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Pre-Assessment of the NarodySevera and BolsheretskSalmon Fishery

Prepared for

"NarodySeveraCo" Ltd and "Bolsheretsk" Ltd
[Obschestvo s ogranichennoiotvetstvennostiu "Rybolovetskayaartel "NarodySevera" and obschestvo s ogranichennoiotvetstvennostiu "Bolsheretsk"].

Prepared by

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1 INTRODUCTION

The Marine Stewardship Council (MSC), an independent, global, non-profit organization, works to enhance responsible management of seafood resources and to ensure the sustainability of global fish stocks and the health of the marine ecosystem. It is supported by a broad coalition of those with a stake in the future of the global seafood supply. The MSC harnesses consumer power by identifying sustainable seafood products through an eco-label. The MSC has identified the following mission statement: To safeguard the world's seafood supply by promoting the best environmental choice.

This report is on results of preassessment of salmon fisheries of "Rybolovetskaya artel Narody Severa" Ltd and "Bolsheretsk" Ltd which are fishing for Pacific salmon: pink salmon*Oncorhynchusgorbuscha,* chum salmon *O. keta,* sockeye salmon*O. nerka,* coho salmon *O. kisuth,*chinook salmon *O. tschawytscha,* char *Salvelinus sp (S.malma, S. leucomonas and S. alpinus)* in the Sea of Okhotsk, Western coast of Kamchatka peninsula, Ust-Bolsheretsk district, Bolshaia and Kikhchik riversarea, according to standards of Marine Stewardship Council. This report may provide only recommendations; full certification will be conducted completely independently of results of pre-assessment.

Narody Severa and Bolsheretsksigned a contract with MRAG Americas Inc. (MRAG) for a pre-assessment of their salmon fishery. To date, almost all fisheries that have successfully progressed to receive an MSC certification have required conditions continuing certification. These conditions may relate to operational and management functions. The client is then responsible for ensuring that these conditions are met within the required timescale. The client should therefore have authority, or have secured agreement with the relevant organisations, to enact potential conditions should certification be successful. Unless the action plan required to achieve the conditions has a high likelihood of success, the fishery cannot receive certification. Conditions must be closed out during the five year certification or risk suspension of the certification.

The MSC recommends pre-assessments of fisheries interested in certification to help the client make a decision of whether the fishery is a good candidate for a full certification evaluation, to see what potential issues may arise as part of a full certification evaluation, and to determine the likely costs for a full certification. The client must provide evidence that 1) the policies, management principals, and enforcement programs of the responsible fishery management bodies and fishing fleets can be expected to meet the MSC Principles and Criteria; and 2) that the status of the entire biological stock of Pacific salmon, utilized by the fishery are healthy, even if the fishery just fishes a small portion of the entire stock(s). This is necessary because the MSC's Standards Council has determined that the biological stock of the species fished must be demonstrated as healthy for a fishery or fisheries to be fully certified. These pieces of information are designed to help a fishery make more informed decisions regarding its ability to move forward with full certification. However, no verification of information occurs during a pre-assessment.

A pre-assessment report that meets all the requirements of the Marine Stewardship Council provides the following information:

1. A short description of the fishery;
2. General historical background information on the fishery and area;
3. The fishery management policy objectives, regulations, and practices;
4. Identification of other fisheries in vicinity, but not subject to certification;
5. List of stakeholders in the fishery;
6. State of preparedness for assessment, in particular, the extent to which the fisheries systems are based upon the MSC principles and criteria;
7. A discussion of the key issues and factors identified as potentially troublesome in completing a successful certification assessment based on the MSC principles and criteria,
8. A decision as to whether it will be possible to move from the pre-assessment to final assessment stage; and
9. A budget estimate for conducting a full certification assessment.

2 SCOPE OF PRE-ASSESSMENT

The MSC Guidelines to Certifiers specifies that the unit of certification is "The fishery or fish stock (biologically distinct unit) combined with the fishing method/gear and practice (vessel(s) pursuing the fish of that stock) and management framework."

The definition of the fishery under pre-assessment is therefore as follows:

Species:	Pink salmon *Oncorhynchusgorbuscha*, chum salmon *O. keta*, sockeye salmon *O. nerka*, coho salmon *O. kisutch*,chinook salmon[1]*O. tschawytscha*, char *Salvelinus sp.*
Geographical Area:	Sea of Okhotsk, Western coast of Kamchatka peninsula, Ust-Bolsheretsk district, Bolshaia, Opala and Kikhchik rivers area.
Method of Capture:	Set nets, length up to 2000 m in sea, and beach seines, length up to 2000 m in rivers In the area indicated by companies for fishing, there are 7 sea fishing parcels and 4 parcels in rivers Bolshaia, Opala and Kikhchik, belonging to “Bolsheretsk” Ltd, and 7 sea parcels 3 river parcels in Bolshaia and Kikhchik rivers and 1 parcel (beach seine) in Tolmachevo Lake, belonging to Narody Severa Ltd, which could be used for fishing.
Stock:	Populations of five species of Pacific salmon (pink, chum, coho, sockeye and Chinook) and charspawning in Western coast of Kamchatka (Bolshaia, Opala and Kikhchik Rivers and also adjacent rivers those populations can be intercepted by the fishery under pre-assessment).

