submits information on corruption of data on Russian and foreign vessels positions in the internal sea waters of the Russian Federation, territorial sea of the Russian Federation, exclusive economic zone of the Russian Federation and continental shelf of the Russian Federation to Russian Federal Fisheries Agency and the Russian Federation Security Service bodies on-line.

Satellite tracking is used for the Russian and foreign vessels in the EEZ, and for the Russian vessels fishing in other waters. The Centre operates within international agreements with Norway, Iceland, Greenland, Faroe Islands and Morocco and cooperates with International Fishery Commissions and organizations such as NAFO, NEAFC, SPO, CCAMLR.

Recent developments of fishery monitoring system include an electronic logbook system which has been tested in the Barents Sea and will be rolled out across all Russian fisheries over the coming seasons. The system is operating with a unique identifier key so that access is controlled and all inputs have to be verified by the authorized user before transmitting. The electronic logbook contains the same interfaces and entry fields as existing paper based systems.

Other developments include a new automated sub-system (called "Permission") for granting electronic permissions for fishing of aquatic bio-resources. This will make information readily available to the various Federal and Regional management organizations for increased efficiency.

3.5.5.2 State Fishery Register

Government of the Russian Federation in accordance with the article 43 of the Federal law "On fisheries and aquatic biological resources preservation" by the resolution No. 601 dated August 12, 2008 "On the State Fishery Register" imposed a function of keeping State Fishery Register on the FAR and obliged to provide required information for the Register.

The State Fishery Register contains the following information:

- quantitative, qualitative and cost characteristics of aquatic bio-resources;
- fishing areas of commercial fishing importance;
- companies and individual entrepreneurs engaged in fisheries;
- fishing vessels including the right of title and other rights to them, on type (horse power), class of such vessels, and fishing gears;
- public authorities resolutions and quota agreements;
- catches and landings data;
- other information about fisheries and aquatic bio-resources preservation.

Such information is provided by the FSB, the Ministry of Emergency Situations, Federal Agency for Water Resources, the Ministry of Transport agencies (port administration captains), the Federal Tax Service and executive government bodies as well as the FAR departments and agencies.

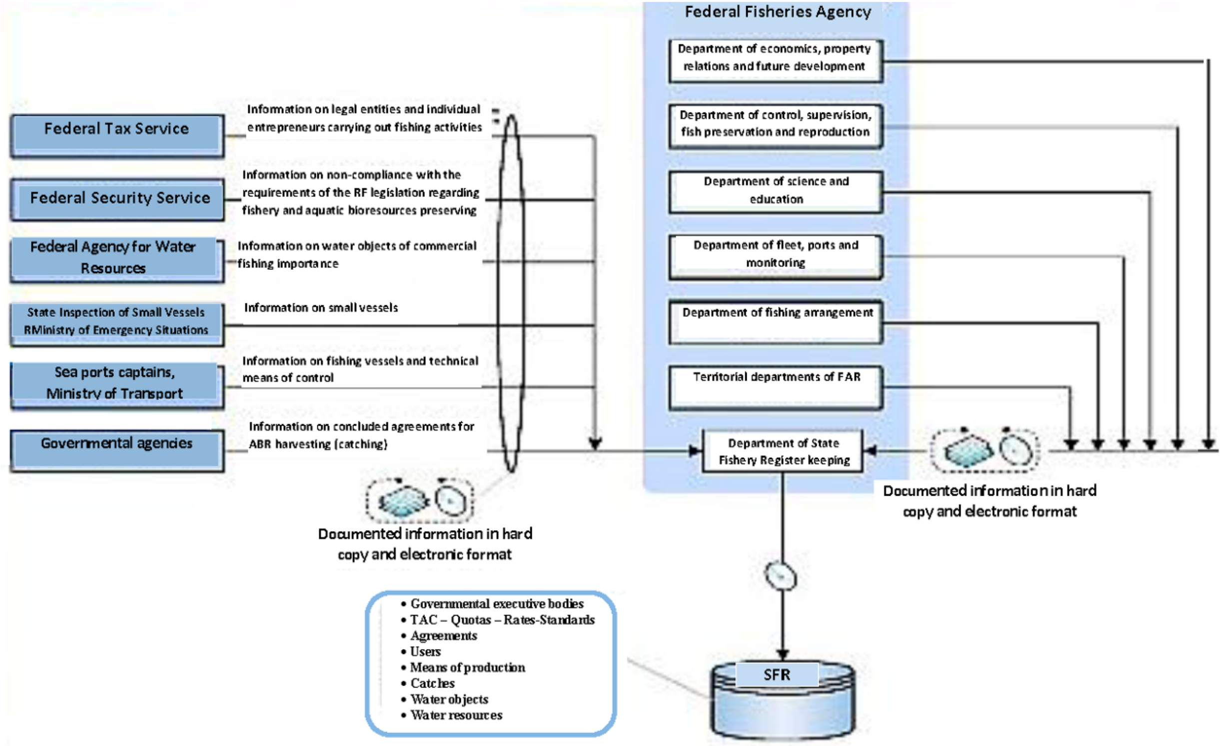

Figure 20. State Fishery Register.

3.5.5.3 International Scientific Cooperation and Consultations.

Russia is party to the Convention for the Conservation of Anadromous Fish Stocks in the North Pacific Ocean, and a member of the North Pacific Anadromous Fish Commission. The Commission promotes the conservation of anadromous fish in the Convention area, which includes the waters of the North Pacific Ocean and its adjacent seas north of 33 degrees latitude and beyond the 200 mile zones of the coastal states. The Commission requires member states to:

- Prohibit directed fishing for anadromous fish in the Convention Area.
- Minimize to the maximum extent of the incidental taking of anadromous fish
- Prohibit the retention of anadromous fish (taken as an incidental catch during fishing for non-anadromous fish) on board of fishing vessel.

The Convention authorizes research fishing for anadromous fish on the high seas if consistent with the NPAFC science program. The parties conduct joint research programs including exchange of information. The parties have an obligation to enforce the provisions of the Convention. Russian scientists participate in PICES and its FUTURE program (to Forecast and Understand Trends, Uncertainty and Responses of North Pacific Marine Ecosystems.). This allows scientists to work with the international community in adopting the latest methods related to ecosystem management and adaptation to climate change. They also work in NPAFC and its BASIS program (Bering-Aleutian Salmon International Survey). This way international colleagues peer-review the work of Russian scientists. Russian scientists are also involved with American colleagues at NOAA/NMFS, participating in Bering Sea fishery science and management.

Russia and the US maintain the Intergovernmental Consultative Committee (ICC) with the objectives to maintain a mutually beneficial and equitable fisheries relationship through:

- cooperative scientific research and exchanges;
- reciprocal allocation of surplus fish resources in the respective national 200-mile zones, consistent with each nation's laws and regulations;

- cooperation in the establishment of fishery joint ventures;
- general consultations on fisheries matters of mutual concern; and,
- cooperation to address illegal or unregulated fishing activities on the high seas of the North Pacific Ocean and Bering Sea.

3.5.5.4 Gidrostroy Website

Gidrostroy maintains a website for the dissemination of information regarding Iturup Island MSC chum and pink salmon fisheries (J.S.C. Gidrostroy Website). This website was established as a condition of the previous assessment. The website includes Russian and English language information on the fishery background, management, enhancement, escapement, and research. This includes only information that is otherwise provided to the government and thus publically available. It does not include propriety real-time information that would put the company at a competitive disadvantage in their market.

4 EVALUATION PROCEDURE

4.1 Harmonised Fishery Assessment

The unit of certification of this fishery does not overlap with any other units of certification that are in assessment or are already certified. No harmonization with other assessments took place.

4.2 Previous Assessments

SCS conducted a pre-assessment of the Iturup pink and chum salmon fishery in 2008. The fishery was found to have adequate information to support a full assessment with the MSC criteria and the fishery entered assessment later on that year. The fishery was first certified as a sustainable source of seafood in September, 2009 (SCS 2009). The MSC reference standards in use at the time of the beginning of the assessment in 2008 were MSC Fisheries Certification Methodology v6 (FCMv6) including Technical Advisory Board Directives and Policy Advisories and MSC Chain of Custody Certification Methodology v6. This was prior to the publication of the MSC default assessment tree. A unique tree was therefore developed for the fishery by the assessment team. SCS received a variance from MSC to continue to use these criteria for the duration of the certification when the FCM and FAM were consolidated into the CR. Many of the same requirements for stakeholder consultation were in place at that time the FCMv6 was used including soliciting stakeholder comment on the composition of the assessment team, proposed assessment criteria (assessment tree), on-site meetings, stakeholder meetings and the report findings. The team consisted of three members, Mr. Ray Beamesderfer (principle 1), Dr. Chet Chaffee (principle 2) and Mr. Evgeny Matsak (principle 3). The same team was retained for the re-assessment with the addition of team leader and lead auditor, Ms. Adrienne Vincent.

Three broad issues were identified in the first assessment. The first was availability of documentation and transparency of information collected by the government. The second issue was the need for improved resolution on the proportion of natural to hatchery pink and chum salmon in the fishery, on the spawning grounds and taken for broodstock. The third issue identified in the initial assessment was improved information on the level of impact on non-target species including the rare Sakhalin taimen. These were to be addressed by closing eight conditions. Progress to close the conditions on the fishery was evaluated at annual surveillance audits and was found to be adequate to maintain certification through to the re-assessment. Below is a table summary of the conditions and their status by the end of the 4th annual surveillance audit.

Table 14. Summary of Performance Indicators with Conditions and their status at the end of the 4th annual surveillance audit

Condition	*Indicator(s)*	*Status*
1	1.1.1.5, 1.1.2.4, 3.1.10	Closed in 2013 surveillance audit—rescored to 80
2	1.1.1.5, 1.1.2.4, 3.1.1	Open and on target—continued through to next certification cycle
3a	1.1.2.1, 1.1.2.4,	Closed in 2013 surveillance audit—rescored to 80
3b	1.1.2.1, 1.1.2.4	Closed in 2013 surveillance audit—rescored to 80
4	1.1.2.2, 1.1.2.4	Closed in the 2012 surveillance audit—rescored to 80
5	2.1.2, 3.7.1	Closed in the 2012 surveillance audit—rescored to 80
6	2.2.2, 3.1.10	Closed in 2013 surveillance audit—rescored to 80
7	3.2.1	Closed in 2013 surveillance audit—rescored to 80
8	3.4.2.2	Closed in 2013 surveillance audit—rescored to 80

All of the conditions were adequately addressed in the certification cycle (SCS 2011; SCS 2012; SCS 2013a; SCS 2013b). Condition 2 remains open and is carried over as a condition in the re-assessment. Condition 2 related to identifying the proportion of hatchery and naturally spawning salmon in the fishery, spawning grounds and broodstock collection. This information is integral in understanding the direct and indirect effects of the hatchery on naturally spawning (wild) populations. At the time of the first assessment, there were two hatcheries that were on "mixed" river systems, meaning that the hatcheries were placed on a stream that also has natural spawning components either further up-stream or in another part of the tributary system. One of these hatcheries was reconstructed at the historical site of the Japanese hatchery built in the early part of the 20^{th} century.

Iturup benefits from several 'wild' streams that do not have hatcheries on them and that are far enough away from the hatcheries such that there is very little likelihood that straying from hatchery fish was occurring so that the fishery met the minimum requirements for initial certification. Additional information was needed to get better resolution on the level of straying (if any) from hatchery fish. Gidrostroy began thermal otolith marking their hatchery pink and chum salmon in the 2009 brood year with preliminary returns expected in the 2011 and 2012 fishing seasons.

By 2011, J.S.C. Gidrostroy had built two more hatcheries, but these take a different approach than the semi-integrated hatcheries. The new hatcheries are not integrated with wild stream systems. They are built directly on Olya and Prostor Bays with an artificial lagoon for juvenile marine acclimation. They utilize groundwater instead of stream water. They are also state of the art facilities that are capable of marking 100% of juveniles. The older facility on the Kurilsky system uses natural springs that feed directly into rearing pens. Thermal control of this system is less effective in otolith marking. Sampling for otoliths takes place throughout the fishing season. Otoliths are read by Akinichiva and her team under special contract with J.S.C. Gidrostroy (see Akinichiva reports for 2011, 2012 and 2013).

Additional genetic marker studies are taking place on the island. Zhivotovsky, in conjunction with Gidrostroy biologists collected DNA samples of a chum population that have adapted to spawn on the shores of Lake Lebidinoe also in the Kurilsky watershed. The lake is downstream from the Kurilsky hatchery (and site of the original Japanese hatchery). Results from the Zhivotovsky work (Zhivotovsky et al, 2011) indicated that there are other DNA markers in the lake spawning chum population presumably from straying hatchery fish. This is in conflict with the direct otolith observations, which do not indicate that hatchery fish are straying into the lake to spawn. Both the otolith study and the microsatellite DNA study suffer from small sample sizes. To allow additional information to be gathered on this particular population, SCS found that progress on Condition 2, which relates to identifying hatchery stray rates, to be adequate to continue certification, but kept the condition open after the 4^{th} surveillance audit since the issue had not yet been resolved. No additional actions against the client were taken. Condition 2 from the initial assessment is therefore being carried over into the findings of the re-assessment and is assigned to Principle 1. The table below offers further explanation.

Table 15. Summary of Previous (2010) Assessment Conditions

Condition	Closed? (Y/N)	Justification
Condition 2 from the original assessment related to Indicators 1.1.1.5, 1.1.2.1, 1.1.2.4, 2.1.2 & 3.1.1 in the original assessment. The wording of condition 2 was as follows: *Establish goals and objectives for the wild (unenhanced) stocks to ensure that the presence of unenhanced fish in the management units does not adversely impact the wild (unenhanced) fish stocks, consistent with MSC policy guidance and current best practice. Develop appropriate remedies for assuring that the presence of enhanced fish does not adversely affect the wild stock based on the results of stock composition studies and consistent with the goals and objectives for managing proportions of hatchery and wild fish in the natural spawning escapement and hatchery broodstock, respectively. The potential for impact of hatchery contributions of non-Gidrostroy hatchery programs on target stocks shall also be evaluated based on the findings of the Gidrostroy hatchery evaluation program on hatchery stray rates in wild production areas relative to distance from hatchery release sites.*	N, but on target. Carried to re-assessment	This condition has several components there were addressed by the client since the initial certification. J.S.C. Gidrostroy established a mark and recapture program for their hatcheries. It was at least two years before the first marked fish started to return. Marking rates improved in subsequent years and is nearly 100%. Within the certification cycle, two new hatcheries came online (assessed in the 2011 audit). With additional hatcheries, additional mark and recapture data needed to be collected to address the condition adequately. This research is ongoing as marked hatchery fish are just beginning to return. This work will continue through the next certification cycle. While the mark and recapture studies have been underway, Zhivotovsky et al. (2011) also conducted micro-satellite DNA testing of a rare lake-shore spawning chum salmon (normally chum salmon spawn in streams) on the Kurilsky river system. This is the river system with the hatchery site originally operated by the Japanese. Initial results from Zhivotovsky indicated that there may be significant straying of hatchery fish into the lake. Direct evidence from otolith sampling does not correlate with the microsatellite DNA results. Zhivotovsky, during interviews with the assessment team expressed that the microsatellite DNA work was on a small sample size. Because the findings between the two studies are contradictory, additional research is currently underway to determine whether hatchery fish are adversely affecting Lebidinoe Lake spawning chum. In the interim, J.S.C. Gidrostroy biologists are increasing their survey efforts and improving security at the lake to prevent poaching on the rare chum. Other aspects of this condition have been adequately addressed through the mark and recapture studies and annual reporting on study results. Initial results find that wild river populations are healthy and additional management measures do not need to be taken at this time (see Akinichiva reports). Because progress was sufficient for most systems in the fishing area, the condition was judged to be open and on target in the 4th surveillance. To ensure that the lake spawning chum issue gets resolved, this condition is being carried over in the re-assessment and is applied to Principle 1.

4.3 Assessment Methodologies

The re-assessment started concurrently with the 4th annual surveillance audit in summer and fall of 2013. The MSC standard of reference used for the re-assessment is Version 1.3 released January 2013. The reporting template of this report is also Version 1.3 released January 2013.

The Iturup pink and chum salmon fisheries occur within an enhanced system. There are four pink and chum salmon hatcheries that are operated by the clients, J.S.C. Gidrostroy. The assessment criteria (assessment tree) developed by the MSC for all fishery assessments, known at the Default Assessment Tree found in Certification Requirements Part C v1.3 does not adequately address the special issues relating to enhanced systems. Modifications were therefore proposed to the language of the tree. These and the rationale for the changes made may be found in Appendix 8 of this report.

In summary, the modifications mirror those salmon assessments that have been undertaken since the publication of the Default Assessment Tree including those for the Annette Islands Reserve salmon fishery, the NE Sakhalin pink salmon fishery, and Ozernaya sockeye assessment. The modifications include adding in terms directly into the performance indicator scoring guideposts so that enhancement activities are accounted for. Some performance indicators had additional scoring issues added to them that address enhancement activities. Several performance indicators also specify "wild" stocks to make it clear that the assessment is being conducted on the naturally spawning pink and chum salmon instead of on the hatchery origin salmon. Three additional performance indicators that address enhancement activities were added to Principle 1 under (1.3.1, 1.3.2 and 1.3.3). A public consultation period of at least 30 days was initiated on 4 July 2013 (closing 6 August 2013). SCS received comments regarding adding additional enhancement-specific language to Principle 2 performance indicators. These additions were incorporated and the tree was confirmed for use in the re-assessment. A summary of the changes to the Default Assessment Tree are in the table below. Some indicators had more than one change. For explicit changes and their rationale, please refer to Appendix 8 of this report where modifications are highlighted in red text.

Table 15. Modifications to the Default Assessment Tree

Type of Modification	Performance Indicators Modified
Additional Language in the PI or in the Scoring Issue so that enhancement activities are expressly evaluated including assessing the status of 'wild' populations	1.1.1, 1.1.2, 1.1.3, 1.2.1 2.1.1, 2.1.2, 2.1.3, 2.2.1, 2.2.2, 2.2.3, 2.3.1, 2.3.2A, 2.3.3, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 2.5.2, 2.5.3 3.1.3, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5
Additional scoring issues added to the Performance Indicator relative to the Default Assessment Tree found in CRv1.3	1.1.2, 1.2.3, 1.2.4, 2.4.1, 2.5.1, 2.5.2
Additional Performance Indicators added relative to the Default Assessment Tree found in CR 1.3	1.3.1, 1.3.2, 1.3.3
Modifications to the weighting of performance indicators relative to the Default Assessment Tree found in CR 1.3 to accommodate additional performance indicators	1.1.1, 1.1.2, 1.1.3, 1.2.1, 1.2.2, 1.2.3, 1.2.4 (see above)

Table 16. Change to Principle 1 PI Weight within the Principle. Each Component is 1/3 of the Total.

Principle 1 Wt. (of 3)	Wt (L2) in Principle	PI No.	Performance Indicator (PI)	Wt (L3) if 1.1.3 is scored	Wt (L3) if 1.1.3 is NOT scored	Weight in Principle if 1.1.3 is scored	Or Weight in Prin. If 1.1.3 NOT scored
1.0	0.333	1.1.1	Stock status	0.333	0.500	0.1110	0.1665
		1.1.2	Reference points	0.333	0.500	0.1110	0.1665
		1.1.3	Stock rebuilding	0.333	0.000	0.1110	NA
	0.333	1.2.1	Harvest strategy	0.25	0.25	0.083	0.083
		1.2.2	Harvest control rules & tools	0.25	0.25	0.083	0.083
		1.2.3	Information & monitoring	0.25	0.25	0.083	0.083
		1.2.4	Assessment of stock status	0.25	0.25	0.083	0.083
	0.333	1.3.1	Enhancement Outcomes	0.333	0.25	0.1110	0.1110
		1.3.2	Management	0.333	0.25	0.1110	0.1110
		1.3.3	Information	0.333	0.25	0.1110	0.1110

4.4 Evaluation Processes and Techniques

4.4.1 Site Visits

The re-assessment audit started as part of the 4th annual surveillance:

1. A desk audit and audit agenda were provided to the clients before the meetings. An orientation for the Assessment Team was not provided as team members were considered adequately experienced in MSC process and procedures and have undertaken the MSC required training modules. The opening meeting with the client included an exchange of information relevant to the surveillance audit and the start of the re-assessment.
2. The assessment team met with J.S.C. Gidrostroy personnel in Yuzhno-Sakhalinsk, Russia July 29-31, 2013 and with additional personnel on the Island of Iturup, Russia August 1-2, 2013 and follow up meetings in Yuzhno-Sakhalinsk August 4th, 2013. The discussions focused on the ongoing management and fishing activities for Iturup Island pink and chum salmon fisheries as well as the activities associated with the Conditions from the initial assessment placed on the fishery. Due to inclement weather, the site visit to Iturup Island was delayed several days. Dr. Chafee was not able to accompany the rest of the team to Iturup, though he had been there several times before for the initial assessment as well as the first surveillance audit.
3. On Iturup the team visited each of the hatcheries and processing facilities. Ms. Vincent conducted MSC Chain of Custody audits of the processing facilities. Team members interviewed several staff at the hatcheries and processing facilities including Mr. Borzov, who now works for J.S.C. Gidrostroy, the General Manager at the Kitovy processing plant but was previously employed with SakNIRO as a fisheries biologist and manager. The team was able to observe the set nets, fish being landed and taken to the processing plants (via fish pumps) and observe the different hatchery types (semi-integrated and non-integrated systems).
4. The assessment team, joined by Ms. Voronova and Mr. Pogoden, walked several salmon bearing streams on the island to observe the status of the habitat including the temporary weirs (not in operation). The group also visited Lebidinoe Lake where the lake spawning chum population are reported to be located.

5. Related information and documents were presented by the client to SCS before, during and following the meeting. The team communicated through phone and email to identify additional information requests. Requests were handled through Ms. Donna Hartshorn the logistics manager for Polar Bear Seafoods in Seattle, WA. Polar Bear Seafoods is a US broker for J.S.C. Gidrostroy and has served as a liason and translator for previous assessments and surveillance audits.
6. The assessment team met in 29 November at SCS headquarters for the scoring meeting once many of the requested documents had been received. Additional meetings were held by teleconference in December to confirm scores and identify any additional data needs.
7. Additional information was provided to the assessment team regarding the results of the otolith marking. This information was accounted for and scores re-evaluated by the assessment team in January and February, 2015. Because additional information was considered before finalizing scores, the duration of the certificate was extended to 9 June 2015.

Table 17. Re-Certification Onsite meeting attendees and activities

Attendees	*Organization*	*Role*	*Locations*	*Dates*	*Activities*
Adrienne Vincent	SCS	Team Member (Team Leader)	Gidrostroy headquarters Yuzhno-Sakhalinsk, Sakhalin Russian Federation	29 to 31 July and 4 August, 2013	Interviews with biologist and management staff, chain of custody audit
			Iturup island, Kuril Islands Russian Federation	1 and 2 August 2013	Interview sand Tour including hatcheries, landing docks, processing facilities, steam tour, set net observation, chain of custody audit
			SCS headquarters Emeryville CA USA	29 November 2013	Scoring meetings
Ray Beamesderfer	R2 Resource Consultants	Team Member (Principle 1)	Gidrostroy headquarters Yuzhno-Sakhalinsk, Sakhalin Russian Federation	29 to 31 July and 4 August, 2013	Interviews with biologist and management staff
			Iturup island, Kuril Islands Russian Federation	1 and 2 August 2013	Interview sand Tour including hatcheries, landing docks, processing facilities, steam tour, set net observation
			SCS headquarters Emeryville CA USA	29 November 2013	Scoring meetings
Chet Chafee	Carbon Solutions	Team Member (Principle 2)	Gidrostroy headquarters Yuzhno-Sakhalinsk, Sakhalin Russian Federation	29 to 31 July and 4 August, 2013 (conference)	Interviews with biologist and management staff
			SCS headquarters Emeryville CA USA	29 November 2013	scoring meetings
Evgeny Matsak	Matsak Consulting	Team Member (Principle 3)	Gidrostroy headquarters Yuzhno-Sakhalinsk, Sakhalin Russian Federation	29 to 31 July and 4 August, 2013	Interviews with biologist and management staff
			Iturup island, Kuril Islands Russian	1 and 2 August 2013	Interview sand Tour including hatcheries, landing docks,

			Federation		processing facilities, steam tour, set net observation
			SCS headquarters Emeryville CA USA	29 November 2013	Scoring meetings
Yuri Svetlikov	JSC Gidrostroy	General Manager	Gidrostroy headquarters Yuzhno-Sakhalinsk, Sakhalin Russian Federation	29 to 31 July and 4 August, 2013	interviewee regarding JSC Gidrostory lead science and management
			Iturup island, Kuril Islands Russian Federation	1 and 2 August 2013	facilitating tour and Kitovvy head office tour, additional interviews
Ludmilla Voronova	JSC Gidrostroy	Manager of Processing and Quality Assurance	Gidrostroy headquarters Yuzhno-Sakhalinsk, Sakhalin Russian Federation	29 to 31 July and 4 August, 2013	interviewee regarding JSC Gidrostory lead science and management
			Iturup island, Kuril Islands Russian Federation	1 and 2 August 2013	logistics, interviewee regarding JSC Gidrostroy science and management
Victor Pogodin	JSC Gidrostroy	Lead Biologist	Gidrostroy headquarters Yuzhno-Sakhalinsk, Sakhalin Russian Federation	29 to 31 July and 4 August, 2013	interviewee regarding hatcheries and escapement
			Iturup island, Kuril Islands Russian Federation	1 and 2 August 2013	tour of hatcheries, streams and Lebidinoe Lake
Oxana Minina	SakRyvod	Mater of Receiving	Iturup island, Kuril Islands Russian Federation	1 August 2013	Interviewee regarding receiving procedures dockside
RF Yasny	JSC Gidrostroy (formerly of SakNIRO)	General Manager of Kitovvy Plant	Iturup island, Kuril Islands Russian Federation	1 August 2013	Interviewee regarding bycatch and segregation (CoC)
Sergey Ivanovich Borzov	JSC Gidrostroy	General Manager of Processing Plants	Iturup island, Kuril Islands Russian Federation	1 August 2013	Interviewee regarding bycatch and segregation (CoC)
Raisa Dodova	JSC Gidrostroy	Roe General Manager	Iturup island, Kuril Islands Russian Federation	1 August 2013	Interviewee regarding segregation
Tamara Vladimirona Kiera	JSC Gidrostroy	Chief of Laboratories	Iturup island, Kuril Islands Russian Federation	1 August 2013	Interviewee regarding hatcheries and quality control
Tatiana Yugova	JSC Gidrostroy	Translation/ Interpretation	Gidrostroy headquarters Yuzhno-Sakhalinsk, Sakhalin Russian Federation	29 to 31 July and 4 August, 2013	Translation/Interpretation
			Iturup island, Kuril Islands Russian Federation	1 and 2 August 2013	Translation/Interpretation. Accompanied the team on all excursions and tours.

4.4.2 *Consultations*

The fishery was announced as entering re-assessment 6 June 2013 when the re-assessment announcement was posted to the MSC website. Along with the announcement, the team members were proposed. Stakeholders requested an additional team member and Dr. Chet Chaffee was also proposed. The team was confirmed 1 July 2013. The assessment team held a conference call to discuss the particulars of the fishery July 2nd and agreed that the assessment tree developed for the NE Sakhalin pink fishery would be an appropriate starting place for the Iturup re-assessment tree. The onsite visit was planned to take place in Yuzhno-Sakhalinsk, Sakhalin with a trip out to the Island of Iturup following meetings on Sakhalin for the end of July and beginning of August. SCS asked the MSC fishery assessment manager working on salmon assessments, Ms. Megan Atcheson, if she would like to join the meetings, but due to a scheduling conflict, it was not possible. The proposed assessment tree was posted to the MSC website 4th July 2013. SCS sought feedback from stakeholders. No stakeholders from the Russian Far East responded with interest, but the Wild Salmon Center (WSC), based in Portland, OR USA was interested in discussing their concerns with the assessment team. A teleconference meeting with stakeholders took place 23rd July, 2013. The WSC wanted to be sure that the team evaluated the issues brought by the potential competition of hatchery chum and wild chum in Lebedinoe Lake as well as whether taimen were occurring in the fishery at all. The assessment tree was confirmed August 6th. Once the team had returned from the onsite meetings, members of the assessment team met with the WSC at their offices in Portland August 15th, 2013 to go over the preliminary items. An additional consultation period opened for stakeholders to bring forward additional information for 30 days from 19 August to 19 September, 2014. No additional information was received from stakeholders at that time.

Otoliths were collected in 2012, 2013 and 2014 from Lebedinoe Lake and other salmon streams to help determine the relative contribution of hatchery origin salmon to natural origin salmon to the fishery and spawning escapement. The analysis of these otoliths was completed in early 2015. This information was incorporated into the report. Peer reviewers were proposed 3 February 2015 and were available for comment for a period of 10 days. No comments were received. Dr. Greg Ruggerone and Dr. Dmitry Lajus conducted independent reviews of the report. The team responded to peer review comments and made adjustments to the conditions. The client action plan was re-negotiated to reflect changes to the conditions

The report was available for public comments for a period of 30 days, from 4 June to 5 July, 2015. No comments were received from stakeholders during the public comment draft report consultation period. The report and previous comments were provided to the SCS certification board who issued a positive certification decision. The report is now available for stakeholders to review the decision and lodge an objection if they believe that the scores are not supported such that the fishery should not be re-certified.

4.4.3 Evaluation Techniques

The Scoring elements chosen were based on information on the catch as well as stakeholder concerns. The scoring meetings included an evaluation of the information available relative to the Assessment Tree that was developed for this fishery. The assessment team reached scoring conclusions throughconsensus-seeking deliberations.

Table 18. Scoring Elements.

