ITURUP ISLAND PINK & CHUM SALMON FISHERY

2012 3rd MSC Surveillance Visit Report

Certificate Code: SCS-MFCP-F-0011

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Prepared for:
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General Information

Date of Issue	25 January 2013	
Prepared by	SCS	Adrienne Vincent
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Surveillance Team	SCS	Adrienne Vincent Ray Beamesderfer
Surveillance Stage	3rd Annual Surveillance	
Methodologies	MSC Accreditation Manual Issue 5.1, MSC Fisheries Certification Methodology (FCM) Version 6.1 MSC Fisheries Assessment Manual (FAM) Version 2.1 MSC Certification Requirements 1.2	

PREFACE

All facts in this report were provided to SCS by JSC Gidrostroy. However, the interpretation, opinions, and assertions made in this report as to the compliance of the fishery with MSC requirements are the sole responsibility of SCS Global Services, Inc.

CONTENTS

1. EXECUTIVE SUMMARY

SCS finds that the Iturup pink and chum salmon fishery is still in general compliance with the MSC standard and recommends the continued use of the MSC certificate at least until the next surveillance.

- Conditions 4 and 5 were closed during the 2011 audit.
- Condition 7 remains open and was determined to be on target.
- Conditions 1, 3, and 6 remain open and were determined to be on target. These conditions were originally scheduled to be closed in the 3rd surveillance but have now been extended for the duration of the certification necessitated by the development of two new hatchery programs since the original certification.
- Condition 2 is open and behind target. Prior to the 2011 surveillance audit, new research information indicated that hatchery activity may be affecting the viability of a unique lake spawning chum population. The fishery agreed to develop a plan to assess this issue and a framework for developing effective remedies as appropriate. An interim assessment plan was developed (see Appendix II) and substantive assessment measures were implemented in 2012. However, this plan was incomplete with respect to consideration of precautionary remedial measures in the interim until hatchery risks can be fully assessed. Therefore this condition is considered to be behind target. The assessment team recognizes that current information on the significance of hatchery impacts on this population is incomplete and contradictory, and that additional information is will necessary before specific hatchery or fishery measures can be identified. The client will complete a more comprehensive assessment of the significance of hatchery risks to the Lebidinoe Lake chum population prior to the next surveillance.
- Condition 8 is open and behind target. The 2011 surveillance identified the need for information to be made publically available *prior* to the surveillance visit so that related questions can be identified and addressed during the visit, and the surveillance report can be completed according to the schedule prescribed by the MSC. Condition 8 is identified as being behind target because information on mark sampling and area-specific escapements in hatchery systems is incomplete. This non-conformance will be addressed by completing posting of comprehensive information for 2012 prior to the next surveillance which is scheduled for July 2013.

Table 1. Summary of Performance Indicators with Conditions

Condition	*Indicator(s)*	*Status*
1	1.1.1.5, 1.1.2.4, 3.1.10	Open and on target
2	1.1.1.5, 1.1.2.4, 3.1.1	Open and behind target
3a	1.1.2.1, 1.1.2.4,	Open and on target
3b	1.1.2.1, 1.1.2.4	Open and on target
4	1.1.2.2, 1.1.2.4	Closed
5	2.1.2, 3.7.1	Closed
6	2.2.2, 3.1.10	Open and on target
7	3.2.1	Open and on target
8	3.4.2.2	Open and behind target

2. GENERAL BACKGROUND ABOUT THE FISHERY

Located at the southern end of the Kuril Islands, Iturup 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. Abundant rainfall feeds about 200 small rivers and streams which support abundant salmon runs. The landscape includes a series of volcanoes connected by hilly or low-laying isthmuses. Most of the island is wild and remote. Development is limited to two small towns connected by road to various locations used for fishing, hatchery operations, processing operations, and power generation. The human population 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.

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.

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.

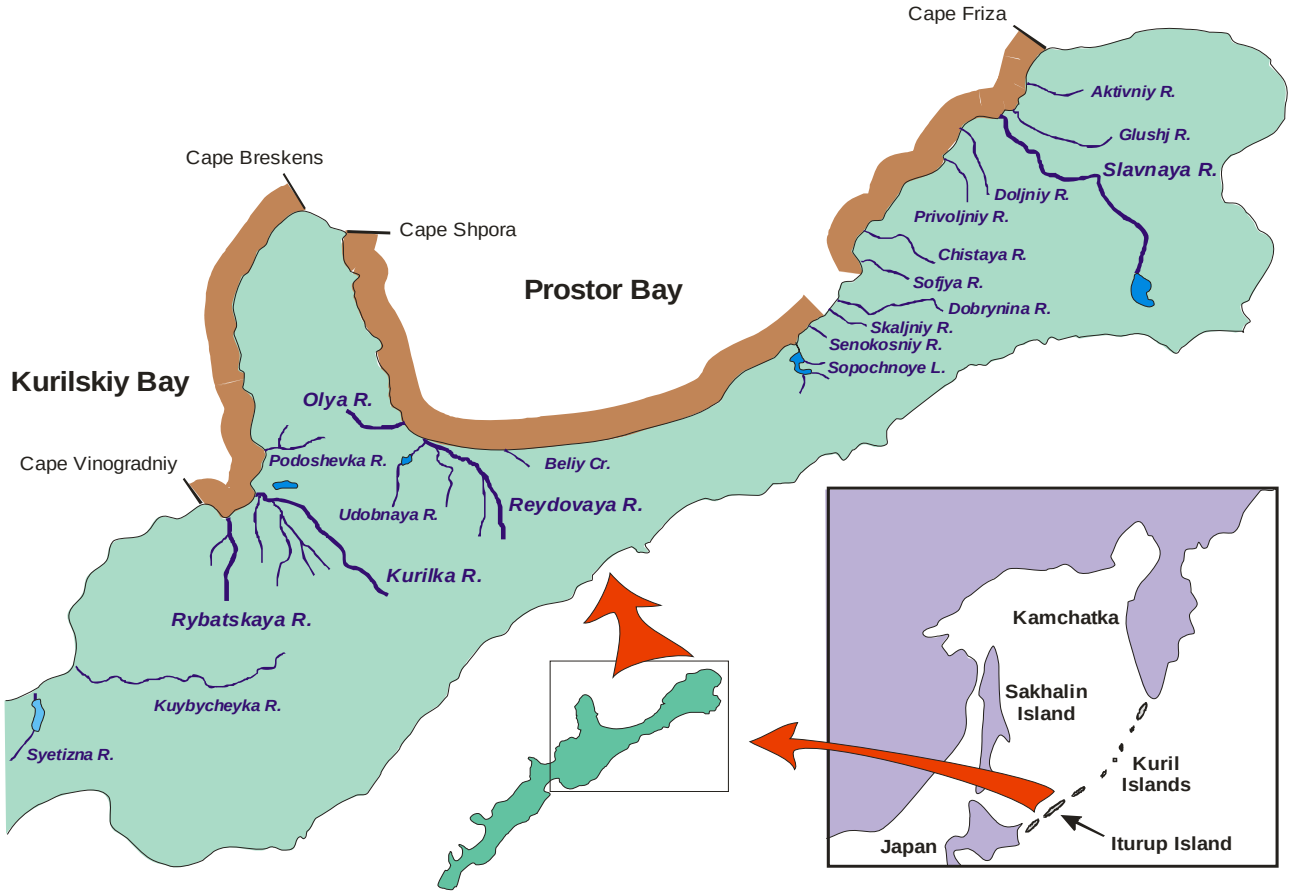

Figure 1. JSC Gidrostroy fishery areas in Kurilskiy and Prostor Bays (shaded) and associated rivers on the northern coast of Iturup Island, Kuril Islands, Russia.

3. ASSESSMENT OVERVIEW

This is the 3rd Annual Surveillance Report prepared by SCS to meet the requirements of the MSC for annual surveillance audits of certified fisheries.

3.1 Methodology

The surveillance audit was carried out in accordance with the Marine Stewardship Council (MSC) Certification Methodology (CM) Version 1.2 (in use at the time of the audit). The annual surveillance audit process is comprised of four general parts:

1. The certification body provides questions around areas of inquiry to determine if the fishery is maintaining the level of management observed during the original certification. In addition, the surveillance team requires that the client provide evidence that the fishery management system has taken the necessary actions to meet all conditions placed on the fishery during the initial certification assessment or any previous surveillance audits.
2. The surveillance/assessment team meets with the client fishery to allow the client to present the information gathered in answer to the questions asked by the surveillance team. The surveillance team can then ask questions about the information provided to ensure its full understanding of how well the fishery management system is functioning and if the fishery management system is continuing to meet the MSC standards.
3. The surveillance team presents its findings to the client fishery at the end of the site visit. The results outline the assessment team's understanding of the information presented and its conclusion regarding the fishery management system's continued compliance with MSC standards. Where indicated, the surveillance team may provide the client fishery with additional time to supplement the information provided if the surveillance team finds that there are still issues requiring clarification.
4. Where appropriate, the client fishery submits final information to the surveillance/assessment team for consideration in the surveillance findings and report. The surveillance team then reviews the final information and submits a final report to the client fishery and the MSC for posting on the MSC website. If there are continued compliance concerns, these are presented as non-conformances that require further action and audits as specified in the surveillance report.

The issues for the certifier are twofold: whether a random check on the performance of the fishery verifies continued compliance with the MSC standards, and whether the fishery has sufficiently acted on the required conditions set forth in the original certification report. Should a fishery fail the surveillance audit, and cannot address identified deficiencies in a reasonable period of time, then the use of the certificate and the MSC logo can be revoked by the certifier.

3.1.1. Surveillance Audit Frequency

Surveillance audit visit frequency is determined to be 'normal' meaning annual. This is in compliance with tables C3 and C4 in the Certification Requirements (v1.2) which state that fisheries that did not use the default assessment tree receive annual surveillance visits.

3.2 Surveillance Team

Two assessment team members participated in this audit:

Lead auditor:	Adrienne Vincent
Assessor MSC Principle 1:	Ray Beamesderfer (original certification team member)
Assessor MSC Principle 2:	Adrienne Vincent and Ray Beamesderfer
Assessor MSC Principle 3:	Ray Beamesderfer

The surveillance team fulfills the requirements of the Certification Methodology. Both members are fully versed in the management processes and fishery activities associated with Iturup Island salmon fisheries.

Mr. Ray Beamesderfer, M.Sc. – Senior Fish Scientist, Cramer Fish Services, 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 extensive experience regarding salmon conservation, fishery management and hatchery enhancement. He currently provides consulting services to Federal and State governmental agencies, first nations, fishery interests and private industry on fisheries-related questions. He previously worked in salmon assessment and fishery management for a State Fish and Wildlife agency. Ray has served on SCS fishery assessment teams for salmon fisheries in Alaska, Russia and Japan, and is well versed in the Marine Stewardship Council requirements. He also served on assessment teams for other salmon fisheries in Russia in Kamchatka and Sakhalin Island.

Ms. Adrienne Vincent, Scientific Certification Systems (SCS) – Lead Auditor, USA
Ms. Vincent is a marine biologist with expertise in finfish species of commercial importance. She holds a B.Sc. in biology from the University of Oregon and an e.M.B. in marine science with the Oregon Institute of Marine Biology with a focuse on marine species management, estuarine trophic relationships, marine plankton and oceanographic conditions. Ms. Vincent previously worked for the California Department of Fish and Game where she worked on stock assessment and management issues in the State Managed Finfish Project. She managed the hook-and-line and trawl fishery independent sampling and by-catch rate surveys as well as halibut movement and age structure studies. With SCS, she has been involved with the MSC certifications of US Pacific halibut, US Pacific sablefish, Hokkaido chum salmon and Scotian Shelf shrimp. She is a certified lead auditor under the International Standard Organization (ISO) 90011:2008 certification requirement, has undertaken the MSC Risk-Based Framework training and is also a MSC Chain-of-Custody lead auditor.

Surveillance Meeting

The surveillance audit for 2012 included:

1. A desk audit and audit agenda provided to the client before the meeting. An orientation for the Assessment Team was not provided as both team members were considered adequately experienced in MSC process and procedures. The opening meeting with the client included an exchange of information relevant to the surveillance audit.
2. The assessment team met with J.S.C. Gidrostroy personnel in Yuzhno-Sakhalinsk, Russia on December 10-12, 2012. 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 placed on the fishery.
3. Related information and documents were presented by the client to SCS before, during and following the meeting.
4. Stakeholder comments were also received from the Wild Salmon Center prior to the meeting and were discussed with the client.