Elements	Scoring components	Main/not main	Data-deficient or not
pink salmon	Principle 1	Main	not data deficient
chum salmon	Principle 1	Main	not data deficient
sockeye salmon	retained sp.	not main	not data deficient
char	retained sp.	not main	not data deficient
Greenling	bycatch	not main	not data deficient
Soles	bycatch	not main	not data deficient
Sakhalin taimen	ETP	NA	not data deficient

Hatchery impacts on Freshwater systems	Habitat	NA	not data deficient
hatchery impacts on carrying capacity on North Pacific	Ecosystem	NA	not data deficient

5 TRACEABILITY

5.1 Eligibility Date

The eligibility date for this fishery is 10 June 2015. The fishery certificate expired on 9 June 2015, but fishing generally does not begin until late August/early September. Any products harvested from this fishery after 9 June 2015 and prior to recertification will be considered “Under MSC Assessment Fishery” or UMAF. Gidrostroy has confirmed that UMAF products will not be sold until after the fishery is recertified. In the interim between the 9th of June and the certification date, any caught salmon is being processed and frozen at the plants on Iturup and being stored in cold storages owned by Gidrostroy. In any cases where this protocol is not followed, UMAF lots are identified with the date they were preserved. Product from the previous season was eligible for the MSC logo and was also sold last season and therefore does not pose a risk of being mixed with UMAF product in the cold storages. The UMAF products may not carry the logo until the fishery is re-certified. The target eligibility date has been selected based on the PCDR being published on 3 June and expiry of the initial certification certificate.

5.2 Traceability within the Fishery

The fishery maintains traceability of landed fish in a manner that is consistent with the MSC chain of custody requirements. Each set net location is stipulated by license convention so that it may be identified as being within the Unit of Certification. JSC Gidrostroy leases all of the fishing grounds included in the unit of certification. No other fishers operate set nets within this area. If another operator not licensed to the area or set net were to collect fish, the coast guard would be informed. Once the catch is hauled from the nets to the kungas (small water craft with netted bottoms), it is taken to one of the two processing plants on Iturup either by a tender or directly. The catch may be landed in either Prostor Bay or Kurilskiy Bay harbors. Once in port, a landing receipt is filled in by the harbour’s receiving master. The receiving master verifies that the license conditions are met, and records this information on a Mate’s Receipt and weighs the catch. A copy of the Mate’s receipt is given to the vessel operator, to the processing plant and to the government fisheries agency, SakRyvod. Gidrostroy processing plants only process Gidrostroy fish. From the kungas, a fish pump is used to pump fish directly into the Gidrostroy owned processing plant located at the harbour site. It is here that the first link in the chain of custody begins. The next link in the chain of custody occurs when the frozen headed/gutted salmon blocks (or preserved salmon roe or milt) is sold from Gidrostory facilities to another company (next point of ownership). Gidrostroy does not process any other fisher’s catch. The risk of substitution is virtually zero after the fishery is re-certified (see UMAF discussion in section 5.1). No trans-shipping to other ports takes place. Management regarding traceability is very good for this fishery. The catch date is associated with each day’s lot in the cold storages. Should any salmon caught between the eligibility date and the re-certification date (UMAF) be sold prior to the re-certification date, it may be identified by the catch date as such and may not carry the logo.

5.3 Eligibility to Enter Further Chains of Custody

The level of traceability from the set nets to the point of landing and into the processing plant is sufficient to start the chain of custody. JSC Gidrostroy is the only company authorized to fish within the unit of certification which occurs along Iturup’s north coast in Kurilskiy Bay from Cape Vinogrodniy to Cape Breskens and in Prostor Bay between Cape Shpora and Cape Friza. The only set nets that Gidrostroy operates on Iturup are within the unit of certification. Certificate sharing is not anticipated. Gidrostroy does operate additional set nets on Sakhalin Island, but these are processed at Gidrostroy’s local Sakhalin facilities and the frozen block packaging identifies which processing plant the product originated from. Products landed on Sakhalin are therefore easily identified from Iturup landed products. Landings on Iturup may occur in Prostor Bay or Kurilskiy Bay. The catch is owned by JSC Gidrostroy from the time it is in the set net, through the processing plant and first point of preservation until the first point of sale to another company. Chain of custody begins at the processing plant because the product is changing form. At the plant, the catch is headed and gutted and block frozen for further processing from a buyer. Gidrostroy also separates roe and milt as a specialty product. Gidtrostroy's chain of custody certificate covers the product from landing to the first point of preservation and the next link in the chain of custody begins at the point of sale from Gidrostroy.

6 EVALUATION RESULTS

6.1 Principle Level Scores

Table 19. Final Principle Scores

Principle	Pink salmon	Chum Salmon
Principle 1 – Target Species	86.2	81.8
Principle 2 – Ecosystem	85.3	85.3
Principle 3 – Management System	82.5	80.5

6.2 Summary of Scores

Principle	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Or Wt (L3)	Or Weight in Prin.	PINK	CHUM	Contribution to Principle Score PINK	Contribution to Principle Score CHUM
One	1	Outcome	0.333	1.1.1	Stock status	0.500	0.1665	100	90	16.65	14.99
				1.1.2	Reference points	0.500	0.1665	80	80	13.32	13.32
				1.1.3	Stock rebuilding	NA	NA	NA	NA	NA	NA
		Management	0.333	1.2.1	Harvest strategy	0.250	0.083	100	100	8.33	8.33
				1.2.2	Harvest control rules & tools	0.250	0.083	90	90	7.50	7.50
				1.2.3	Information & monitoring	0.250	0.083	80	80	6.67	6.67
				1.2.4	Assessment of stock status	0.250	0.083	85	85	7.08	7.08
		Enhancement	0.333	1.3.1	Enhancement Outcomes	0.333	0.111	80	80	8.89	8.89
				1.3.2	Management	0.333	0.111	80	70	8.89	7.78
				1.3.3	Information	0.333	0.111	80	65	8.89	7.22
Two	1	Retained species	0.200	2.1.1	Outcome	0.333	0.067	80	80	5.33	5.33
				2.1.2	Management	0.333	0.067	80	80	5.33	5.33
				2.1.3	Information	0.333	0.067	80	80	5.33	5.33
		Bycatch species	0.200	2.2.1	Outcome	0.333	0.067	80	80	5.33	5.33
				2.2.2	Management	0.333	0.067	100	100	6.67	6.67
				2.2.3	Information	0.333	0.067	80	80	5.33	5.33
		ETP species	0.200	2.3.1	Outcome	0.333	0.067	80	80	5.33	5.33
				2.3.2	Management	0.333	0.067	80	80	5.33	5.33
				2.3.3	Information	0.333	0.067	80	80	5.33	5.33
		Habitats	0.200	2.4.1	Outcome	0.333	0.067	100	100	6.67	6.67
				2.4.2	Management	0.333	0.067	95	95	6.33	6.33
				2.4.3	Information	0.333	0.067	95	95	6.33	6.33
		Ecosystem	0.200	2.5.1	Outcome	0.333	0.067	80	80	5.33	5.33
				2.5.2	Management	0.333	0.067	90	90	6.00	6.00
				2.5.3	Information	0.333	0.067	80	80	5.33	5.33
Three	1	Governance and policy	0.500	3.1.1	Legal & customary framework	0.25	0.125	95	95	11.88	11.88
				3.1.2	Consultation, roles &	0.25	0.125	85	85	10.63	10.63
				3.1.3	Long term objectives	0.25	0.125	60	60	7.50	7.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125	80	80	10.00	10.00
		Fishery specific management system	0.500	3.2.1	Fishery specific objectives	0.2	0.100	60	60	6.00	6.00
				3.2.2	Decision making processes	0.2	0.100	95	75	9.50	7.50
				3.2.3	Compliance & enforcement	0.2	0.100	100	100	10.00	10.00
				3.2.4	Research plan	0.2	0.100	90	90	9.00	9.00
				3.2.5	Management performance evaluation	0.2	0.100	80	80	8.00	8.00

Overall weighted Principle-level scores	PINK	CHUM
Principle 1 - Target/Nontarget species	86.2	81.8
Principle 2 - Ecosystem	85.3	85.3
Principle 3 - Management	82.5	80.5

6.2.1 Conditions Raised by the Assessment Team

Condition	Applicable Performance Indicator	Related to Previously Raised Condition?
Error! Reference source not found. *Milestones* ▪ *2016 audit: Update the management policy to define and incorporate metrics used to adjust harvest control rules that are consistent with the FAO Precautionary Approach to protect wild chum stocks from significant detrimental effects from enhancement. Provide results of 2014 and 2015 otolith and scale sampling in the Annual Otolith Sampling Report.* ▪ *2017 audit and annually thereafter: Include in the Annual Otolith Sampling Report an estimate of the over-all percent contribution of hatchery origin chum salmon in each of the sampling areas. This must include systems with hatchery input and those without hatchery input. Include in the Annual Harvest Report whether any management actions were needed and, if so, what actions were taken.*	**1.3.2**	**no**
Error! Reference source not found. *Milestones* ▪ *2017 audit and annually thereafter: Include in the Annual Otolith Sampling Report an estimate of the over-all percent contribution of hatchery origin chum salmon in each sampling area including systems with hatchery input and those without hatchery input. Include in the Annual Harvest Report whether based on this calculation, management actions were needed and if so, what actions were taken.*	**1.3.3**	**no**
Condition 3. By the first surveillance audit, clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within the management policy as defined by JSC Gidrostroy. *Milestones* ▪ *2016 audit: update the Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the FAO Precautionary Approach to protect wild salmon.*	**3.1.3**	**no**
Condition 4. By the first surveillance audit, short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and enhancement activities. *Milestones* ▪ *2016 audit: update Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the Precautionary Approach to protect wild salmon.*	**3.2.1**	**no**
Error! Reference source not found.	**3.2.2**	**yes**

<u>*Milestones*</u> ▪ *2016 audit: update the Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the FAO Precautionary Approach to protect wild salmon.* ▪ *2017 audit: update the Annual Harvest Report with a summary of any actions that may have been taken to protect wild salmon based on the harvest control rules defined in the Management Policy.*		

6.2.2 Recommendations Raised by the Assessment Team

Non-Binding Recommendations	Performance Indicators
Otolith evaluations for determination of stock origin (hatchery or wild) should include sex and age determinations because the report indicated hatchery fish may have different timing than wild salmon; age is often different for hatchery versus wild salmon. Annual otolith analysis reports should include data tables of hatchery fish (%) on the spawning grounds. The annual otolith analysis reports should include estimates of the total percentage of the harvest comprised of hatchery fish and quantitative assessment of measurement of error due to unreadable otolith marks. Productivity of wild chum salmon should be estimated using spawner-recruitment relationships based on escapement, age composition and hatchery mark sampling information.	1.3.2 and 1.3.3

6.3 Determination, Formal Conclusion and Agreement

With the information available, pink and chum salmon meet the minimum requirements for passing certification which includes meeting the SG60 for all performance indicators and an average score of 80 or greater for all three principle scores. The team discussed the merits and shortfalls of the fishery and by consensus recommended re-certification for the fishery. The SCS Certification Board reviewed the report, Performance Indicator rationales, peer reviews and stakeholder comments and agreed with the Assessment Team's recommendation.

In accordance with MSC Certification Requirements, the findings were made open to objection by interested parties for a period of 15 working days from publication of the Final Report with the Certification Determination. As of August 27th, 2015 1700 GMT the objection period has closed, and the final certification decision is to be published to the MSC website.

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APPENDIX 1: SCORING AND SUPPORTING RATIONALE

Principle 1

Evaluation Table for PI 1.1.1

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Issue		SG 60	SG 80	SG 100
A	**Guidepost**	It is likely that the wild stock is above the point where recruitment would be impaired or the fishery impacts are so small as to have no significant effect on the stock status.	It is highly likely that the wild stock is above the point where recruitment would be impaired or fishery impacts are so small as to have no significant effect on the stock status.	There is a high degree of certainty that the wild stock is above the point where recruitment would be impaired or fishery impacts are so small as to have no significant effect on the stock status.
	Pink Met?	Y	Y	Y
	Justification	*Long-term production trends provide a high degree of certainty that the wild stock is above the point where recruitment would be impaired by fishing. Iturup pink salmon have maintained consistently high levels of production for over 20 years (Figure 4). Survival and productivity estimates of pink salmon reported by Kaev et al. (2006) are also quite high relative to other pink salmon populations, highlighting the resilience of this stock in response to fishing and environmental variation. Very high replacement rates of 6 to 8 fold are consistently apparent in brood year escapements. Consistently high levels of spawning escapement (averaging 900,000 per year) are achieved annually in salmon habitats throughout the fishery area (Figure 5). Escapements are typically near the productive capacity of the systems estimated based on the quantity and quality of available habitat (Table 3). Hatchery otolith marking and subsequent sampling indicates that wild fish comprise the majority of pink salmon returns to the fishery area and to wild spawning grounds. The aggregate wild and hatchery production consistently appears to support exploitation rates of 90%.*		
	Chum Met?	Y	Y	N
	Justification	*Increasing trends in spawning escapement of chum salmon throughout the last decade in response to management that prioritizes spawning escapements, indicates that it is likely that the wild stock is above the point where recruitment would be impaired. Consistent returns to wild streams coupled with evidence for strong homing affinity of hatchery-origin chum salmon suggests that wild fish are currently at or above replacement levels even with significant harvest rates. Information from otolith sampling in wild production areas appears to corroborate this observation. Hatchery chum salmon have been otolith-marked and 2013 was the first year when age 2+, 3+ and 4+ returns of hatchery fish were marked. Otolith sampling on the spawning grounds in 2012 and 2013 indicates that straying of hatchery-origin chum salmon is not significant among hatchery and non-hatchery streams. Straying of hatchery chum salmon is significant in natural spawning areas of streams where hatcheries are located. However, the majority of chum-producing streams in the assessment area are wild streams. Straying of hatchery chum has also been documented in the Lebedinoe Lake of the Kurilka system. However, spawning ground surveys and otolith samples indicate that that the wild lake-spawning population is temporally segregated by a latter run timing to spawn after lake temperatures cool in the fall. Additional otolith sampling will be required in more years and areas demonstrate a high degree of certainty that assessments of wild stock status are not confounded by hatchery fish.*		

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
B	Guidepost		The wild stock is at or fluctuating around its target reference point.	There is a high degree of certainty that the wild stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.
	Pink Met?	--	Y	Y
	Justification	*Annual estimates of spawning escapement by stream for significant natural production areas provide a high degree of certainty that the wild stock has been fluctuating around its target reference point which represent the production capacity of each system under optimum environmental conditions (Table 3). Stream-specific escapement benchmarks which function as target reference points were exceeded 92% of the time for pink salmon from 2005-2013. As in many productive salmon fisheries, formal limit reference points are not established because target reference points provide effective operation equivalents. Escapements of 50% or more of benchmark values (proxy for point of recruitment impairment) were achieved 92% of the time. Otolith sampling results indicate that spawning escapements in non-hatchery streams are predominately wild-origin fish (see Section 3.3.5.6).*		
	Chum Met?	--	Y	Y
	Justification	*Annual estimates of spawning escapement by stream for significant natural production areas indicate that the wild stock has been fluctuating around its target reference point represent the production capacity of each system under optimum environmental conditions (Table 4Table 4). Stream-specific escapement benchmarks which function as target reference points were exceeded 55% of the time for chum salmon from 2005-2013. As in many productive salmon fisheries, formal limit reference points are not established because target reference points provide effective operation equivalents. Escapements of 50% or more of benchmark values (proxy for point of recruitment impairment) were achieved 79% of the time. Run distribution patterns suggest that spawning escapements in non-hatchery streams are generally of wild-origin fish (see Section 3.3.5.6). Information from otolith sampling corroborates these observations. Streams without hatcheries can be considered indicators of wild stock abundance relative to target reference points because otolith sampling indicates that hatchery straying among streams is low. Because wild streams are observed to fluctuate around target reference points, it can be concluded with high likelihood that wild populations are independently meeting their escapement objectives.*		
References		Section 3.3.3.2 Pink Salmon Status Section 3.3.3.3 Chum Salmon Status		

Stock Status Relative to Reference Points; Pink			
	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
Target reference point	Equivalent to BMSY	Stream specific (Table 2)	110% on average (Table 3)
Limit reference point	Not applicable	Not applicable	Not applicable

Stock Status relative to Reference Points; Chum			
	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
Target reference point	Equivalent to BMSY	Stream specific (Table 2)	85% on average (Table 4)

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing			
Limit reference point	Not applicable	Not applicable	Not applicable	
Pink OVERALL PERFORMANCE INDICATOR SCORE:				***100***
Pink CONDITION NUMBER (if relevant):				**--**
Chum OVERALL PERFORMANCE INDICATOR SCORE:				***90***
Chum CONDITION NUMBER (if relevant):				--

Evaluation Table for PI 1.1.2

PI 1.1.2		Limit and target reference points or operational equivalents are appropriate for the wild production components of the stock		
Issue		SG 60	SG 80	SG 100
A	**Guidepost**	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the wild stock and can be estimated.	
	Pink Met?	Y	Y	--
	Justification	*Stream-specific spawning escapement targets are established based on the amount of suitable spawning habitat and a target fish spawning density in suitable habitats (see Section 3.3.3.1). Management for stream or stock specific spawning escapement targets is a common practice for salmon fisheries throughout the Russian far east, Alaska, and Canada. Iturup fisheries are managed to achieve these targets which consistently provide for high levels of spawning escapement of about million per year. 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. Highly variable annual run sizes are characteristic of salmon, particularly pink salmon. Thus, it is not always possible to meet optimum targets in every population and year. However, effective management for target reference points should ensure that average escapements will be maintained over the long term above the level at which there is an appreciable risk of impairing reproductive capacity. Reference points are appropriate for the wild stock because otolith sampling in wild production has identified a relatively low incidence of hatchery-origin fish in natural production areas (see Section 3.3.5.6), particularly in non-hatchery systems which include the majority of Iturup streams.*		
	Chum Met?	Y	Y	
	Justification	*Stream-specific spawning escapement targets are established based on the amount of suitable spawning habitat and a target fish spawning density in suitable habitats (see Section 3.3.3.1). Application of these targets is as described for pink salmon. Escapement objectives are established for natural spawning areas without respect to the relative contributions of wild and hatchery fish. Hatchery production is limited to only a few systems and the majority of wild production occurs in non-hatchery systems. Reference points are appropriate for the wild stock because otolith sampling in wild production has identified a relatively low incidence of hatchery-origin fish in natural production areas of non-hatchery systems which include the majority of Iturup systems.*		
B	**Guidepost**		The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues.
	Pink Met?		Y	N

PI 1.1.2		Limit and target reference points or operational equivalents are appropriate for the wild production components of the stock		
	Justification	*Management for optimum spawning escapement levels provides a conservative standard for protecting populations from critical low levels that impact diversity, resilience and future production. Management for these target reference points effectively 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. Consistent high levels of pink salmon production confirm that the management strategy based on target reference points has effectively maintained the reproductive capacity of the aggregate pink salmon stock. Occasional poor run years and escapements into portions of some systems are characteristic of salmon. Long term population viability and fishery sustainability for salmon is maintained under these circumstances by a diverse meta-population structure including multiple, interacting populations and subpopulations. (McElhany et al. 2000). However, without explicit consideration of limits of hatchery-origin spawners in wild production areas, it cannot be concluded that limit reference points provide a precautionary standard sufficient to meet the 100 scoring guidepost.*		
	Chum Met?		Y	N
	Justification	*Management for optimum spawning escapement levels provides a conservative standard for protecting populations from critical low levels that impact diversity, resilience and future production. Management for these target reference points effectively 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. Consistent high levels of chum salmon production confirm that the management strategy based on target reference points has effectively maintained the reproductive capacity of the aggregate stock. Occasional poor run years and escapements into portions of some systems are characteristic of salmon. Long term population viability and fishery sustainability for salmon is maintained under these circumstances by a diverse meta-population structure including multiple, interacting populations and subpopulations (McElhany et al. 2000). However, without explicit consideration of limits of hatchery-origin spawners in wild production areas, it cannot be concluded that limit reference points provide a precautionary standard sufficient to meet the 100 scoring guidepost.*		
C	Guidepost		The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.
	Pink Met?	--	Y	N

PI 1.1.2		Limit and target reference points or operational equivalents are appropriate for the wild production components of the stock		
	Justification	*Salmon escapement goals are often managed based on production functions defined by stock-recruitment curves relating spawner numbers with adults produced in the next generation of return. Escapements greater than the habitat capacity will reduce productivity due to density-dependent regulating factors involving competition for limited space and food. Escapements substantially less than capacity reduce fishery yields. Maximum sustainable yield typically occurs somewhere between 50% and 100% of the habitat capacity where capacity is defined based on the point of maximum production in the stock recruitment curve (Ricker 1975). Under the Russian management system, maximum production is defined based on estimates of habitat capacity and spawner densities determined to be consistent with habitat capacity based on average size of spawning redds. Stock-recruitment curves have not been formally estimated for Iturup salmon. However, escapement numbers have been demonstrated to produce high levels of sustained yields over several decades of use and these escapements have been observed to produce high rates of replacement. Therefore, it can be concluded that escapement goals for Iturup pink salmon are representative of the point of maximum production. The available information does not demonstrate that relevant precautionary issues such as the ecological role of the stock are addressed in current escapement objectives with a high degree of certainty.*		
	Chum Met?		Y	N
	Justification	*Same justification as for pink salmon.*		
d	Guidepost		For key low trophic level stocks, the target reference point takes into account the ecological role of the stock.	
	Pink Met?		Not Applicable	
	Justification	*Salmon are not low trophic level species.*		
	Chum Met?		Not Applicable	
	Justification	*Salmon are not low trophic level species.*		
e	Guidepost	Where the wild stock is a management unit comprised of more than one subcomponent, it is likely that the target and limit reference points are consistent with maintaining the inherent diversity and reproductive capacity of each stock subcomponent.	Where the wild stock is a management unit comprised of more than one subcomponent, it is highly likely that the target and limit reference points are consistent with maintaining the inherent diversity and reproductive capacity of each stock subcomponent.	Where the wild stock is a management unit comprised of more than one subcomponent, there is a high degree of certainty that the target and limit reference points are consistent with maintaining the inherent diversity and reproductive capacity of each stock subcomponent.
	Pink Met?	Y	Y	N

<table>
<tr><td colspan="2">PI 1.1.2</td><td colspan="3">Limit and target reference points or operational equivalents are appropriate for the wild production components of the stock</td></tr>
<tr><td rowspan="4"></td><td>Justification</td><td colspan="3">The wild stock of Iturup pink salmon does not obviously include discrete subcomponents (Section 3.3.1.2) but does include a spectrum of natural diversity expressed in run timing and spatial distribution. Consistent differences in run timing among different systems and different streams within a system reflect this diversity. Target and limit reference points are highly likely to maintain this inherent diversity because escapement goals include streams throughout the fishery area as well as specific spawning grounds within streams (Table 2). Each run component is explicitly identified and monitored during the course of the run. Temporal and spatial elements of subcomponents allow for monitoring to provide for target levels of escapement of each subcomponent to the extent that it can be achieved through fishery management. Thus, management to fill all available portions of the spawning grounds implicitly protect wild subcomponents. Wild and hatchery origin fish might also be considered subcomponents although pink salmon hatchery management is intended to avoid significant divergence between hatchery and wild fish originating from the same system. Otolith sampling and run timing patterns indicate that hatchery-origin fish do not comprise a substantial portion of natural spawners in most pink salmon populations. However, because escapement goals do not explicitly consider wild and hatchery components, the 100 scoring guidepost is not met.</td></tr>
<tr><td>Chum Met?</td><td>Y</td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">The wild stock of Iturup chum salmon includes unique stream and lake spawning subcomponents (Section 3.3.2.2) as well as a spectrum of natural diversity expressed in run timing and spatial distribution. Target and limit reference points are highly likely to maintain this inherent diversity because escapement goals include streams throughout the fishery area as well as specific spawning grounds within streams (Table 2). As with pink salmon, each run component is explicitly identified and monitored during the course of the run and management to fill all available portions of the spawning grounds implicitly protect wild subcomponents. Wild and hatchery origin fish might also be considered subcomponents although chum salmon hatchery management is intended to avoid significant divergence between hatchery and wild fish originating from the same system. Because escapement goals do not explicitly consider wild and hatchery components, the 100 scoring guidepost is not met.</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="2">References</td><td colspan="3">Section 3.3.3.1 Assessment Methodology</td></tr>
<tr><td colspan="4">Pink OVERALL PERFORMANCE INDICATOR SCORE:</td><td>80</td></tr>
<tr><td colspan="4">Pink CONDITION NUMBER (if relevant):</td><td>NA</td></tr>
<tr><td colspan="4">Chum OVERALL PERFORMANCE INDICATOR SCORE:</td><td>80</td></tr>
<tr><td colspan="4">Chum CONDITION NUMBER (if relevant):</td><td>--</td></tr>
</table>

Evaluation Table for PI 1.1.3

PI 1.1.3		**Where the wild stock or wild stock components are depleted, there is evidence of stock rebuilding within a specified timeframe**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Where stocks are depleted rebuilding strategies, which have a reasonable expectation of success, are in place. The rebuilding strategy should prohibit targeting depleted stocks		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the specified timeframe.
	Pink Met?	NA	--	NA
	Justification	*Not applicable. This PI is not scored if the stock is not considered depleted. Iturup pink salmon are currently enjoying record levels of productivity (see Section 3.3.3.2).*		
	Chum Met?	NA	NA	NA
	Justification	*Not applicable. This PI is not scored if the stock is not considered depleted. Iturup chum salmon were reportedly depleted until the 1990s but have currently been restored to significant levels of natural production by concerted management efforts (see Section 0).*		
b	**Guidepost**	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the depleted stock.
	Pink Met?	NA	NA	NA
	Justification	Not applicable. This PI is not scored if the stock is not considered depleted.		
	Chum Met?	NA	NA	NA
	Justification	Not applicable. This PI is not scored if the stock is not considered depleted.		
c	**Guidepost**	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within a specified timeframe.	There is evidence that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a specified timeframe.	
	Pink Met?	NA	NA	--
	Justification	Not applicable. This PI is not scored if the stock is not considered depleted.		
	Chum Met?	NA	NA	--

PI 1.1.3		Where the wild stock or wild stock components are depleted, there is evidence of stock rebuilding within a specified timeframe	
	Justification	Not applicable. This PI is not scored if the stock is not considered depleted.	
References		Section 3.3.3.2 Pink Salmon Status Section 0 Chum Salmon Status	
Pink OVERALL PERFORMANCE INDICATOR SCORE:			**NA**
Pink CONDITION NUMBER (if relevant):			**NA**
Chum OVERALL PERFORMANCE INDICATOR SCORE:			**NA**
Chum CONDITION NUMBER (if relevant):			**NA**

Evaluation Table for PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Issue		SG 60	SG 80	SG 100
a	Guidepost	The harvest strategy is expected to achieve wild stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the wild stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the wild stock and is designed to achieve stock management objectives reflected in the target and limit reference points.
	Pink Met?	Y	Y	Y
	Justification	*There is a robust and precautionary harvest strategy in place involving intensive daily in-season monitoring of harvest, river mouth returns, hatchery returns and spawning escapements and in-season fishery management based on this information. Fishery times and areas are designed and regulated specifically to fill the available natural spawning areas and to achieve corresponding escapement objectives. For instance, fishing areas, specific nets or dates may be closed to ensure escapement. River mouth nets may also be opened on a daily schedule to pass fish upstream where needed to fill spawning grounds or closed to avoid excessive escapements while holding fish in the fishery area. Meeting escapement targets is a primary priority of the management system. A more detailed description of the harvest strategy may be found in Section 3.3.4.5.*		
	Chum Met?	Y	Y	Y
	Justification	See pink salmon justification.		
b	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Pink Met?	Y	Y	Y
	Justification	*The current harvest strategy has been in place for over a decade and the effectiveness of the cooperative government-private system has clearly been demonstrated by consistent achievement of escapement goals under a wide range of conditions. This system has been tested by inherent variability in annual abundance and run timing of salmon. The effectiveness of the current harvest strategy was very clearly demonstrated during the record low return of pink salmon in 2011. The fishery was effectively closed in response to in-season information on run strength with total pink salmon harvests of less than 20% of average (Table 5). These closures were enacted despite severe economic impacts on the heavily-capitalized fishery infrastructure on Iturup. As a result of these closures, the median escapements was 92% in 16 monitored systems (Table 3).*		
	Chum Met?	Y	Y	Y

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
	Justification	*The current harvest strategy has been in place for over a decade and the effectiveness of the cooperative government-private system has clearly been demonstrated by consistent achievement of escapement goals under a wide range of conditions. This system has been tested by inherent variability in annual abundance and run timing of salmon. The effectiveness of the current harvest strategy has been demonstrated by consistent success in producing high levels of spawning escapement over a range of run sizes and harvests. The fishery has been effectively regulated in response to in-season information on run strength. As a result of fishery regulation, stream-specific escapement of chum salmon has exceeded target levels over 50% of the time and has exceeded 50% of target levels 89% of the time since 2005 (Table 4).*		
c	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Pink Met?	Y		
	Justification	*The harvest strategy involves extensive in-season monitoring of harvest, biological indicators (sex and age), river-mouth returns, spawning escapement. These indicators are compared with historical values and patterns to determine run size and timing, and make corresponding adjustments in fishing times and areas. See Section 3.3.3.1 for a detailed description of the monitoring strategy.*		
	Chum Met?	Y		
	Justification	*See pink salmon explanation.*		
d	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Pink Met?			Y
	Justification	*The harvest strategy is periodically reviewed and improved as necessary. Extensive changes in the strategies adopted by the regional management system since 2008 provide for more local and responsive regulation are evidence to this effect. Escapement objectives are also periodically reviewed and revised based on updated assessments of the spawning habitat availability.*		
	Chum Met?			Y
	Justification	*See pink salmon explanation.*		
References		*Section 3.3.4.5 Management* *Section 3.3.3.1 Assessment Methodology*		

Pink OVERALL PERFORMANCE INDICATOR SCORE:	**100**
Pink CONDITION NUMBER (if relevant):	**--**
Chum OVERALL PERFORMANCE INDICATOR SCORE:	**100**
Chum CONDITION NUMBER (if relevant):	**--**