Table 2. 1st Annual Surveillance Meeting Attendees and Organizations

Attendees	*Organization*	*Role*
Adrienne Vincent	SCS	Team Member/Team Leader
Ray Beamesderfer	Cramer Fish Sciences	Team Member
Yuri Svetlikov	JSC Gidrostroy	General Manager
Ludmilla Voronova	JSC Gidrostroy	Manager of Processing and Quality Assurance
Victor Pogodin	JSC Gidrostroy	Lead Biologist
Tatiana Yugova	JSC Gidrostroy	Translation/Interpretation

4. SURVEILLANCE BACKGROUND

The section below provides the general information about the status of the stock, the ecosystem impacts from fishing, and management arrangements for this reporting period.

4.1 Principle 1 - Stock Status and Harvest Strategy

4.1.1. Harvest

The 2011 harvest of both pink and chum salmon was substantially less than forecast and the long term average (**Table 3**). The pink salmon return was the lowest in 95 years. 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. 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. Run strength in-season is assessed based on observed versus expected catch per unit effort by time of year, sex ratios, and government forecasts. 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.

Table 3. Annual harvest of target and non-target species in Gidrostroy salmon fisheries.

Year	Pink		Chum		Sockeye	Char
	Weight (kg)	Number[a]	Weight (kg)	Number[a]	Weight (kg)	Weight (kg)
1998	15,650,211	11,200,000	419,805	100,000	0	8,641
1999	10,422,707	7,400,000	872,018	200,000	0	7,435
2000	29,452,129	21,000,000	878,170	300,000	0	5,680
2001	15,081,190	10,800,000	1,369,904	400,000	3,279	11,445
2002	24,180,131	17,300,000	3,157,866	900,000	1,192	4,490
2003	10,541,711	7,500,000	4,496,341	1,300,000	741	20,524
2004	20,153,990	14,400,000	2,849,466	800,000	5,800	10,118
2005	21,703,700	15,500,000	1,157,440	300,000	563	8,490
2006	30,699,000	21,900,000	2,967,400	800,000	3,535	15,367
2007	24,062,378	17,200,000	5,043,787	1,400,000	4,363	11,306
2008	22,235,128	15,900,000	10,302,337	2,900,000	475	12,899
2009	*	*	*	*	845	19,108
2010	21,430,000	15,300,000	5,518 ,000	1,600,000	845	5,082
2011	5,500,000	3,900,000	3,500,000	1,000,000	450	3,713
2012	22,007,069	15,700,000	3,468,524	991,000	4,400	17,430

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

Harvest on Iturup returned to near average levels in 2012 (**Table 3**). More typical pink salmon returns were seen throughout the Sakhalin region in 2012 than in 2011. The pink salmon return was 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 SakNiro 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 nontypical 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.

4.1.2. Spawning Escapement

Ground surveys and weir counts are used annually to monitor spawning escapement. Both government and Gidrostroy biologists conduct surveys on selected dates established based on historical average run timing 3 to 4 times per season. Official estimates typically reflect spawner numbers at the time the fishery ends and are regarded as a minimum index of escapement. However, significant numbers of 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 available from Gidrostroy biologists based on stream surveys conducted after the completion of the fishery and the official index counting periods.

Available spawning area and spawner benchmark densities that are established for the region by the federal scientific authority (Sakniro) are used to establish spawner escapement goals for each stream (**Table 4**). Goals represent the optimum production capacity of each system under favorable environmental conditions. Numbers based on generic spawner densities effectively serve as reference points rather than hard objectives. Working objectives are based on in-season determinations regarding the availability of spawning habitat which may 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.

Total pink salmon escapements averaged approximately 900,000 fish per year from 2005-2011 (**Table 5**). Numbers consistently approach or exceed optimum levels for all major populations (**Figure 2**). 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 River and Beliy Creek consistently fall under 50% of the optimum level.[1] High levels of escapement were consistently achieved in 2011 despite an abnormal run timing. Escapements reached 70% and 100% of optimum levels in 12 and 6 of 16 monitored streams, respectively. Preliminary information also indicates that most escapement goals were met in 2012 despite the abnormal run timing. (Final escapement numbers are not yet available for 2012.)

Total chum salmon escapements averaged approximately 100,000 fish per year from 2005-2011 (**Table 6**). Much lower numbers for chums than pinks reflect the habitat requirements and relative availability of suitable habitats for each species. Chum escapements typically averaged 80% or greater of optimum levels for all monitored streams except the Olya River (**Figure 2**). The 2011 and 2012 escapements were similar to the long-term average despite low run sizes, over-forecasts, or abnormal run timing. Escapements in 2011 reached 85% of optimum levels in 5 of 5 monitored streams.

[1] *The surveillance 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 4. 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.

	Length	Area	Pink Salmon *(O. gorbuscha)*			Chum salmon *(O. keta)*		
	(km)	(m^2)	Type	Area (m^2)	Capacity[b]	Type	Area (m^2)	Capacity[b]
Kurilskiy Bay								
Rybatskaya R.		15,600	Wild	12,000	24,000	Wild	3,600	5,760
Kurilka R.	22	121,900[c]	Mixed[a]	101,650[c]	203,300	Mixed[a]	20,250	32,400
Podoshevka R.	6	5,500	Wild	5,500	11,000	--	--	--
Prostor Bay								
Aktivniy R.	8	6,000	Wild	6,000	12,000	--	--	--
Beliy Cr.	6	3,000	Wild	1,000	2,000	--	--	--
Chistaya R.	8	14,500	Wild	11,500	23,000	--	--	--
Doljniy R.	7	3,500	Wild	3,500	7,000	--	--	--
Gush R.	14		Wild	18,000	35,000	--	--	--
Lk. Sopochnoye		37,500	Wild	11,000	22,000	Wild	26,500	42,400
Lovushka R.			Wild	1,000	2,000			
Olya R.	8	17,500	Wild	17,500	35,000	Wild	650	1,040
Privoljniy R.	6	No data	Wild	2,000	4,000	--	--	--
Reydovaya Lk.	--	7,400	--	--	--	Mixed[a]	7,400	11,840
Reydovaya R.	18	44,000	Mixed[a]	25,500	51,000	Mixed[a]	11,100[c]	17,760
Senokosniy R.	3	1,100	Wild	1,200	2,400	--	--	--
Skaljniy R.	9	800	Mixed[a]	8,000	16,000	--	--	--
Slavnaya R.	23	196,000	Wild	185,000	370,000	Wild	11,000	17,600
Sofjya R.	5	2,000	Wild	2,000	4,000	--	--	--
Udobnaya R.	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/m^2 for pink salmon and 1.5 spawners/m^2 for chum salmon)*
[c] *Number revised in 2009 based on new assessment by SakRbyVod.*

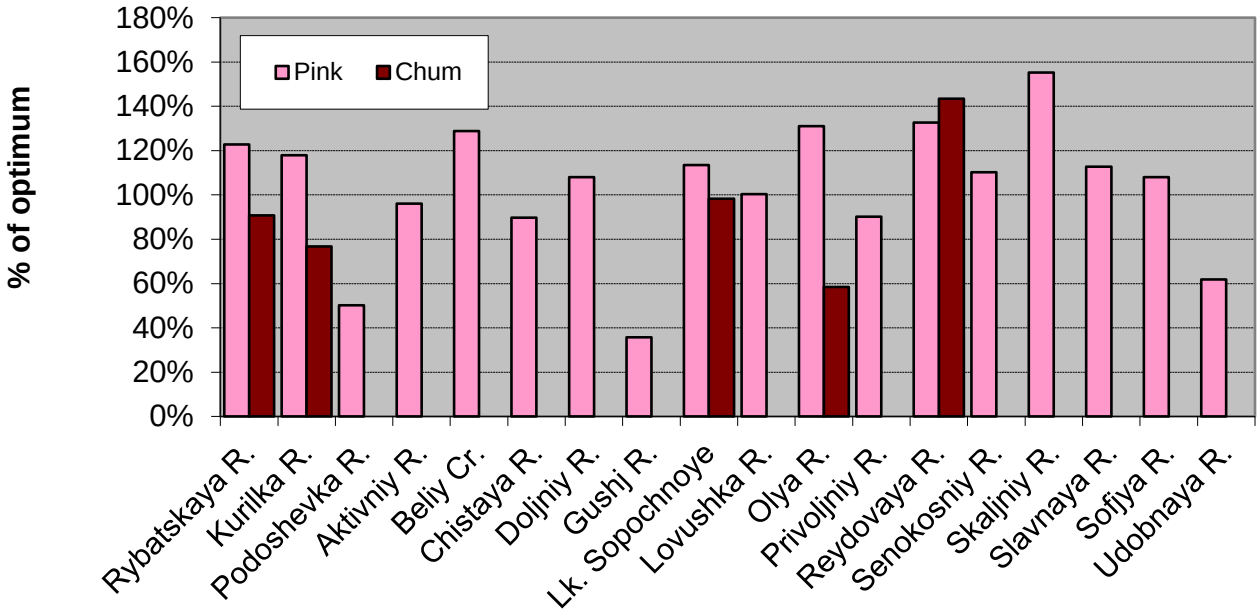

Figure 2. Recent average escapements (2005-2011) of pink and chum salmon in Iturup streams expressed as a percentage of optimum levels. (Analysis by surveillance team of escapement data provided by the client included in Tables 5 and 6 below).

Table 5. Recent densities of spawning of pink salmon in rivers and streams contiguous with Gidrostroy fisheries on Iturup Island (thousands).

	Fish number								% of optimum							
	2005	2006	2007	2008	2009	2010	2011	avg	2005	2006	2007	2008	2009	2010	2011	avg
Kurilskiy Bay																
Rybatskaya R.	38.4	36.5	37.2	28.5	25.4	26.8	13.5	29.5	160%	152%	155%	119%	106%	112%	56%	123%
Kurilka R.	355.2	197.8	198.1	255.9	247.1	234.1	189.3	239.7	175%	97%	97%	126%	122%	115%	93%	118%
Podoshevka R.				1.0	2.4	26.8		10.1				5%	12%	134%		50%
Prostor Bay																
Aktivniy R.	12.0	15.4	9.1	6.6	12.5	12.8	12.3	11.5	100%	128%	76%	55%	105%	107%	103%	96%
Beliy Cr.				1.0	6.2		0.5	2.6				49%	311%		27%	129%
Chistaya R.	14.3	17.1	13.0	17.1	31.1	24.0	28.0	20.6	62%	75%	57%	74%	135%	104%	122%	90%
Doljniy R.	9.0	10.2	7.1	3.5	7.8	8.5	7.0	7.6	128%	145%	101%	50%	111%	121%	99%	108%
Gushj R.						18.2	7.6	12.9						51%	21%	36%
Lk. Sopochnoye	24.0	32.6	27.7	24.6	23.7	23.4	18.9	25.0	109%	148%	126%	112%	108%	106%	86%	114%
Lovushka R.						2.6	1.5	2.0						128%	73%	100%
Olya R.	57.8	51.8	51.8	38.5	37.1	35.7	48.5	45.9	165%	148%	148%	110%	106%	102%	139%	131%
Privoljniy R.						3.6		3.6						90%		90%
Reydovaya Lk.																
Reydovaya R.	77.3	75.7	68.2	64.9	74.7	58.2	54.8	67.7	151%	148%	134%	127%	146%	114%	107%	133%
Senokosniy R.	3.6	3.3	3.5	2.5	2.7	2.5	0.5	2.6	150%	136%	145%	106%	110%	105%	20%	110%
Skaljniy R.	28.8	25.6	25.4	26.6	28.0	23.5	15.9	24.8	180%	160%	159%	166%	175%	147%	100%	155%
Slavnaya R.	410.7	407.0	414.4	290.1	589.8	418.5	390.6	417.3	111%	110%	112%	78%	159%	113%	106%	113%
Sofjya R.	6.0	5.7	5.0	1.1	4.5	4.2	3.7	4.3	150%	144%	126%	28%	113%	105%	91%	108%
Udobnaya R.		1.4		1.0	2.5	1.2	1.9	1.6		55%		39%	95%	47%	73%	62%
Total	1,036.9	880.0	860.6	762.8	1,095.4	924.7	794.3	907.8	124%	105%	103%	91%	131%	111%	95%	109%

Table 6. Recent densities of spawning of chum salmon in rivers and streams contiguous with Gidrostroy fisheries on Iturup Island.