Evaluation Table for PI 1.2.2

PI 1.2.2		**There are well defined and effective harvest control rules in place**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Generally understood harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.	Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.	
	Pink Met?	Y	Y	
	Justification	*Well defined control rules include time and area fishery closures based on real time escapement monitoring data in conjunction with other indicators of run strength and timing based on harvest and biological composition of the harvest. Harvest control rules are specifically defined in licenses issued for commercial fishery operation and in-season regulation changes adopted by an Anadromous Fish Commission as appropriate at the recommendation of the local fishery manager. Exploitation rates are reduced at low abundance to ensure that escapement goals are generally met. (See Section 3.5.2.4 for a more detailed description of the in-season management process.*		
	Chum Met?	Y	Y	
	Justification	*See pink justification*		
b	**Guidepost**		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
	Pink Met?		Y	N
	Justification	*Main uncertainties in the implementation of harvest control rules are primarily related to run strength and timing. While run forecasts are made based on brood year escapements and recent production patterns, recommended harvest levels based on these forecasts are utilized primarily as preseason planning tools. Once the fishing season begins, management to control exploitation rates is based on in-season data. Data are referenced to seasonal patterns in previous years to distinguish run timing and strength. Forecasts are typically uncertain and run timing may also vary from year to year. Overfishing might occur when run timing effects are mistaken for run size (for instance, mistaking a strong earlier-than-average return for a larger-than-forecast number). In-season management utilizes indicators based on biological characteristics of the harvest to avoid this potential problem. For instance, the onset portion of each run typically includes a larger percentage of males which declines as the run progresses. Average fish size varies in tandem as male and female sizes are different. Managers also employ terminal fisheries in river mouths to regulate upstream escapements to avoid overseeding spawning areas in the event of very large run sizes. Excessive escapements have been observed to result in reduced production as habitat capacity is exceeded and extreme events may even result in large-scale prespawning mortality due to oxygen depletion of the water, particularly in warm, dry years. Harvest control rules do not appear to fully consider uncertainties related to annual variation in hatchery and wild fish survival and contributions to the total return which could potentially confound estimates of wild abundance under some circumstances..*		
	Chum Met?		Y	N

PI 1.2.2		There are well defined and effective harvest control rules in place		
	Justification	*See pink salmon justification*		
c	Guidepost	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
	Pink Met?	Y	Y	Y
	Justification	*Catch per effort, fish size, sex ratio, and distribution are all utilized as indicators. The fishery is managed on a daily basis to regulate harvest consistent with escapement targets. Fisheries are restricted as appropriate based on actual run size and escapement objectives are consistently achieved (see Sections 3.3.3.2 and 0).*		
	Chum Met?	Y	Y	Y
	Justification	*See pink salmon justification*		
References		*Section 3.5.2.4 In-season Process*		
Pink OVERALL PERFORMANCE INDICATOR SCORE:				**90**
Pink CONDITION NUMBER (if relevant):				**--**
Chum OVERALL PERFORMANCE INDICATOR SCORE:				**90**
Chum CONDITION NUMBER (if relevant):				**--**

Evaluation Table for PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Issue		SG 60	SG 80	SG 100
a	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Pink Met?	Y	Y	N
	Justification	*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. Comprehensive information not directly related to the harvest strategy is generally not collected. Direct estimates of natural stock productivity are not available.*		
	Chum met?	Y	Y	N
	Justification	*See pink salmon justification*		
b	Guidepost	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Pink Met?	Y	Y	N
	Justification	*Excellent information is collected on harvest in the Gidrostroy commercial salmon fishery on Iturup. Numbers are estimated at every stage of the harvest and processing chain including net-specific deliveries from the fishing brigades to the processing plants, amounts received and amounts processed. 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. Uncertainties in information required by the harvest control rule are generally understood but formal consideration of the effects of uncertainty on assessments and management have not been reported. The reason for the very poor return of pink salmon to Iturup in 2011 has not been explained. Similar anomalies in recent years on Sakhalin have been attributed to marine environmental conditions which were thought to affect migration patterns.*		
	Chum Met?	Y	Y	N

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	Justification	*See pink salmon justification*		
c	Guidepost		There is good information on all other fishery removals from the stock.	
	Pink Met?		Y	
	Justification	*General information is available on the significance of incidental harvest of pink salmon in marine drift net fisheries and its effects are implicitly included in production estimates based on estimates of juvenile and adult numbers. Some Iturup origin salmon may also occur in Sakhalin Island terminal harvest areas but numbers are likely limited by the distance between fishing areas. Additional information on Sakhalin harvest of Iturup salmon will likely be provided in the future by implementation of an otolith sampling program in selected Sakhalin fisheries.*		
	Chum Met?		Y	
	Justification	*See pink salmon justification*		
d	Guidepost	Some relevant information is available on the significance of fishery harvests on various stock components	Information is sufficient to estimate the significance of fishery harvests on stock components	A comprehensive range of information is available to estimate the significance of fishery harvests on stock components.
	Pink Met?	Y	Y	N
	Justification	*Harvest of salmon returning in different portions of the run is estimated based on timing. Time-stratified catch and escapement data provides information on the significance of fishery harvest on each run component. Harvest of specific stocks harvested in each bay is estimated based on the hatchery-specific otolith marks. This information has shown that the harvest in each bay may include fish originating in streams of the other bay, and that migration patterns may vary from year to year, apparently in response to marine survival conditions. It is unclear if anomalous migration patterns in 2010 may have resulted in significant straying of Iturup pink salmon to eastern Sakhalin Island.*		
	Chum Met?	Y	Y	N
	Justification	*See pink salmon justification*		
References		*See Section 3.3.3.1 Assessment Methodology*		
Pink OVERALL PERFORMANCE INDICATOR SCORE:				**80**
Pink CONDITION NUMBER (if relevant):				**--**
Chum OVERALL PERFORMANCE INDICATOR SCORE:				**80**
Chum CONDITION NUMBER (if relevant):				**--**

Evaluation Table for PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status		
Issue		SG 60	SG 80	SG 100
A	**Guidepost**		The assessment is appropriate for the stock and for the harvest control rule.	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
	Pink Met?		Y	Y
	Justification	*The assessment includes real-time in-season estimation of harvest, catch per effort, biological characteristics, abundance of fish returning to river mouths, timing and distribution of harvest and returns, spawning escapement, and hatchery returns. See Section 3.3.3.1 for more detailed descriptions of the assessment methodology. Harvest is controlled in-season based on real-time data on spawning escapement as well as numbers and characteristics of fish entering the fishery. Assessments take into account major features relevant to the biology of the species and the nature of the fishery including differences in run timing and spawning distribution within and among each river system, and needs of wild and hatchery systems.*		
	Chum Met?		Y	Y
	Justification	*The assessment includes real-time in-season estimation of harvest, catch per effort, biological characteristics, abundance of fish returning to river mouths, timing and distribution of harvest and returns, spawning escapement, and hatchery returns. See Section 3.3.3.1 for more detailed descriptions of the assessment methodology. Harvest is controlled in-season based on real-time data on spawning escapement as well as numbers and characteristics of fish entering the fishery. Assessments take into account major features relevant to the biology of the species and the nature of the fishery including differences in run timing and spawning distribution within and among each river system, and needs of wild and hatchery systems. New information on the unique characteristics and status of the lake-spawning population in Lebedinoe Lake has come to light since the previous certification but concerns regarding hatchery straying into this population are being addressed with additional assessments of the status of the lake spawning population*		
B	**Guidepost**	The assessment estimates stock status relative to reference points.		
	Pink Met?	Y		
	Justification	*Stock status is estimated by stream and stream area. These escapement estimates are evaluated relative to target spawner numbers for each stream. Spawning escapement goals are established for each population based on stream-specific habitat availability and optimum spawner numbers per unit area.*		
	Chum Met?	Y		
	Justification	*See pink salmon justification.*		
C	**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.
	Pink Met?	Y	Y	N

PI 1.2.4		There is an adequate assessment of the stock status		
	Justification	*Major sources of uncertainty related to environmentally-driven variability in productivity and the nature of hatchery-wild interactions are identified. Stock status is not evaluated relative to reference points in a probabilistic way.*		
	Chum met?	Y	Y	N
	Justification	*Major sources of uncertainty related to environmentally-driven variability in productivity and subpopulation structure are identified. Stock status is not evaluated relative to reference points in a probabilistic way.*		
D	**Guidepost**			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Pink Met?	--	--	N
	Justification	*A rigorous exploration of alternative hypotheses and approaches has not been reported.*		
	Chum Met?	--	--	N
	Justification	*A rigorous exploration of alternative hypotheses and approaches has not been reported.*		
E	**Guidepost**		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Pink Met?	--	Y	N
	Justification	*The stock assessment is subject to extensive peer review within the management system. Assessment information is collected and exchanged by local agency staff from both SakhNiro and SakhRybvod. SakhNiro scientists regularly review and improve assessment methodologies and results which are subject to additional review by the regional scientific institute (VNiro). External peer review is limited.*		
	Chum Met?	--	Y	N
	Justification	See pink salmon justification.		
f	**Guidepost**	The majority of stocks are defined with a clear rationale for conservation, fishery management and stock assessment requirements.	The stocks are well-defined and include details on the major subcomponent stocks with a clear rationale for conservation, fishery management and stock assessment requirements.	There is an unambiguous description of each stock, including its geographic location, run timing, and component stocks with a clear rationale for conservation, fishery management and stock assessment requirements.
	Pink Met?	Y	Y	N

PI 1.2.4		There is an adequate assessment of the stock status		
	Justification	*Pink salmon harvested in Iturup fisheries are almost entirely comprised of local populations returning to area streams. Assessments are based on a combination of time and area-specific estimates of spawning escapement; size, age and sex structure; downstream migration of juveniles; and harvest and catch rate patterns. Conservation, fishery management, and stock assessment all take details of these subcomponents into account. When hatchery and wild portions of the return are considered subcomponents, it is not clear that a specific rationale for conservation, fishery management, and stock assessment requirements for each has been effectively addressed.*		
	Chum Met?	Y	Y	N
	Justification	*Chum salmon harvested in Iturup fisheries are almost entirely comprised of local populations returning to area streams. Assessments are based on a combination of time and area-specific estimates of spawning escapement; size, age and sex structure; downstream migration of juveniles; and harvest and catch rate patterns. Conservation, fishery management, and stock assessment all take details of these subcomponents into account. It is not clear that a specific rationale for conservation, fishery management, and stock assessment requirements for each has been effectively addressed for hatchery and wild portions of the return or for river and lake spawning population components.*		
g	Guidepost	Where indicator stocks are used as the primary source of information for making management decisions on larger groups of stocks in a region, there is some scientific basis for the indicator stocks.	Where indicator stocks are used as the primary source of information for making management decisions on larger groups of stocks in a region, there is some evidence of coherence between the status of the indicator stocks and the status of the other stocks they represent within the management unit to the extent that a high likelihood exists of tracking stock status for lower productivity of stocks (i.e., those a higher conservation risk)	Where indicator stocks are used as the primary source of information for making management decisions on larger groups of stocks in a region, the status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the management unit.
	Pink Met?	NA	NA	NA
	Justification	*Indicator stocks are not utilized for making management decisions. Assessments are based on indicator populations rather than indicator stocks. Detailed information is collected by local fishery managers and Gidrostroy biologists on systems throughout the area including large and small, hatchery and non-hatchery systems.*		
	Chum Met?	NA	NA	NA
	Justification	*Indicator stocks are not utilized for making management decisions. Assessments are based on indicator populations rather than indicator stocks. Detailed information is collected by local fishery managers and Gidrostroy biologists on systems throughout the area including large and small, hatchery and non-hatchery systems.*		
References		*See Section 3.3.3.1 Assessment Methodology*		
Pink OVERALL PERFORMANCE INDICATOR SCORE:				**85**
Pink CONDITION NUMBER (if relevant):				**--**
Chum OVERALL PERFORMANCE INDICATOR SCORE:				**85**
Chum CONDITION NUMBER (if relevant):				**--**

Evaluation Table for PI 1.3.1

PI 1.3.1		**Enhancement Outcomes: Enhancement activities do not negatively impact wild stocks or substitute for a stock rebuilding strategy**		
Scoring Issue		SG 60	SG 80	SG 100
A	Guidepost	It is likely that the enhancement activities do not have significant impacts on the local adaptation, reproductive performance and productivity of wild stocks based on reasonable estimates of likely proportions of hatchery-origin fish in the natural spawning escapement (e.g., it is likely that hatchery-origin spawners occur in a small proportion of the natural spawning populations/locations and that they represent a small proportion of the total natural spawning escapement).	It is highly likely that the enhancement activities do not have significant impacts on the local adaptation, reproductive performance and productivity of wild stocks based on reasonable estimates of likely proportions of hatchery-origin fish in the natural spawning escapement (e.g., it is highly likely that hatchery-origin spawners occur in a small proportion of the natural spawning populations/locations and that they represent a small proportion of the total natural spawning escapement).	There is a high degree of certainty that the enhancement activities do not have significant negative impacts on the local adaptation, reproductive performance and productivity of wild stocks, based on appropriate levels of marking and monitoring to reliably estimate proportions of hatchery origin fish in the natural spawning escapement.
	Pink Met?	Y	Y	N
	Justification	*The potential for negative impacts of hatchery fish on wild populations depends both on the proportions of hatchery-origin fish in natural spawning areas and the significance of effects on hatchery practices which might alter characteristics related to local adaptation, reproductive performance and productivity. Two hatcheries produce pink salmon for release in streams of the fishing area but wild fish continue to comprise a large majority of the total production and return based on aggregate run reconstructions completed reported by Kaev et al. (2006). Virtually all of the pink salmon hatchery production is now otolith marked and subsequent sampling of the harvest and returns has demonstrated that hatchery fish comprise a very low proportion of the escapement in the majority of streams (Akinicheva 2011, Akinicheva et al. 2012; Akinicheva 2013). Hatcheries are located on only two systems relatively few hatchery fish stray into non-hatchery streams. Wild fish comprise a substantial portion of the samples even in most natural production areas of hatchery systems. No new hatcheries are currently planned in the region. The potential for hatchery impacts on wild attributes is also limited in local hatcheries due to the relative small portion of the pink salmon life cycle spent in the hatchery and hatchery practices intended to emulate natural conditions to the extent possible.* *Straying of hatchery pink salmon has proven to be much less than previously hypothesized. Low levels of genetic diversity among pink salmon populations and sporadic use of small systems that provide suitable spawning conditions only in some years were previously believed by many scientists throughout the North Pacific to be indicative of a high rate of inter-population straying. However, otolith mar-recapture studies for hatchery pink salmon in Alaska, Iturup, and Sakhalin has shown a much lower incidence of widespread hatchery straying than was previously feared. In addition, more advanced genetic methods have shown more population differences than was previously detected. On Iturup, otolith sampling of pink salmon corroborates previous inferences for a relative low incidence of hatchery straying into non-hatchery systems based on spatial and temporal correlations between hatchery and wild run patterns.* *A degree of uncertainty remains regarding the potential for differentiation of hatchery origin fish due to hatchery practices and the effects of any differences on wild-hatchery interactions in systems where both are present.*		

PI 1.3.1		Enhancement Outcomes: Enhancement activities do not negatively impact wild stocks or substitute for a stock rebuilding strategy		
	Chum Met?	Y	Y	N
	Justification	*The situation with chum salmon appears similar to that of pink salmon on Iturup except that otolith sampling results are incomplete. Representative portions of current hatchery production chum are being marked but significant numbers of marked hatchery fish did not begin to return until 2013 (chum salmon primarily return at 4 years of age vs. 2 years of age for pink salmon). The available information indicates a strong affinity by chum salmon for natal streams. Significant straying occurs among natural spawning areas within mixed hatchery-wild systems. However, otolith sampling indicates that little straying of hatchery fish occurs into wild systems. Stray hatchery fish from the the Kurilka Hatchery chum salmon appear to be straying into Lebedinoe Lake but a significant wild population is temporally segregated from the hatchery influence.* *Gidrostroy has begun operation of two new chum hatcheries at Olya Bay and Kitovvy since the original certification. In addition, there are plans to develop an additional chum hatchery – Yankito hatchery, beginning in 2015.All of these facilities are designed as segregated programs where production occurs at locations without wild spawners and hatchery practices are designed to encourage hatchery-origin adults to return directly to facilities with minimal straying into other systems. Otolith marking occurs or will occur at these facilities and initial returns from Kitovvy have shown significant straying back to hatcheries where initial broods were incubated prior to transfer to the new hatchery for feeding and release. However, broodstock collection, incubation, rearing and release now occur entirely at each facility which is expected to eliminate significant straying.* *Additional otolith sampling will be required to demonstrate a high degree of certainty with respect to this guidepost.*		
B	Guidepost	Enhancement activities are not routinely used as a stock rebuilding strategy but may be temporarily in place as a conservation measure to preserve or restore wild diversity threatened by human or natural impacts.	Enhancement activities are not used as a stock rebuilding strategy.	There is no salmon enhancement programs within expected straying distances of the natural spawning areas, which periodic monitoring has verified.
	Pink Met?	Y	Y	N
	Justification	*Enhancement activities are for the purposes of increasing harvest of fish. They have not been employed for stock rebuilding.*		
	Chum Met?	Y	Y	N
	Justification	*Enhancement activities are for the purposes of increasing harvest of fish. They have not been employed for stock rebuilding. Chum salmon were historically depleted on Iturup by overfishing but have since recovered to significant levels of natural production following implementation in the 1990s of policies and practices for protection of natural production. The management system does not discount the use of hatcheries for rebuilding depleted populations and initially considered development of a chum hatchery program at Lebedinoe Lake but has since abandoned this idea out of concern for the unique wild population.*		
References		*See Section 3.3.5 Enhancement*		
Pink OVERALL PERFORMANCE INDICATOR SCORE:				**80**
Pink CONDITION NUMBER (if relevant):				**--**
Chum OVERALL PERFORMANCE INDICATOR SCORE:				**80**
Chum CONDITION NUMBER (if relevant):				**1**

Evaluation Table for PI 1.3.2

PI 1.3.2		**Enhancement Management: Effective enhancement and fishery strategies are in place to address effects of enhancement activities on wild stock status**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Practices and protocols are in place and considered likely to protect wild stocks from significant detrimental impacts of enhancement, based on plausible argument	There is a strategy in place and confidence that the strategy will protect wild stocks from significant detrimental impacts of enhancement, based on evidence that the strategy is effectively achieving the outcome metrics used to define these minimum impacts (e.g., related to verifying and achieving acceptable proportions of hatchery-origin fish in the natural spawning escapement).	There is a comprehensive strategy in place and clear evidence for successful protection of wild stocks from significant detrimental impacts of enhancement.
	Pink Met?	Y	Y	N
	Justification	*Practices and protocols are designed to emulate natural conditions. Highly integrated hatchery programs are designed and operated to avoid significant artificial selection or domestication due to hatchery practices. Very large numbers of broodstock are utilized and naturally-produced fish are included in the broodstock. Broodstock are collected from throughout the duration of the return to avoid alteration of natural run timing. Eggs are incubated at natural river temperatures so that incubation period and the timing of hatch are similar to natural conditions. Size and timing of release is similar to that of wild fish. Releases occur over several weeks based on age. Feeding of fish in the hatchery is minimal and generally limited to years when local ocean conditions are unfavourable.* *Pink salmon hatcheries are operated on only two rivers - other streams continue to provide significant natural production potential in the region. Hatcheries have not been used as substitute for loss of natural habitat. Assessments of the relative magnitude of hatchery and wild production, and the incidence of marked hatchery fish in natural spawning areas provide strong evidence that impacts are acceptably small. Release numbers of hatchery pink salmon have been reduced since the 1970s based on monitoring which indicated that large numbers were competing for limited food resources in the nearshore marine waters. Hatchery fish are also released a little later to avoid competition with wild fry.* *While the current hatchery strategy effectively limits the potential for detrimental impacts to wild stocks, the potential for some level of impact cannot be discounted and a comprehensive hatchery strategy must allow for this possibility. Hatchery selection and ecological effects can be quite difficult to avoid and some hatchery practices will inevitably pose significant genetic or ecological risk. For instance, feeding or delayed release of fry might increase competition with wild fry. For pink salmon, the existence of even-odd year cycles implies a potential for impact of large hatchery-enhanced numbers. It has also been postulated that avoidance of natural selection in the incubation and early rearing stage can conceivably alter genetic characteristics. Finally, the presence of large numbers of enhanced fish can substantially increase exploitation rates and potentially-detrimental fishing practices, like river mouth fisheries in the latter stages of a run, with the potential for significant impacts on wild populations.*		
	Chum Met?	Y	Partial	

PI 1.3.2		Enhancement Management: Effective enhancement and fishery strategies are in place to address effects of enhancement activities on wild stock status	
	Justification	*Practices and strategies are being employed to limit impacts of chum hatcheries on wild populations. Chum salmon hatcheries are operated in only two river systems within the unit of assessment - other streams continue to provide significant natural production potential in the region. Kurilsk and Reydovo Hatcheries are operated as integrated programs where practices and protocols are designed to emulate natural conditions so as to avoid artificial selection or domestication which might impact wild fish spawning in the hatchery rivers. Olya Bay and Kitovvy hatcheries are operated as segregated programs where production and returns are designed to avoid straying of hatchery fish into wild systems. However, assessments of the relative magnitude of hatchery and wild production, and the incidence of marked hatchery fish in natural spawning areas are incomplete for chum salmon. Some evidence also suggests that significant numbers of Kurilsk Hatchery chum may be straying into spawning areas of the unique Lebedinoe Lake population. However, temporal segregation of hatchery and wild populations in Lebedinoe Lake appear to be effective in limiting hatchery influence on this wild population.* *Distribution of hatchery-origin fish in natural production areas is being assessed through otolith marking and mark sampling programs. The available information indicates that current production strategies ensure that the presence of enhanced fish in the management units does not adversely impact a majority of the wild fish populations in the management unit. Hatchery contributions occur primarily in areas proximate to the hatchery and hatchery contributions in other systems are low. As a result, wild characteristics of populations in areas outside significant hatchery influence would be expected to retain the native wild population characteristics of the meta-population complex. However, revised strategies may yet be appropriate to address specific cases of straying by hatchery fish into natural production areas of hatchery streams and by fish from the new Kitovvy and Olya facilities pending assessments of the effectiveness of transitioning all aspects of production to those facilities in the after the start-up phase which incubated eggs off site. Assessments necessary to make these determinations are already in place – all hatchery production continues to be marked and will be sampled upon return. This guidepost was scored a partial because there is only one guidepost for this indicator and it is largely, albeit not entirely, met.*	
References		*See Section 3.3.5 Enhancement*	
Pink OVERALL PERFORMANCE INDICATOR SCORE:			**80**
Pink CONDITION NUMBER (if relevant):			**--**
Chum OVERALL PERFORMANCE INDICATOR SCORE:			**70**
Chum CONDITION NUMBER (if relevant):			**1**
Error! Reference source not found.*Condition 1. Chum only - The fishery must demonstrate that there is a strategy in place to protect wild chum stocks from significant detrimental impacts of enhancement. The strategy must be based on outcome metrics that are based on evidence and expected to cause the minimum impact on wild chum stocks (e.g., related to verifying and achieving acceptable proportions of hatchery-origin fish in the natural spawning escapement) by the second annual audit and annually thereafter.*			

Evaluation Table for PI 1.3.3

<table>
<tr><td>PI 1.3.3</td><td colspan="3">Enhancement Information: Relevant information is collected and assessments are adequate to determine the effect of enhancement activities on wild stock status.</td></tr>
<tr><td>Scoring Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td>a Guidepost</td><td>Some relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock.</td><td>Sufficient relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock.</td><td>A comprehensive range of relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock.</td></tr>
<tr><td>Pink Met?</td><td>Y</td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">Information includes aggregate run reconstructions based on total hatchery releases and estimates of natural production based on juvenile monitoring of representative streams, and sample data from the harvest and escapement for hatchery fish which were marked as juveniles with otolith growth patterns specific to the hatchery of release (see Section 3.3.5.6). The combination of production estimates and hatchery mark sampling information provides sufficient information to determine that the contribution of enhanced fish to harvest and escapement is low (Akinicheva 2011; Akinicheva et al. 2012; Akinicheva 2013). Hatchery fish comprise a relatively small fraction of the natural spawners even in hatchery rivers. The incidence of hatchery fish in rivers substantially removed from the hatcheries was negligible. While the tagging data may not yet be sufficient to precisely quantify the hatchery contribution to each stream under a range of annual run conditions, the information is sufficient to determine that hatchery fish are highly likely to comprise a small fraction of the total run and a small fraction of the natural spawners in most streams.</td></tr>
<tr><td>Chum met?</td><td>Y</td><td>Partial</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">Information is available on the relative scale of hatchery and wild production based on numbers of spawners. Differences in run timing of chum salmon returning to hatchery and natural systems also suggest that hatchery straying of chum salmon might be relatively low. Representative groups of hatchery chum have been marked since 2009 (Table 7). All hatchery production is currently marked except for a portion at Kurilsk hatchery where springs in hatchery raceways in a portion of the facility prevent effective marking. Small numbers of marked began to return in 2012 as 3 year olds and larger numbers in 2013 as 4 year olds. Results of 2012 and 2013 mark sampling of the harvest and natural spawning areas is reported in Akinicheva (2013a, 2013b). This mark sampling information indicates that straying by hatchery chum salmon is relatively low and largely confined to natural production areas in hatchery streams. However, data is available from only a few years due to the 1-4 year lag time between when salmon are marked as fry and return as adults. In addition, initial assessments have identified the need for additional sampling to evaluate the effectiveness of continuing refinements in hatchery strategies. IThis guidepost was determined to be partially met because, while srelevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock, additional information from future mark sampling will be needed to guide continuing hatchery refinements.</td></tr>
<tr><td>b Guidepost</td><td>The effect of enhancement activities on wild stock status, productivity and diversity are taken into account.</td><td>The assessment includes estimates of the impacts of enhancement activities on wild stock status, productivity and diversity.</td><td>The assessment is appropriate and takes into account the major features relevant to the biology of the species and the effects of any enhancement activities on the wild stock status, productivity and diversity.</td></tr>
<tr><td>Pink Met?</td><td>Y</td><td>Y</td><td>N</td></tr>
</table>

<table>
<tr><td colspan="2">PI 1.3.3</td><td colspan="4">Enhancement Information: Relevant information is collected and assessments are adequate to determine the effect of enhancement activities on wild stock status.</td></tr>
<tr><td rowspan="3"></td><td>Justification</td><td colspan="4">Information on the relative contribution of hatchery fish to run size and escapement provides a basis for evaluating the effects of hatchery fish on wild stocks. However, current assessments do not yet fully consider the potential for impact of enhancement on wild stock productivity. Evaluations of enhanced fish are relatively new and have not yet been incorporated into all aspects of stock assessments in the region. Comprehensive information is not available regarding the potential for differentiation of hatchery origin fish due to hatchery practices and the effects of any differences on wild-hatchery interactions in systems where both are present.</td></tr>
<tr><td>Chum Met?</td><td>Y</td><td>N</td><td colspan="2"></td></tr>
<tr><td>Justification</td><td colspan="4">The effect of enhancement activities on wild stock status, productivity and diversity are taken into account. Otolith sampling information is generally sufficient to assess the hatchery contributions to wild populations but information as yet sufficient to assess the effects of hatchery fish on wild stock productivity and diversity where some straying occurs.</td></tr>
<tr><td colspan="2">References</td><td colspan="4">See Section 3.3.5 Enhancement</td></tr>
<tr><td colspan="5">Pink OVERALL PERFORMANCE INDICATOR SCORE:</td><td>80</td></tr>
<tr><td colspan="5">Pink CONDITION NUMBER (if relevant):</td><td>--</td></tr>
<tr><td colspan="5">Chum OVERALL PERFORMANCE INDICATOR SCORE:</td><td>65</td></tr>
<tr><td colspan="5">Chum CONDITION NUMBER (if relevant):</td><td>2</td></tr>
<tr><td colspan="6"><u>Condition 2. Chum only</u> The fishery must provide evidence by the 2nd surveillance audit that sufficient information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock of chum salmon (an estimate of relative contribution of wild to hatchery fish). The fishery must also include any identified impacts of enhancement activities on wild chum stock status, productivity and diversity in the Annual Otolith Sampling Report.</td></tr>
</table>

Principle 2

Rationales contribute to both pink and chum salmon scores for Principle 2.