	Fish number								% of optimum							
	2005	2006	2007	2008	2009	2010	2011	avg	2005	2006	2007	2008	2009	2010	2011	avg
Rybatskaya R.	1.9	2.7	7.8	6.2	6.5	5.8	5.7	5.2	33%	47%	136%	108%	112%	101%	99%	91%
Kurilka R.	11.1	15.5	25.9	35.6	35.6	33.6	29.8	26.7	32%	44%	75%	102%	102%	97%	86%	77%
Lk. Sopochnoye	42.0	27.1	43.2	48.9	46.2	42.8	41.7	41.7	99%	64%	102%	115%	109%	101%	98%	98%
Olya R.				0.2	0.2		1.4	0.6				20%	21%		135%	58%
Reydovaya R.	25.3	21.8	34.4	22.8	24.2	34.9	15.1	25.5	142%	123%	194%	128%	136%	197%	85%	144%
Total	94.7	67.0	111.4	113.7	112.6	117.2	93.7	99.8	72%	51%	85%	87%	86%	89%	71%	77%

Recent spawning escapement patterns of pink and chum salmon remain generally consistent with indicators and guideposts established to avoid over-fishing as per Principle 1. Management for optimum spawning escapement levels provides a conservative standard for protecting populations from critical low levels that impact diversity, resilience and future production. 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, and by only a portion of each population or brood year cohort returning to spawn in any given year (McElhany et al. 2000).

A key uncertainty regarding status of Iturup salmon continues to be the question of whether natural stock diversity and productivity is adequately maintained in the face of very high annual exploitation rates of the heavily-enhanced stocks. Kaev (2012) recently highlighted ecological risks associated with hatchery salmon production in the Sakhalin-Kuril region. This question will be addressed in part by information on the contribution of hatchery-produced fish in the harvest and the natural spawning escapement based on mark sampling implemented as a condition of this certification. Otolith marking of pink and chum salmon was initiated in 2009. All Reydovo hatchery releases and a portion of the Kurilsk hatchery releases were marked. A sampling program was initiated in 2010 which provided the first opportunity to recover marked adults. Only marked pink salmon were available in 2010. (Chum spend longer periods of time at sea.)

Partial results of sampling efforts in 2010 and 2011 were reported by Akinicheva (2011, 2012). Samples were collected from sea nets, hatchery broodstock, and natural spawning areas during both years. Similar sampling was also conducted in 2012.

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 Reidovoy and Kurilskiy 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 Kurilskiy Salmon Hatchery was larger than for the pink salmon from Reidovoy 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 Reidovoy 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.

At the same time, new information has been published highlighting the occurrence of significant hatchery impacts to wild populations in some areas. Zhivotovsky et al. (2011) 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 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.

However, Zhivotovsky et al. (2011) assessment was 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.

While chum salmon typically home very strongly to specific spawning areas, a large disparity in hatchery and wild population sizes in the Kurilka system has led to concern for potential swamping of the wild lake-spawning population by hatchery fish. While lake spawners always go to the lake and the large majority of hatchery fish return to the hatchery and adjacent river areas, even a small stray rate might translate into a significant impact because of the large number of hatchery fish and the very small lake-spawning population. The lake-spawning population was believed to have been previously depleted by overfishing during the economic upheavals of the 1990s. Lebedinoe Lake is in close proximity to the town of Kurilsk. Following the decline of the beach-spawning population, there was concern that habitat suitability for natural reproduction may have been reduced by substrate sedimentation and armoring because the gravels in the lake were no longer being turned over annually by spawning salmon (L. Federova, personal communication). However, this hypothesis is not universally held (V. Pogoin, personal communication). It is unknown whether a decline in current habitat conditions limits productivity of lake spawners.

Information on current numbers is limited owing to the difficulty of visually assessing numbers in the lake and a protracted run timing where late returning fish may be spawning under the ice. The wild lake spawners typically return later than the hatchery fish which originate from a river spawning stock. Later run timing is better suited to the temperature profile in the lake. Lake temperatures are warmer than river temperatures during fall. Earlier spawning fish may encounter suboptimum temperatures for incubation. Numbers were believed to be less than historic levels but substantial numbers of late-timed lake spawners continue to be observed in all years.

Company scientists and fishery managers are currently evaluating the situation and considering appropriate measures. Implementation of the hatchery marking along with spawning ground survey data is expected to

provide a more accurate assessment of current population status. Fishery and hatchery operations have adopted to limit overescapement of hatchery chum salmon into Lebedinoe Lake which would further exacerbate the status of 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. Beginning in 2012, more intensive sampling protocols were implemented for this lake spawning population. Supplemental visual surveys were

4.1.3. Enhancement

A total of eight hatcheries on Iturup Island released fish in 2012. Gidrostroy facilities accounted for 93% of the pink salmon and 80% of the chum salmon releases. Since the original certification, two new chum hatcheries have been built and are operated by Gidrostoy. The Olya Bay hatchery began releasing chum salmon in 2010. The Kitovyy Bay began operation in 2011 and is began releasing fish in 2012. A total of six additional sites are currently being evaluated as possible sites for future hatchery development (**Figure 3**).

Enhancement activities of the Kurilsk and Reydovo hatcheries in 2011-2012 were 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.

Numbers of pink salmon broodstock collected were reduced in 2011 relative to recent years (**Table 8**). Chum salmon broodstock numbers increased substantially. In 2011, a total of 224 million pink and chum salmon eggs were collected. In 2012, eggs were collected for the normal period despite the late and contracted run timing of pink salmon. Broodstock objectives were reached. Broodstock from throughout the run were held until they ripened. Eggs continue to be collected from all fish in the return without regard for size.

Table 7. Production by hatcheries currently operated on Iturup Island (2012 releases).

			Pink		Chum	
Hatchery	**Area**	**Operator**	**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	30%	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		144.4	

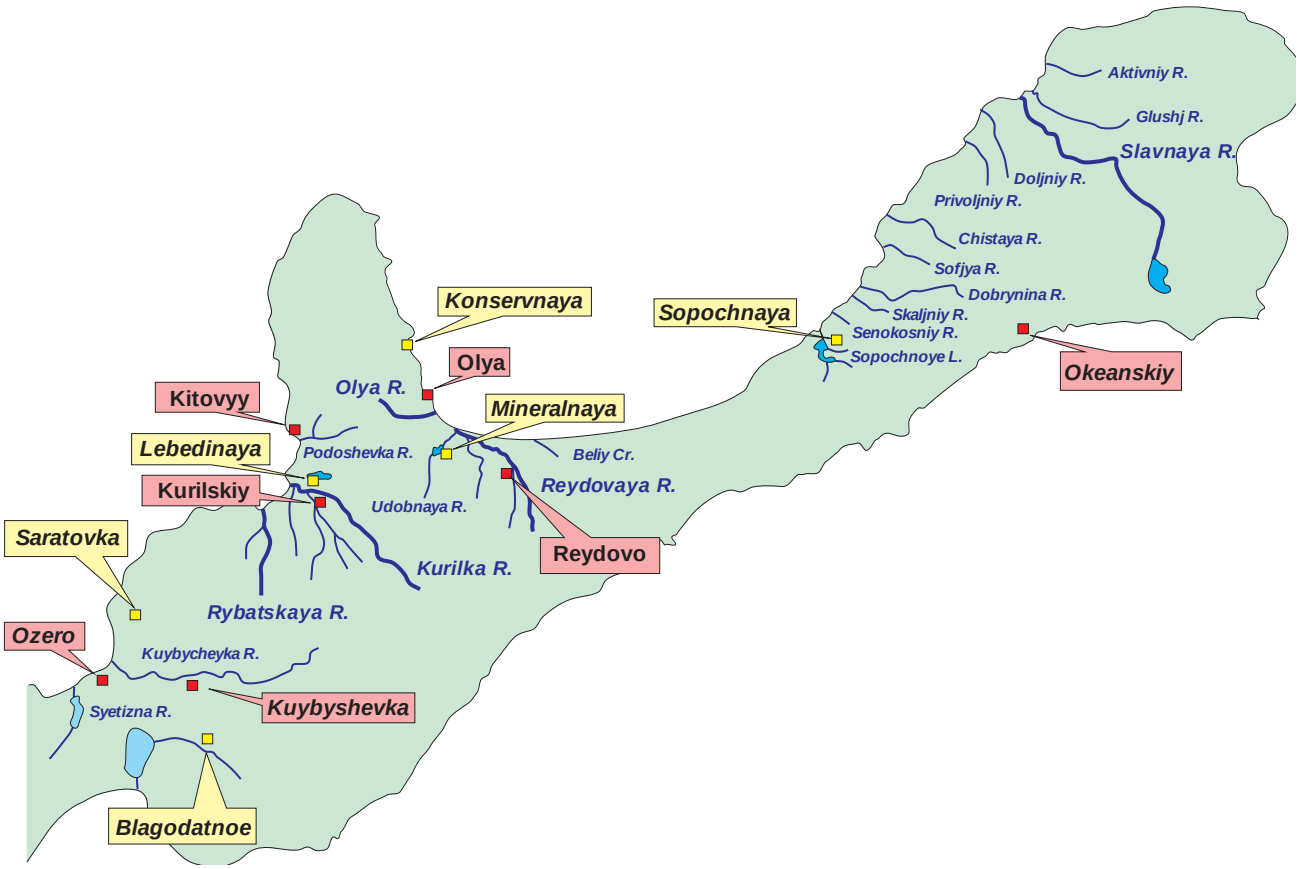

Figure 3. Locations of current salmon hatcheries (red) and other hatchery sites currently under evaluation (yellow) on Iturup Island.

Combined pink salmon releases of 79 million in 2012 from the Kurilsk and Reydovo facilities were substantially less than the recent average (**Table 9**). Chum salmon releases were 116 million in 2012 from the Gidrostroy facilities. Chum releases have increased 5-fold since 2003 with the completion of two new hatcheries at Olya Bay and Kitovyy (**Table 9**). However, both new hatcheries were sited outside significant salmon-producing rivers and are designed as segregated programs intended to maximize harvest of returns and minimize wild escapement. Mark recovery information for chum salmon is only now becoming available for the evaluation of program effectiveness. Marking of hatchery fish with year and hatchery-specific otolith patterns was initiated by Gidrostroy hatcheries in 2009 (Akinicheva 2011) with a goal of 100% marking (**Table 9**). Marking is accomplished using the dry method except at Reydova the water system allows for use of the wet method. The 100% target was achieved in 2012 for all facilities except Kitovyy. Marking at Kitovyy is constrained by technical issues. Incubation ponds at Kitovyy have gravel bottoms subject to upwelling which complicates marking efforts.

The Olya Bay 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).

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
Average	**107,000**	**70,000**	**177,000**	**30,000**	**0**	**30,000**	**14,000**	**74,000**

Source: J.S.C. Gidrostroy

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

Six additional sites are being evaluated by the government. Additional hatcheries may or may not ultimately be built. No funds have been identified for additional hatchery construction at this time. Gidrostroy reports no plans to begin building additional hatcheries in their fishing area within next two years. They report that current efforts are focused on optimizing operations of existing facilities.

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.

Of the possible sites, Konservnaya Bay is reportedly the most likely to be developed. This site 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 operates the facility under government oversight. This hatchery will utilize surface water and be operated as segregated program. In the 2011 surveillance, it was reported that planning schedules called for completion by 2014. Plans for development of this facility have changed in the interim.

Table 9. Annual numbers (millions) and mark rates (%) of juvenile salmon released from Gidrostroy hatcheries.