Evaluation Table for PI 2.1.1

PI 2.1.1		The fishery and the enhancement activities do not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
Issue		SG 60	SG 80	SG 100
a	Guidepost	Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
	Met?	Y	Y	N
	Justification	*No other species comprises the 5-20% of the total catch that would categorize it as a main retained species for the purposes of this assessment, and the other species do not appear vulnerable or at risk. The fishery therefore meets the SG80. The SG100 is not met because although char and sockeye appear to be abundant based on bycatch surveys and anecdotal accounts, recent stock assessments have not been conducted.*		
b	Guidepost			Target reference points are defined for retained species.
	Met?			N
	Justification	*Reference points have not been established for other retained species which comprise a negligible fraction of the catch*		
c	Guidepost	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery and its enhancement activities do not hinder recovery and rebuilding of the depleted species.	If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery and its enhancement activities do not hinder recovery and rebuilding.	
	Met?	NA	NA	
	Justification	*No other species comprises the 5-20% of the total catch that would categorize it as a main retained species for the purposes of this assessment, and the other species do not appear vulnerable or at risk.*		

<table>
<tr><td colspan="2">PI 2.1.1</td><td colspan="4">The fishery and the enhancement activities do not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species</td></tr>
<tr><td rowspan="3">d</td><td>Guidepost</td><td>If the status is poorly known there are measures or practices in place that are expected to result in the fishery and its enhancement activities not causing the main retained species to be outside biologically based limits or hindering recovery.</td><td></td><td colspan="2"></td></tr>
<tr><td>Met?</td><td>NA</td><td></td><td colspan="2"></td></tr>
<tr><td>Justification</td><td colspan="4">No other species comprises the 5-20% of the total catch that would categorize it as a main retained species for the purposes of this assessment, and the other species do not appear vulnerable or at risk.</td></tr>
<tr><td colspan="2">References</td><td colspan="4">See Section 3.4.1 Retained Species</td></tr>
<tr><td colspan="5">OVERALL PERFORMANCE INDICATOR SCORE:</td><td>80</td></tr>
<tr><td colspan="5">CONDITION NUMBER (if relevant):</td><td>NA</td></tr>
</table>

Evaluation Table for PI 2.1.2

<table>
<tr><td colspan="2">PI 2.1.2</td><td colspan="3">There is a strategy in place for managing retained species that is designed to ensure the fishery and its enhancement activities do not pose a risk of serious or irreversible harm to retained species</td></tr>
<tr><td colspan="2">Scoring Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td>Guidepost</td><td>There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery and its enhancement activities do not hinder their recovery and rebuilding.</td><td>There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery and its enhancement activities do not hinder their recovery and rebuilding.</td><td>There is a strategy in place for managing retained species.</td></tr>
<tr><td>Met?</td><td>Y</td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">All commercial fishery catch is delivered directly to one of two local processing plants. Each delivery is weighed and fish delivery tickets are provided to the fishermen. The existing monitoring program allows the volumes and species of fish caught to be entered into the Fishing Log after each fishing operation and delivery of catch for processing. Deliveries are also logged by the plant. Catch totals are reported every 5 days by the company to the management authorities and written reports are also submitted twice per month. Fishermen log books are turned into the management authority at the end of the fishing season. No other species comprises the 5-20% of the total catch that would categorize it as a main retained species for the purposes of this assessment, and the other species do not appear vulnerable or at risk. Other retained species include sockeye and char. No directed fisheries occur for these species but no strategy is in place to manage them.</td></tr>
<tr><td rowspan="3">b</td><td>Guidepost</td><td>The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).</td><td>There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.</td><td>Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.</td></tr>
<tr><td>Met?</td><td>Y</td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">No directed fishery for sockeye or char, which are minor species in the catch (<1%) but also no strategy in place to manage them. The SG80 is automatically met because there are no “main” species. This is also the case for scoring issues c and d.</td></tr>
<tr><td rowspan="3">c</td><td>Guidepost</td><td></td><td>There is some evidence that the partial strategy is being implemented successfully.</td><td>There is clear evidence that the strategy is being implemented successfully.</td></tr>
<tr><td>Met?</td><td></td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">No directed fishery for char or sockeye. Please see rationale for a and b relating to the SG80 being met.</td></tr>
<tr><td rowspan="3">d</td><td>Guidepost</td><td></td><td></td><td>There is some evidence that the strategy is achieving its overall objective.</td></tr>
<tr><td>Met?</td><td></td><td></td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">Please see above.</td></tr>
</table>

PI 2.1.2	**There is a strategy in place for managing retained species that is designed to ensure the fishery and its enhancement activities do not pose a risk of serious or irreversible harm to retained species**
References	See section 3.1.4; Tumanov et al, 2011; Smirnov and Tochilina, 2011
OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**NA**

Evaluation Table for PI 2.1.3

PI 2.1.3		**Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and its enhancement activities and the effectiveness of the strategy to manage retained species**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	*Accurate and verifiable information is available on the catch of all retained species but the consequence for the status of affected populations has not been quantified. Any significant retention of species, including sockeye and char, for the purposes of commercial sales is quantified and reported to the management system. No main retained species are identified. There are periodic assessments on their stock status but how the fishery is impacting the stock status of these species has not been evaluated, however is expected to be low. The SG80 is considered met only.*		
b	**Guidepost**	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
	Met?	Y	Y	N
	Justification	Based on the periodic evaluations conducted by SakhNIRO on sockeye and char, populations are not considered depleted or overfished. Updates that are available to the public are in summary and based on fishery removals and some independent sampling. Because sockeye and char are minor species and the evaluation by SakhNIRO determined that the populations are not at risk, the SG80 is considered met.		
c	**Guidepost**	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	Not targeting of sockeye and char is considered a de facto partial strategy. Take in the fishery is very low and is not likely to negatively impacting their stock status meeting the SG80 but not the SG100.		

PI 2.1.3		**Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and its enhancement activities and the effectiveness of the strategy to manage retained species**		
d	**Guidepost**		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?		Y	N
	Justification	The catch from the fishery is monitored with regularity. In other areas, where sockeye and char populations may be commercial species, they are more rigorously evaluated. Because they are minor species the SG80 is considered met, but not the SG100.		
References		See section		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**--**

Evaluation Table for PI 2.2.1

PI 2.2.1		The fishery and enhancement activities do not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups		
Issue		SG 60	SG 80	SG 100
a	Guidepost	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically based limits.
	Met?	Y	Y	N
	Justification	*Bycatch comprises a very small proportion of the total harvest in the commercial pink and chum salmon fisheries. Common bycatch species include flatfish, far eastern dace, sculpins, codfish, smelt, and crab. The fishery occasionally has observers from SakNIRO that monitor fishing activities at the nets and all species that make it into the kungas are enumerated at the processing plants (catch is sucked up with fish pumps directly from the kungas into the plants). The more extensive bycatch surveys from 2009 and 2010 did not indicate any bird deaths at the nets and none came into the processing plants. Because no non-retained bycatch species comprises anywhere near 5% of the total catch, none are valuable or vulnerable, all bycatch species are considered to be minor species. No species is categorized as a main bycatch species for the purposes of this assessment. See Smirnov and Tochilina (2009) for additional information on bycatch species status and proportions. However, given the lack on status assessments on bycatch species, it cannot be concluded with a high degree of certainty that bycatch species are within biologically based limits, although bycatch rates are clearly negligible.*		
b	Guidepost	If main bycatch species are outside biologically based limits there are mitigation measures in place that are expected to ensure that the fishery and its enhancement activities do not hinder recovery and rebuilding.	If main bycatch species are outside biologically based limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery and its enhancement activities do not hinder recovery and rebuilding.	
	Met?	Y	Y	
	Justification	*No species is categorized as a main bycatch species for the purposes of this assessment. The SG80 is therefore considered met.*		
c	Guidepost	If the status is poorly known there are measures or practices in place that are expected to result in the fishery and its enhancement activities not causing the bycatch species to be outside biologically based limits or hindering recovery.		
	Met?	Y		
	Justification	*Species-specific biologically-based limits have not been established for bycatch species because exploitation rates in the salmon fishery are deemed to be so low as to constitute no significant impact on the status of these lightly or unexploited species. The bycatch species have no commercial value and are widespread in the region. Therefore, it is likely that the bycatch species are within biologically-based limits.*		

PI 2.2.1	**The fishery and enhancement activities do not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups**	
References	*See Section 3.4.2 Bycatch Species and Smirnov & Tochilina, 2011.*	
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**--**

Evaluation Table for PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to bycatch populations		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery and its enhancement activities do not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery and its enhancement activities do not hinder their recovery and rebuilding.	There is a strategy in place for managing and minimizing bycatch.
	Met?	Y	Y	Y
	Justification	*The bycatch strategy consists of effectively managing and minimizing bycatch in the commercial pink salmon fishery by use of fixed trap nets, which are very effective in passively capturing salmon during spawning migrations while also avoiding significant catches of other non-migratory local fish species.*		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Y
	Justification	*The very low incidence of observed bycatch, based on information directly about the fishery and/or the species involved, provides a strong objective basis that this strategy is effective. The strategy is mainly based on information directly about the fishery and/or species involved, and testing through bycatch monitoring supports high confidence that the strategy is working.*		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	Y
	Justification	*There is clear evidence that the fishing strategy is being implemented successfully to harvest pink salmon with minimal bycatch of other species, as the trap nets inherently have low bycatch rates and allow for live releases of some bycatch species.*		

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to bycatch populations		
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.
	Met?			Y
	Justification	*The objective is to catch the targeted species and not to catch other species. The fact that very little non-target species are observed in the fishery, indicates that the strategy is achieving its overall objective.*		
References		*See Section 3.4.2 Bycatch Species*		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 2.2.3

PI 2.2.3		**Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and enhancement activities and the effectiveness of the strategy to manage bycatch**		
Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	*Qualitative information and some quantitative information are available on the amount of minor bycatch species affected by the fishery. This information was collected in a dedicated subsampling program conducted for the fishery in 2009. The study indicates that bycatch levels are extremely low. Results were consistent with findings of more detailed bycatch monitoring efforts for similar coastal trapnet fisheries in the Kurile Islands and Kamchatka. All bycatch and the status of bycatch species is not monitored as a matter of course.*		
b	**Guidepost**	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
	Met?	Y	Y	N
	Justification	*This information showing low amounts of bycatch was sufficient to estimate outcome status and to demonstrate that the level of bycatch is not likely to approach any meaningful biologically based limits, but not with a high degree of certainty.*		
c	**Guidepost**	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage bycatch species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	*Information is adequate to support a partial strategy to manage main bycatch species by minimizing bycatch in salmon fisheries by employing a highly effective and selective fixed trap net gear. A bycatch study was completed in 2009, but is not completed annually for other species besides economically valuable species considered under the retained species performance indicators. Thus, information is not adequate to support a comprehensive strategy to manage bycatch with a high degree of certainty based on specific bycatch limitation objectives.*		

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and enhancement activities and the effectiveness of the strategy to manage bycatch		
d	Guidepost		Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectively of the strategy).	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
	Met?		Y	N
	Justification	*No main bycatch have been identified. Assuring that the salmon fishery uses only low bycatch gears through regulations and ongoing monitoring and enforcement demonstrates that the risk to the bycatch species is unlikely to change. Ongoing assessments of bycatch are not conducted.*		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**--**

Evaluation Table for PI 2.3.1

PI 2.3.1		**The fishery meets national and international requirements for the protection of ETP species** **The fishery and enhancement activities do not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species**		
Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Known effects of the fishery and enhancement activities are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery and enhancement activities are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery and enhancement activities are within limits of national and international requirements for protection of ETP species.
	Met?	Y	Y	N
	Justification	*For the purposes of this assessment, endangered, threatened, or protected species are those that are recognized by national legislation and/or binding international agreements (e.g. CITES) to which jurisdictions controlling the fishery under assessment are party. Protected fish species potentially intercepted by the fishery include Sakhalin taimen which are included in the Russian Red Book of endangered species as well as the IUCN red-list. Harbor seals are also listed in the Red Book of Russia and therefore receive protections by law. The incidence of Taimen in the fishery is reportedly negligible owing to the absence of significant local populations.The fishery has had no reports of a Sakhalin taimen take in more than 10 years. See Section 3.4.3.4 for more detailed information on taimen.*		
b	**Guidepost**	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery and enhancement activities on ETP species.
	Met?	Y	Y	N
	Justification	*Due to the low reported incidence of harvest of these species, direct fishery effects of the fishery are highly unlikely to create unacceptable impacts to these ETP species. It must be noted that even a very low incidence of taimen occurrence in fishing nets could pose a concern where taimen are at critical low abundance levels.*		
c	**Guidepost**		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery and enhancement activities on ETP species.
	Met?		Y	N
	Justification	*No significant indirect effects of fisheries have been identified which might pose unacceptable risk to these species. While existing information is adequate to make a qualitative determination regarding effectiveness of the commercial fishery strategy in minimizing mortality of taimen, some level of uncertainty remains due to a lack of detailed quantitative information on taimen harvest and status.*		
References		*See Section 3.4.3 ETP Species*		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**--**

Evaluation Table for PI 2.3.2 Alternate

<table>
<tr><th colspan="2">PI 2.3.2A</th><th colspan="3">There is a strategy in place for managing ETP species that is designed to ensure the fishery and enhancement activities do not hinder the recovery of ETP species.</th></tr>
<tr><td colspan="2">Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td>Guidepost</td><td>There are measures in place that are expected to ensure the fishery and enhancement activities do not hinder the recovery of ETP species.</td><td>There is a partial strategy in place that is expected to ensure the fishery and enhancement activities do not hinder the recovery of ETP species.</td><td>There is a strategy in place for managing ETP species, to ensure the fishery and enhancement activities do not hinder the recovery of ETP species.</td></tr>
<tr><td>Met?</td><td>Y</td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">The partial strategy involves fishery times and areas where ETP species are uncommon and a ban on retention of these species.</td></tr>
<tr><td rowspan="3">b</td><td>Guidepost</td><td>The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).</td><td>There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.</td><td>The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work.</td></tr>
<tr><td>Met?</td><td>Y</td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">Observations of a low incidence of ETP catch in the fishery, consistent with timing of availability of the ETP species not coinciding with the timing of the fishery, provide an objective basis for confidence that the fishery strategy based on qualitative information directly about the fishery and/or the species involved. Information on the distribution and abundance of taimen in particular does not allow for a quantitative analysis sufficient to support high confidence that the strategy is effective.</td></tr>
<tr><td rowspan="3">c</td><td>Guidepost</td><td></td><td>There is some evidence that the partial strategy is being implemented successfully.</td><td>There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring.</td></tr>
<tr><td>Met?</td><td></td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">The available information on catch and biology of taimen provides evidence that the strategy is being implemented successfully. The incidence of taimen catch in the fishery is reportedly very low. Other factors, including illegal harvest in freshwater, are believed to be the primary contributors to the depletion of this species in this region. Clear evidence is lacking on the contribution of the fishery strategy to objectives for conservation and recovery for taimen. A definitive assessment is precluded by the lack of quantitative information on taimen status. Questions remain regarding whether the low incidence of taimen catch in the fishery is due to low exploitation rate or low abundance.</td></tr>
<tr><td colspan="2">References</td><td colspan="3">See Section 3.4.3 ETP Species</td></tr>
<tr><td colspan="4">OVERALL PERFORMANCE INDICATOR SCORE:</td><td>80</td></tr>
<tr><td colspan="4">CONDITION NUMBER (if relevant):</td><td>--</td></tr>
</table>

Evaluation Table for PI 2.3.3

PI 2.3.3		Relevant information is collected to support the management of fishery and enhancement impacts on ETP species, including: Information for the development of the management strategy; Information to assess the effectiveness of the management strategy; and Information to determine the outcome status of ETP species.		
Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
	Met?	Y	Y	N
	Justification	*Information indicating a negligible catch of taimen or sturgeon is sufficient to determine that fishery management and enhancement activities do not threaten protection and recovery of these species which are currently limited by other factors. Information is not sufficient to quantitatively estimate outcome status of taimen with a high degree of certainty.*		
b	**Guidepost**	Information is adequate to broadly understand the impact of the fishery and its enhancement activities on ETP species.	Information is sufficient to determine whether the fishery and its enhancement activities may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	Y	Y	N
	Justification	*Information indicating a negligible catch of taimen is sufficient to determine that fishery management and enhancement activities do not threaten protection and recovery of these species which are currently limited by other factors.*		
c	**Guidepost**	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Y	Y	N
	Justification	*Information is adequate to support a strategy to manage the impacts on ETP species based on prohibition of retention and fishing during times and areas where taimen are uncommon.*		
References		*See Section 3.4.3 ETP Species*		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 2.4.1

<table>
<tr><td colspan="2">PI 2.4.1</td><td colspan="3">The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function</td></tr>
<tr><td colspan="2">Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td>Guidepost</td><td>The fishery and its enhancement activities are unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.</td><td>The fishery and its enhancement activities are highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.</td><td>There is evidence that the fishery and its enhancement activities are highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.</td></tr>
<tr><td>Met?</td><td>Y</td><td>Y</td><td>Y</td></tr>
<tr><td>Justification</td><td colspan="3">Trap nets and related operations have been observed to cause no significant habitat impacts. The fishery operates a passive gear type that is static once installed. The only conceivable effects would involve highly localized and temporary disturbances of the substrate due to net anchors or possibly occasional movement of weighed lead lines. Disturbance due to setting the nets once per season is minimal as they are set over sand or gravel with anchors or sand bags. Sand and gravel have very quick and complete recovery from even moderate disturbance (van Delfsen and Essink, 2001). The amount of this type of habitat is plentiful near the coastal areas around Iturup (Pietch et al. 2003). Enhancement activities that may disturb freshwater habitats include water diversion for the older hatchery sites and effluent coming from the hatcheries being released into the freshwater systems. The audit team received water testing results that confirm regular testing and levels of effluent nitrates and other contaminants are within acceptable parameters. Water temperature is the same as the source temperature. The streams that are used for hatcheries were not fish bearing streams to begin with. With more than 200 river systems on the island (SakhNIRO, 1991), some small water diversion is not affecting overall habitat function. Evidence that the habitat is highly unlikely to have had its function and structure reduced includes the amount of biodiversity observed in freshwater, marine and terrestrial systems (Pietch et al, 2003). These systems continue to be very productive and diverse indicating that fishery operations (or any other anthropogenic effects) are not harming the habitat.</td></tr>
<tr><td rowspan="2">b</td><td>Guidepost</td><td>The enhancement activities are likely to have minimal impact on water quality, access of natural-origin fish to spawning habitat, and quality of stream habitat (such as physical features, spawning and rearing flows and water temperatures).</td><td>The enhancement activities are highly likely to have minimal impact on water quality, access of natural-origin fish to spawning habitat, and quality of stream habitat (such as physical features, spawning and rearing flows and water temperatures).</td><td>There is evidence that the enhancement activities are likely to have minimal impact on water quality, access of natural-origin fish to spawning habitat, and quality of stream habitat (such as physical features, spawning and rearing flows and water temperatures).</td></tr>
<tr><td>Met?</td><td>Y</td><td>Y</td><td>Y</td></tr>
</table>

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function
	Justification	*Water quality coming into and going out of the hatcheries is tested regularly (at least once per month, usually once per week) by a third party government water control board (records reviewed from May 2013). A number of potential contaminants are tested for including concentrations of NO_3, NO_2^- PO_4, HCO_3, SO_4 NH_4^+ etc. as well as pH and temperature. Hatchery managers and salmon biologists have a vested interest in keeping the hatcheries running well. They do not use anti-biotics at any point during rearing or incubation. The streams are largely fed through upwelling ground water (~50%) (SakhNIRO, 1991) and diversion from non-fish bearing creeks is limited. A natural gravel filter system is employed for effluent water and the source creek is very close to the hatchery, so water is not diverted very far or for very long before being tested and put back into the system. The physical features of the creeks and streams have not been altered by hatchery operations or other means. There are two weirs that are temporary. They are located on the Reydova and Kurilka Rivers, which are mixed wild and hatchery rivers. They may be operated if a particularly large influx of salmon returns and there is threat that they may deplete oxygen levels too quickly before they can spawn. In this way the weirs mediate fish passage so that survival is greater rather than preventing passage for wild fish completely. Escapement goals for wild rivers are consistently met or very nearly so (low returns are likely related to oceanographic conditions in some years) The fishery meets the SG100.*
References		*See Section 3.4.4 Habitats*

OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	**NA**

Evaluation Table for PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to habitat types		
Issue		SG 60	SG 80	SG 100
A	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.
	Met?	Y	Y	Y
	Justification	*The fishing strategy involves use of passive trap net gear which has no significant physical habitat effects. The enhancement strategy involves operation of hatcheries on only small number of rivers and concerted efforts to avoid local habitat effects at hatchery sites.*		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
	Met?	Y	Y	N
	Justification	*The limited scale of fishery and enhancement relative to the available habitat provides an objective basis for confidence that the partial strategy will work and is being implemented successfully. Biogeographic surveys of the Kuril Islands indicate the high amount of biodiversity is being supported by the habitat (Pietch et al, 2003). This is in both freshwater and marine environments. More recently, there has been some additional infrastructure including deepening the main harbor and building an additional road that passes by some of the stream habitat. Indirectly, these activities are related to the salmon fisheries to improve access to goods and services for fishers and their families living on the island. Weir operation effects are less known and full testing on how the weir operation is affecting wild salmon access have not been fully explored.*		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	Y
	Justification	*Observations of marine habitat conditions in the fishery zone provide evidence that habitat impacts are very low or negligible at a regional scale.*		
d	Guidepost			There is some evidence that the strategy is achieving its objective.
	Met?			Y
	Justification	*The goal of the strategy is to maintain the habitat of the wild systems to as close to the natural system as possible. This in-turn will maximize the wild salmon returns. Evidence that this is working is in consistently meeting escapement goals for wild systems. Further testing from otolith marking confirms that the escapement goals are almost completely being met by wild salmon (Akinichiva, 2012 and 2013).*		
References		*See Section 3.4.4 Habitats*		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.4.3

PI 2.4.3		**Information is adequate to determine the risk posed to habitat types by the fishery and enhancement activities and the effectiveness of the strategy to manage impacts on habitat types**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
	Met?	Y	Y	Y
	Justification	*The nature and distribution of habitat types, including vulnerable areas, in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery. The amount of available spawning habitat is of particular interest to the fishery and fishery managers because escapement goals are based on habitat quantity and quality. Fisheries biologists walk the streams regularly pre-season and during the season to monitor the available habitat. Vulnerable habitat, including small creeks or embankments that may be prone to erosion are of particular importance. Iturup is a dynamic island with seasonal variability in rain and snow fall (SakhNIRO, 1991). If an obstruction in an important part of the stream occurs (trees falling across the stream, for example), biologists are quick to remove it to maintain fish passage for when the season starts. The nature and distribution of habitat types in freshwater streams affected by hatchery operations is known.*		
b	**Guidepost**	Information is adequate to broadly understand the nature of the main impacts of gear use and enhancement activities on the main habitats, including spatial overlap of habitat with fishing gear.	Sufficient data are available to allow the nature of the impacts of the fishery and enhancement activities on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.	The physical impacts of the gear on the habitat types have been quantified fully.
	Met?	Y	Y	Y
	Justification	*Sufficient data are available to allow the nature of the impacts of the fishery and enhancement activities on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear. The set nets are a passive gear type that are set once per season in designated locations which are in sandy or gravelly areas. Net location and fishing season are specified by license condition. Sandy and gravelly areas are known to have quick and complete recovery times (vanDalfsen and Essink, 2001), so effects from fishing gear are essentially The nature of impacts of hatcheries on habitats is identified and mitigated by regular testing for contaminants or changes in other parameters such as temperature or pH. The SG100 is met for this scoring issue.*		

<table>
<tr><th colspan="2">PI 2.4.3</th><th colspan="3">Information is adequate to determine the risk posed to habitat types by the fishery and enhancement activities and the effectiveness of the strategy to manage impacts on habitat types</th></tr>
<tr><td rowspan="3">c</td><td>Guidepost</td><td></td><td>Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).</td><td>Changes in habitat distributions over time are measured.</td></tr>
<tr><td>Met?</td><td></td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">Prior to salmon season and weekly during salmon season, the streams are surveyed to complete spawning escapement counts and monitor habitat functioning. This level of monitoring would provide quick indication if there were issues arising in the habitat that was affecting the viability of the wild salmon populations. It is difficult to conclude however that large scale changes over time are measured in a quantitative fashion as the amount of available habitat for calculating the spawning escapement goals has remained consistent for several years. This is either because the amount of available spawning habitat has not changed, or the estimated available habitat is not quantified annually. The SG80 is easily met for this scoring issue. Fishing operations and hatchery operations are regularly reviewed by both Gidrostroy managers and government personnel. This includes regular physical testing of water effluent and regular checking by SakhNIRO officials that weir operations and fishing regulations are being adhered to. Every document is reviewed by managers that approve each copy by date stamping it and providing hard-copy signatures. This includes water sampling, instructions on weir closings, to fisheries operations on the kungas and permits for the number of set nets. Every aspect of the fishery has accompanying documentation that is reviewed by at least one, if not several personnel that each sign off.</td></tr>
<tr><td colspan="2">References</td><td colspan="3">See Section 3.4.4 Habitats</td></tr>
<tr><td colspan="4">OVERALL PERFORMANCE INDICATOR SCORE:</td><td>95</td></tr>
<tr><td colspan="4">CONDITION NUMBER (if relevant):</td><td>--</td></tr>
</table>

Evaluation Table for PI 2.5.1

PI 2.5.1		**The fishery and enhancement activities do not cause serious or irreversible harm to the key elements of ecosystem structure and function**		
Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Y	Y	N
	Justification	*The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. These ecosystem components are separate from retained, bycatch, and ETP species considerations already addressed by specific indicators. Potential ecosystem concerns related to fishing might involve effects of changes in salmon abundance on ecosystem structure, trophic relationships, and biodiversity. For instance, decreases in salmon abundance due to fishing might favor prey species of salmon and harm predator species of salmon. However, the Iturup salmon fishery has complex short and long term effects on pink salmon abundance. Salmon fishery management to provide escapements consistent with maximum sustained yield generally increases average abundance in the ocean and return relative to what can be expected in an unmanaged system. Conversely, high exploitation rates and management for optimum rather than equilibrium escapements will substantially reduce the average number of fish escaping to freshwater.* *Effects of salmon abundance on ecosystem productivity in the ocean have been the subject of extensive research over the last 20 years and the scientific literature generally suggests that high abundance of salmon on the high seas due to the net effects of fishery management and hatchery enhancement throughout the north Pacific Rim has is related to ecosystem changes. However, the contribution from any specific area, including Iturup Island, to total salmon abundance in the ocean is relatively small. Effects of salmon abundance on ecosystem productivity in freshwater have also been well documented in other systems. Larger escapements provide more food for salmon predators such as bears and eagles and also more marine derived nutrients to support primary and secondary productivity. However, while fishery management may affect abundance, it also reduces the variability in abundance relative to what can be expected in an unmanaged system, thus providing a more stable resource and avoiding catastrophic extremes. On balance these effects are not expected to result in serious or irreversible harm to any other component of the ecosystem.* *Direct evidence demonstrating a high likelihood of no effect has not been provided.*		
b	**Guidepost**	Enhanced fish are likely to have minimal negative effect on the productivity of wild salmon and other aquatic populations as a result of predation, competition for resources, and disease transmission.	Enhanced fish are highly likely to have minimal negative effect on the productivity of wild salmon and other aquatic populations as a result of predation, competition for resources, and disease transmission.	There is evidence that enhanced fish are likely to have minimal negative effect on the productivity of wild salmon and other aquatic populations as a result of predation, competition for resources, and disease transmission.
	Met?	Y	Y	N

PI 2.5.1		The fishery and enhancement activities do not cause serious or irreversible harm to the key elements of ecosystem structure and function
	Justification	*At the current scale of enhanced fish are likely to have a minimal negative effect on the productivity of wild salmon and other aquatic populations as a result of predation, competition for resources, and disease transmission. While large numbers of hatchery fish are produced in the Iturup hatcheries, wild production continues to exceed that of the hatcheries. Mark and recapture information on recently returned pink and chum salmon indicate that the Gidrostroy hatcheries are getting good returns on the hatchery fish (usually 4% or more). This is indirect evidence that competition due to increased hatchery fry inputs from the many hatcheries around the Pacific rim is not impacting the Iturup returns at least. Iturup also has good returns of wild fish by meeting escapement goals in wild rivers. Both of these pieces are indirect evidence, which meets the SG80, but not the SG100 for this scoring issue. Disease transmission has not been an issue as rearing time in the hatcheries is relatively short and densities within the hatcheries are kept low so as to better mimic the natural environment. Direct evidence demonstrating a high likelihood of no effect has not been provided.*
References		*See Section 3.4.5 Ecosystem*
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**--**

Evaluation Table for PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to ecosystem structure and function		
Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.
	Met?	Y	Y	N
	Justification	*Measures include fishery management for spawning escapements adequate an additional to provide for ecosystem needs in freshwater including bears and marine derived nutrients. Hatchery production of pink salmon has been reduced since the 1970s based on observations of resource limitations in the nearshore marine environment. This strategy also involves significant monitoring and research of ecosystem components at a regional scale.*		
b	Guidepost	The measures take into account potential impacts of the fishery and enhancement activities on key elements of the ecosystem.	The partial strategy takes into account available information and is expected to restrain impacts of the fishery and enhancement activities on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	The strategy, which consists of a plan, contains measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and enhancement activities and the Components and elements of the ecosystem. This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery or enhancement activities do not cause serious or irreversible harm.
	Met?	Y	Y	N
	Justification	*The partial strategy takes into account available information and is expected to restrain impacts of the fishery and enhancement activities on the ecosystem. It is not apparent that the strategy involves a specific plan containing measures to address all main impacts of the fishery on the ecosystem, nor that all functional relationships between the fishery and the components and elements of the ecosystem are well understood.*		
c	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
	Met?	Y	Y	Y

PI 2.5.2		There are measures in place to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to ecosystem structure and function		
	Justification	*General experience and information from other systems indicate that the fishery and enhancement measures are likely to minimize risks of serious or irreversible harm to ecosystem structure and function. Salmon populations are inherently dynamic with large interannual variation on run sizes due to normal environmental variation in abundance. Related ecosystems are affected by these same dynamic conditions. Management of fisheries to provide significant natural spawning escapements and minimal disruption from enhancement ensure future production of salmon to fuel future fisheries while also providing fish and marine derived nutrients critical to sustaining freshwater and nearshore marine ecosystems.*		
d	Guidepost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.
	Met?		Y	Y
	Justification	*Qualitative information and observations readily indicate that stream and nearshore ecosystems of Iturup are intact, diverse, and productive. Iturup is one of the most remote and pristine areas in the eastern Pacific.*		
e	Guidepost	There is an established artificial production strategy in place, if necessary, that is expected to achieve the SG 60 outcome as a minimum performance requirement.	There is a tested and evaluated artificial production strategy, if necessary, with sufficient monitoring in place and evidence is available to reasonably ensure with high likelihood that the strategy is effective in achieving the SG80 outcome.	There is a comprehensive and fully evaluated artificial production strategy, if necessary, to verify with certainty that the SG100 outcomes are being achieved.
	Met?	Y	Y	N
	Justification	*Information on the relative scale of natural and hatchery production, and hatchery contributions to the run and escapement provide information on the effectiveness of the production strategy. The artificial production strategy includes limits on hatchery production to only 4 of numerous area rivers and hatchery operations to emulate wild population characteristics. Hatchery operations distribute releases over several weeks to avoid exceeding the capacity of the nearshore marine environment. Comprehensive evaluations of the artificial production strategy from an ecosystem perspective have not been specifically conducted.*		
References		*See Section 3.4.5 Ecosystem*		
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery and enhancement activities on the ecosystem		
Issue		SG 60	SG 80	SG 100
a	Guidepost	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	*The salmon life cycle encompasses a vast ecosystem including natal rivers and lakes, the nearshore ocean, and the high seas of the North Pacific Ocean. Key ecosystem elements include trophic structure and function (in particular key prey, predators, and competitors), community composition, productivity pattern (e.g. upwelling or spring bloom, abyssal, etc.), and characteristics of biodiversity. Key elements of the salmon ecosystem are broadly understood based on extensive work by scientists associated with the management system. Extensive research has been conducted on freshwater and marine aquatic ecosystems. This information consists of Iturup-specific research and research conducted in other salmon-producing regions.*		
b	Guidepost	Main impacts of the fishery and enhancement activities on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery and enhancement activities on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and enhancement activities and these ecosystem elements can be inferred from existing information, and have been investigated.
	Met?	Y	Y	N
	Justification	*Marine-derived nutrients from salmon carcasses can have a significant impact on freshwater communities as well as those communities in the freshwater to terrestrial interface. The relationships between salmon and the population dynamics of their terrestrial predators has been well documented in other systems. It has been reported that these nutrients also form a base for rich development of zooplankton in coastal area, which serves a food for young salmon just after downstream migration. Many aspects of ecosystem dynamics have been investigated in detail. For instance, long term studies have been conducted of pink salmon life history and feeding in relation to productivity of the nearshore marine environment and productivity and species interactions on the high seas.*		