	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	*43*	26.4	*100*	19.5	*100*	--	--	72.9	*79*
2011	73.3	*100*	42.9	*100*	116.2	*100*	20.6	*100*	26.6	*100*	26.2	*100*	--	--	73.4	*100*
2012	51.3	*100*	27.7	*100*	79.0	*100*	32.8	*100*	35.8	*100*	29.9	*100*	17.6	15	116.1	*87*
Avg.	**64.2**		**37.2**		**101.4**		**8.4**		**19.1**		**25.2**		**17.6**		**31.3**	

Source: J.S.C. Gidrostroy

4.2 Principle 2 – Ecosystem impacts from fishing

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 punjas (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 details of which may be found in **Table 3** of this report.

An assessment of all non-target and bycatch species was implemented for the 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 (see summary of activities addressing Condition 4). 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). 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 bycatch is made by 2 species of salmon: 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.

Table 10. Primary species of fish bycatch (tons) in sea nets fished for pink salmon, 2009-2010 (Smirnov and Tochilina 2011).

Species		Prostor Bay	Kurilskiy Bay	% of total
Pink salmon	*Oncorhynchus gorbuscha*	741	1160	100%
Chum salmon	*Oncorhynchus keta*	1.9905	0.7529	0.144%
Char	*Salvelinus leucomaenis*	1.8126	0.6456	0.129%
Greenling	*Hexagrammidae*	0.2994	0.0242	0.020%
Soles	*Pleuronectidae*	0.2100	0.1640	0.020%
Dolphin fish	*Coryphaena hippurus*	0.0017	0.1025	0.010%
Bull-head	*Hemitripteridae*	0.0338	0.1589	0.010%
Rockfish	*Scorpaenidae*	0.1800	0.0308	0.010%
Sockeye salmon	*Oncorhynchus nerka*	0.0661	0.0000	0.003%
Rudds	*Tribolodon brandtii*	0.0003	0.0160	0.000%
Blennies	*Stichaeidae*	0.0021	0.0020	0.000%
Wolffish	*Eleginus gracilis*	0.0414	0.0106	0.000%
Sandfish	*Arctoscopus japonicus*	0.0760	0.0001	0.000%

Additional information on harvest significant 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 bycatch 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.

There have been no significant changes to the composition of the bycatch since the 2011 audit.

The incidence of endangered, threatened or protected (ETP) in this fishery is reported to be negligible. The fishery has had no reports of a Sakhalin taimen (*Hucho perryi*) take in more than 10 years. Taimen populations are reported to exist south of the Gidrostroy fishing area from the Dobrye to Kubycheyka systems. Taimen are reported to spawn in the spring (Fadeev 2005), hence adults are largely unavailable in coastal marine waters during summer and spring pink and chum salmon fishing periods.

4.3 Principle 3 – Management and Regulation

Governmental environmental agencies responsible for regulation, monitoring and compliance were unchanged in 2011 and 2012. However, the federal fisheries agencies (Rosselvobostra) has be moved from its own ministry to under the Ministry of Agriculture. This was an organization change.

In 2011, a new Federal law was adopted regarding bycatch. An additional license is required for sale of other species taken as bycatch. Previously bycatch could be sold and was not accounted for as long as it did not exceed 49% of the total harvest including licensed target species. This is a substantial improvement in regulation and also removes previous incentives for under-reporting. The new system also allows the government to more-accurately assess bycatch impacts. Approvals are easy to obtain and inexpensive compared with the harvest value. The fishing company initially pays a percentage fee based on a license for a projected amount. Harvest is tracked daily and additional allocations are purchased as necessary as long as harvests are consistent with stock assessments.

A second Federal law adopted in 2011 requires an export certificate for fish caught in the sea and exported from Russia. This law applies to all fish species throughout Russia. Pink and chum salmon certificates in the far east are issued by the regional fish board. This certification requirement was developed in a cooperative initiative with Europe as an enforcement aid to address illegal fishing. Companies in China cannot purchase fish from Russia for processing without this certificate. European and U.S. importers typically demand this certificate to defend their markets from illegal fisheries. South Korea is considering requiring this certificate. Japan currently does not.

Gidrostroy has made internal staff changes of the technical staff. Victor Pagodin was promoted to replace Ludmilla Federova as lead fishery biologist.

5. STATUS OF PREVIOUSLY RAISED CONDITIONS

This section contains the surveillance team assessment of progress on Conditions identified in the 2009 Assessment report for Iturup Island Salmon. The format will consist of the Condition, any recommendations associated with that Condition, the client's Action Plan developed during the original assessment and the surveillance team's discussion of progress on meeting the Condition. The full text of each Performance Indicator, its scores and corresponding rationale can be found in the original assessment report to be found on the MSC website.

Condition 1	Complete implementation of hatchery marking and recapture studies to estimate proportions of hatchery-origin chum and pink in representative wild spawning rivers. Include a minimum of at least 3 brood years of marks to provide statistical replication and results representing normal temporal variation. *(Condition 1 applies to criteria's 1.1.1.5, 1.1.2.2, 1.1.2.4, 2.2.2 & 3.1.10)*

Recommendation for Condition 1. Representative sampling areas could include widely distributed sampling effort to establish a spatial relationship between proportions of hatchery/wild and distance from hatchery release locations. Only examining waters near to hatcheries would not provide enough data to fully evaluate straying into significant wild production areas. This approach shall be reflected in the action plan. While this condition initially specified the need for at least three years of marking, the surveillance team has now recommends marking be conducted for at least five years to provide information on two new hatcheries constructed following the original assessment.

Client Action Plan for Conditions 1 & 2:	**WHO**	**DUE**
Develop and implement an otolith tagging and recapture project for Pink and Chum salmon in order to better determine the contribution of hatchery to wild fish in the annual harvest, at various periods during the run and also the component of hatchery fish straying into the spawning grounds. General outline of the preliminary study objectives can be found on our website: www.Gidrostroymsc.com. Project has already been implemented and will be available for review during annual surveillances. As a further action on the part of Gidrostroy's, in addition to government studies, has and continues to commission studies of the genetic populations and interactions of wild vs. hatchery fish. An example would be the research documents completed by Smirnov et al 2006 and Zhivitovsky et al, 2008 referenced in the SCS assessment report. Results of these studies are and will be used in preparation and guidance in the ongoing management of the fishery before, during and after the season and are posted on the above website for review. If hatchery fractions in non-hatchery rivers are low, then no further action may be needed. If hatchery fractions in non-hatchery rivers are significant, then appropriate remedies might include further research to evaluate effects of hatchery measures designed to reduce straying.	Gidrostroy Jointly with governmental Scientific Institutions, SakhNIRO for otolith marking.	~~3~~[RD] ~~Annual Surveillance~~. Extended through the 5-year duration of the certification. Surveillance. Progress reviewed annually.

Condition 1: A hatchery marking program has been initiated to address this condition. Both chum and pink salmon from all hatchery programs are being otolith marked. Unique patterns are utilized for each hatchery and year. Marking protocols have been established and tested working with the governmental scientific agency (Antonov & Akinicheva, 2009). Patterns and annual release

numbers have been registered and are available with the North Pacific Anadromous Fish Commission marking database (http://npafc.taglab.org/default.asp).

Marking was initiated in December 2008 and has been conducted each year since. Marking continued in 2012 and is planned for 2013. Reydova hatchery production has been 100% marked since the 2009 release – the configuration of hatchery allows for marking at no additional cost. Initially only 10% of the Kurilsk production was marked because of constraints by water temperature controls but the mark rate has since been increased to 100%. Complete marking at the Olya Bay hatchery was achieved in 2011. A portion of the production from the new Kitovyy hatchery was marked in 2012 but 100% marking was not achieved for technical reasons. The company's goal is ultimately to mark 100% of the hatchery production. Gidrostroy has agreed to continuing hatchery marking beyond the minimum three-year period identified in the certification (L. Federova, personal communication). The company is finding this information to be very valuable in evaluating and optimizing their hatchery production and fishery.

Otolith sampling was initiated in 2010 and two years of partial sampling results have been published by Achinicheva (2011, 2012). Sampling was conducted in the fishery, spawning streams and the hatchery return during early, mid, and late portions of the run. Results have generally corroborated information on run timing of fish in hatchery and non-hatchery rivers, which supported conclusions regarding limited hatchery contributions to wild populations in the original assessment.

The program includes sampling from the entire island including both Gidrostroy and other areas. Samples from other areas including Kuibysheva and Dobrynina Bays are expected to provide information on the incidence of Gidrostroy-produced fish in fisheries and escapements in other areas of the island. Because extensive marking is conducted in other areas of the Pacific, data are also expected to be available on the incidence in Iturup harvests and spawning areas of fish originating in other regions.

The surveillance team notes that otolith sampling results have been reported in summary form but a comprehensive report of results for 2011 has not been completed. A complete report will be requisite for the next surveillance.

Status of Condition 1: Open and on target

Condition 2	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 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. *(Condition 2 applies to criteria's 1.1.1.5, 1.1.2.1, 1.1.2.4, 2.1.2 & 3.1.1)*

Condition 2: 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.

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). The client reports that current protocols are designed to avoid divergence. 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.

In addition, new chum hatchery programs developed at Olya Bay and Kitovyy involve a segregated hatchery strategy in which production is spatially separated from significant natural production areas such that straying of hatchery fish is limited.

The adequacy of this approach will depend in large part on:

1) the incidence of hatchery-origin fish in natural spawning potential, and the
2) characteristics of hatchery-origin fish relative to the wild stock.

Distribution of hatchery-origin fish in natural production areas is currently under investigation through otolith marking and mark sampling programs discussed under Condition 1. Appropriate remedies to ensure that the presence of unenhanced fish in the management units does not

adversely impact the wild fish stocks will depend in large part on the outcome of this investigation. If hatchery contributions occur primarily in areas proximate to the hatchery and hatchery contributions in other systems are low, then no further action may be needed in those systems. 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. If significant numbers of hatchery-origin fish are widespread in natural production areas including non-hatchery systems, then further evaluations of the potential for adverse effect may be appropriate. Appropriate adjustments to policies and procedures will depend on the results of this evaluation.

Results of initial sampling mark sampling efforts reported by Akinicheva (2011, 2012) 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 have corroborated information on run timing of fish in hatchery and non-hatchery rivers which supported conclusions regarding limited hatchery contributions to wild populations in the original assessment.

New information published by Zhivotovsky et al. (2011) indicated that large releases of chum salmon from Kurilsk hatchery beginning in 2004 have resulted in significant straying of a more numerous river-spawning form of chum salmon produced by the hatchery into nearby Lebedinoe Lake where they could swamp a genetically-distinct beach-spawning population. 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 of hatchery and wild chum to production for this system is unknown.

The fact that marking studies are being conducted to fully understand the extent of hatchery releases on spawning escapements shows that good progress is being made on this Condition. However, the new information on potentially detrimental effects of hatchery chum on a unique wild population spawning in Lebedinoe Lake will require appropriate action to ensure that the presence of unenhanced fish in the management units does not adversely impact the wild fish stocks consistent with MSC policy guidance and current best practice. 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) identify 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 (see Appendix II) and substantive assessment measures were implemented in 2012. New assessments included supplemental spawning ground surveys to estimate Lebindinoe 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. Results of otolith sampling will be available in 2013. In addition, significant historical information on the status of this population has been identified in governmental records and is currently being reviewed

and evaluated. Finally, any consideration of hatchery development at the Lebidinoe Lake has been suspended based on recognition of the significant of the local chum population.

However, the interim plan was incomplete regarding the significance of this problem and consideration of precautionary remedial measures in the interim until hatchery risks can be fully assessed. The assessment team acknowledges that current information on the significance of hatchery impacts on this population is incomplete and possibly contradictory, and that additional information is will necessary before specific hatchery or fishery measures can be identified. The assessment team also recognizes that substantial new assessments have been implemented and are expected to help resolve uncertainties within a reasonable period of time. Therefore this condition is considered to be in minor non-compliance. The client will complete a more comprehensive assessment of the significance of hatchery risks to the Lebidinoe Lake chum population prior to the next surveillance. The assessment team emphasizes that the serious nature of this concern will jeopardize recertification of the chum fishery if not satisfactorily addressed prior to the reassessment which will begin in 2013.

Status of Condition 2: Open and behind on target on the requirement to develop a detailed plan for addressing Lebedinoe Lake spawning chum

Condition 3a	Develop and implement a fishery sampling plan to use commonly available stock identification tools to assess the origin of chum and pink salmon contributing to the Iturup fishery under assessment. *(Condition 3a applies to criteria's 1.1.2.1 & 1.1.2.4)*

Recommendation for Condition 3a. Incorporate appropriate temporal and area stratification to test the hypothesis that no populations from other Russian and non-Russian production areas outside Kurilskiy and Prostor Bay rivers are contributing, or alternatively, contributing at small enough levels to provide evidence that the fishery is not negatively impacting non-target populations from other areas. Stock identification information from the fishery also would be important to ensure the robustness of the otolith marking and evaluation plans required by other conditions, since wild stock composition of the Iturup harvest could be directly evaluated (rather than simply assume by subtraction that anything not estimated as a local hatchery fish must be a Iturup wild fish by default). While this condition initially specified the need for at least three years of marking, the surveillance team has now recommends marking be conducted for at least five years to provide information on two new hatcheries constructed following the original assessment.

Client Action Plan for Conditions 3a & 3b:	**WHO**	**DUE**
Develop and implement an otolith tagging and recapture project for Pink and Chum salmon in order to better determine the contribution of hatchery to wild fish in the annual harvest, at various periods during the run and also the component of hatchery fish straying into the spawning grounds. General outline of the preliminary study objectives can be found on our website: www.Gidrostroymsc.com. Project has already been implemented and will be available for review during annual surveillances. Otolith and genetic analyses will also be used to evaluate the occurrence of local and non-local pink and chum salmon stocks in the fishery. The occurrence of significant numbers of non-local stocks in the Gidrostroy harvest will be identified from otolith analyses based on hatchery/wild ratios. Mark ratios will be similar in the harvest and	Gidrostroy Jointly with governmental Scientific Institutions, SakhNIRO Laboratory for otolith marking	~~3~~ 3RD ~~Annual Surveillance~~. Extended through the 5-year duration of the certification. Progress reviewed annually.

escapement when the harvest is comprised primarily of local stock. Otolith analyses will also provide the opportunity to observe marked fish from other areas although sampling power will depend on the level of marking of other stocks. Otolith marking programs in other areas are coordinated by the fishery management authorities to ensure that stocks are uniquely marked.		

Condition 3a: An assessment of the stock composition of the chum harvest has been implemented by the governmental scientific agency using genetic information. The work plan may be found at the J.S.C. Gidrostroy website. Genetic stock assessment of chum is appropriate because of the unique genetic characteristics of different populations. Genetic characteristics have been identified for a subset of Iturup and Sakhalin chum stocks (including Aniva Bay hatchery, Nyba River and Kunishira Island). Results confirm that the majority of the Gidrostroy chum harvest is of local origin.

Additional information on the stock composition of both pink and chum stocks harvested in Gidrostroy fisheries is being provided by ongoing otolith sampling studies (Akinichiva 2011, 2012). Initial results of pink salmon hatchery marking are showing a very high degree of fidelity to the vicinity of natal streams. Otolith marking programs are currently underway in Gidrostroy hatcheries as well as other areas throughout the eastern Pacific. Otolith samples from the fishery are currently being analysed for the occurrence of marks form other regions. There is one concern however, and that is that hatchery marking programs are not comprehensive which may well limit the power of the otolith sampling effort to identify non-local stocks or local stocks from hatcheries where production is not marked. Power to assess the occurrence of other salmon stocks in the Iturup fishery is expected to improve over time as additional hatchery marking programs are implemented in other areas including Sakhalin Island. In general, completing an answer to this question based on available information is progressing sufficiently to warrant maintenance of the fishery certificate.

Status of Condition 3a: Open and on target

Condition 3b	Estimate hatchery contribution to the total annual harvests of pink and chum salmon utilizing hatchery marks described in Condition 2. This will involve temporally-stratified random sub-sampling of a portion of the catch for marks during biological sampling at the processing plants. Include a minimum of at least 3 fishery years to provide statistical replication and results representing normal temporal variation. This shall be reflected in the action plan. *(Condition 3b applies to criteria's 1.1.2.1 & 1.1.2.4)*

Condition 3b: Addressed by activities described under Condition 1 above.

Status of Condition 3b: Open and on target

Condition 4	In addition to Condition 1 which will address the need for estimates of the annual escapement and natural spawning of enhanced fish, the client needs to establish appropriate fishery-independent indicators of spawning abundance for significant non-target species. *(Condition 4 applies to criteria's 1.1.2.2, 1.1.2.4 & 2.1.2)*

Client Action Plan for Conditions 4:	**WHO**	**DUE**
The client will work with the Russian government to identify significant non-target species and to establish research needed to identify appropriate indicators of spawning abundance. For example, the work needed to identify and agree on significant non-target species may include, but not be limited to, a discussion among stakeholders, J.S.C. Gidrostroy, and the government. This will be completed by the second annual surveillance in the fishery.	Gidrostroy Jointly with scientists from the N.I. Vavilov Institute for General Genetics	2nd Annual Surveillance. Progress reviewed annually.
PIs 1.1.2.2, 1.1.2.4, and 2.1.2 are rescored to 80		

Condition 4: As a first step to addressing this condition, a costly bycatch assessment project has been initiated via contract with the regional scientific agency. This work began in September 2009 for the chum salmon season and continued in 2010 for the pink salmon season (L. Voronova, personal communication). Fish were sampled daily at the plant. Non-target fish were taken from the conveyor belt. Species, length and weight data, and otoliths are collected. Numbers and types of fish are reported. Reports also include descriptions of the life history and available information on the status of each species. Results of 2009 and 2010 sampling have been provided and confirm that bycatch is quite small and no species comprises a large portion of the bycatch (see **Table 10**). No species is being caught in numbers that are likely to have a significant impact on local populations.

Additional information on harvest significant 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 bycatch species that is sold. This information is included in this surveillance. 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 (http://gidrostroymsc.com/uploads/Scientific_Plans_-_Freshwater_ecosystems_080909.pdf). This information is expected to establish 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. A final report is currently in preparation and is expected to be made available through the Niro website upon publication.

The assessment team agrees that current information is adequate to understand the full extent of bycatch in the Iturup salmon fisheries management and operated by Gidrostroy, and therefore there is ample evidence that for closing this condition.

Status of Condition 4: Closed

Condition 5	Along with Condition 4, conduct a risk assessment meeting open to significant stakeholders and attended by government or agency personnel, and company personnel to establish ecosystem risks in the fishery. *(Condition 5 applies to criteria 2.1.2)*

Client Action Plan for Conditions 5:	**WHO**	**DUE**
Meetings are to be organized at the time of the annual meeting of the scientific and fisheries meeting with the aim of using the results of the scientific work on by-catch, which should be concluded by 2010 July and also such information from scientific work on the ecosystem. Meetings will include representatives of the stakeholders, government authorities, scientific communities and from ZAO Gidrostroy.	Gidrostroy	1st Annual Surveillance
PI 2.1.1 is rescored to 80		

Condition 5: A workshop was conducted in 2011 to identify and consider potential ecosystem risks in the fishery (if any). Originally, the Condition required Gidrostroy to hold the workshop in 2010 prior to the 1st Annual Surveillance. However, the studies and data needed to facilitate the workshop had not been fully produced due to ongoing research. The assessment team felt it inappropriate to hold the workshop prior to receiving the results from the various research studies as it could severely impede stakeholder understanding and discussions as to potential ecological impacts on non-target species at Iturup Island. As a result, the assessment team provided a variance to JSC Gidrostroy on the timing of the workshop, allowing the workshop to be held in 2011.

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. A table of the results from the meetings may be found in Appendix II of this report.

As previously noted, significant information related to this condition has also been provided. This includes preliminary hatchery mark sampling, bycatch assessments, and the regional survey of the freshwater fauna being conducted by the regional governmental scientific agency. This information along with the workshop proceedings are sufficient to close this condition.

Status of Condition 5: Closed

Condition 6	Upon implementation of hatchery marking and recapture studies identified in Condition 1, estimate proportions of wild-origin chum and pink in the hatchery broodstock and take appropriate measures to ensure that adequate numbers of natural-origin fish are used in the broodstock each year in order to avoid potential domestication or selection. Include a minimum of at least 3 brood years of marks to provide statistical replication and results representing normal temporal variation. *(Condition 6 applies to criteria's 2.2.2 & 3.1.10)*

Recommendation for Condition 6. While this condition initially specified the need for at least three years of marking, the surveillance team has now recommends marking be conducted for at least five years to provide information on two new hatcheries constructed following the original assessment.

Client Action Plan for Condition 6:	**WHO**	**DUE**
Develop and implement an otolith tagging and recapture project for Pink and Chum salmon in order to better determine the contribution of hatchery to wild fish in the annual harvest, at various periods during the run and also the component of hatchery fish straying into the spawning grounds. General outline of the preliminary study objectives can be found on our website: www.Gidrostroymsc.com. Project has already been implemented and will be available for review during annual surveillances. As a further action on the part of Gidrostroy's, in addition to government studies, has and continues to commission studies of the genetic populations and interactions of wild vs. hatchery fish. An example would be the research documents completed by Smirnov et al 2006 and Zhivitovsky et al, 2008 referenced in the SCS assessment report. Results of these studies are and will be used in preparation and guidance in the ongoing management of the fishery before, during and after the season and are posted on the above website for review.	Gidrostroy Jointly with governmental Scientific Institutions, SakhNIRO for otolith marking and/or scientists from the N.I. Vavilov Institute for General Genetics	~~3~~RD ~~Annual Surveillance~~. Extended through the 5-year duration of the certification. Progress reviewed annually.

Condition 6: Mark sampling program including sampling of the hatchery broodstock to assess hatchery and wild contributions is described under Condition 1 above. **Table 8** documents large effective population sizes of the hatchery broodstock. Information on hatchery fractions in the broodstock is reported in otolith sampling results. Adequate progress to answering this Condition is evident and sufficient to maintain the fishery certificate for another year.

Status of Condition 6: Open and on target

Condition 7	The client must publicly provide the research plan for the pink and chum fisheries on Iturup Island each year. The plan shall detail what research (if any) may be needed to address ecosystem impacts and shall list the research to be conducted by either the government or the client to address identified ecosystem impacts. *(Condition 7 applies to criteria 3.2.1)*

Client Action Plan for Condition 7:	**WHO**	**DUE**
The client, J.S.C. Gidrostroy, will work with the federal government on identifying research needed to properly understand the ecosystem impacts of salmon fishing on Iturup Island, and assist in developing an implementation plan for research needs identified. Research needs may be identified in a number of ways, including but not limited to, conducting a risk assessment workshop with appropriate stakeholder participation.	Gidrostroy jointly with scientists from the SakhNIRO or other scientific institution	Each Annual Surveillance.

Condition 7: The fishery website established by Gidrostroy includes a list of scientific projects funded by the client (J.S.C. Gidrostroy website). This list has been updated with projects current through 2013. Again, the assessment team believes that adequate progress is being made in terms of making research plans and studies available to a wider public audience. Many current documents regarding enhancement, escapement, research and stakeholder meetings are available and sufficient to maintain the use of the certificate.

Status of Condition 7: Open and on target

Condition 8	Develop and implement an effective system for distribution of annual post-season monitoring reports to the certification surveillance team. *(Condition 8 applies to criteria 3.4.2.2)*

Recommendation to Condition 8. *Information could include:*

- *run size forecasts and adopted total allowable catches,*
- *numbers of fish harvested by species including target and non-target species,*
- *escapement estimates of pink and chum salmon by population,*
- *broodstock and juvenile production numbers by hatchery and species,*
- *biological characteristics of the catch and escapement,*
- *a summary of recent annual averages and trends,*
- *a list of research activities during that year.*
- *descriptions of any unique environmental or run conditions or activities for the year's fishery.*

Client Action Plan for Conditions 8:	**WHO**	**DUE**
Information will be provided to the certifying body as it becomes available. Reports that are commissioned by Gidrostroy will be made publically available on the website www.gidrostroymsc.com.	Gidrostroy	Begin Prior to 1st Annual Surveillance and continue through the certification period.

Condition 8: This condition is being addressed by the establishment by Gidrostroy of a website for Iturup Island MSC chum and pink salmon fisheries (J.S.C. Gidrostroy Website). 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. The team recognizes the significance of a privately-held Russian company assuming responsibility for posting fish and fishery information on a public website.