<table>
<tr><th colspan="2">PI 2.5.3</th><th colspan="3">There is adequate knowledge of the impacts of the fishery and enhancement activities on the ecosystem</th></tr>
<tr><td></td><td></td><td colspan="3">Of particular concern to salmon fishery management throughout the North Pacific Region including Sakhalin Island are the effects of ocean environmental conditions on stock productivity. Short term and long term variability in these conditions is now understood to be strongly related to patterns of ocean productivity. Ocean productivity regimes have been observed shift periodically to more or less favorable conditions. The region is currently in a very productive ocean regime for many northern salmon stocks including Sakhalin pink salmon. These patterns and their effects are generally understood but future patterns are cannot be forecast. Thus salmon productivity and sustainability would be negatively affected by a shift to a less favorable regime. It remains unclear whether knowledge of fishery-ecosystem interactions is sufficient to recognize changes and to revise management objectives and practices in a timely fashion. Thus while information on fishery-ecosystem functions and elements is sufficient to meet 80 scoring guideposts, it does not rise to the standard of the 100 scoring guideposts.</td></tr>
<tr><td rowspan="3">c</td><td>Guidepost</td><td></td><td>The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.</td><td>The impacts of the fishery and enhancement activities on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.</td></tr>
<tr><td>Met?</td><td></td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">It is clear that salmon influence the food webs in the North Pacific although the effect varies widely between systems and is dependent on many factors like timing, scale and alternative nutrient sources, etc. In addition, like most large marine ecosystems, resolving interactions strengths among food web constituents is made difficult by limited data and confounding effects of environmental forcing.</td></tr>
<tr><td rowspan="3">d</td><td>Guidepost</td><td></td><td>Sufficient information is available on the impacts of the fishery and enhancement activities on these Components to allow some of the main consequences for the ecosystem to be inferred.</td><td>Sufficient information is available on the impacts of the fishery and enhancement activities on the Components and elements to allow the main consequences for the ecosystem to be inferred.</td></tr>
<tr><td>Met?</td><td></td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">Scientists of the government research institutes have collected substantial information on pink salmon and their role in the ecosystem. Information on salmon ecosystems throughout the Pacific rim has also provided a good understanding of the salmon's function in freshwater ecosystem, particularly for supporting aquatic and terrestrial food webs either directly by feeding predators and scavengers or indirectly by the delivery of marine derived nutrients. Active fishery management might also help stabilize returns by avoiding excessively large escapements which can depress future returns under some conditions. Enhancement with hatcheries can substantially increase salmon numbers in certain times and areas although hatchery contributions to chum salmon runs remain uncertain. Enhancement of Pacific salmon across the Pacific Rim since the 1970s has resulted in very large abundance in the North Pacific Ocean. There is some evidence that high salmon abundances in the ocean might adversely affect wild salmon through competition.</td></tr>
</table>

PI 2.5.3		There is adequate knowledge of the impacts of the fishery and enhancement activities on the ecosystem		
e	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
	Met?		Y	N
	Justification	*Extensive research has been conducted by the Russian Scientific Institutes on (1) Juvenile Anadromous Stocks in Ocean Ecosystems; (2) Anadromous Stocks in the Bering Sea Ecosystem (BASIS); and (3) Anadromous Stocks in the Western Subarctic Gyre and Gulf of Alaska Ecosystems (Temnykh et al. 2010. This work also involved substantial monitoring and research of related ecosystem components including food web composition, production and dynamics. Based on this work, the Russian management system has generally concluded that there is no capacity limitation based on oceanographic data which indicates that pink salmon utilize only 20% of the plankton in the ocean (Shuntov and Temnykh 2004; Shuntov et al. 2010).*		
References		*See Section 3.4.5 Ecosystem*		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**--**

Principle 3

Evaluation Table for PI 3.1.1

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it:		
		Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and		
		Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and		
		Incorporates an appropriate dispute resolution framework.		
Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	*Section 3.5.1 provides details of the Russian management system, including federal and state scientific and management agencies and the laws under which they operate The Federal Law "On fisheries…" sets that all citizens, public organizations, and associations have the right to participate in decision making process. For these purposes the FAR maintains a multi level system of public (community) and scientific fishery councils providing opportunities to participate and influence on decision process and regulations.*		
b	**Guidepost**	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.	The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	Y	Y	N
	Justification	*The Public Council for FAR and the FESFC provide an opportunity for participants to bring up disputes for resolution and the federal and regional courts are available for resolving disputes not otherwise addressed. The court system provides an effective legal system for dispute resolution among the various commercial fishery enterprises and the management agencies. To clarify legal procedures in applying various and changing Russian fishery laws, a 2010 Supreme Court decree provided guidance to marine inspectors and prosecutors. By providing legal guidelines for the fishing industry, this decree seeks to harmonize laws and enforcement procedures (Plenum of the Russian Federation Supreme Court. 23.11.2010 No. 27 "On the practice of trial of administrative cases involving violations of rules for harvesting (catch) of aquatic biological resources and other rules governing the implementation of industrial, coastal and other types of fisheries"). FAR Public Council and FESFC also provide an opportunity to bring up disputes for resolution. But the level of effectiveness of the system in context of the fisheries is unclear.*		

<table>
<tr><td colspan="2">PI 3.1.1</td><td colspan="3">The management system exists within an appropriate legal and/or customary framework which ensures that it:
Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and
Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and
Incorporates an appropriate dispute resolution framework.</td></tr>
<tr><td>c</td><td>Guidepost</td><td>The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</td><td>The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</td><td>The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</td></tr>
<tr><td colspan="2">Met?</td><td>Y</td><td>Y</td><td>Y</td></tr>
<tr><td colspan="2">Justification</td><td colspan="3">The federal law "On Fisheries and Protection of Aquatic Biological Resources" of December 2004 (referred to below as the Law on Fisheries) divides fisheries into three main categories" - industrial, recreational, and subsistence fisheries of indigenous groups, which applies to the management system to ensure traditional fisheries and livelihoods of indigenous people. In accordance with the law, every district establishes fishing sites for indigenous peoples near their homes. While distributing quotas for salmon fishing, the Anadromous Fish Commission first sets a quota for indigenous peoples (the rate of 200 kg of Pink salmon and 100 kg of Chum per person). The remainder of the quota is distributed between the other users of water resources. Representatives of the Association of Indigenous Peoples of Sakhalin are involved in the distribution of the quota. In the case the interests of the indigenous peoples are violated, the prosecutors are being involved to address violations. There are no indigenous peoples living on Iturup Island.</td></tr>
<tr><td colspan="2">References</td><td colspan="3">See Report Section for detailed description of the management system.</td></tr>
<tr><td colspan="4">OVERALL PERFORMANCE INDICATOR SCORE:</td><td>95</td></tr>
<tr><td colspan="4">CONDITION NUMBER (if relevant):</td><td>--</td></tr>
</table>

Evaluation Table for PI 3.1.2

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Issue		SG 60	SG 80	SG 100
a	Guidepost	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Y	Y	Y
	Justification	*Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. The Federal Fisheries Agency (FAR) is based in Moscow and has several regional fishery offices that conduct both research and managerial duties specific for their regions. These include SakNIRO, based in Yuzhno-Sakhalinsk and responsible for scientific research in the Kurils and SakRybVod which is specific for monitoring hatchery effectiveness and impacts in the Russian Far East. The Federal Security Service (SKTU) includes the Coast Guard and Government Marine Inspectors which enforce fishing regulations and are in charge of leasing fishing areas to set net holders. These local agencies are overseen by the Regional Governor who is also responsible for ensuring that the agencies submit fisheries data and participate in the international Anadromous Fisher Commission.*		
b	Guidepost	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	Y	Y	N

<table>
<tr><td colspan="2">PI 3.1.2</td><td colspan="3">The management system has effective consultation processes that are open to interested and affected parties.
The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</td></tr>
<tr><td></td><td>Justification</td><td colspan="3">An extensive public consultation process is provided by the Anadromous Fish Commission which meets in open public session periodically over the course of the fishing season to consider regulatory changes.
The FAR advocates the right for public participation in the fishery management process which is set out in the Federal Law on Fisheries. The FAR has Community Council as a way to promote transparency, cooperation and dialogue with scientific, non-governmental, and public organizations and establishes the regional fishery & scientific council, which coordinates proposals from the fishing industry and adopt them to the management system.
The Federal Law №166 “On Fisheries and Conservation of Aquatic Living Resources” (2004) sets that “…citizens (individuals), public organizations, unions of legal bodies (associations and unions) have the right to participate in decision making process …” in the fishery. The fishery management agencies “… must provide an opportunity for public participation in any ways and forms set by the regulations” (article 2, item 5). An extensive public consultation process is provided by the Anadromous Fish Commission which meets in open public session periodically over the course of the fishing season to consider regulatory changes.</td></tr>
<tr><td>c</td><td>Guidepost</td><td></td><td>The consultation process provides opportunity for all interested and affected parties to be involved.</td><td>The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.</td></tr>
<tr><td></td><td>Met?</td><td></td><td>Y</td><td>N</td></tr>
<tr><td></td><td>Justification</td><td colspan="3">As part of the consultation process with stakeholders AFC sends information used for pre-season management to all of them. During its meetings the AFC examines data on the intensity of salmon runs, hydrological regime in the spawning rivers and number of spawners on a spawning grounds, as well as recommendations of SakhNIRO and Sakhrybvod on the timing and regulation of fishing.
AFC decisions are recorded. The protocols of the AFC meetings are sent to all interested parties and published on web site of SKTU. All environmental and different interest groups have an opportunity to be effectively engaged. But it seems that stakeholders may have an opportunity to be involved, but may have not been considered.</td></tr>
<tr><td colspan="2">References</td><td colspan="3">See Report Section 3.5 for detailed description of the management system</td></tr>
<tr><td colspan="4">OVERALL PERFORMANCE INDICATOR SCORE:</td><td>85</td></tr>
<tr><td colspan="4">CONDITION NUMBER (if relevant):</td><td>--</td></tr>
</table>

Evaluation Table for PI 3.1.3

<table>
<tr><td colspan="2">PI 3.1.3</td><td colspan="3">The management policy has clear long-term objectives to guide decision-making for wild stock components and the use of enhancement programs that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach</td></tr>
<tr><td colspan="2">Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td>Guidepost</td><td>Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy</td><td>Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.</td><td>Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.</td></tr>
<tr><td>Met?</td><td>Y</td><td>N</td><td>N</td></tr>
<tr><td></td><td colspan="3">The over-arching fisheries and resource regulations such as Article 12, Rational use of water and biological resources and Article 291, Fishery and Conservation of Biological Resources lay out long-term objectives and long-term goals for the salmon fisheries of the Russian Far East. These broad national regulations have been incorporated into regional management policies. The regional fisheries management demonstrates its strategy towards sustainable use of fish resources by contribution to fisheries research, increasing control over poaching, development of modern fish-processing factory, by hatchery operation, and organization of protected areas. This performance indicator deals only with the high or broad management policy context – perhaps within overarching legislation, perhaps policy or custom that applies to many or all fisheries within a broader management system – and with whether laws, policies, practices or customs at that high or broad level imply or specify and/or require long term objectives that are consistent with a precautionary approach. The precautionary approach has been implicitly incorporated, though it is not yet explicit in the regulations as such.

The precautionary approach means being cautious when information is uncertain, unreliable or inadequate, and that the absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures. But sometimes it is dangerous to take any measures if you base your decisions on the best available data because it is unknown which is the right direction to go just because the data is not reliable. “Fishery Rules For the Far-East basin” takes into consideration practically all aspects of sustainable fisheries with the precautionary approach. For example: 14. Fishing on all types of water bio-resources is prohibited near the mouths of the spawning salmon rivers at the distance less than 2 km in both directions from the mouth and at the distance of 2 km into the sea or the gulf during Pacific salmons run - on the island of Iturup - from July 1 to October 31, on the island of Kunashir - from July 15 to October 31).

17.14. it is prohibited to install fishing gear for the Pacific salmons (except for fishery sites where fishing is allowed and based on the principle "one river - one user", b) in East Sakhalin and Southern Kuril zone - from the mouth of the spawning river or gulf channels of lagoon type (or lakes) less than length of the central wing, and the direction of the central wing of the trap closest to the mouth of the spawning river has to be parallel to the perpendicular drawn from the coast line and passing through a point in a middle of the spawning river or channel in a spot of their confluence into the sea or the gulf. Allowed deviations in the direction of the central wing can be no more than 15 degrees; “Fishing rules” also take care about salmon natural escapement and protection of endangered species: 36.16. Fishing of the Pacific salmons is prohibited for providing optimum conditions for the natural escapement in the period of the spawners return to the spawning grounds. Timing is controlled and managed by the Anadromous Fish Commission;(in edition of Rosrybolovstvo order from 21.12.2011, N 1271) 67.5.</td></tr>
</table>

PI 3.1.3		**The management policy has clear long-term objectives to guide decision-making for wild stock components and the use of enhancement programs that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach**
	Justification	*Fishing of the following bio-resources in the Sakhalin-Kuril region is prohibited for the recreational and sports fishery: Pacific salmons (chinook, sockeye, coho, chum, pink, cherry), except for recreational and sports fishery according to “Permits to fish” on the water bio-resources; Pacific salmon juveniles;* ***Siberian taimen****; Lagovsky's Manzhurian minnow . Hatchery objectives are clearly specified in authorizing plans. Goals to achieve optimal natural spawning objectives provide some measure of protection for wild fish by ensuring that a significant portion of the production occurs in the wild. Laws and regulations are explicit with respect to protecting spawning escapement.* *Objectives consistent with MSC Principles and Criteria and the precautionary approach are not always required by management policy, though they are implemented at the local level. Laws and regulations are explicit with respect to protecting spawning escapement, but could be more explicit relating specifically to the environmental/ecosystem. Explicit objectives for preserving biodiversity and responsible water based resource use (including biological) are incorporated into national legislation, though these are only implicit objectives for wild salmon stock management or the precautionary approach to hatcheries. There is no explicit policy for or a mechanism to protect wild stocks from additional hatchery development.*
References		*See Report Section for detailed description of the management system*
OVERALL PERFORMANCE INDICATOR SCORE:		**60**
CONDITION NUMBER (if relevant):		**3**
Condition 3. By the first surveillance audit, clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within the management policy as defined by JSC Gidrostroy.		

Evaluation Table for PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure they do not contribute to unsustainable fishing practices.
	Met?	Y	Y	N
	Justification	*The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing and seeks to ensure that negative incentives do not arise. According to Federal Law of Fisheries, fishing companies are leasing the fishing sites for 20 years. Therefore, companies are interested in ensuring a sustainable fishery and take measures to protect their resources, develop educational programs to prevent poaching and protect the environment. Replacing management through pre-season TACs and catches quotas with a system designed around achieving spawning escapement goals in-season has helped reduce IUU catches by fishing companies, and reduced the need for further developed the hatcheries due to lack of need for additional quotas.* *Consideration of the potential for unintentional incentives for potentially unsustainable fishing practices does not appear to be an explicit consideration in regular reviews of management policy or procedures.*		
References		*See Report Section 3.5 for detailed description of the management system*		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 3.2.1

PI 3.2.1		**The fishery and enhancement activities have clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2**		
Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system and enhancement activities.	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and enhancement activities.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and enhancement activities.
	Met?	Y	N	N
	Justification	*There are both short-term and long-term objectives, though they are quite broad and only implicitly address MSC Principles 1 and 2. For wild fish, these include short-term objectives for spawning escapements intended to provide for maximum sustained yield and long term objectives for fishery sustainability reflected in management regulations. With respect to enhancement, while the management system has not established specific policies for protecting wild population from detrimental hatchery effects, it has established specific hatchery objectives designed to avoid negative effects. These include "Integrated hatcheries", which means continued infusion of a high proportion of natural-origin fish in the broodstock, collection of broodstock from the beginning to the end of run timing, rearing on surface water in the hatcheries, which maintains natural developmental timing, etc.* *Short and long term objectives in the sense that the concepts of maintaining healthy ecosystems for the continued health of fisheries and biodiversity are incorporated into several national Articles, but do not always provide clear measurable standards with respect to ecosystem, sensitive species such as taimen, and hatchery effects on wild stocks. The fishery therefore meets the SG60 for implicit objectives, but not explicit.*		
References		*See Report Section for detailed description of the management system*		
OVERALL PERFORMANCE INDICATOR SCORE:				**60**
CONDITION NUMBER (if relevant):				**4**

Condition 4. By the first surveillance audit, short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and enhancement activities.

Evaluation Table for PI 3.2.2

PI 3.2.2		**The fishery-specific and hatchery 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 under assessment.**		
Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific and enhancement objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific and enhancement objectives.	
	Met?	Y	Y	
	Justification	*Section 3.5.5.4 provides information demonstrating the high degree of sophistication of the decision making process in the fishery. The fishery-specific and hatchery management systems include established decision-making processes, both pre-season and in-season, that result in measures and strategies to achieve the fishery-specific and enhancement objectives.*		
b	**Guidepost**	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Y	Y	N
	Justification	*Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation in a transparent, timely and adaptive manner and take in account wider implications of decisions. SakhNIRO and TINRO-Centre use 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.*		
c	**Guidepost**		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		N for chum only Y for pink	
	Justification	*Although it is clear that the Precautionary Approach is adhered to for many aspects of the fishery (see above), it was not clear that there were precautionary measures implemented to protect lake spawning chum at Lebidinoe Lake once there was some evidence that there was a unique population there. This scoring issue is considered met for pink salmon, but not for chum.*		

PI 3.2.2		The fishery-specific and hatchery 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 under assessment.		
d	Guidepost	Some information on fishery performance and management action is generally available on request to stakeholders.	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.	Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Y	Y	Y
	Justification	*Formal reporting to all interested stakeholders through the Anadromous Fish Commission describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. Reports are posted online to document decisions and make them available to the public.*		
e	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?	Y	Y	Y
	Justification	*The management system of Gidrostroy fisheries is bound to act proactively and follow all legal requirements of the fisheries in Russia, if any legal disputes arise, those are addressed in a timely manner.*		
References				
OVERALL PERFORMANCE INDICATOR SCORE CHUM:				**75**
OVERALL PERFORMANCE INDICATOR SCORE FOR PINK				**95**
CONDITION NUMBER (if relevant):				**5**

Error! Reference source not found. *The fishery must demonstrate by the second surveillance audit that the precautionary approach is being applied to all aspects of the fishery including protection of lake spawning chum in Lebedinoe Lake while investigations are still underway.*

Evaluation Table for PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery and hatchery management measures are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery and enhancement activities under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and enhancement activities under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and enhancement activities under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	Y	Y
	Justification	*Gidrostroy fisheries are effectively regulated and improvements in economic conditions and enforcement efforts have reduced illegal harvest to a minimum particularly when compared to when the company began fishing in the late 1990s . Local staff regularly survey streams for poaching and report suspicious activities. Gidrostroy employs their own security guards as well as the coast guard is very active in the area. With an island population of only a few thousand people and regular monitoring by Gidrostroy staff and the coast guard, poaching within the river systems and at the set nets has not proven to be an issue. Permits are also checked regularly by the Federal Security Service before and during the fishing season to ensure that no additional illegal fishing is taking place. The SG100 is considered met with regards to monitoring and surveillance.*		
b	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Y	Y	Y
	Justification	*Regulatory measures appear to provide some level of effective deterrence to noncompliance by commercial fisheries and hatchery operators. For example, loss of opportunity to fish when convicted of serious offenses provides a major incentive for fishery operators to stay within the rules.* *Education and enforcement procedures are implemented and applicable rules are consistently applied. Enforcement actions are effective in achieving the objectives of management. There are no infractions being consistently committed in the fishery by the company, only minor sport and personal use fishing infractions in the local community. Regulatory measures appear to provide effective deterrence to noncompliance by commercial fisheries and hatchery operators. For example, loss of permit to fish or loss of fishing lot when convicted of serious offenses provides a major incentive for fishery operators to stay within the rules.* *To clarify legal procedures in applying various and changing Russian fishery laws, a 2010 Supreme Court decree provided guidance to marine inspectors and prosecutors. By providing legal guidelines for the fishing industry, this decree seeks to harmonize laws and enforcement procedures (Plenum of the Russian Federation Supreme Court. 23.11.2010 No. 27 "On the practice of trial of administrative cases involving violations of rules for harvesting (catch) of aquatic biological resources and other rules governing the implementation of industrial, coastal and other types of fisheries").*		

PI 3.2.3		**Monitoring, control and surveillance mechanisms ensure the fishery and hatchery management measures are enforced and complied with**		
c	Guidepost	Fishers and hatchery operators are generally thought to comply with the management system for the fishery and its enhancement activities under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers and hatchery operators comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery and its enhancement activities.	There is a high degree of confidence that fishers and hatchery operators comply with the management system under assessment, including, providing information of importance to the effective management of the fishery and its enhancement activities.
	Met?	Y	Y	Y
	Justified	*Management system of Gidrostroy conducts annual assessments of the fisheries compliance with relevant domestic laws and regulations, and these assessments have confirmed full compliance with these laws and regulations. No legal and customary rights are affected by the fishery. The management system provides for legal and customary rights in areas where they are impacted by a fishery. Existing evidence demonstrates that fishers and hatchery operators comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery and its enhancement activities.*		
d	Guidepost		There is no evidence of systematic non-compliance.	
	Met?		Y	
	Justification	*There is no evidence of systematic noncompliance by fishery operators under the current management system. The current Legal system has reportedly reduced systematic noncompliance by fishing companies by eliminating significant incentives for noncompliance related to unreported or under-reported harvest and bycatch.*		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 3.2.4

<table>
<tr><td colspan="2">PI 3.2.4</td><td colspan="3">The fishery and related enhancement activities have a research plan that addresses the information needs of management</td></tr>
<tr><td colspan="2">Scoring Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td>Guidepost</td><td>Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.</td><td>A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.</td><td>A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.</td></tr>
<tr><td>Met?</td><td>Y</td><td>Y</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">A substantial amount of research occurs in the Sakhalin region with development of research plan showing that research occurs in a systematic way to address the management needs for the fishery. The management system incorporates a research component that provides for the collection and analysis of information necessary to formulate management strategies and decisions for both target and non-target species. Annual research plans are developed and implemented by the government scientific agency and the company, resulting in the "Plan for resource research and government monitoring of aquatic bio-resources for the current year". Under current law, the research plans are coordinated with all interested federal ministries and agencies and are approved by FAR. Plan stipulates the amounts and content of scientific research work to be conducted by all fisheries-related institutes for all commercial target species, including salmon.

Scientific research work is conducted year-round. During the salmon season, scientific research work covers the entire fisheries period, taking into account both commercial and non-commercial fish species. The plan takes into consideration the impact of commercial fisheries activities on the ecosystem if it is approved after a positive conclusion by government ecological experts for the up-coming year. These materials also contain an evaluation of the impact of the fishery on the communities and ecosystems. TINRO, as a scientific research commercial fisheries institute, conducts annual planning of scientific research work as described above, and also is one of the executors of the Plan within the scope of its responsibility. All programs and research plans are approved by FAR, including their financing.</td></tr>
<tr><td rowspan="2">b</td><td>Guidepost</td><td>Research results are available to interested parties.</td><td>Research results are disseminated to all interested parties in a timely fashion.</td><td>Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.</td></tr>
<tr><td>Met?</td><td>Y</td><td>Y</td><td>Y</td></tr>
</table>

PI 3.2.4		**The fishery and related enhancement activities have a research plan that addresses the information needs of management**
	Justification	*Research results are generally available and disseminated to interested parties in a timely fashion.* *One and five year research plans are compiled by SakhNIRO. A research program "Far Eastern Basin program of complex investigation of Pacific salmon for period 2007-2012" was approved by FAR in 2007. Another research program "Complex program for scientific research for the interest of the Russian federation fishing industry for 2010 – 2014" (FAR decree No.144) was approved by the FAR in 2010.* *These programs appear to addresses all aspects necessary for effective management of the directed fishery. Sakhalin-Kuril fisheries are essential part of these programs.* *Clients for scientific research work can be private companies as well as governmental entities. According to Russian law, results of the scientific work can be available to interested parties including stakeholders if the client will grant written permission. In case of Gidrostroy it is confirmed that the data concerning the Iturup Island salmon fishery will be made available upon request by any interested stakeholder.* *The Anodromous Fish Commission (AFC) meets regularly and makes in season fishery management decisions. Based on the reports about filling of the spawning grounds (prepared and submitted by SakhNIRO and SakhRybvod), the AFC makes operational decisions on the time and duration of fishing by either closing fishing in spawning grounds in case of insufficient filling or by increasing the quotas in order to harvest excessive spawners from the mouths of rivers to avoid overflow of spawning grounds. The AFCs' decisions are made through discussions and consultations with stakeholders. All meetings are open to the public. All decisions of AFC on fisheries management are subject to final approval by Territorial Administration of FAR. Meeting minutes and decisions are posted on the Territorial Administration website.*
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**90**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 3.2.5

PI 3.2.5		**There is a system of monitoring and evaluating the performance of the fishery-specific and hatchery management system against its objectives There is effective and timely review of the fishery-specific and hatchery management system**		
Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery and its enhancement program have in place mechanisms to evaluate some parts of the management system.	The fishery and its enhancement program have in place mechanisms to evaluate key parts of the management system	The fishery and its enhancement program have in place mechanisms to evaluate all parts of the management system.
	Met?	Y	Y	N
	Justification	*The FAR interacts with various agencies at the federal level while controlling its territorial departments and provides oversight of departments under its jurisdiction. The FAR evaluates the management system through its responsibility for defining the rules and the areas of fisheries and for preparation of federal-level and agency-level reports on the fishing industry. The fishery does not meet the 100SG, however, as it is not clear how the fishery is evaluating all parts of the enhancement program.*		
b	**Guidepost**	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Y	Y	N
	Justification	*The fishery-specific management system is reviewed through several avenues. Results from scientific research work of the Iturup Island salmon fishery are discussed and reviewed periodically, no less than annually. At these meetings managers discuss existing and propose new studies. Jointly, with the general director, the scientific research plan is determined for the next year. In regards to Sakhrybvod an annual examination and confirmation of scientific research plan is conducted in Moscow. Scientific organizations, internal and external to the government annually determine a research plan which includes study of resources. This is confirmed by internal and external specialists by order of the FAR. Key parts of the management system are also subject to extensive internal review. Information on run size, harvest by time and area, river openers and closures, and escapement is typically reported within the management system and may be reviewed by stakeholders upon request. All citizens have the right to request information though some detailed technical information is not always available. The management system provides for periodic reviews of the content and scope of research by stakeholders in the fishery and the communities in which the affect. By incorporating stakeholder and external scientific opinion into fishery management review the SG80 is met.*		
References				

OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**NA**

APPENDIX 2. PEER REVIEW REPORTS

Overall Opinion of the Report		
	Peer Reviewer 1	Peer Reviewer 2
Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report? (Yes/No)	Mostly	Yes
Peer Reviewer Justification	Overall, the assessment was reasonable but there were a few issues that should be considered by the assessment team. The biggest obstacle to the sustainability of the wild chum and pink populations is the large (pink & chum) and growing (chum) production of hatchery fish. There are no policies in place to protect wild salmon and there are often no short or long term objectives for hatchery production and harvests of hatchery fish. How many hatchery salmon is enough? This uncertainty in objectives leads to uncertainty with respect to the sustainability of wild salmon.	Iturup pink and chum salmon fishery obtained its first MSC certificate in 2009 and since that time undertook serious efforts to maintain the certificate addressing the conditions. This fishery is in general, is well managed being located in very remote area. Overall, I think that the assessment team arrived to appropriate conclusions. At the same time, there are some key issues considered in more details in comments to specific PIs. In particularly, I think that more attention should be paid to methodology of otolith analysis, to analysis of ecosystem effects of salmon hatcheries and removal of spawners, and to availability of information.
Certification Body Response	Hatchery objectives designed to protect wild fish are explicitly identified in Section 3.3.5.1 of the assessment. Related policies include reserving the majority of streams in the unit of assessment as wild fish production areas where no hatchery fish are released, managing fisheries to ensure that natural production areas are filled to capacity, marking and sampling hatchery fish to assess effectiveness of enhancement and	

	production efforts and siting new hatchery production on the coastal shoreline segregated from significant natural production areas. A consistent pattern of filling of the spawning grounds and mark sampling information which shows that straying of hatchery fish into wild rivers is limited, produces a high level of certainty regarding the sustainability of wild salmon. Specific comments regarding the methodology of otolith analysis, analysis of ecosystem effects of salmon hatcheries and removal of spawners, and availability of information are found under related performance indicators below.	
Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? (Yes/No)	Mostly	yes
Peer Reviewer Justification	The milestones should end with the final product or action that is needed to achieve the SG80 score. The expected date for this achievement is needed in the milestones. In other words, provide text from the Condition and from the SG80 scoring indicator as the final milestone. Please see additional comments in the report review below.	
Certification Body Response	Milestones were revised to clarify the final product or action needed to achieve the SG80 score.	

Client Action Plan Comments

Client Action Plan Comments (if included)		
	Peer Reviewer 1	Peer Reviewer 2
Do you think the client action plan is sufficient to close the conditions raised? (Y/N)	No	yes

Peer Reviewer Justification	1) As noted below, sex and age (chum) determinations must be accompanied by otolith determination of stock origin: hatchery or wild—because the report indicated hatchery fish may have different timing than wild salmon; age is often different for hatchery versus wild salmon. This otolith analysis is needed to avoiding confounding effects of hatchery fish on timing and age of wild salmon—data that are needed for management. 2) There is some mention of monitoring spawning areas for hatchery origin salmon. Details are lacking. How many streams with and without hatchery will be monitored each year, what is sample size per stream, distance from hatchery, etc. This activity is critical each year unless it is conclusively shown that hatchery fish on the spawning grounds is minimal (<5% of total). Furthermore, otoliths must be used to determine whether the stray hatchery chum originated from an integrated versus segregated hatchery because this is important to the genetic fitness of the wild salmon. 3)There is no mention of what is “acceptable” levels of straying for integrated versus segregated hatchery fish on the spawning grounds. Will MSC guidelines be used? There is no apparent plan to evaluate the risk of straying in a written document, including notification that actions will be taken to reduce straying if the	The client action plan looks sufficient to close the conditions raised.

	levels are high. 4) A condition is needed to prohibit the direct killing of native char that feed on hatchery fry during release, even though this action probably has little effect on the char population. This action is inconsistent with the intent of MSC policies. Native fishes should not be killed to promote survival of hatchery salmon. 5) Quantitative short- and long-term objectives must be developed for hatchery production and operations. 6) Policies are needed to protect the sustainability and genetic structure of wild salmon populations. 7) The Client action plan is often too vague and it is not possible to determine if the proposed actions will enable the fishery to meet SG80 within the specified time period.	
Certification Body Response	1. Evaluations of sex and age of hatchery and wild fish were added as a recommendation under condition 1 to address this comment. 2. Milestones for condition 2 were revised to include the need for a detailed otolith sampling implementation plan by the first annual surveillance consistent with this comment. 3. MSC certification requirements V1.3 does not include specific guidance regarding “acceptable” levels of straying for integrated versus segregated hatchery fish on the spawning grounds. PI 1.3.1 for enhancement outcomes will be evaluated based on likelihoods that hatchery-origin spawners occur in a small proportion of the natural spawning populations/locations and that they represent a small proportion of the total natural spawning escapement). As per direction for salmon in FCR 2.0, the assessment team will use expert judgment to score this indicator using a precautionary approach which also considers the degree of differentiation of hatchery and	

	wild stocks. Default guidelines for salmon identified in FCR 2.0 Box GSC1 will inform considerations where applicable. The client action plan indicates that actions will be taken to reduce straying if the levels are high but appropriate actions will depend on the degree and nature of straying. 4. No condition was identified concerning removal of char in the hatchery outlet to manage predation on releases of hatchery fry. Char are extremely abundant in this system and localized removals constitute a negligible ecosystem effect. Removals from the hatchery vicinity are considered equivalent to harvest in the fishery where char are retained, processed and sold to consumers. 5. Qualitative hatchery objectives designed to protect wild fish for the Unit of Certification are explicitly identified in Section 3.3.5.1 of the assessment. Quantitative evaluations consistent with PI 1.3.1 (Enhancement Outcomes) are as described in #3 above. 6. Hatchery objectives designed to protect wild fish are explicitly identified in Section 3.3.5.1 of the assessment. Related policies include reserving the majority of streams in the unit of assessment as wild fish production areas where no hatchery fish are released, managing fisheries to ensure that natural production areas are filled to capacity, marking and sampling hatchery fish to assess effectiveness of enhancement and production efforts and siting new hatchery production on the coastal shoreline segregated from significant natural production areas. 7. Milestones were revised to clarify the final product or action needed to achieve the SG80 score.

Peer Reviewer General Comments (optional)	
Peer Reviewer 1	Peer Reviewer 2
None	Minor comments and edits are available the attached version of the report
Certifying Body Response	
Editorial comments and Russian to English spelling suggestions were incorporated.	

Peer Reviewers Comments Related to Scores and Rationales

Principle 1

Performance Indicator 1.1.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Pink—Y Chum--Y	partly
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—N Chum--Partially	partly
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	PINK: The score is probably adequate. However, the statement that the wild pink populations can sustain an exploitation rate of 90% tells me that data collection contains mis-information---an ER of 90% on a wild pink population over many years is not realistic. Hopefully the otolith program will help resolve this problem. I also wonder about interception of Sakahlin pinks, although the otolith marks are reportedly few. Also, are pinks from other regions if Iturup Island taken in this fishery? Are optimum values based on the capacity density values? This was not clear. Optimum = capacity? Continued otolith marking & evaluation of marks in the fishery and spawning grounds is needed to confirm this initial assessment. Justification should mention why an LRP is not applicable or needed here (this is provided in the next	A, pink: Exploitation rates 90% are very high and should be strongly supported by scientific data, in particularly, data which would allow analysis of interception of Iturup salmon by terminal fisheries, and vice versa, interception of other stocks by Iturup fisheries, which are situated on salmon migration routes. Concerning this question, the report refers paper by Kaev et al 2006, but does not provide bibliography of this reference (it is absent in the reference list), thus making impossible to check the conclusions. I consider that such an important question should be addressed in more details in the report itself. B, pink: It is not clear, how averages in Table 3 were obtained. My calculations based on presented figures

	indicator—not sure why LRP mentioned in 1.1.1). CHUM: What is the definition of significant straying of chum in this justification? For lake chum, the genetic data reportedly do not support the otolith data, so it is not clear why the justification highlights timing of the wild and hatchery components since it is the genetic data that suggests some interbreeding. Continued otolith marking & evaluation of marks in the fishery and spawning grounds is needed. Justification should mention why an LRP is not applicable or needed here.	resulted in different averages than those provided in the Table 3. B, chum: Some (but not many) cases exceed 100% (Table 4), which means that recruitment is lower than optimal. Averaging is not very indicative. It is not clear, how Total and Average in Table 4 were calculated. My calculations based on presented figures resulted in different results than those provided in the Table 4.
Certification Body Response	The Kaev et al. (2006) citation was added to the references. Kaev et al. estimated annual exploitation rates of 83-86% on pink salmon in low abundance years and 90-94% in high abundance years. These rates were inferred from run reconstructions involving a number of assumptions regarding escapement, production and survival of hatchery and wild fish. Observed estimates of high exploitation rates might reflect underestimates of total returns due to run reconstruction assumptions, interception of significant numbers of non-local stocks or actual rates on hatchery-dominated local stocks. More accurate estimates of exploitation rates are expected to be available in the future based on returns of marked hatchery fish which will allow accurate apportionment of the harvest. Mark sampling information from the fishery harvest has identified only very small numbers of nonlocal hatchery fish in the harvest to date although significant numbers of hatchery fish have only recently begun to be marked in Sakhalin and Japan. Kaev et al. (2006) indicated that the fishery harvest of pink salmon is comprised of local populations based on the coincidence of fishing sites and spawning streams and results of tagging adults in coastal waters along the northern extremity of the island – tagged fish were recaptured only in bays and rivers of Iturup Island. Continued mark sampling can be expected to improve the understanding of possible interception rates of nonlocal stocks in the future. Regardless of these potential errors, intensive escapement assessments and mark-sampling information collected from spawning areas to date, provide strong evidence that wild salmon stocks on Iturup are sustaining themselves at a high rate. Report was revised to clarify that annual escapement benchmarks represent the production capacity of each system under optimum	

	environmental conditions (see Section 3.3.3.1). Discussions with regional fish managers indicate that the spawning escapement goals are effectively treated as the point of maximum production beyond which the capacity of the habitat is exceeded and future returns of salmon decline. Thus, fisheries are managed for a stream-specific range of spawning escapements estimated to provide maximum recruitment and yield at spawner numbers between 70 and 100% of capacity (S. Makeyev, Sakryvod, personal communication). A. Buslov (SakNiro, personal communication) supported this interpretation, stating that it was better to fall below the goal than above it due to the potential for catastrophic mortality due to high escapements. These numbers as used as reference points rather than hard objectives. Rationale for PI 1.1.1 was revised to clarify that formal limit reference points are not established because target reference points provide effective operation equivalents as in many other productive salmon fisheries, but escapements of 50% or more of benchmark values were used in the assessment as a proxy for point of recruitment impairment in analysis of escapement patterns. Straying of hatchery chum into Lake Lebedinoe must be considered in the context of run timing differences between the early returning hatchery fish and the late returning wild fish. While hatchery fish might comprise a higher percentage of total spawning escapement when aggregated throughout the year, the native late stock dominates the escapement during their normal period of return. Temporal segregation of the hatchery and wild fish reduces the actual incidence of interaction on the spawning grounds relative to a simple aggregate analysis. Late-spawning wild fish likely superimpose redds on top of the earlier hatchery-origin spawners, reducing hatchery production in the Lake. Natural production of hatchery-origin spawners is likely significantly reduced by their early run timing. The delayed cooling of lake waters that favored development of a late-returning local wild stock in the first place, can be expected to cause early-spawning hatchery-origin fish to hatch and emerge too early in the spring when temperature and food availability are not conducive to survival. Average percentages in Table 3 and Table 4 were replaced with median values which provide a better depiction of the frequency with which escapement objectives are achieved. Average values were skewed by extreme values in a few years. For both pink and chum salmon, median values were typically at or above 100% which indicates that escapements are currently fluctuating around target reference points.

Performance Indicator 1.1.2

	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Pink—Y Chum--Y	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—Y Chum--Y	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	PINK: It would be good to provide reference for the capacity reached at 2 pinks per m^2 or 1.5 for chum. Part of this statement do not apply to pinks: *Long term population viability and fishery sustainability for salmon is maintained under these circumstances by a diverse meta-population structure including multiple, interacting populations and subpopulations, and* <u>*by only a portion of each population or brood year cohort returning to spawn in any given year*</u> *(McElhany et al. 2000).* CHUM: It would be good to provide reference for the capacity reached at 2 pinks per m^2 or 1.5 for chum. Some of the reported data indicate 30% of the lake spawning chum were hatchery origin. This is a high percentage, especially for a unique population such as this. This, the natural origin spawning population is less than the total reported here.	The assessment is reasonable

Certification Body Response	Additional explanation and references were added to Section 3.3.3.1 to clarify the basis and application of target spawning densities. These values were established by the management system based on historical research which estimated the average area of salmon redds. Statement regarding pink salmon age composition was corrected. See explanation in PI 1.1.1 regarding hatchery spawners in Lebedinoe Lake.

Performance Indicator 1.1.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	NA	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	NA	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	NA	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 1.2.1		
	Peer Reviewer 1	Peer Reviewer 2

Has all the relevant information available been used to score this indicator? (yes/no)	Pink—Y Chum--Y	partly
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—Y Chum--Y	partly
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	Management appeared to maintain escapement levels during the relatively small return in 2011	B, pink & chum: Considerable changes in the salmon management, in particularly, introduction of so-called Olympic system, took place in 2008, i.e. notably less than a decade ago. Although there are positive examples of effectiveness of the management system. It is also should be noted that the report did not address quite important change in salmon harvest strategy - fish-counting wears which are set up in the mouth of the river to prevent over escapement. It is a very hot and controversial question now in Sakhalin area because may cause a serious threat to achieve escapement goals. The wears, however, got only a very little attention in the report. Probably, the problem is not so serious in Iturup Island, but it should be considered in some extent. Overall, I cannot agree that "the harvest strategy was fully evaluated" just because of

		insufficient time for such evaluation. SG80 would be more appropriate.
Certification Body Response	The use of weirs in the mouths of rivers is much less controversial in Iturup than Sakhalin despite the fact that both areas occur in the same management region. Iturup is different from Sakhalin in that both the trapnet fishery and the weirs are operated by a single Company working in close cooperation with government fishery managers. The Company also operates the hatcheries and employs their own biological staff to assist with escapement monitoring and evaluation. The Company is heavily invested in the long-term sustainability of the fishery resource. This integrated approach to management on Iturup has appeared to avoid problems with weir operations like those reported on Sakhalin. Similar factors provide confidence that the harvest strategy has been fully evaluated. Although the Olympic System is relatively new, the current management framework on Iturup has been in place for over a decade. The success of this management system is reflected in the consistent pattern of meeting escapement goals as well as a demonstrated ability in implementing appropriate management initiatives including hatchery marking and mark sampling in the fishery and escapement.	

Performance Indicator 1.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Pink—Partial Chum--Partial	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—Partial Chum--Partial	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A

Peer Reviewer Justification	PINK: The report mentions that migration timing of hatchery and wild pink salmon differ in some watersheds. Harvest management uses run timing and sex ratios to judge run abundance. Hatchery runs may therefore compromise these indicators for the wild run unless managers are carefully using otolith marked hatchery salmon. CHUM: See pink salmon, as it was noted that timing of lake chum varied from that of hatchery chum.	The assessment is reasonable
Certification Body Response	Iturup salmon escapements are managed on a stream-by-stream basis by regulating effort in marine trap-nets near each stream and river mouth weirs on the major streams. Biological sampling occurs in all of these. Different run timing patterns are documented among different natural systems. All of these indicators are used to assess run timing and strength. Confounding influences of hatchery fish in assessing run timing are limited because hatchery fish are representative of the dominant timing of the wild runs and population-specific information is available for significant wild streams.	

Performance Indicator 1.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Pink—Y Chum—Y	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—Partial Chum--Partial	yes

Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	PINK: The report states that extensive data on stock structure and stock productivity has been collected. However, there is limited recent data on hatchery/wild composition (stock structure) in the fishery and on the spawning grounds. Also, the reported harvest rate of 90%, if true, suggests non-local pink salmon (i.e., including stocks from other parts of Iturup Island) might be caught in this fishery (or some other factor leading to unreasonably high average harvest rate). What is the evidence to suggest this high rate is not supported by non-local salmon? Also, I did not see any calculations of stock productivity across the life cycle such as return per spawner. CHUM: The report states that extensive data on stock structure and stock productivity has been collected. However, there is limited recent data on hatchery/wild composition (stock structure) in the fishery and on the spawning grounds. Also, I did not see any calculations of stock productivity across the life cycle such as return per spawner.	The assessment is reasonable
Certification Body Response	Extensive data includes annual estimates of escapement and biological characters for pink and chum salmon on a stream by stream basis. This level of information in much more extensive than in most other salmon situations where status is assessed	

	based on aggregate stock or index population indicators. Stock-recruitment evaluations for Iturup pink salmon are available from Kaev et al. (2006) – this information was added to Section 3.3.3.2 in response to this comment. Historical run reconstructions estimated hatchery-wild percentages based on estimates of hatchery and wild fry production. Future run reconstructions are expected to incorporate hatchery marking results. Similar stock-recruitment data is not available for chum salmon. A recommendation was added to condition 2 for analysis of chum salmon stock-recruitment patterns and hatchery mark sampling information.

Performance Indicator 1.2.4		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Pink—Y Chum—y	partly
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—Partial Chum—Partial	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	
Peer Reviewer Justification	PINK & CHUM: Escapement is counted at weirs in some rivers. What methods are used to count escapement in other watersheds, e.g., foot survey, aerial survey? Are the escapement counts expanded to account for total escapement rather than just an index? This is important given that escapement objectives are	F: Re: "Pink salmon harvested in Iturup fisheries are almost entirely comprised of local populations returning to area streams". Comprehensive information on level of interception of non-local fish by Iturup fishery is not provided in this report (see comment on 1.1.1).

	based on density and an index of density would not be appropriate for this approach to managing spawning escapement.	
Certification Body Response	This is a very intensively-monitored system in relation to most other salmon systems. Escapements are estimated from foot surveys conducted in significant spawning areas on streams throughout the fishery area and are repeated on multiple dates throughout the run. Foot surveys are very effective because streams are small and spawning areas are well defined. Thus, index areas and expansions are not required for estimates of total escapement. Additional explanation was incorporated into Section 3.3.4.4 of the report regarding the level of interception of non-local fish by the Iturup fishery. Kaev et al. (2006) indicated that the fishery harvest of pink salmon is comprised of local populations based on the coincidence of fishing sites and spawning streams and results of tagging adults in coastal waters along the northern extremity of the island – tagged fish were recaptured only in bays and rivers of Iturup Island.	

Performance Indicator 1.3.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Pink—No Chum—No	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—No Chum--No	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	See comments on action plan.	yes

Peer Reviewer Justification	PINK: 1) The report references Kaev (2006) which shows that hatchery production of fry represents 20% to 60% of total pink fry production on Iturup Island. Pink hatchery production only occurs in two of many production areas (see Fig. 9), therefore relating hatchery production to all natural systems in Iturup can be misleading. Hatchery production should be related to the fishery area reviewed by MSC. What % of this fishery is hatchery origin? Also, Fig. 10 shows that pink harvests throughout Iturup closely follows pink salmon hatchery production, indicating hatchery production is likely a significant portion of the total. 2) Broodstock collection was not clearly described. What percentage of broodstock is from hatchery versus wild origin fish? This is important in the evaluation of potential genetic effects. 3) Marking has occurred only in recent years. Data tables showing the percentage of hatchery salmon in each watershed and fishery is needed. I could not find online the papers referenced in the report by Akinicheva. 4) The report indicates that salmon hatcheries are used for restoring populations (see page 25), so Indicator B is not scored correctly because it concludes that hatcheries are not used as	The assessment is reasonable

	a stock rebuilding strategy. CHUM: 1) The report needs to describe the number and percentage of the MSC fishery that originates from hatchery versus natural production. 2) A segregated hatchery approach is reportedly used for chum salmon, therefore straying to natural areas should be kept to 10% or less. A data table of hatchery fish (%) on the spawning grounds is needed, especially since hatchery production is significantly increasing. 2) It is not clear why the genetic data and otolith data seem to conflict with regard to interbreeding of hatchery chum in Lebedinoe Lake. 3) Table 7 has a mistake. The total number of chum that were marked is lower than indicated because only 20% of Kurilsk H were reportedly marked. 100% marking of chum is needed because a segregated hatchery approach is used. 4) The report indicates that salmon hatcheries are used for restoring populations (see page 25), so Indicator B is not scored correctly because it concludes that hatcheries are not used as a stock rebuilding strategy.	
Certification Body Response	Pink 1: Mark sampling results summarized in Section 3.3.5.6 indicate that a majority of the pink salmon harvest is of naturally-produced fish. Exact percentages require time and area harvest reconstructions which have not yet been completed by the scientific agency. A recommendation was added to condition 2 specifying the need for these estimates. Pink 2: Broodstock are collected from fish returning to the hatchery. Thus, a large proportion of the broodstock is comprised of hatchery-origin fish. Otolith sampling will provide a means of	

	quantifying the relative contributions of hatchery and natural fish to the hatchery broodstock. Pink 3: Web links to reports on otolith sampling have been added to the references to provide access to detailed results in reports by Akinecheva. Pink 4: Section 3.3.5.1 indicates that the primary purpose of hatcheries is for enhancing fishery harvest of pink and chum salmon. Hatcheries are not being used to restore lost populations of salmon in the unit of certification. Chum 1: Mark sampling results summarized in Section 3.3.5.6 indicate that a majority of the chum salmon harvest is of naturally-produced fish. Exact percentages require time and area harvest reconstructions which have not yet been completed by the scientific agency. A recommendation was added to condition 2 specifying the need for these estimates. Chum 2: A recommendation was included for Condition 2 for inclusion of a data tables of hatchery fish (%) on the spawning grounds. MSC certification requirements V1.3 does not include specific guidance regarding “acceptable” levels of straying for integrated versus segregated hatchery fish on the spawning grounds. As per direction for salmon in FCR 2.0, the assessment team will use expert judgment to score this indicator using a precautionary approach which also considers the degree of differentiation of hatchery and wild stocks. Default guidelines for salmon identified in FCR 2.0 Box GSC1 will inform considerations where applicable. Chum 3: Differences between genetic and otolith data in Lebedinoe Lake appear to be explained by seasonal differences in timing. Genetic analyses by Zhivotovky were based on samples collected during the early portion of the run when hatchery fish predominate. Otolith data included samples collected during the latter part of the run when the native lake-spawning population predominates. Chum 4: 100% marking of chum salmon at Kurilsky hatchery is not feasible because the older portion of the facility where a portion of the chum production is incubated, is fed by natural spring upwelling where temperatures cannot be controlled for effective marking. Returns from this portion of the facility must be inferred by expansion from chum salmon marked in the newer portion of the facility where water flow and temperature can be effectively regulated for marking purposes. Mark rates for chum salmon reported for the Kurilsky hatchery in Table 7 are correct – the new portion of the facility currently accounts for approximately 20% of the chum production. 100% marking is achieved at all other hatcheries in the unit of certification. Chum 5: Section 3.3.5.1 indicates that the primary purpose of hatcheries is for enhancing fishery harvest of pink and chum salmon. Hatcheries are not being used to restore lost populations of salmon in the unit of certification.

Performance Indicator 1.3.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Pink—Partial Chum—No	partly
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—Partial Chum--Yes	partly
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Chum: Maybe. What are acceptable proportions of hatchery origin chum on the spawning grounds, including the unique lake spawning population? How does this proportion vary with an integrated and segregated hatchery, which both are present in Iturup?	N/A
Peer Reviewer Justification	PINK: 1) What percentage of the broodstock is derived from wild versus hatchery origin salmon? Where is the broodstock collected—near the hatchery? 2) What are the harvest rates on the latter portions of runs when hatchery fish are still present but wild salmon are dwindling? CHUM: 1) Releases of hatchery pink salmon were reduced because evidence indicated hatchery pink salmon were competing for food with wild salmon in the nearshore marine areas. The diet of pink	A: Re: "Hatchery fish are also released a little later to avoid competition with wild fry". If the policy of the company is to create "integrated hatchery system", why they feed fish, and then release them later to avoid competition with wild fish. With that, risk of genetic divergence, and therefore detrimental effect of hatcheries on wild fish increases. As far as I know, pinks and chums are fed in hatcheries mostly to increase their return rate. Decrease of interaction between wild and hatchery fry is

	and chum fry is known to be similar and they are known to compete of food. Releases of hatchery chum is increasing substantially, therefore competition for food with wild chum and pink fry should be considered. 2) The justification incorrectly states that hatchery chum are produced in only 2 rivers. Table 6 indicates 9 chum hatcheries, including other areas of Iturup. 3) For the integrated hatchery, what are the percentages of wild chum in the broodstock and percentages of hatchery chum in the adjacent natural spawning areas? 4) What are the harvest rates on wild chum in the areas of hatchery fish?	just by-product of suc strategy. Also, large hatchery fish may probably more effectively compete with wild fish in the ocean, given limited carrying capacity of the oceanic ecosystem. Therefore I would rather score the 1.3.2.a as SG 60 than SG 80, because I am not convinced that there is a confidence that the given strategy will protect wild stocks from significant detrimental impacts of enhancement". Chum: Summary says that hatchery–origin chum return weeks earlier than their wild/natural counterparts. I understand that this is an evidence of genetic differences between hatchery and wild fish, and therefore a risk of genetic disturbance of wild stocks, which can be also addressed in scoring this PI.
Certification Body Response	Pink 1: Broodstock are collected from fish returning to the hatchery. Thus, a large proportion of the broodstock is comprised of hatchery-origin fish. Otolith sampling will provide a means of quantifying the relative contributions of hatchery and natural fish to the hatchery broodstock. Pink 2: Mark sampling results summarized in Section 3.3.5.6 indicate that a majority of the pink salmon harvest is of naturally-produced fish. Exact percentages require time and area harvest reconstructions which have not yet been completed by the scientific agency. A recommendation was added to condition 2 specifying the need for these estimates. Chum 1: Future monitoring of survival and returns of hatchery and wild fish based on hatchery marking can be expected to provide a means of evaluating effects of increasing hatchery production. Chum 2: Hatchery chum salmon are released in only two rivers within the unit of certification. Two additional chum hatcheries are located adjacent to marine waters separated from major wild chum production rivers. The remaining chum hatcheries are	

	located on other areas of the island and production is much less than that of Gidrostroy hatcheries. Chum 3: Broodstock are collected from fish returning to the hatchery. Thus, a large proportion of the broodstock is comprised of hatchery-origin fish. Otolith sampling will provide a means of quantifying the relative contributions of hatchery and natural fish to the hatchery broodstock as well as percentages of chum in the adjacent natural spawning areas. Chum 4: Harvest occurs in marine trapnets with composition of wild and hatchery fish varying depending on proximity to hatchery or wild streams and fish migration patterns. Mark sampling results summarized in Section 3.3.5.6 indicates that a majority of the chum salmon harvest is of naturally-produced fish. Exact percentages by time and area harvest require reconstructions which have not yet been completed by the scientific agency. A recommendation was added to condition 2 specifying the need for these estimates. A: Hatchery fish may be held in the hatchery for a few weeks prior to release and fed during this period to increase survival and return rates. This strategy has the effect of reducing completion between wild and hatchery fish which should be beneficial to wild fish, particularly those migrating early in the spring when food resources may be limited by cold temperatures. At present, there are no indications of competition-related limitations on survival of juvenile salmon in the nearshore marine environment of Iturup. Future monitoring of hatchery and wild returns can be expected to provide indications of competitive effects if they occur. Risks of genetic divergence among hatchery fish due to feeding are not deemed to be significant due to the brief duration of hatchery rearing and the high survival of fish in the hatchery during this interval. B: Chum salmon run timing is similar between hatchery and stream spawning fish. It is the unique lake-spawning population in Lebedinoe Lake that has a later run timing that is adapted to environmental conditions in the Lake. Because the lake is warmer later into the fall, the later run timing avoids premature emergence of lake spawning fish during early spring before warming temperatures stimulate significant food production.

Performance Indicator 1.3.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this	Pink—No Chum—Yes	no

indicator? (yes/no)		
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Pink—No Chum--Yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Chum: yes, partially	partly
Peer Reviewer Justification	PINK: 1) the statement that the contribution of enhanced pinks to harvests and escapements is low is not consistent with report text (also see comments above), e.g., "substantial numbers of hatchery-origin fish spawn naturally in rivers where hatcheries are located"(Akinicheva 2011). 2) Marking and recovery of hatchery pinks is just beginning, so it is difficult to obtain concrete estimates at this time. More detailed monitoring and analysis is needed. 3) Effects of competition between the growing chum hatchery and wild pink and chum has not been discussed; evidence was provided that high pink densities has reduced food availability in the near shore. 4) Total escapements of pinks to spawning areas appear to be adequate, yet other estimates indicate 90% of returning pinks are harvested. This is a very high harvest rate. Clarification or verification is warranted. How does the presence of numerous hatchery pinks on the spawning grounds affect	A: Analysis of otolith marks is a subject to serious uncertainties. Available through www.gidrostroymsc.com and www.npafc.org images showing otolith marks are in many cases not very clear, which can result in comparatively low reliability of reading of marks. The available reports do not provide sufficient information on formal assessment of measurement error associated with mark reading. This may mean that such formal assessment was not performed at all, which does not allow to assess magnitude of uncertainty associated with otolith reading. My personal experience of working with otolith marks in Sakhalin Island in 2010-2012 performed using the same methodology, confirms that reading of otoliths can be associated with high measurement error. I have a number of publications in international peer review journals and other sources, which involve analysis of measurement error in various morphological structures and suggests that insufficient attention measurement error can result in

	productivity of the wild population? CHUM: For Condition 2, the spawning ground evaluation should consider whether the marked fish came from an integrated versus segregated hatchery. The two hatchery approaches must use different otolith marks in order to achieve this condition unless stay rates meet objectives for segregated hatcheries.	serious consequences for analysis of otolith marks. I consider that evaluating this PI, the assessment team underestimated uncertainties associated with analysis of otolith thermal marks, which does not allow to conclude that "sufficient relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock". This should result in reducing score of this PI for both pink and chum. To address this issue, a formal assessment of measurement error associated with reading marks is necessary, preferably with involvement of independent experts. List of selected publications dealing with analysis of measurement errors in morphological research.
Certification Body Response	Pink 1: Hatchery pink salmon are released in only two of 17 rivers or streams in the unit of certification area where natural production of pink salmon is significant. Mark sampling information indicates that some straying of hatchery fish occurs in the two mixed production streams but is limited in other areas. Natural production from wild fish streams exceeds returns of hatchery fish such that the majority of the fishery harvest is of wild fish. Pink 2: The client action plan for conditions of this certification includes detailed monitoring and analysis of otolith samples for both pink and chum salmon. Pink 3: Future monitoring of survival and returns of hatchery and wild fish based on hatchery marking can be expected to provide a means of evaluating effects of increasing hatchery production. Pink 4: The Kaev et al. (2006) citation was added to the references. Kaev et al. estimated annual exploitation rates of 83-86% on pink salmon in low abundance years and 90-94% in high abundance years. These rates were inferred from run reconstructions involving a number of assumptions regarding escapement, production and survival of hatchery and wild fish. Observed estimates of high exploitation rates might reflect underestimates of total returns due to run reconstruction assumptions, interception of significant numbers of non-local stocks or actual rates on hatchery-dominated local stocks. More accurate estimates of exploitation rates are expected to be	

	available in the future based on returns of marked hatchery fish which will allow accurate apportionment of the harvest. Mark sampling information from the fishery harvest has identified only very small numbers of nonlocal hatchery fish in the harvest to date although significant numbers of hatchery fish have only recently begun to be marked in Sakhalin and Japan. Kaev et al. (2006) indicated that the fishery harvest of pink salmon is comprised of local populations based on the coincidence of fishing sites and spawning streams and results of tagging adults in coastal waters along the northern extremity of the island – tagged fish were recaptured only in bays and rivers of Iturup Island. Continued mark sampling can be expected to improve the understanding of possible interception rates of nonlocal stocks in the future. Regardless of these potential errors, intensive escapement assessments and mark-sampling information collected from spawning areas to date, provide strong evidence that wild salmon stocks on Iturup are sustaining themselves at a high rate. Chum 1: Otolith marks are unique to each hatchery and year. This allows hatchery and year of origin to be distinguished upon mark recovery. A: A recommendation was added to Condition 2 identifying the need for quantifying measurement error of otlith marking. Measurement error for otolith marking is being addressed in two ways. First, samples are analyzed for samples of fry prior to release to determine if marking was effective. Second, numbers of unreadable marks are identified in samples of returning adults. This work is contracted by Gidrostroy to SakhNIRO. Analyses to date have identified a very low incidence of unreadable marks. This appears to be much less of an issue than was observed in Sakhalin hatcheries because: 1) Iturup hatcheries are largely modern facilities with the capability of effectively controlling water flow and temperature to achieve marking, and 2) hatcheries on Iturup are privately operated by the ccompany which has recognized the value and importance of marking and made a significant financial investment in this effort.

Principle 2

Performance Indicator 2.1.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	yes	yes

Does the information and/or rationale used to score this indicator support the given score? (yes/no)	yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	The report mentions that the hatchery program "remove" (kill?) char that may predate on released hatchery salmon. Although these char removals do not qualify as a main species, or even a bycatch species, this action of killing native fishes to enhance hatchery salmon survival is not one that the MSC would support. I am not sure where this issue is covered by MSC standards, but it should be covered somewhere even if the action does not have serious effect on the status of char. ("In May and June of 2007, 1,718 predators weighing an average of 0.35 kg were removed from the Reydovaya River (Table 15 in Mizina and Molchanov 2007)"	The assessment is reasonable
Certification Body Response	No condition was identified concerning removal of char in the hatchery outlet to manage predation on releases of hatchery fry. Char are extremely abundant in this system and localized removals constitute a negligible ecosystem effect. Removals from the hatchery vicinity are considered equivalent to harvest in the fishery where char are retained, processed and sold to consumers.	