The 2nd surveillance identified the need to update the website with current information each year prior to the annual surveillance visit. At that time, this condition was determined to be in minor non-conformance. Some information on the 2011 fishery was posted subsequent to the 2nd surveillance and other material was provided to the assessment team during or subsequent to the site visit. However, most information was not available prior to the 3rd surveillance as previously directed. If information is made available prior to the surveillance visit, the assessment team can address any related issues during the site visit. When information is not provided until or after the surveillance, it is difficult to follow up with the fishery to resolve related questions within the prescribed time frame for completing the audit report. It is also more difficult to address complicated issues by phone or correspondence rather than in-person. Finally, posting of information allows interested stakeholders to review and comment to the assessment team. The opportunity for public review and comment is a critical component of the MSC process.

In particular, information on the results of otolith sampling in 2011 related to conditions 1, 3 and 6 was incomplete. In addition, the 2nd surveillance identified the need for detailed reporting of spawning escapement relative to goals of streams within hatchery river systems. The lack of a regular schedule for making annual information available to the surveillance results in identification of a major non-conformance for this issue. This non-conformance will be addressed by completing posting of comprehensive information for 2012 prior to the next surveillance which is scheduled for July 2013.

Status of Condition 8: Open and behind target

6. CONCLUSIONS AND RECOMMENDATIONS

SCS finds that the Iturup pink and chum salmon fishery is still in general compliance with the MSC standard and recommends the continued use of the MSC certificate at least until the next surveillance.

- Conditions 4 and 5 were closed during the 2011 audit.
- Condition 7 remains open and was determined to be on target.
- Conditions 1, 3, and 6 remain open and were determined to be on target. The conditions were originally scheduled to be closed in the 3rd surveillance but have now been extended for the duration of the certification because of the need for additional hatchery marking and sampling necessitated by the development of two new chum hatchery programs since the original certification.
- Condition 2 is open and behind schedule. Prior to the 2011 surveillance audit, new research information indicated that hatchery activity may be affecting the viability of a unique lake spawning chum population. The fishery agreed to develop a plan to assess this issue and a framework for developing effective remedies as appropriate. An interim assessment plan was developed (see Appendix II) and substantive assessment measures were implemented in 2012. However, this plan was incomplete with respect to consideration of precautionary remedial measures in the interim until hatchery risks can be fully assessed. Therefore this condition is considered to be in minor non-compliance. The assessment team recognizes that current information on the significance of hatchery impacts on this population is incomplete and contradictory, and that additional information is will necessary before specific hatchery or fishery measures can be identified.
- Condition 8 is open and behind schedule. The 2011 surveillance identified the need for information to be made publically available prior to the surveillance visit so that related questions can be identified and addressed during the visit, and the surveillance report can be completed according to the schedule prescribed by the MSC. A major non-conformance is identified on condition 8 because information on mark sampling and area-specific escapements in hatchery systems is incomplete. This non-conformance will be addressed by completing posting of comprehensive information for 2012 prior to the next surveillance which is scheduled for July 2013.

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STATE OF THE SALMON

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

November 30, 2012

Ms. Adrienne Vincent, Program Associate
Scientific Certification Systems, Inc.
2200 Powell Street, Suite 725
Emeryville, CA 94608 United States

Sent via email

Re: Iturup Island Salmon Fishery Third Annual Surveillance Audit

Dear Ms. Vincent:

Thank you for the opportunity to contribute to the third annual surveillance audit of the Iturup Island pink and chum salmon fishery. We note that five conditions are scheduled to be closed during this audit (conditions 1, 2, 3a, 3b, and 6). Given the importance of these conditions and questions about their implementation status, we feel that this is a critical stage in the audit process and it is essential for the audit team to examine evidence regarding the following:

- The implementation and adequacy of otolith sampling programs to assess:
  - Proportions of hatchery origin pink and chum salmon spawning naturally (pHOS)
  - Contributions of hatchery fish to commercial harvests
  - Proportions of natural origin pink and chum salmon in hatchery broodstock (pNOB)
- The development and implementation of an action plan to protect and restore the Lebedinoe Lake chum salmon population
- Whether the expansion (actual and planned) of Gidrostroy hatchery programs since 2009 has the likelihood of significant increased risk to wild salmon populations.

Our detailed comments on these and other issues are provided under individual conditions below.

Condition 1

Estimating the proportions of hatchery fish in natural spawning areas

SoS is pleased to see that Gidrostroy has implemented a sampling program with which to estimate the proportions of wild and hatchery-origin fish on natural spawning grounds, in fishery catches, and in returns to hatchery weirs (where broodstock is collected). However, it is critical to ensure that a sufficient number of samples are collected from a representative range of locations. Condition 1 states that wild spawning rivers should be sampled over a representative range of dates during the season of returns, and its recommendation further specifies that a representative range of distances from hatchery release sites should be included.

Chum salmon

JSC Gidrostroy has posted results of pink and chum salmon otolith sampling in 2011 on its website (Akinicheva 2011a). However, because only marked age 3 hatchery chum salmon were expected to return (from brood year 2008) and less than 100% of the fish were marked (12% at the Kurilsk hatchery; SCS 2012), no marked fish were sampled. The report indicates that only 700 chum salmon were sampled from the entire District of Kurilskiy in 2011 (Akinicheva 2011a, Table 1). In order to assess hatchery chum salmon stray rates into non-hatchery streams, it is important to substantially increase sampling rates in the Kurilka River tributaries due to the low marked fractions at the Kurilsk hatchery in 2009 and 2010, as fish from those release years are still returning. Zhivotovsky et al. (2011) concluded that (i) fish returning to Kurilskiy Creek, a Kurilka River tributary close to the hatchery, were not genetically distinct from those returning to the hatchery; (ii) Lake Lebedinoe (also a Kurilka River tributary) chum salmon were genetically distinct from hatchery fish prior to the current hatchery expansion but the population is now swamped by hatchery fish and this is likely reducing the genetic structure of this population, and (iii) chum salmon in Rybatskaya River, a system that does not contain a hatchery, remain genetically distinct from the Kurilka hatchery population, suggesting that hatchery straying into this discrete river system was insignificant. Zhivotovsky et al. (2011) noted that "it is impossible to estimate how much the Kurilka River chum salmon population was genetically subdivided prior to the large returns of hatchery fish. Nevertheless, it is still structured genetically, with statistically significant within-run temporal differentiation." Thus, adequate otolith sampling is necessary to evaluate the potential genetic risk to wild populations, and we hope that the results of this sampling will be published as soon as possible. When assessing these results, we urge the audit team to pay particular attention to whether the data collection programs for chum salmon included a sufficient number of samples from an appropriate number of sites on those tributaries to the Kurilka and Reydovaya Rivers where hatcheries are not located.

Due to the close proximity of the Olya River to the new Olya hatchery, it is essential that this river be closely monitored over time. SCS' response to our letter in advance of the second annual audit (SCS 2012, Appendix I) stated that preliminary results indicated that stray rates of chum from the Olya Bay hatchery into the nearby Olya River were insignificant. However, Akinicheva (2011a) did not list any sampling of chum salmon from the Olya River in 2011. In addition, 2010 was the first release year for this hatchery and only age-2 fish would have returned in 2011.
Chum salmon can return at ages 1-5, with most returning at ages 3 and 4 (Salo 1991). Thus, the number of chum salmon returning from this hatchery will increase significantly through at least 2014. Further, we understand that the Olya River is located less than a kilometer from the Olya hatchery. Recent studies in Alaska have found high proportions of hatchery chum salmon in wild spawning rivers located up to 50km from hatchery release sites (Brenner et al. 2011, Piston and Heinl 2011a-b). Most Alaska hatchery chum salmon are released at salt water locations away from the hatchery so the results may or may not be directly applicable to the Olya hatchery. However, additional otolith sampling in the Olya River will be necessary to assess the full impact of this hatchery on this wild population.

Pink salmon

The information currently provided is insufficient to evaluate the impact of hatchery fish on the wild pink salmon population. Akinicheva (2011b) stated that the 2010 pink salmon data collection was exploratory. Specifically, the "collection of the material during the first year of study was carried out in a somewhat random, observational manner," and that "the objective for the first year was the determination of data collection points in order to carry out the correct calculation of the number of hatchery-origin spawners in the fixed net catches, and the approaches to the hatchery, and beyond to the spawning grounds." Further, only 11% of the pink salmon returning to the Kurilsk hatchery in 2010 were marked. Thus, it is difficult to draw conclusions from the 2010 sampling results. In contrast, the report on the 2011 sampling (Akinicheva 2011a) stated that the purpose of the study was "to estimate the share of hatchery origin spawners returning to the Kurilskiy and Reidovoy hatcheries in 2011, and the study of the dynamics of their runs." The report does not mention the intent to estimate the proportion of hatchery fish in wild salmon spawning areas and does not report any results of sampling of pink salmon in non-hatchery streams. It does not list the pink salmon samples collected in 2011, so it is unclear whether they sampled in those streams. A separate document listed 2011 planned pink salmon sample sizes by date and location which included non-hatchery streams and tributaries (Gidrostroy 2011); however, it is unclear if this sampling program was followed. Information on the proportion of hatchery fish in natural spawning areas is essential to closing out Condition 1. We are perplexed why this crucial analysis is missing for pink salmon in the latest report.

Interpreting results

The client action plan for Conditions 1 and 2 states that "if hatchery fractions in non-hatchery rivers are significant, then appropriate remedies might include further research to evaluate the effects or hatchery measures designed to reduce straying (SCS 2012)." However, SCS has not defined what acceptable levels of hatchery-origin fish on the spawning grounds are. The Draft Annex GCM Guidance on the Modifications to the Default Assessment Tree for Salmon Fisheries (MSC 2012a) recommended the following:

"At the SG80 level, pHOS at the level of the SMU, taken as an unweighted average over all populations in the SMU, should be

- no more than 5% for segregated hatchery programs;
- no more than 10% for integrated hatchery programs where pNOB is less than 20%;
- no more than 0.5 x pNOB for integrated hatchery programs operating between 20% and 40% pNOB;
- no more than 20% for integrated hatchery programs operating at pNOB > 40%."

It is important that SCS define a priori what constitutes an acceptable level of pHOS both in terms of overall levels within the area as well as the magnitude and distribution among individual populations.

Condition 2

Minimizing the effects of hatchery fish on wild stocks

Despite concerns over the impacts of hatchery fish on wild salmon populations, JSC Gidrostroy has continued to increase salmon releases from its hatcheries. While total annual releases at the time of certification in 2009 were consistently less than 55 million, by 2011 almost 75 million were released (Figure 1). This does not include the new Kitovi hatchery which started releasing chum fry in 2012. The impact of these increases on wild populations must continue to be monitored, and actions must be taken to minimize these impacts.