Performance Indicator 2.1.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	yes	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 2.1.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes, but see comment below	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	No	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)		N/A
Peer Reviewer Justification	The justification states that	The assessment is reasonable

	"Not targeting sockeye and char is considered a de facto partial strategy." This is true for the commercial fishery but it is not true for the hatchery operation where char are removed near the hatchery in order to enhance salmon survival. My view is that a condition should be placed on the hatchery operation to stop killing of wildlife for the purpose of enhancing hatchery fish survival.	
Certification Body Response	No condition was identified concerning removal of char in the hatchery outlet to manage predation on Char are extremely abundant in this system and localized removals constitute a negligible ecosystem effect. Removals from the hatchery vicinity are considered equivalent to harvest in the fishery where char are retained, processed and sold to consumers.	

Performance Indicator 2.2.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	partly
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	assessment is reasonable	A: Section 3.4.2, which addresses by-catch species, writes "New regulations

		require permits by volume for each bycatch species is sold", meaning that fishery sells bycatch species. As far as I know, MSC defines bycatch as organisms that have been taken incidentally and are not retained (usually because they have no commercial value). Is this definition used in this report? I.e. all the bycatch is discarded? According to my personal experience of working with fishermen in the Far East, they mostly retain species listed in the Table 10, rather than discard them. Definition of what is by-catch and what is a difference between by-catch, retained and discard species would be useful in this report.
Certification Body Response	CRv1.3 defines bycatch species to be those species in the catch that are not retained and that are discarded as well as those that die because of unobserved fishing mortality where those species have not already been assessed under P1 as target species or under the other components in P2. This assessment includes sockeye and char as nontarget retained species – both of these are processed and sold with commercial value. All other species are treated as bycatch.	

Performance Indicator 2.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Partial	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Partial	yes

Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	To what extent do fishermen take time to live release bycatch species, such as sockeye? Sockeye are not abundant in this region but pink and chum fisheries might exert a high harvest rate on co-mingling sockeye. What is the probable harvest rate on sockeye?	The assessment is reasonable
Certification Body Response	It is not practical to sort small numbers of sockeye for live release from large catch volumes of pink or chum salmon. The terminal nature of this fishery and the lack of local sockeye populations in the area of the unit of assessment can be expected to result in very low harvest rates on sockeye in this fishery.	

Performance Indicator 2.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	Assessment is reasonable	The assessment is reasonable

Certification Body Response	NA

Performance Indicator 2.3.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Y	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Y	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	Assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 2.3.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	yes
Will the condition(s) raised improve the fishery's	NA	N/A

performance to the SG80 level? (yes/no/NA)		
Peer Reviewer Justification	assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 2.3.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	The assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 2.4.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	yes

Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	The assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 2.4.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	The assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 2.4.3

	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	The assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 2.5.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Partial	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Partial	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	A new journal publication shows the impact of high pink salmon	The assessment is reasonable

	abundance (including Russian pinks) on the survival, growth, and age at maturation of up to 36 sockeye populations over the past 55 years. The paper is now available online: Ruggerone, G.T., and B.M. Connors. 2015. Productivity and life history of sockeye salmon in relation to competition with pink and sockeye salmon in the North Pacific Ocean. Canadian Journal of Fisheries and Aquatic Sciences. In Press: 10.1139/cjfas-2014-0134. Releases of hatchery pink salmon were reduced because evidence indicated hatchery pink salmon were competing for food with wild salmon in the nearshore marine areas (see report text). The diet of pink and chum fry is known to be similar and they are known to compete of food. Releases of hatchery chum is increasing substantially, therefore competition for food with wild chum and pink fry should be considered.	
Certification Body Response	Citation was incorporated into assessment. Related issue is treated in Section 3.4.5.	

Performance Indicator 2.5.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Partial	partly

Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Partial	partly
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	Releases of hatchery pink salmon were reduced because evidence indicated hatchery pink salmon were competing for food with wild salmon in the nearshore marine areas (see report text). The diet of pink and chum fry is known to be similar and they are known to compete of food. Releases of hatchery chum is increasing substantially, therefore competition for food with wild chum and pink fry should be considered. The justification text states, "*Hatchery operations distribute releases over several weeks to avoid exceeding the capacity of the nearshore marine environment.*" However, this approach did not work for pink salmon according to the report. What is the evidence that it will work for increasing numbers of hatchery chum in addition to hatchery pink salmon?	A: Re: "However, the contribution from any specific area, including Iturup Island, to total salmon abundance in the ocean is relatively small". I do not think that it is a sufficient consideration regarding a question of limitation of ocean carrying capacity issue, especially given recent research data. It is very important also to take into account proportion on hatchery fish in the fishery. I think that a brief analysis comparing proportion of hatchery fish in Iturup fishery with that in other fisheries, certified and not certified, would be useful for consideration the ecosystem effect. A: Re: "However, while fishery management may affect abundance, it also reduces the variability in abundance relative to what can be expected in an unmanaged system, thus providing a more stable resource and avoiding catastrophic extremes. On balance these effects are not expected to result in serious or irreversible harm to any other

		component of the ecosystem". This conclusion sounds very speculative. Do you have research data to support it? If there is no support from research, I would rather score 2.5.1.a as 60 but not 80.
Certification Body Response	Future monitoring of survival and returns of hatchery and wild fish based on hatchery marking can be expected to provide a means of evaluating effects of increasing hatchery production. Current high survival rates of both pink and chum salmon from Iturup provide strong evidence that current densities are not producing significant competition for these stocks. For instance, survival of pink salmon fry migrants was estimated to average 4.6% per year (Kaev et al. 2006). Similar estimates are not available for chum salmon but current high returns suggest that survival must also be high.	

Performance Indicator 2.5.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	N	partly
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Partial	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	A new journal publication shows the impact of high pink salmon abundance (including Russian pinks) on the survival, growth, and age at maturation of up to 36 sockeye populations over the past 55 years. The paper is now	E: There are also other researches in the North Pacific, which resulted in different conclusions. I think that they also needed to be mentioned

	available online: Ruggerone, G.T., and B.M. Connors. 2015. Productivity and life history of sockeye salmon in relation to competition with pink and sockeye salmon in the North Pacific Ocean. Canadian Journal of Fisheries and Aquatic Sciences. In Press: 10.1139/cjfas-2014-0134. The papers cited in the report ignore the fact that salmon form loose aggregations at sea and that they likely depend on concentrated patches of prey for efficient foraging. Humans have yet to develop gear that effectively samples prey eaten by salmon at sea (R. Brodeur, NOAA, pers. comm).	here.
Certification Body Response	Citation was incorporated into assessment. Related issue is treated in Section 3.4.5 including references to research concluding that salmon competition on the high seas may be significant.	

Principle 3

Performance Indicator 3.1.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Y	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Y	yes
Will the condition(s) raised improve the fishery's	NA	N/A

performance to the SG80 level? (yes/no/NA)		
Peer Reviewer Justification	The report is not clear on who can fish in this region. Is it an open access fishery, or do fishermen work for the fishing company? According to the report, the fishery management process is open to the public but I am not so sure if the fishery is open to the public via purchase of fishing permits. There are no indigenous people remaining on Iturup.	The assessment is reasonable
Certification Body Response	Section 3.3.4.3 describes organization of the fishery including who can fish in this region. Fishing parcels are leased to fishing companies. Fishermen are employees of the fishing companies. The public is allowed to fish in designated areas with the purchase of a license.	

Performance Indicator 3.1.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Y	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Y	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	The report indicates tremendous turn-over in the fishery management structure	The assessment is reasonable

	during the past 15 years or so. Yet, they seem to have and open and transparent management process according to the report.	
Certification Body Response	Yes, it was moved among different government management bodies 15 times in the last 20 years, but internal structure, roles and responsibilities in FAR remained the same.	

Performance Indicator 3.1.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Partial	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Partial	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Not likely. See comment below.	yes
Peer Reviewer Justification	SG80 says: "Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy." What is the long-term objective with respect to hatchery releases and how many adults do they intend to catch that are of hatchery origin? With no long-term objective, it is likely the	The assessment is reasonable

	hatchery system will continue to grow. The report states that *"There is no policy for the sustainability of wild stocks or a mechanism to protect wild stocks from additional hatchery development."*	
Certification Body Response	The SG 80 guidepost for this performance indicator was not met necessitating identification of Condition 3. Report was also revised to clarify that there is no explicit policy or a mechanism to protect wild stocks from additional hatchery development. There is a policy for the sustainability of wild stocks. Clause 36.16. of "Fishing Rules of Russian Federation" explicitly mentions "…providing optimum conditions for the natural escapement in the period of the spawners return to the spawning grounds. Timing is controlled and managed by the Anadromous Fish Commission; (in edition of Rosrybolovstvo order from 21.12.2011, N 1271)". With respect to the amount of hatchery salmon in the natural escapement there is not enough data yet. "Gidrostroy" deploys massive tagging program to collect reliable data needed for development of the mechanism of wild stocks sustainability and protection from hatchery development.	

Performance Indicator 3.1.4		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Partial	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Partial	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A

Peer Reviewer Justification	The report states that "*There is no policy for the sustainability of wild stocks or a mechanism to protect wild stocks from additional hatchery development.*" Given this, it appears that the hatchery system is an allowable subside that could impact wild salmon.	The assessment is reasonable
Certification Body Response	This issue is more appropriately addressed under PI 3.1.3. The report was also revised to clarify that there is no explicit policy or a mechanism to protect wild stocks from additional hatchery development. There is a policy for the sustainability of wild stocks. See response to PI 3.1.3	

Performance Indicator 3.2.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Partial	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Partial	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	See comment below	yes
Peer Reviewer Justification	What is the long-term objective with respect to hatchery releases and how many adults do they intend to catch that are of hatchery origin? With no long-term objective, it is likely the hatchery system will continue	The assessment is reasonable

	to grow. What are the specific objectives to achieve an integrated hatchery?	
Certification Body Response	This issue is more appropriately addressed under PI 3.1.3. An integrated hatchery is associated with a specific natural population from which brood stock is taken. The specific objective of such approach is to increase the abundance of fish representing a natural population. The intent is to allow natural environment to drive the adaptation of a composite population that spawns both in a hatchery and in the wild.	

Performance Indicator 3.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Y	no
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Y	no
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Y	yes
Peer Reviewer Justification	Assessment is reasonable.	D: Stronger justification is needed to support this scoring. In particularly, information on availability of data on spawning escapement, which is a crucial for salmon management is needed approach high scores. Site www.gidrostroymsc.com only provides some data on escapement from 2007 or earlier. I did not find other data on escapement. Links to AFC documents which provide such data are not provided in this report,

		as well as sources of information for tables 3 and 4, but according to my knowledge, such information is not published in AFC site and even it is not readily available by request. I think that 3.2.2.d does not meet not only SG100 criteria, but also SG80 criteria and thus may require a special condition.
Certification Body Response	This indicator concerns the effectiveness of the management decision making processes that result in measures and strategies to achieve the objectives. Objectives include salmon escapement. Detailed information on spawning escapement in this assessment demonstrates that they consistent meet established objectives. Anadromous Fish Commission actions are posted on the regional government website.	

Performance Indicator 3.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Y	yes
YDoes the information and/or rationale used to score this indicator support the given score? (yes/no)	Y	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	Assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Performance Indicator 3.2.4		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	No	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	No	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	Research and management documents cited in the report should be made available on the Gidrostroy web page. Some documents were provided here but many were not. The point here is that to achieve a score of 100, these documents should be widely and publicly available. How does one even contact Gidrostroy and who? In the next PI, the justification states: *"All citizens have the right to request information but in fact, detailed technical information is not always available."*	The assessment is reasonable
Certification Body Response	The website is updated at the end of each season by JSC Gidrostroy staff with information that is relevant to the assessment. The contact people are listed on the website and are responsive to inquiries should more detailed information be requested, particularly from SakNIRO or the Russian Government. JSC Gidrostroy staff are usually able to obtain information relating to Iturup specifically upon request from stakeholders. Please contact Donna Hartshorn at donna@polarbearenterprise.com for	

	communications in English and Ludmila Voronova at voronova-mila@yanex.ru for communications in Russian.

Performance Indicator 3.2.5		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	Assessment is reasonable	The assessment is reasonable
Certification Body Response	NA	

Any Other Comments (optional)		
	Peer Reviewer 1	Peer Reviewer 2
	None	None
Certification Body Response	NA	

APPENDIX 3. STAKEHOLDER SUBMISSIONS

STATE OF THE SALMON

KNOWLEDGE ACROSS BORDERS ЗНАНИЕ СКВОЗЬ ГРАНИЦЫ 国境を超えた知識

June 25, 2013

Adrienne Vincent, Lead Auditor
Scientific Certification Systems, Inc.
2000 Powell Street, Suite 600
Emeryville, CA 94608 USA

Sent via email

Re: Proposed team for the Iturup salmon fishery re-assessment

Dear Adrienne:

State of the Salmon appreciates the opportunity to comment on the proposed re-assessment team for the Iturup pink and chum salmon fishery. We anticipate that the re-assessment of this fishery will be challenging and are concerned that the proposed team lacks sufficient depth and experience to tackle the range of issues adequately.

A lot has changed in the Iturup fishery since it was first certified in 2009 which increases the complexity of the re-assessment. We commend JSC Gidrostroy for implementing a wide range of actions and research programs designed to meet conditions identified in the certification report. This work has not only greatly added to the understanding of the fishery, hatchery/wild interactions, and ecosystem impacts, but has also identified significant areas of uncertainty. For example, initial results indicated that hatchery-origin chum salmon were genetically swamping a rare lake-spawning population of chum salmon in the unit of certification (Zhivotovsky et al. 2011). In addition, two new hatcheries have been constructed by JSC Gidrostroy, more than doubling the number of hatchery chum salmon released annually since the fishery was certified. These new hatcheries are designed as "segregated" programs that are intended to reduce impacts on wild salmon populations. Segregated hatchery programs are widely used in Alaska but to our knowledge the new Iturup hatcheries are the first segregated programs used in Asia. In contrast, the two Iturup hatcheries that have been in operation since before 2009 when the fishery was certified are classified as "integrated" programs. The team needs to have the capability to assess the different hatchery programs and their relative impacts on wild salmon populations.

While most of the team has been actively involved in assessing salmon fisheries in the North Pacific, we have reservations about Mr. Matsak's ability to contribute significantly to the re-assessment. He does not appear to meet the minimum qualifications (five years' experience as a practicing fishery manager and/or fishery/ policy analyst) for the Principle 3 (fishery management and operations) of the Fishery Team Qualification and Competency Criteria, outlined in Annex CM3 section 5 of MSC Certification Requirements (V 1.3). He previously worked as a geneticist with the Pacific Institute of Fisheries and Oceanography/Aqua-Ecos and was on the original Iturup assessment team. However, it appears that he has little practical experience in salmon management or enhancement. In addition, his CV does not list any fisheries related work experience since the Iturup fishery was certified in 2009. We question whether his work and experience will provide sufficient depth to the team that will assess a fishery as complex and

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challenging as the Iturup fishery. In conclusion, we ask that you consider replacing him with someone more familiar with salmon management and the emerging science on hatchery and wild salmon interactions.

Thank you once again for the opportunity to provide input to the proposed re-assessment team for the Iturup pink and chum salmon fishery. We look forward to working with SCS and JSC Gidrostroy during the re-assessment of this important salmon fishery.

Sincerely,

Randy Ericksen, Salmon Management Specialist
State of the Salmon
rericksen@wildsalmoncenter.org
+1-971-255-5548

References

Zhivotovsky, L.A., L.K. Fedorova, G.A. Rubtsova, M.V. Shitova, T.A. Rakitskaya, V.D. Prokhorovskaya, B.P. Smirnov, A.M. Kaev, V.M. Chupakhin, V.G. Samarsky, V.P. Pogodin, S.I. Borzov, and K.I. Afanasiev. 2011. Rapid expansion of an enhanced stock of chum salmon and its impacts on wild population components. Environmental Biology of Fishes. Published online (DOI 10.1007/s10641-011-9873-4).

Team Leader Response and additional response from SoS from 26 June 2013

From: Randy Ericksen
To: Adrienne Vincent
Cc: Rich Lincoln; Sabine Daume
Subject: RE: Comments on proposed Iturup re-assessment team
Date: Wednesday, June 26, 2013 7:49:51 PM
Attachments: SoS Proposed NSB Assessment Tree Comments.pdf

Thanks Adrienne, I think adding Chet to the team addresses our concerns about lack of depth on the team. We provided comments on the proposed NSB assessment tree to MRAG (attached). Not sure if you have a chance to deal with these issues before they get posted. Anyway, this should give you a heads up on what our comments might be. -Randy

From: Adrienne Vincent [mailto:AVincent@scsglobalservices.com]
Sent: Wednesday, June 26, 2013 5:06 PM
To: Randy Ericksen
Cc: Rich Lincoln; Sabine Daume
Subject: RE: Comments on proposed Iturup re-assessment team

Hi Randy and Rich,
Thank you for comments. Mr. Matsak was on the original assessment team and will bring knowledge of the local language and fishery regulations as well as the clients are comfortable with him being on the team.

On short notice and with the onsite about a month away and tickets booked, we will be keeping him on the team. To address the concerns detailed in your letter we will be adding an additional team member: Dr. Chet Chaffee. Dr. Chaffee has agreed and is able to expedite his visa for travel to the Russian far east. He is also very familiar with the issues that have come to light since the initial certification.

Also, to let you know, we will be using the same assessment tree MRAG is using for the Narody Severa-Bolsheretsk salmon fishery. This will be published to the MSC website shortly, but I wanted to let you guys know as soon as possible.

Thank you again for your continued engagement in the MSC process. A discussion of the team selection process will be included in the public comment draft report.

Kind regards,
Adrienne

From: Randy Ericksen [mailto:rericksen@wildsalmoncenter.org]
Sent: Tuesday, June 25, 2013 5:12 PM
To: Adrienne Vincent
Cc: Rich Lincoln
Subject: Comments on proposed Iturup re-assessment team

Hi Adrienne,

I trust things are well with you. Please find our comments on the proposed Iturup re-assessment

Letter that was referred to in the above email string from June 2013 relating to the composition of the default assessment tree:

STATE OF THE SALMON

KNOWLEDGE ACROSS BORDERS ЗНАНИЕ СКВОЗЬ ГРАНИЦЫ 国境を超えた知識

June 19, 2013

Jodie Campbell
MRAG Americas, Inc
10051 5th St. N., Suite 105
St. Petersburg, FL 33702

Sent via email

Re: Proposed revised assessment tree for the Narody-Severa Bolsheretsk salmon fishery

Dear Jodie:

State of the Salmon appreciates the opportunity to comment on the proposed default assessment tree for the Narody-Severa Bolsheretsk (NSB) salmon fishery. The proposed tree is based on similar trees developed for the Annette Island Reserve salmon fishery, the Northeast Sakhalin and Aniva Bay trap net pink salmon fishery and the Ozernaya sockeye salmon fishery. In addition, the proposed tree was edited to more closely match MSC Certification Requirements v1.3. We commend MRAG's intention to strive for consistency with recent salmon fishery assessments and to adopt language and guidance from recent updates to MSC Certification Requirements. It is essential that salmon fisheries competing in the worldwide sustainability market be evaluated under consistent performance criteria.

Our specific comments and recommendations provided below highlight aspects for MRAG to modify the proposed tree and clarify the guidance to be used. Our intent is to provide the client with the greatest future certainty and help avoid the possibility for creating unexpected and potentially unfavorable outcomes to the durability of the fishery's certification status (if/once recertified).

Assessment of Enhancement Activities

We would like to clarify that the assessment team will be evaluating the potential impact of enhancement activities under Principles 1, 2 and 3. The introduction states "*Please note that no enhancement activities occur for the salmon stocks under assessment for the Narody Severa-Bolsheretsk fishery*." While this is true, there are two hatcheries located on the Bolshaya River that produce, sockeye, chum, coho and Chinook salmon. These hatcheries are part of the management system and potential impacts should be assessed under relevant performance indicators.

PI 1.1.3 Stock Rebuilding

Additional scoring issues were added to the PISG 1.1.3 reflecting changes in MSC Certification Requirements v 1.3. However, scoring issue b for SG 100 was not included. We assume this was unintentional and recommend the following be added to PISG 1.1.3 SG 100:

The shortest practicable rebuilding timeframe is specified which does not exceed **one generation time** for the depleted stock.

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PI 2.1.1 Retained Species - Outcome

All of the P2 Outcome performance indicators include reference to enhancement activities except for retained species. We believe this was an oversight in previous salmon assessment trees and should be specifically referenced here for consistency throughout P2. This is relevant to the NSB fishery which includes enhanced retained salmon stocks. We recommend the following changes to Table 2.1.1:

2.1.1 Retained Species – Outcome		
The fishery and its enhancement activities do~~does~~ not pose a risk of serious or irreversible harm to the retained species and do~~does~~ not hinder recovery of depleted retained species.		
SG60	**SG80**	**SG100**
Main retained species are likely to be within biologically based limits or if outside the limits there are measures in place that are expected to ensure that the fishery and its enhancement activities do~~does~~ not hinder recovery and rebuilding of the depleted species. If the status is poorly known there are measures or practices in place that are expected to result in the fishery and its enhancement activities not causing the retained species to be outside biologically based limits or hindering recovery.	Main retained species are highly likely to be within biologically based limits, or if outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery and its enhancement activities do~~does~~ not hinder recovery and rebuilding.	There is a high degree of certainty that retained species are within biologically based limits. Target reference points are defined and retained species are at or fluctuating around their target reference points.

PI 2.5.3 Ecosystem – Information

There appears to be an omission in PI 2.5.3.b for the SG 100 which we suggest remedying with the following addition in red to maintain consistency with the other scoring elements:

> Main **interactions** between the fishery and its enhancement activities and these ecosystem elements can be inferred from existing information, and **have been investigated in detail**.

Thank you once again for the opportunity to provide input to the proposed default assessment tree for the NSB salmon fishery. We look forward to receiving MRAG's response to our comments.

Sincerely,

Randy Ericksen, Salmon Management Specialist
State of the Salmon
rericksen@wildsalmoncenter.org
+1-971-255-5548

Team Leader Response: The assessment tree was modified to incorporate all suggestions made above.

See next Page for Technical Oversight from MSC

Response to MSC TO

Reference	Response
15330	3.1.2 a) the roles and responsibilities described in the body of the report have now also been incorporated into the rationale for this PI. 3.1.3 a) Articles 12 and 291 are now better described in the rationale for this PI. 3.2.1 a) A description on how the explicit national regulations relating to conservation of the environment and biodiversity have been implicitly incorporated into the fishery specific management system has been added to this PI. 3.2.3 The rationales has been changed to focus on enforcement monitoring instead of scientific monitoring 3.2.5 b) An explanation relating to the occasional stakeholder, external science committee and community involvement in fishery local fishery management meets the SG80 requirement.
15331	2.2.1 A description of the findings from SakNIRO observer information and Gidrostory extensive 2009/10 bycatch survey that found no bird mortalities at the set nets has been included.
15332	This score was changed for pink salmon so that the condition only applies to chum salmon
15333	Understood and this guidance will be incorporated into subsequent SCS reports.
15334	Section 5 has been significantly updated to be clear on CoC and traceability.
15335	Section 5.3 has been significantly updated to be clear on CoC and traceability including plants on Sakhalin.
15336	Section 5 has been significantly updated to be clear on CoC and traceability.

APPENDIX 4. SURVEILLANCE FREQUENCY

Table A4: Fishery Surveillance Plan

Score from CR Table C3	Surveillance Category	Year 1	Year 2	Year 3	Year 4
>2	Normal Surveillance	On-site	On-site	On-site	On-site

APPENDIX 5. CLIENT ACTION PLAN

Conditions Re-Stated

Condition	Applicable Performance Indicator
Condition 1: *Chum only - The fishery must demonstrate that there is a strategy in place to protect wild chum stocks from significant detrimental impacts of enhancement. The strategy must be based on outcome metrics that are based on evidence and expected to cause the minimum impact on wild chum stocks (e.g., related to verifying and achieving acceptable proportions of hatchery-origin fish in the natural spawning escapement) by the second annual audit and annually thereafter.* *Milestones* ▪ *2016 audit: Update the management policy to define and incorporate metrics used to adjust harvest control rules that are consistent with the FAO Precautionary Approach to protect wild chum stocks from significant detrimental effects from enhancement. Provide results of 2014 and 2015 otolith and scale sampling in the Annual Otolith Sampling Report.* ▪ *2017 audit and annually thereafter: Include in the Annual Otolith Sampling Report an estimate of the over-all percent contribution of hatchery origin chum salmon in each of the sampling areas. This must include systems with hatchery input and those without hatchery input. Include in the Annual Harvest Report whether any management actions were needed and, if so, what actions were taken.*	**1.3.2**
Condition1 *Milestones* ▪ *2017 audit and annually thereafter: Include in the Annual Otolith Sampling Report an estimate of the over-all percent contribution of hatchery origin chum salmon in each sampling area including systems with hatchery input and those without hatchery input. Include in the Annual Harvest Report whether based on this calculation, management actions were needed and if so, what actions were taken.*	**1.3.3**
Condition 3. By the first surveillance audit, clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within the management policy as defined by JSC Gidrostroy. *Milestones* ▪ *2016 audit: update the Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the FAO Precautionary Approach to protect wild salmon.*	**3.1.3**
Condition 4. By the first surveillance audit, short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and enhancement activities. *Milestones* ▪ *2016 audit: update Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the Precautionary Approach to protect wild salmon.*	**3.2.1**
Condition 4 *Milestones* ▪ *2016 audit: update the Management Policy with short and long-term objectives and define metrics used to adjust harvest control rules consistent with the FAO Precautionary Approach to protect wild salmon.* ▪ *2017 audit: update the Annual Harvest Report with a summary of any actions*	**3.2.2**

that may have been taken to protect wild salmon based on the harvest control rules defined in the Management Policy.	

Planned Actions

The purpose of company activities on Iturup Island is optimization of salmon harvest and reproduction, allowing the company to sustain the size and genetic health of populations and reducing any negative influence on the other fish species and utilizes the Precautionary Approach.

Systematic and competent work in this area requires following of the main conditions:

- ✓ Monitoring of chum and pink salmon returns to the coast of Iturup Island and then to the spawning grounds and broodstock take sites of the hatcheries. Continuous tracking of biological characteristics and numbers of returning salmon allows to adjust harvest pressure and define harvest and spawning salmon numbers required for optimal density on a spawning grounds and gathering of eggs for the hatcheries.
- ✓ Scales and otoliths collection is a must for definition of age and population origin of salmon.
- ✓ Patrol and protection of spawning rivers and grounds during the spawning run.
- ✓ Allow spawners to enter the spawning grounds from the beginning to the end of the spawning run to ensure preservation of a genetic variety of populations.
- ✓ Continue otoliths tagging (and then collection and analysis of returning tags) of pink and chum salmon at the hatcheries.

Following measures will be applied for implementation of our plan:

1. Harvest control

Relating to Condition №	Activities	Deliverable Documentation	Work period	Executor
1 and 2	Estimate of fish numbers at each harvest site (a trap, weir, hatcheries broodstock take sites).	Annual Harvest Report Due at Surveillance audit for previous year's work (example, report 2015 information in annual report presented prior to 2016 MSC audit and on Gidrostroy website).	Daily during harvest period	Harvest Manager
1 and 2	Estimate of sex composition of chum and pink salmon in the catches.	Annual Harvest Report Due at Surveillance audit for previous year's work.	Daily during harvest period	Gidrostroy laboratory
1 and 2	Biological analyses of chum and pink salmon, otoliths and scales collection to determine salmon origin and frequency in the fishery and broodstock.	Annual Otolith Sampling Report Due at Surveillance audit for previous year's work.	Every five days	SAKHNIRO, VNIRO, Gidrostroy

1 and 2	Tracking of returning chum salmon age using scales and updating of return size forecasts during harvest period.	Annual Harvest Report Due at Surveillance audit for previous year's work.	Every five days	Fish breeders
1 and 2	Count of the spawners entering the rivers.	Annual Harvest Report Due at Surveillance audit for previous year's work.	Every ten days	SAKHRYBVOD and fish breeders (Gidrostroy)
1 and 2	Walking of the spawning grounds for calculation of the density of pink and chum spawners for possible correction of the number of spawners passing through the river mouth.	Annual Harvest Report Due at Surveillance audit for previous year's work.	Weekly	Fish breeders (Gidrostroy)

It is extremely important not to allow overfishing of returning salmon in a coastal sea zone, allow sufficient number of the spawners to reach the spawning grounds and hatcheries, and also trace chum and pink salmon while they move up the river. Natural (not forced) distribution of the spawners along the rivers, tributaries and to the hatchery broodstock take sites is important as well.

2. Otolith tagging

Relating to Condition №	Activities	Deliverable Documentation	Work period	Executor
1 and 2	Otoliths tagging of pink and chum salmon. Our plan is 100% tagging for three contiguous years at each current and any new hatcheries, then reduce tagging down to 50% to minimize the stress to an embryos.	Report in the Annual Otolith Sampling Report due at the surveillance audits.	November – February; annually	Fish breeders (Gidrostroy)
1 and 2	Otoliths collection of pink and chum salmon on spawning grounds of the rivers and in the harvest zone. Spawning ground collection will occur in rivers with and without hatcheries and in Lebedinoe Lake during both October and November. Otolith collection for chum salmon will continue for the duration of the certification.	Report in the Annual Otolith Sampling Report due at the surveillance audits.	September-December annually	VNIRO, Fish breeders (Gidrostroy)

We are planning to create mobile group involving VNIRO scientists for collection of material (otoliths and bioanalyses) from the spawning grounds of Kurilsky and Prostor Bays rivers basins during the spawning run, because there is not enough data about distribution of wild and hatchery salmon in the rivers, but we have enough data about tagged salmon near the coast of Iturup Island.

3. Research

Relates to Condition №	Activities	Deliverable Documentation	Work period	Executor
1 and 2	Otoliths tagging of chum and pink salmon, collection and processing of otoliths samples.	Report in the Annual Otolith Sampling Report due at the surveillance audits.	All year	SAKHNIRO
1 and 2	Biological analyses of spawners with age detection (chum salmon), calculation of the next year return forecast and correction of the current forecast during the harvest period. Analyses will estimate annual percentages of hatchery fish in the harvest and each spawning ground surveyed by hatchery of origin.	Report in the Annual Otolith Sampling Report due at the surveillance audits.	July-November; annually	SAKHNIO, VNIRO, fish breeders (Gidrostroy)

Each year the staff of Gidrostroy and the Kuril fisherman along with SAKHNIRO and VNIRO scientists produce salmon the return forecast, which is the base for planning of the fishing season details for the next year (ordering of the equipment, packing materials, workers and so forth). The spawning run correctional (operational) forecast is produced on the basis of biological characteristics and age (for chum salmon). Then based on this forecast, sizes of catches near the cost and numbers of fish entering the rivers are corrected (regulated).

4. Security actions

Relates to Condition №	Activities	Deliverable Documentation	Work period	Executor
maintain certification	Implementation of security actions on all spawning reservoirs in the harvest zone.	Report of any enforcement activities in the annual harvest report due annually at the surveillance audits.	July-December; annually	Security agency, SKTU, fish breeders (Gidrostroy)
maintain certification	Selective security actions in the period of the spawning run of not abundant species (sockeye salmon, cherry salmon, taimen)	Report of any enforcement activities in the annual harvest report due annually at the surveillance audits.	April-July; annually	SKTU, fish breeders (Gidrostroy)

Spawning run time differs among different species of salmon. Taimen runs in April-May, cherry salmon in May-June, sockeye salmon June-July. To prevent poaching in April – June joint raids of Gidrostroy and Fish Inspection staff are organized. In time of sockeye salmon run permanent posts are placed by security agency near the lake Sopochnoye and the river Slavnaia. These species are not affected by the harvest because in April-July there are no traps or weirs installed and these species

5. Management Plan Update

Relates to Condition №	Activities	Deliverable Documentation	Work period	Executor
1, 3 and 4	Update the Gidrostroy Iturup Management Plan to include explicit short-term and long-term goals and explicit harvest control rules that guide decision making and a strategy to protect wild fish stocks. These will be consistent with MSC Principles and Criteria as well as the Precautionary Approach which reduces fishery and hatchery impacts in the absence of information.	Updated Management Plan to include explicit long and short term goals, harvest control rules and an explicit strategy protecting wild fish in the absence of information.	Due at 2016 surveillance audit	Gidrostroy
1 and 5	Document implementation and use of the Management Plan updates, progress toward short and long-term goals and how the strategy utilizing the Precautionary Approach was used.	Include in the annual harvest report due annually at the surveillance audits.	Due at 2017 surveillance audit and annually thereafter	Gidrostroy

8 APPENDIX 6. SUMMARY OF ADJUSTMENTS TO THE DEFAULT ASSESSMENT TREE

Revisions to the MSC FAM default assessment tree for the assessment of the Iturup Pink and Chum salmon fishery that was consulted on in July 2013 and confirmed in August 2013.

This is a summary of the confirmed revisions to the MSC Fishery Assessment Methodology's (FAM) Default Assessment Tree for use in the full assessment of the Iturup Pink and Chum salmon fishery, based primarily on the Default Assessment tree prepared by Scientific Certification Systems (SCS) for the Annette Island Reserve (AIR) salmon fishery assessment, and modified for the Northeast Sakhalin and Aniva Bay trap net pink salmon fishery and Ozernaya sockeye salmon fishery. The indicators, issues, and elements have been edited to more closely match the MSC Certification Requirements v1.3, but to remain as close as practicable to the assessment tree used in recent salmon assessments.

Please note that enhancement activities (hatchery operations) occur for the salmon stocks under assessment for the Iturup salmon fishery. The modified assessment tree has considerations of performance indicators for stock complexes of salmon typically include a mixture of local and non-local stocks of the same species. The units of certification will include chum and pink salmon fished in waters around Iturup Island, Russian Federation.
The intent is that all salmon stocks harvested in this area will be re-certified to carry the logo as long as all performance indicators are met with a mean score of 80 or greater for each of the three principles. This fishery was first certified by SCS in 2009 using the assessment criteria developed by the assessment team. This fishery began its first assessment prior to the publication of the MSC default assessment tree.

For the purposes of this assessment, all pink and chum salmon caught in the Iturup fishery are considered to be target stocks. This includes local salmon stocks that are produced naturally in the rivers in the unit of certification and from adjacent rivers.
Indicators, issues, and elements that have been modified from the FAM can be found in red text. In order to fully capture the effect of enhancement, three additional indicators have been added, 1.3.1, 1.3.2 and 1.3.3.

SCS received suggestions to greater clarify that the assessment team shall score the fishery considering the effects that enhancement has on the stocks and ecosystem as well as considering enhancement activities in the management of the fisheries. The performance indicator language in Principle 2 included reference to enhancement activities, but greater clarification on including enhancement considerations in the scoring issues was suggested. All suggestions to this effect have been incorporated into the final tree confirmed in this publication. This will improve clarity and consistency between recently developed salmon assessment trees.

Evaluation Table for PI 1.1.1

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	It is likely that the wild stock is above the point where recruitment would be impaired or the fishery impacts are so small as to have no significant effect on the stock status.	It is highly likely that the wild stock is above the point where recruitment would be impaired or fishery impacts are so small as to have no significant effect on the stock status.	There is a high degree of certainty that the wild stock is above the point where recruitment would be impaired or fishery impacts are so small as to have no significant effect on the stock status.
b	Guidepost		The wild stock is at or fluctuating around its target reference point.	There is a high degree of certainty that the wild stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing
	Justification	In recognition of broadly including any salmon stock component harvested in the fishery, this indicator was modified to clarify that high productivity and low probability of recruitment overfishing of stocks can occur in two circumstances. Where fishery harvest rates are significant the scoring guideposts can be met when the subject fishery, in concert with other fisheries affecting the stock, adequately protects spawning escapement. Where fishery harvest rates are very low, status of the stock is independent of the fishery. Most mixed stock salmon fisheries and some more terminal salmon fisheries harvest a complex of local and non-local stocks. Often nonlocal stocks are harvested at a very low exploitation rate – this rate might be so small as to have no measurable effect on status or recruitment of the stock. Very low “de minimis” fishing rates are often identified as limit reference points for salmon stocks intercepted at very low rates in mixed stock fisheries. Status of these stocks typically depends on conditions at the point of origin and fisheries targeting these stocks in closer proximity to the point of origin. For the purposes of this assessment, stock status is evaluated based on estimates of the significance of fishery harvests on the stock as identified in 1.2.3. This is not to suggest that the status of the stock can be ignored. Rather it defines a different standard for assessing the status of stocks that are harvested at negligible rates, and highlights the possibility that a fishery may pass this indicator under certain conditions even when a non-local stock is below its escapement goals. In this case, specific salmon fisheries in other areas with significant exploitation of the stock in question could fail a specific guidepost while other fisheries, where the stock in question is incidentally harvested at a very low rate while targeting other more-abundant local stocks, could pass the same guidepost. An appropriate definition of stocks as identified in 1.2.4 is obviously essential to the assessment of this indicator.

Evaluation Table for PI 1.1.2

PI 1.1.2		Limit and target reference points or operational equivalents are appropriate for the wild production components of the stock		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the wild stock and can be estimated.	
b	Guidepost		The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues.
c	Guidepost		The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.
d	Guidepost		For key low trophic level stocks, the target reference point takes into account the ecological role of the stock.	

PI 1.1.2		Limit and target reference points or operational equivalents are appropriate for the wild production components of the stock		
e	Guidepost	where the wild stock is a management unit comprised of more than one subcomponent, it is likely that the target and limit reference points are consistent with maintaining the inherent diversity and reproductive capacity of each stock subcomponent.	where the wild stock is a management unit comprised of more than one subcomponent, it is highly likely that the target and limit reference points are consistent with maintaining the inherent diversity and reproductive capacity of each stock subcomponent,	where the wild stock is a management unit comprised of more than one subcomponent, there is a high degree of certainty that the target and limit reference points are consistent with maintaining the inherent diversity and reproductive capacity of each stock subcomponent.
Justification		Allowing for the use of operational equivalents to limit and target reference points recognizes the unique characteristics of salmon stock structure and fishery management. These characteristics include a complex spatial metapopulation structure consisting of large numbers of local populations whose relatedness is a function of distance, a broadly overlapping mixture of different stocks in the ocean, and fisheries that are typically focused on annual cohorts of semelparous adults destined to die after spawning. The combination of these characteristics typically provides a high degree of species resilience to annual variability in numbers as long as natural stock diversity and habitats are protected. Target reference points are typically defined for salmon in terms of annual escapement levels or exploitation rates established to produce maximum or optimum sustained yield. Limit Reference Points (LRP) are generally identified only for depleted salmon stocks and are sometimes based on escapement levels below which the ability of the stock to sustain itself is uncertain or jeopardized. Operational equivalents of LRPs are also widely utilized for salmon based on maximum fishery harvest or impact rates intended to avoid significant effects on escapement or production. Guideposts were also added to explicitly recognize the stock structure typically of salmon species. These guideposts highlight the need to protect the full range of diversity and reproductive capacity among and within stock subcomponents. This diversity is regarded as an essential feature in the long term sustainability of salmon species.		

Evaluation Table for PI 1.1.3

PI 1.1.3		Where the wild stock or wild stock components are depleted, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Where stocks are depleted rebuilding strategies, which have a reasonable expectation of success, are in place. The rebuilding strategy should prohibit targeting depleted stocks		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the specified timeframe.
b	Guidepost	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the depleted stock.
c	Guidepost	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within a specified timeframe.	There is evidence that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a specified timeframe.	
	Justification	This indicator was revised to clarify its application to the wild stock or stock components (as opposed to hatchery/enhanced stocks or components).		

Evaluation Table for PI 1.2.1

PI 1.2.1	There is a robust and precautionary harvest strategy in place		
Scoring Issue	SG 60	SG 80	SG 100

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
a	Guidepost	The harvest strategy is expected to achieve wild stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the wild stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the wild stock and is designed to achieve stock management objectives reflected in the target and limit reference points.
b	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
c	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
d	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Justification	"Wild" has been added to this PI to make it clear which components are being evaluated.		

Evaluation Table for PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Generally understood harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.	Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.	
b	**Guidepost**		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
c	**Guidepost**	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
	Justification	no changes		

Evaluation Table for PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
b	Guidepost	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
c	Guidepost		There is good information on all other fishery removals from the stock.	
d	Guidepost	Some relevant information is available on the significance of fishery harvests on various stock components	Information is sufficient to estimate the significance of fishery harvests on stock components	A comprehensive range of information is available to estimate the significance of fishery harvests on stock compoents.
Justification		information for different stock components. Information relevant to the significant stocks in the fishery includes stock structure, productivity, abundance and harvest. Information relevant tocincidental stocks includes the need to estimate the significance of the fishery to the stock component. Fishing rates on some stocks originating outside the management area are typically less than those on more local stocks. In most cases, status of the stocks is primarily determined by fishing in the management area of origination. The essential questions for each salmon stock is whether it is known what stock components are being intercepted by the fishery in your management area, if the harvest rates of each stock component is estimated, and whether the harvest rate is significant to the status of the stock? Significance might be determined based on harvest levels or rates relative to those for the same stock in its management area of origin harvest levels or rates relative to management reference points established for the stock components, or		

PI 1.2.3	Relevant information is collected to support the harvest strategy
	estimates of the relative productivities of different stock components. As discussed under PI 1.1.1, limited harvest of some stock components may be acceptable if harvest or impact rates are so low as to marginally affect escapement and production, or rates fall below fishery-specific limits even where limit reference points for the stock are not met in other fisheries.

Evaluation Table for PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**		The assessment is appropriate for the stock and for the harvest control rule.	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
b	**Guidepost**	The assessment estimates stock status relative to reference points.		
c	**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.
d	**Guidepost**			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
e	**Guidepost**		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
f	**Guidepost**	The majority of stocks are defined with a clear rationale for conservation, fishery management and stock assessment requirements.	The stocks are well-defined and include details on the major subcomponent stocks with a clear rationale for conservation, fishery management and stock assessment requirements.	There is an unambiguous description of each stock, including its geographic location, run timing, and component stocks with a clear rationale for conservation, fishery management and stock assessment requirements.

PI 1.2.4		There is an adequate assessment of the stock status		
g	Guidepost	Where indicator stocks are used as the primary source of information for making management decisions on larger groups of stocks in a region, there is some scientific basis for the indicator stocks.	Where indicator stocks are used as the primary source of information for making management decisions on larger groups of stocks in a region, there is some evidence of coherence between the status of the indicator stocks and the status of the other stocks they represent within the management unit to the extent that a high likelihood exists of tracking stock status for lower productivity of stocks (i.e., those a higher conservation risk)	Where indicator stocks are used as the primary source of information for making management decisions on larger groups of stocks in a region, the status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the management unit.
Justification		This indicator is focused on stock status and considers the impact of all fisheries affecting this stock in the evaluation of the target fishery. Assessments of some subcomponent stocks may be held to a different standard based on direct status assessments or an assessment of the significance of the fishery impact on that stock. Additional guideposts were identified to recognize the importance of stock definitions in salmon stock assessments.		

PI 1.3.1	Enhancement Outcomes: Enhancement activities do not negatively impact wild stocks or substitute for a stock rebuilding strategy		
Scoring Issue	SG 60	SG 80	SG 100

PI 1.3.1		Enhancement Outcomes: Enhancement activities do not negatively impact wild stocks or substitute for a stock rebuilding strategy		
a	Guidepost	It is likely that the enhancement activities do not have significant impacts on the local adaptation, reproductive performance and productivity of wild stocks based on reasonable estimates of likely proportions of hatchery-origin fish in the natural spawning escapement (e.g., it is likely that hatchery-origin spawners occur in a small proportion of the natural spawning populations/locations and that they represent a small proportion of the total natural spawning escapement).	It is highly likely that the enhancement activities do not have significant impacts on the local adaptation, reproductive performance and productivity of wild stocks based on reasonable estimates of likely proportions of hatchery-origin fish in the natural spawning escapement (e.g., it is highly likely that hatchery-origin spawners occur in a small proportion of the natural spawning populations/locations and that they represent a small proportion of the total natural spawning escapement).	There is a high degree of certainty that the enhancement activities do not have significant negative impacts on the local adaptation, reproductive performance and productivity of wild stocks, based on appropriate levels of marking and monitoring to reliably estimate proportions of hatchery origin fish in the natural spawning escapement.
b	Guidepost	Enhancement activities are not routinely used as a stock rebuilding strategy but may be temporarily in place as a conservation measure to preserve or restore wild diversity threatened by human or natural impacts.	Enhancement activities are not used as a stock rebuilding strategy.	There is no salmon enhancement programs within expected straying distances of the natural spawning areas, which periodic monitoring has verified.
Justification		This indicator was added to address the potential for negative effects of enhancement on the genetic diversity and reproductive capacity of the wild salmon stocks consistent with the direction identified in MSC guidance on scope criteria for enhanced fisheries (TAB D-001 v2). This indicator addresses outcomes of enhancement impacts on wild stocks targeted by the fishery. Management and information is addressed in separate indicators (1.3.2 and 1.3.3) which are consistent with the organization of other indicators under Principle 1 in the revised FAM. Specific guideposts in this indicator are based on those identified in other comparable P1 indicators regarding stock status (1.1.1) and stock rebuilding (1.1.3). In the initial proposal, these guideposts were added to the corresponding indicators. In this revised proposal, they are separated into new separate indicators based on comments from the MSC and consistent with the approach proposed by the assessment teams involved with other salmon fishery certifications in Alaska and Canada (except that these assessment trees combine		

PI 1.3.1	Enhancement Outcomes: Enhancement activities do not negatively impact wild stocks or substitute for a stock rebuilding strategy
	outcome and management guideposts within specific indicators). Potential damaging enhancement effects including outbreeding depression due to translocation of dissimilar brood stock into locally-adapted populations; inbreeding depression or loss of native genetic diversity due to directed or inadvertent hatchery selection or domestication; mining of wild fish for hatchery broodstock; competition or predation by hatchery fish on wild fish; and reduced fish health due to increased incidence of disease in hatchery fish. These risks are a function of adult broodstock collection sources, hatchery mating, incubation and rearing practices, juvenile release numbers and sites, and straying of returning adults. Indicative assessment attributes may include the minimal or limited spawning interaction with wild fish by hatchery fish consistent with the magnitude of divergence between hatchery and wild stock units, and minimal competition or predation interactions between hatchery and wild fish. These would minimize potential negative ecological impacts on the growth and survival of other salmon species (e.g. Asian pink vs. Bristol Bay sockeye interactions on the high seas). Guideposts also recognize problems associated with the use of enhancement as a rebuilding strategy for depleted wild stocks, except in unique circumstances. Populations subsidized by large numbers of hatchery-produced salmon may not be sustainable in the absence of continuing subsidy. Hatcheryproduced fish have been widely observed to mask the true status and problems of wild stocks. Lower fitness and productivity of the hatchery fish can also erode wild stock fitness and productivity. This guidepost might also have been considered under 1.1.3, except that in this revised assessment tree all enhancement effects are being treated under the new performance indicators 1.3.

PI 1.3.2		Enhancement Management: Effective enhancement and fishery strategies are in place to address effects of enhancement activities on wild stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Practices and protocols are in place and considered likely to protect wild stocks from significant detrimental impacts of enhancement, based on plausible argument	There is a strategy in place and confidence that the strategy will protect wild stocks from significant detrimental impacts of enhancement, based on evidence that the strategy is effectively achieving the outcome metrics used to define these minimum impacts (e.g., related to verifying and achieving acceptable proportions of hatchery-origin fish in the natural spawning escapement).	There is a comprehensive strategy in place and clear evidence for successful protection of wild stocks from significant detrimental impacts of enhancement.

PI 1.3.2	Enhancement Management: Effective enhancement and fishery strategies are in place to address effects of enhancement activities on wild stock status
Justification	This indicator was added to emphasize the need for management to address the potential for negative effects of enhancement on the genetic diversity and reproductive capacity of the wild salmon stocks consistent with the direction identified in MSC guidance on scope criteria for enhanced fisheries (TAB D-001 v2). Guideposts are based on the existence of strategies for the protection of wild stocks and the likelihood of their effectiveness. Guideposts address the same potentially damaging enhancement effects identified under 1.3.1. This guidepost captures the need for effective enhancement management measures consistent with past salmon assessments in Alaska and Canada.

PI 1.3.3		Enhancement Information: Relevant information is collected and assessments are adequate to determine the effect of enhancement activities on wild stock status.		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Some relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock.	Sufficient relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock.	A comprehensive range of relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock.
b	Guidepost	The effect of enhancement activities on wild stock status, productivity and diversity are taken into account	The assessment includes estimates of the impacts of enhancement activities on wild stock status, productivity and diversity	The assessment is appropriate and takes into account the major features relevant to the biology of the species and the effects of any enhancement activities on the wild stock status, productivity and diversity.
Justification		This indicator was added to emphasize the information needed to address the potential for negative effects of enhancement on the genetic diversity and reproductive capacity of the wild salmon stocks consistent with the direction identified in MSC guidance on scope criteria for enhanced fisheries (TAB D-001 v2). Guideposts are based on the existence of strategies for the protection of wild stocks and the likelihood of their effectiveness. Guideposts address the same potentially damaging enhancement effects identified under 1.3.1. This guidepost captures the need for effective enhancement management measures consistent with past salmon assessments in Alaska and Canada.		

Evaluation Table for PI 2.1.1

PI 2.1.1	The fishery and the enhancement activities do not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
Scoring	SG 60	SG 80	SG 100

PI 2.1.1		The fishery and the enhancement activities do not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
Issue				
a	Guidepost	Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
b	Guidepost			Target reference points are defined for retained species.
c	Guidepost	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery and its enhancement activities do not hinder recovery and rebuilding of the depleted species.	If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery and its enhancement activities do not hinder recovery and rebuilding.	
d	Guidepost	If the status is poorly known there are measures or practices in place that are expected to result in the fishery and its enhancement activities not causing the retained species to be outside biologically based limits or hindering recovery.		
Justification		Language has been added to accommodate for enhancement activities.		

Evaluation Table for PI 2.1.2

PI 2.1.2		**There is a strategy in place for managing retained species that is designed to ensure the fishery and its enhancement activities do not pose a risk of serious or irreversible harm to retained species**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery and its enhancement activities do not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery and its enhancement activities do not hinder their recovery and rebuilding.	There is a strategy in place for managing retained species.
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
c	**Guidepost**		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
d	**Guidepost**			There is some evidence that the strategy is achieving its overall objective.
e	**Guidepost**	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
Justification		Language was added to account for enhancement activities.		

Evaluation Table for PI 2.1.3

PI 2.1.3		**Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and its enhancement activities and the effectiveness of the strategy to manage retained species**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
b	**Guidepost**	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
c	**Guidepost**	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
d	**Guidepost**		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
Justification		Language has been added to account for enhancement activities.		

Evaluation Table for PI 2.2.1

PI 2.2.1		**The fishery and enhancement activities do not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically based limits.

PI 2.2.1		The fishery and enhancement activities do not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups		
b	Guidepost	If main bycatch species are outside biologically based limits there are mitigation measures in place that are expected to ensure that the fishery and its enhancement activities do not hinder recovery and rebuilding.	If main bycatch species are outside biologically based limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery and its enhancement activities do not hinder recovery and rebuilding.	
c	Guidepost	If the status is poorly known there are measures or practices in place that are expected to result in the fishery and its enhancement activities not causing the bycatch species to be outside biologically based limits or hindering recovery.		
Justification		Language has been added to account for enhancement activities.		

Evaluation Table for PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to bycatch populations		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery and its enhancement activities do not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery and its enhancement activities do not hinder their recovery and rebuilding.	There is a strategy in place for managing and minimizing bycatch.
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.
Justification		Language has been added to account for enhancement activities		

Evaluation Table for PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and enhancement activities and the effectiveness of the strategy to manage bycatch		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.
b	Guidepost	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
c	Guidepost	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
d	Guidepost		Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectively of the strategy).	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
Justification		Language has been added to account for enhancement activities.		

Evaluation Table for PI 2.3.1

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery and enhancement activities do not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Known effects of the fishery and enhancement activities are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery and enhancement activities are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery and enhancement activities are within limits of national and international requirements for protection of ETP species.
b	Guidepost	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery and enhancement activities on ETP species.
c	Guidepost		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery and enhancement activities on ETP species.
Justification		Language has been added to account for enhancement activities.		

Evaluation Table for PI 2.3.2 Alternate

PI 2.3.2A		There is a strategy in place for managing ETP species that is designed to ensure the fishery and enhancement activities do not hinder the recovery of ETP species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place that are expected to ensure the fishery and enhancement activities do not hinder the recovery of ETP species.	There is a partial strategy in place that is expected to ensure the fishery and enhancement activities do not hinder the recovery of ETP species.	There is a strategy in place for managing ETP species, to ensure the fishery and enhancement activities do not hinder the recovery of ETP species.
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work.
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring.
Justification		Language has been added to account for enhancement activities. The Alternative PI is appropriate for this fishery.		

Evaluation Table for PI 2.3.3

PI 2.3.3		Relevant information is collected to support the management of fishery and enhancement impacts on ETP species, including: Information for the development of the management strategy; Information to assess the effectiveness of the management strategy; and Information to determine the outcome status of ETP species.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
b	**Guidepost**	Information is adequate to broadly understand the impact of the fishery and its enhancement activities on ETP species.	Information is sufficient to determine whether the fishery and its enhancement activities may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
c	**Guidepost**	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.

Evaluation Table for PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery and its enhancement activities are unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery and its enhancement activities are highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is evidence that the fishery and its enhancement activities are highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
b	**Guidepost**	The enhancement activities are likely to have minimal impact on water quality, access of natural-origin fish to spawning habitat, and quality of stream habitat (such as physical features, spawning and rearing flows and water temperatures).	The enhancement activities are highly likely to have minimal impact on water quality, access of natural-origin fish to spawning habitat, and quality of stream habitat (such as physical features, spawning and rearing flows and water temperatures).	There is evidence that the enhancement activities are likely to have minimal impact on water quality, access of natural-origin fish to spawning habitat, and quality of stream habitat (such as physical features, spawning and rearing flows and water temperatures).
Justification		Enhancement activities may impact water quality. This PI has been modified to account for these potential impacts.		

Evaluation Table for PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
d	Guidepost			There is some evidence that the strategy is achieving its objective.
Justification		Language has been added to account for enhancement activities.		

Evaluation Table for PI 2.4.3

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and enhancement activities and the effectiveness of the strategy to manage impacts on habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
b	Guidepost	Information is adequate to broadly understand the nature of the main impacts of gear use and enhancement activities on the main habitats, including spatial overlap of habitat with fishing gear.	Sufficient data are available to allow the nature of the impacts of the fishery and enhancement activities on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.	The physical impacts of the gear on the habitat types have been quantified fully.
c	Guidepost		Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Changes in habitat distributions over time are measured.

Evaluation Table for PI 2.5.1

PI 2.5.1		The fishery and enhancement activities do not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
b	Guidepost	Enhanced fish are likely to have minimal negative effect on the productivity of wild salmon and other aquatic populations as a result of predation, competition for resources, and disease transmission.	Enhanced fish are highly likely to have minimal negative effect on the productivity of wild salmon and other aquatic populations as a result of predation, competition for resources, and disease transmission.	There is evidence that enhanced fish are likely to have minimal negative effect on the productivity of wild salmon and other aquatic populations as a result of predation, competition for resources, and disease transmission.
Justification		The performance indicator was revised to ensure that the full scope of enhancement activities are addressed in regard to impact on ecosystem components as required under TAB D-001v2 relating specifically to translocation risks. Note that salmon ecosystem components include effects of competition and predation within and among salmon species in nearshore and high seas ocean waters.		

Evaluation Table for PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.
b	Guidepost	The measures take into account potential impacts of the fishery and enhancement activities on key elements of the ecosystem.	The partial strategy takes into account available information and is expected to restrain impacts of the fishery and enhancement activities on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	The strategy, which consists of a plan, contains measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and enhancement activities and the Components and elements of the ecosystem. This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery or enhancement activities do not cause serious or irreversible harm.
c	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
d	Guidepost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.

PI 2.5.2		There are measures in place to ensure the fishery and enhancement activities do not pose a risk of serious or irreversible harm to ecosystem structure and function		
e	Guidepost	There is an established artificial production strategy in place, if necessary, that is expected to achieve the SG 60 outcome as a minimum performance requirement.	There is a tested and evaluated artificial production strategy, if necessary, with sufficient monitoring in place and evidence is available to reasonably ensure with high likelihood that the strategy is effective in achieving the SG80 outcome.	There is a comprehensive and fully evaluated artificial production strategy, if necessary, to verify with certainty that the SG100 outcomes are being achieved.
Justification		This performance indicator has been modified to account for impacts due to enhancement activities.		

Evaluation Table for PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery and enhancement activities on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
b	Guidepost	Main impacts of the fishery and enhancement activities on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery and enhancement activities on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and enhancement activities and these ecosystem elements can be inferred from existing information, and have been investigated.
c	Guidepost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery and enhancement activities on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.
d	Guidepost		Sufficient information is available on the impacts of the fishery and enhancement activities on these Components to allow some of the main consequences for the ecosystem to be inferred.	Sufficient information is available on the impacts of the fishery and enhancement activities on the Components and elements to allow the main consequences for the ecosystem to be inferred.

PI 2.5.3		There is adequate knowledge of the impacts of the fishery and enhancement activities on the ecosystem		
e	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
Justification		This performance indicator has been modified to account for impacts due to enhancement activities.		

Evaluation Table for PI 3.1.1

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and Incorporates an appropriate dispute resolution framework.		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There is an effective national legal system and <u>a framework for cooperation</u> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and <u>organised and effective cooperation</u> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and <u>binding procedures governing cooperation with other parties</u> which delivers management outcomes consistent with MSC Principles 1 and 2.
b	Guidepost	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.	The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
d	Guidepost	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.

Evaluation Table for PI 3.1.2

PI 3.1.2		**The management system has effective consultation processes that are open to interested and affected parties.** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
b	**Guidepost**	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
c	**Guidepost**		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.

Evaluation Table for PI 3.1.3

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making for wild stock components and the use of enhancement programs that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.

Evaluation Table for PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure they do not contribute to unsustainable fishing practices.

Evaluation Table for PI 3.2.1

PI 3.2.1		The fishery and enhancement activities have clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system and enhancement activities.	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and enhancement activities.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and enhancement activities.
Justification		Language has been added to account for enhancement activities.		

Evaluation Table for PI 3.2.2

PI 3.2.2		The fishery-specific and hatchery 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 under assessment.		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific and enhancement objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific and enhancement objectives.	
b	Guidepost	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
c	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
d	Guidepost	Some information on fishery performance and management action is generally available on request to stakeholders.	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.	Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.

PI 3.2.2		**The fishery-specific and hatchery 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 under assessment.**		
e	**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.
Justification		Language has been added to account for enhancement activities.		

Evaluation Table for PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery and hatchery management measures are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery and enhancement activities under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and enhancement activities under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and enhancement activities under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
b	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
c	Guidepost	Fishers and hatchery operators are generally thought to comply with the management system for the fishery and its enhancement activities under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers and hatchery operators comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery and its enhancement activities.	There is a high degree of confidence that fishers and hatchery operators comply with the management system under assessment, including, providing information of importance to the effective management of the fishery and its enhancement activities.
d	Guidepost		There is no evidence of systematic non-compliance.	
Justification		Language has been added to accommodate enhancement activities.		

Evaluation Table for PI 3.2.4

PI 3.2.4		The fishery and related enhancement activities have a research plan that addresses the information needs of management		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
b	Guidepost	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.

Evaluation Table for PI 3.2.5

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific and hatchery management system against its objectives There is effective and timely review of the fishery-specific and hatchery management system		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery and its enhancement program have in place mechanisms to evaluate some parts of the management system.	The fishery and its enhancement program have in place mechanisms to evaluate key parts of the management system	The fishery and its enhancement program have in place mechanisms to evaluate all parts of the management system.
b	**Guidepost**	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
Justification		This performance indicator was revised to ensure that the fishery's regular mechanism for monitoring and reviewing the performance of the fishery addresses the role, function and effects of the enhancement activities.		