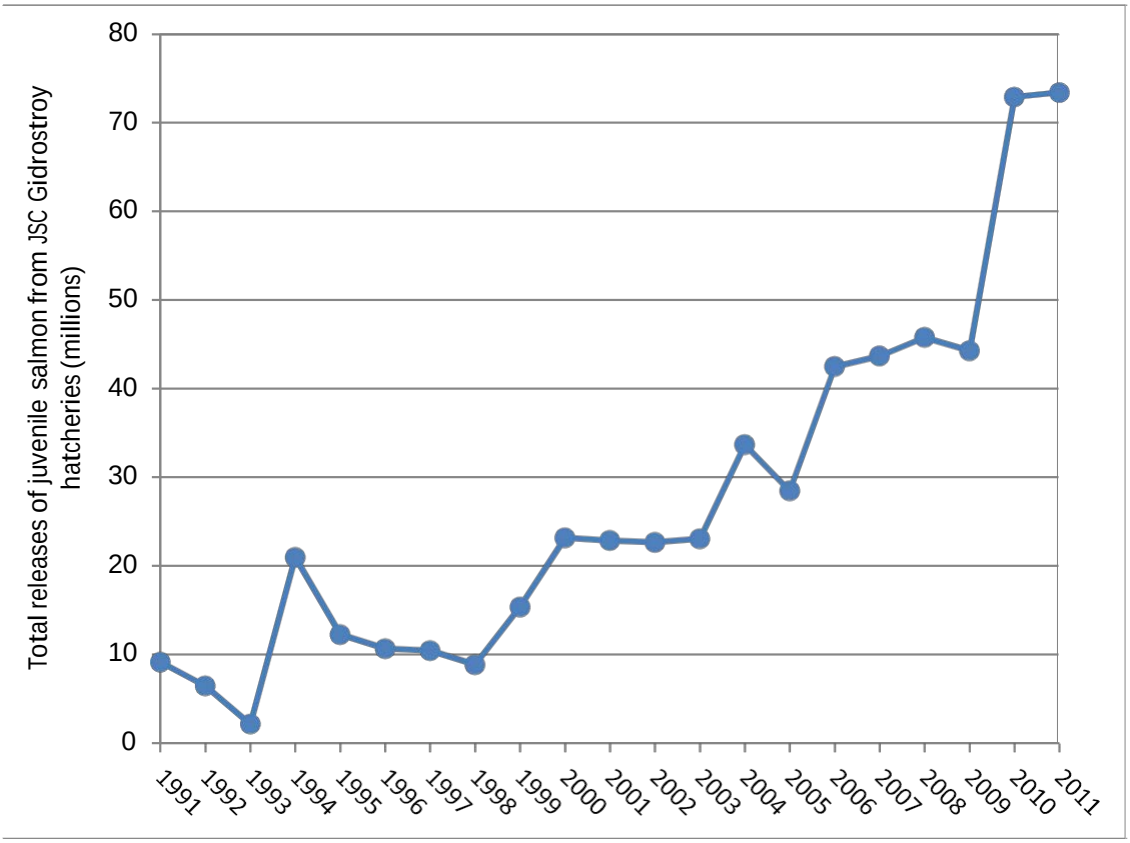

Figure 1. Total pink and chum salmon releases from hatcheries currently operated by JSC Gidrostroy, 1991-2011.

While we are encouraged to see that JSC Gidrostroy is shifting towards segregated hatchery programs, management practices must be in place to (i) minimize straying into wild spawning grounds and (ii) ensure that wild populations are not over-harvested while harvesting abundant hatchery fish. For example, we understand that the Olya River drains into Olya Bay and is located less than a kilometer from the Olya hatchery. What management measures are in place to ensure that sufficient numbers of wild chum salmon return to the Olya River to meet escapement targets, and what evidence exists that wild chum spawning targets are being met?

In addition, the two traditional hatcheries remain in full operation, and the impact of these hatcheries is still being assessed. While the 2010 otolith sampling suggested that the proportion of hatchery pink salmon spawning in natural areas was insignificant, the 2011 sampling

concluded that "a high degree of straying was registered for the pink salmon originating from the Kurilskiy hatchery" (although there was no analysis specific to spawning areas). Further, Zhivotovsky et al. (2011) suggested that hatchery straying into natural chum salmon spawning tributaries to the Kurilka River was occurring to a significant degree. If otolith sampling confirms this result, management actions will be needed to reduce straying. SoS would be happy to provide our consultation and support and the client in designing plans to reduce the incidence of hatchery origin fish on spawning grounds.

Further, the audit team should assess whether new performance issues should be raised under PI 1.1.1.5 due to the recent expansion of JSC Gidrostroy's hatchery program that was not known or assessed by SCS at the time of certification. The fact that large numbers of hatchery fish may negatively impact wild stocks by raising harvest rates on wild stocks to unsustainable levels or by straying and subsequent introgression has already been recognized in the conditions. However, hatchery fish may also impact wild stocks ecologically via predation or competition for resources, and the potential for such interactions is increased with the magnitude of hatchery releases. A number of studies have found evidence of a finite carrying capacity for salmon in the Pacific Ocean (see Kaeriyama et al. 2009, 2011; Ruggerone et al. 2010, 2011), and a number of others have examined the relationships between hatchery release location and/or timing and the potential for ecological interactions between outmigrating juveniles (e.g. Reese et al. 2009, Levings et al. 1986). As hatchery releases are increased the audit team needs to assess these interactions as well as those between adult fish, and to develop plans to minimize them.

The Lebedinoe Lake chum population

To date we have not seen an action plan for the Lebedinoe Lake beach spawning chum population to address the issue of hatchery straying. We support the development of the plan including the five components outlined in the last audit report (SCS 2012, p.21-22) to address hatchery fish swamping the unique Lebedinoe Lake beach spawning chum population (Zhivotovsky et al. 2011), and we feel that component 2 (regarding interim measures to protect the population) and component 4 (regarding longer-term protection measures) are critical. Regarding those two components, we would like clarification of statements in SCS' response to our letter:

- The 2011 surveillance audit states that "this plan will include… a description of interim remedial measures for addressing the issue using current management tools (SCS 2012, p. 21)." SCS' letter to us stated that "a weir is also installed to prevent over escapement from hatchery fish in the same system further down river (SCS 2012, p. 34)." Since local hatchery fish are not externally marked, we question how a weir can be used to prevent hatchery fish from escaping to the system without simultaneously preventing wild fish from doing so.
- The 2011 surveillance audit also states that the plan will include a "long-term strategy for identifying, evaluating, and implementing appropriate conservation alternatives (SCS 2012, p. 22)." SCS' letter suggests that gravel siltation was the primary obstacle to rebuilding the Lebedinoe Lake beach spawning chum population, and that "increasing the area of suitable habitat is a first step to increasing lake spawning chum populations (SCS

2012, p. 34)." We have been unable to find documentation of the gravel siltation in Lebedinoe Lake; please send us the evidence for this statement. Further, is there a plan in place to physically reduce siltation, rather than simply increasing the number of spawners? If this statement is intended to mean that hatchery fish on the spawning grounds are fulfilling an ecological function by reducing levels of siltation, we question whether this would fall within scope for MSC certification. MSC certification requirements state that for an enhanced fishery to be within scope it "does not form a major part of a current rebuilding plan for depleted stocks" (MSC 2012b, section 27.4.12).

Condition 3

We commend JSC Gidrostroy and SakhNIRO on their analysis of the contribution of hatchery pink salmon to the commercial net fishery in 2011, as detailed in Akinicheva (2011a). We were particularly impressed by their analyses of the contribution of fish from the Reidovoy hatchery with three different incubation times. However, it was unclear if recoveries of marked fish originating from the Kurilsk hatchery were expanded to account for unmarked fish released in 2010 (16%). If not, contribution estimates from this hatchery will be biased low. We were also unsure how to interpret Figure 1, which suggests that a large number of commercial fishing sites were sampled over a broad geographic range. Results for pink salmon reference four areas where commercial catch was sampled in Kurilskiy Bay, and three areas where it was sampled in Prostor Bay (Akinicheva 2011a, Figures 7-8). The table listing the locations sampled for chum salmon includes several of the same sites, but although sites are not identified in the table as commercial or otherwise, there appear to be fewer commercial sites sampled than there were for pink salmon. Were there more sites than these sampled for either species? If not, what do the colored circles in Figure 1 represent?

The information collected from otolith sampling may be useful for developing strategies to differentially harvest hatchery fish. The 2010 sampling report concluded that "the hatchery-origin spawners are concentrated [only] while approaching the spawning ground (Akinicheva 2011b)" and suggested a refocusing of sampling efforts toward nearshore areas. A similar analysis was not provided in the 2011 sampling report but could help JSC Gidrostroy and management agencies to understand the dynamics of migration patterns as the fish move inshore and the variability in those patterns. Understanding these patterns may be useful, particularly with regard to the newer, segregated hatchery programs, in order to enable the fishery to target hatchery fish by allocating effort within the fishing grounds.

Information currently provided regarding the contribution of hatchery chum salmon to commercial fisheries is currently insufficient to close Condition 3. Only age 3 and younger chum salmon returning to hatcheries in 2011 would have been marked, and only a portion of those brood years were marked at the Kurilsk hatchery (SCS 2012). Sampling of marked chum salmon from the 2012 fishing season will be more meaningful (providing sampling rates are sufficiently large) but these results are not currently provided. Given the importance of estimating harvest rates on wild stocks, we urge JSC Gidrostroy to provide an analysis of the 2012 sampling (including the numbers of fish sampled) from the commercial harvest as soon as possible.

Condition 6

Condition 6 states that the client must estimate the proportions of wild-origin chum and pink in the hatchery broodstock. To date there is insufficient information provided to assess the proportion of wild chum salmon used for hatchery broodstocks. For the Kurilka and Reidovoy hatcheries, the proportion of wild pink salmon used for broodstock appears to be dependent on wild fish straying into the hatchery weirs, and not due to the intentional taking of wild fish from natural spawning grounds. The available information suggests that both hatcheries may want to include additional wild pink salmon in their broodstock programs at least during certain segments of the spawning return.

The pink salmon collected for broodstock at the Reidovoy hatchery appear to be largely of hatchery origin. Akinicheva (2011b, Table 4) reported that only one of 44 pink salmon sampled at the Reidovaya River hatchery weir was wild, or approximately 2.3%. Four samples collected at the two weir sites in 2011 suggested a similar answer until the final sample collected on October 1st, when the proportion of Reidovoy hatchery-origin fish dropped drastically to 25.5%, with 57.1% of the fish of wild origin and 17.4% actually of Kurilskiy hatchery-origin (Akinicheva 2011a, Figure 15). Although the sampling plan for 2011 included sample collection through mid-October (Gidrostroy 2011) there were no results from later dates (and no sample sizes given in the report), making it impossible to determine whether this result is due to a temporal shift in the makeup of the fish at the weir or is simply an outlying data point.

Broodstock sampled at the Kurilsk hatchery appears to have a higher proportion of wild pink salmon than the Reidovoy hatchery. Samples were taken from the Kurilsk hatchery in 2010 on three occasions, and only two out of 142 pink salmon collected were marked (Akinicheva 2011b). The report states that 10.86% of the juveniles from this hatchery were marked upon release, making estimates based on expansions of these two samples questionable. Results from sampling in 2011 also indicate a large proportion of wild fish at the site; not to the extreme that the results of 2010 suggested, but still as much as half during the early part of the season (Akinicheva 2011a; Figure 12). However, the proportion of hatchery fish steadily increased over the season reaching 93.5% by early October. In addition, it would be useful clarify whether weir samples were representative of hatchery broodstock takes. For example, were the fish sampled actually used for broodstock, or were they just present in the weir?

Condition 6 also states that the client must "take appropriate measures to ensure that adequate numbers of natural-origin fish are used in the broodstock each year in order to avoid potential domestication or selection." MSC draft guidance does not specify targets for integrated hatcheries for the proportion their broodstocks composed of wild fish or state whether targets exist at all for segregated hatcheries (MSC 2012a). However, by definition an integrated hatchery program should include a significant proportion of wild fish in their broodstock. In the event that the contribution of wild spawners of either species to any hatchery broodstock is deemed to be insufficient, it will be important to weigh the benefits of reducing domestication against the increased pressure on wild stocks due to takes for hatchery broodstock.

Condition 8

Total escapements to several surveyed streams, in particular for chum salmon, have been consistently well below escapement goals in recent years (SCS 2012, Figure 2), indicating that intense harvest rates on hatchery fish may be resulting in unsustainable harvest rates on wild fish. Thus, while all of the information recommended in Condition 8 is relevant and should be provided, the data required most urgently is that of catches and escapements of wild fish. It will be necessary to utilize the information from the fulfillment of Condition 1 to adjust estimates of escapement to account for the proportions of hatchery origin fish. Once the fulfillment of Condition 3 provides information on the wild stock contribution to harvests, then it will be possible to estimate the rates of harvest on wild stocks.

As noted in our correspondence prior to the second annual audit, it will be important for the client to publish these data on the level of the tributary and not simply at the river system level, as both the Kurilka and Reydovaya River systems have a tributary on which a hatchery is located and thus spawning grounds on different tributaries will have widely varying incidences of hatchery strays.

JSC Gidrostroy has done an excellent job by creating a website on which to publish data and other information relevant to the assessment and audit processes. However, the website does not seem to have been sufficiently updated since 2011, and the client may need to establish a schedule for publishing key data sets annually. In addition, it would be helpful to post monitoring plans for upcoming seasons (e.g. 2013 otolith sampling) to assess the adequacy of sampling programs before the results are posted.

Thank you once again for the opportunity to provide input into the annual surveillance audit. We look forward to reviewing the results of your surveillance audit and supporting documents.

Sincerely,

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8.1 CB Response to Stakeholder comments

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25 January 2013
Mr. Randy Erikson
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Dear Mr. Erikson,

Thank you for responding to our request for stakeholder input on the MSC third annual surveillance audit of the Iturup Pink and Chum salmon fisheries. SCS was able to ask the questions in your letter directly with fishery scientists and managers at the onsite meeting as well as convey related concerns. Responses to your letter have also been incorporated into the third annual surveillance report.

Responses are summarized as follows by condition:
We understand that condition 1 concerns are whether there is sufficient number of samples collected from a representative range of locations to determine the level and impact of hatchery input particularly in the Kurilsky and Reydovaya systems. Another concern regards sampling for marked otoliths at the Olya River where a non-integrated hatchery program is in place.

Otolith marking has substantially increased since it began end of 2008. Marking is at 100% for pink and chum hatchery fish for all hatcheries except Kitovyy, where the gravel bottomed pens allow some groundwater to seep in thereby reducing marking efficiency. This technical issue is currently being addressed by hatchery engineers with the goal of 100% marking in the near future. At the time of the audit, a comprehensive analysis of the otoliths collected was not available, though a summary presentation of the data was presented. This information is available to the public on the Gidrostroy MSC website under the 'enhancement' tab. Due to the importance of this issue, and to ensure that sufficient information continues to be collected and analysed, the surveillance team has extended the condition requirement to collect otoliths to determine hatchery influence and range for the duration of the certificate. Results from the 2011 collections are to be evaluated at an early surveillance audit scheduled for July 2013. The official status of this condition is "open and on target," reflecting the extension of the duration by which otolith information must continue to be collected.

Still in development is the MSC salmon specific assessment tree, which includes specific guidelines for the recommended acceptable proportion of hatchery origin salmon spawning naturally. Although not completely signed off, this will be the criteria by which the assessment team will evaluate the fishery in the upcoming audit in July 2013. By this time the results of the proportion of hatchery fish in the fishery and in the broodstock collection is scheduled to be available. If not, SCS will consider additional consequences including the possibility of certificate suspension until the condition is sufficiently addressed.

Condition 2 concerns minimizing the effects of hatchery fish on wild stocks. The gravity of this concern has increased with the operations of new hatcheries and the increase in hatchery outputs since the initial certification. Additionally, the risk to the Lebedinoe Lake spawning chum has been identified. The extent of the issue with the lake spawning chum and appropriate mediation measures is still of some debate (see client response to stakeholder concerns in the 2012 surveillance report). To address this, at last surveillance audit, the audit team required the fishery to develop an

assessment plan, which is included as Appendix II to the 2012 surveillance report. Progress toward achieving the plan goals included increasing otolith sampling at the Lake from carcasses. The results from the increased sampling in 2012 are expected at the next surveillance audit, which will be held earlier in the year than would normally be scheduled. The plan does not currently define any management measures. This condition was found to be behind target and the fishery has one year from the date of the audit to bring the condition back on target. The penalty for not bringing conditions back on target is fishery certificate suspension. Progress will be evaluated in the July visit.

Clarification requests on some of the points from SCS's response letter from the 2011 audit included the reference to the weir at the Kurilsky hatchery. It is the understanding of the surveillance team that the weir assists in preventing over-escapement of hatchery fish into the Lebidinoe lake system when extremely high volumes of hatchery origin salmon return and cannot be collected for broodstock fast enough. The weir prevents the hatchery fish from escaping further upstream into the lake during these very high volume periods. Run timing for lake spawning wild chum appears to be later in the season than hatchery origin chum (see Appendix II). Another point of clarification was the cause for the reduction in spawning potential for the lake and remedial measures. Initially, the cause was thought to be siltation (Federova—pers. comm.)—but this was anecdotal. Introducing additional spawners to the lake and constructing a hatchery was considered but later dropped. Gidrostroy is no longer considering placing a hatchery on Lebedinoe Lake as there are several other issues that would arise that would increase risk to the lake spawning chum population there. The interim plan for protecting this unique population is still in development—which places this condition behind target.

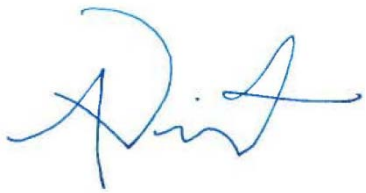
Condition 3 has two parts (a and b) and both concern the origin of pink and chum salmon found in the fishery. Initially the condition requires data collection for 3 years. Due to the importance of this information in closing out this and other conditions, the surveillance team has extended the requirement to collect otoliths for the duration of the certificate. The condition remains open. We have asked the fishery to provide better resolution on the Kurilsky system prior to the next surveillance audit. Reports with this level of resolution will be posted as part of closing condition 8.

Condition 6 regards broodstock collection. Similar to Condition 3, the importance of continuing to collect otoliths from individuals that are utilized for broodstock has been extended through the life of the certificate. Reports summarizing otolith collection methodology, timing and locations have been requested and are in process to be reviewed at the early surveillance audit in July 2013. The reports from previous years are currently available on the Gidrostroy website. Future annual reports will be posted as part of closing condition 8.

Condition 8 regards the availability of information to stakeholders. Gidrostroy maintains a website where research results, catch statistics, escapement goals, research plans and other information are housed. The website is generally updated annually, but not all information is consistently available to the level that the surveillance team would need to close this condition. This condition was therefore judged to be behind target. SCS notes the key data sets that are suggested to be included in your letter and the surveillance team completely agrees that these items should be available prior to the audit.

On behalf of the surveillance team, I would like to thank you for your thorough and thoughtful comments and I hope that we have addressed them thoroughly. I look forward to all future correspondence and to review any new information on this fishery with you as it becomes available.

Until then, kind regards,



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9. CLIENT RESPONSE TO STAKEHOLDER COMMENTS

As for stateholder opinions, in part Mr. R. Ericksen's, question regarding the state of the Lebedinoe Lake Chum Salmon population, at the present time, we can state the following:

1. Is there any risk of genetic intermingling?

- Based on available observations and data, risk probability of Kurilskiy Hatchery fish and Lebedinoe Lake wild fish intermingling is not identified and not proven.

2. Can the wild (or lake-origin) Chum Salmon population be over exploited in the commercial fishery?

This is unlikely in the commercial fishery, given the following circumstances:

2.1. Dates for the beginning and termination of the run for the delta and the mouth is fixed;

2.2. Harvest operations in these areas are carried out uniformly throughout the fishery period under the monitoring of Sakhalinrybvod specialists and in cooperation with salmon hatchery personnel;

2.3. The possibility of overexploitation when producers are harvested at a hatchery is also excluded, as only those producers that have migrated to the egg collection site are harvested. Producers from streams or other tributaries of Kurilka River system and other systems are not harvested.

3. What are the plans to protect Lebedinoe Lake Chum Salmon from hatchery reproduction program impact? Is there any plan to restore lake-origin chum salmon?

These questions are inappropriate for the following reasons:

1.1. There is no clear indication or direct evidence that the reproduction program has an impact on the Lebedinoe lake-origin Chum Salmon. There is clear indication that the Lebedinoe Lake Chum Salmon population remains constant, although not in high numbers, during the whole period of Gidrostroy's Salmon Hatchery operations. A decision to develop a plan for the reestablishment of the lake chum is premature and requires serious basis.

In connection with this, the Federal program for hatchery construction, including one on lake Lebedinoe, is not being considered at the present time nor in the near future by ZAO Gidrostroy, there is no plan to build a hatchery on Lake Lebedinoe.

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APPENDIX II — LEBEDINOE CHUM SALMON ASSESSMENT PLAN

Information data
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for web-site www.Gidrostroymsc.com

Information on Lebedinoe Lake Chum Salmon Population

Historical background:

A population of fall chum salmon is recognized in the waters of Iturup Island. This species is widely found in the Island's rivers and lakes. Due to well-defined mountain terrain, the river network density (0,84 km/km^2) is not as large as on Sakhalin Island (1,3 km/km^2). However, the lithological composition of bedrock of the Kuril Islands, formed by contemporary volcanic activity, results in a deep circulation of ground water and their intensive flow to beds of rivers and lakes. For this reason, the amount of ground water feeding Kuril Island rivers is, in an average water year about 50% of the annual volume, while this value ranges from 20 to 30% for most Sakhalin Island rivers. The abundance of the ground water supply results in a broad distribution of Chum Salmon in rivers and lakes (mostly lagoon-type), except for the rivers with hard-to-navigate falls and bodies of water with an aggressive environment (Sernaya River, etc.).

Pacific Salmon breeding in the Kurilka River basin was first noted in the late 19th century. However, for this period, there are no references of Chum Salmon breeding in Lebedinoe Lake, the removal of producers or juvenile release in the Lake. Subsequently, there were no harvests of Chum Salmon from the Lake.

Chum Salmon spawning grounds in the Lake is calculated as 4250 m², and 2500 m² in the feeders (Total 6750 m²). From the Sakhalinrybvod experts' survey, Chum Salmon, spawning in the Lake in 2008 and 2009 amounted to 11-12 K (thousands). ea. (i.e. 101-103%).

A detailed survey of the Lake was carried out in August 1985. Spawning area records ("passport") for the spawning area was completed following the survey results (ref. Attachment).

In 2003, smolt from the creeks supplying the Lake and directly from the by Lake was collected by fishery biologists of the Sakhalinrybvod Kurilsk Office and the Chum Salmon downstream migration periods were determined as follows:

Average biological parameters of Chum Salmon smolt, Bezymyanniy Creek- Lebedinoe Lake

Dates	Water body	Average length, mm.	Average weight, mg.
30.05.2003	Bezymyanniy Creek	37,7	404
05.06.2003		38,2	395
10.06.2003		37,6	382
15.06.2003		38,4	386

Average biological parameters of Chum Salmon smolt, Zmeika Arm-Lebedinoe Lake

Dates	Water body	Average length, mm	Average weight, mg.
25.05.2003	Zmeika	40,4	467
30.05.2003		40,4	483
05.06.2003		42,9	628
10.06.2003		42,8	595
15.06.2003		41,6	520

Chum Salmon downstream migration periods

	Dates
Start of Downstream migration	April 10-20
Peak downstream migration	May 20 – June10
End of downstream migration	July 20-25

From 2007-2008 Chum Salmon producers were collected from the Lake to provide biological material to Vavilov Institute specialists for genetic identification of Iturup Chum Salmon population. Total individuals caught :

	Sampling year	Chum Salmon caught, ea.
1	2007	42
2	2008	31
TOTAL		73

Research observations and findings were documented in reports and discussed at a public forum with the participation of independent parties in September 2011.

Lebedinoe Lake is included as part of Kurilka River spawning system. It is a fresh water lake. Water flows through Zmeika Arm to the Kurilka River and onto the Sea of Okhotsk. The Kurilskiy Hatchery is located on the Kurilka River for the reproduction of Pinks (73 mln. juvenile release) and Chum Salmon (20 mln. juvenile release), therefore, all of the spawning Kurilka River including its tributaries is regulated during

run escapement operations for Pink and Chum to the spawning grounds. It is noted, that the escapement of Chum Salmon producers to Lebedinoe Lake is quite stable, but not high in numbers. That said, there is an understanding of the necessity to increase the monitoring of Lebedinoe Lake, and at the present time, a program is being developed.

The Program will include the following activities:

1. Visual observation of the Lake and inflowing streams.
2. Evaluation of Chum Salmon abundance.
3. Determination of the dynamics for Chum Salmon producers running to the Lebedinoe Lake.
4. Otolith sampling from spawned out chum from the Lake and streams
5. Morphometric data collection for producers
6. Evaluation of anthropogenic impact assessment for the lake ecosystem.

Monitoring Program implementation results will allow:

2. Assessment of the state of the population (stock abundance, size, age, Straying of Chum Salmon producers);
3. Identify possible risks (harvest, poaching, hatchery fish);
4. Outline a follow-up Plan to further monitor the Lebedinoe Lake Chum Salmon population.

This work program is scheduled to be carried out in 2013.