Management System:

- Federal Agency for Fisheries
- SVTU, regional divisions of Federal Agency for Fisheries.
- Regional (Kamchatka) Fisheries Research Institute, KamchatNIRO.
- Regional (Russian Far East) Fisheries Research Institute, TINRO-Center.
- All-Russia Fisheries Research Institute, VNIRO.
- SevvostRybvod.

3 CLIENT GROUP:

Rybolovetskaya artel “Narody Severa” LTD and “Bolsheretsk”LTD

4 MEETINGS WITH CLIENTS

Dr. D. Lajus met with the clients and undertook atrip to the fishing site of the Bolsheretsk company in Bolshaia Riverfrom 26 to 27 May 2011. Dr. Lajus presented information about the MSC assessment process, and received information relevant to the pre-assessment. Duringthepre-assessmentDr.Lajusmetwith Grigory Polukarov, General Director of “Narody Severa”, Yury Konovalov, General Director of “Bolsheretsk”, Sergey Pereverzev, Director on Production of Narody Severa, Igor Mikhienkov, Head of Fishing team of NS, Igor – fish biologist from KamchatNIRO, Aleksandr Titov, Juridical Consultant of Narody Severa.

[1] Although Chinook is considered in this pre-assessment, it would not be suitable for a full assessment as it is overfished and closed to fishing in most rivers.

5 DESCRIPTION OF THE FISHERY

Location of fishing and catch statistics

The fishing area is situated inthe Western part of Kamchatka Peninsula.Administratively, this area is a part of Ust-Bolsheretsk district of Kamchatka Krai of Far East Federal Region of the Russian Federation, and in terms of fisheries subdivision it is a part of Kamchatka-Kuril subzone of Sea of Okhotsk.

The fishery has a good road access in comparison with majority of other Kamchatka fisheries. There is an autoroad connecting fishing area in Oktiabrsky village and Petropavlovsk-Kamchatsky,the total distance is about 200 km.

Companies have fish processing factories approximately 4,5 km from Oktiabrsky village, i.e. near the area where main fishing activities occur. Fish processing factories of Narody Severa and Bolsheretsk employ about 600 workers in high season (July-August); about half of these people are from mainland Russia (Far East and other parts), a quarter from city of Petropavlovsk-Kamchatsky, and a quarter from Oktiabrsky village. Companies have difficulties finding qualified local employees because of social problems such as alcoholism; often their work tenure lasts only for a very short time. Nevertheless, given the low population in Oktiabrsky(2300 inhabitants), a quite high proportion of local people work in Narody Severa and Bolsheretsk processing factories. In winter season, up to 20-30 workers are employed in each factory.

“Bolsheretsk” is given 11 fishing parcels, 7 of which are in the sea, and 4 in Bolshaia, Opala and Kikhchik rivers, and Narody Severa is also given 11 parcels, 7 in the sea, 3 in rivers Bolshaia and Kikhchik rivers and 1 at Tolmachevo Lake (Fig. 1, Tab.1).

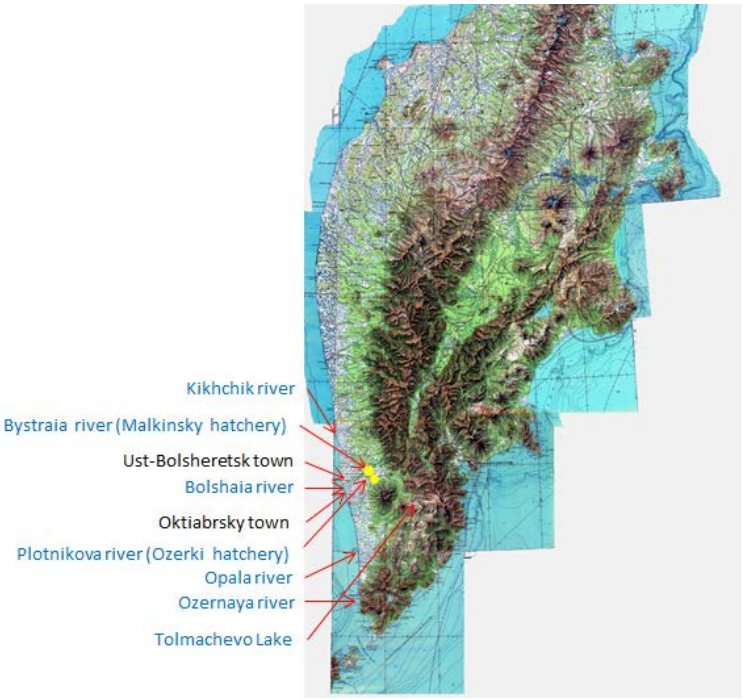

Figure 1.Fishing area under pre-assessment.

Table 1. List of fishing parcels owned by Narody Severa and Bolsheretsk companies. In the sea parcels all gear are allowed, in the river parcels beach seines, set and floating gillnets are allowed (from materials of Anadromous Fish Commission of Kamchatka region,http://www.kamchatka.gov.ru/?cont=oiv_din&id=169&menu=4&menu2=0&oiv_id=102).

Owner	N of fishing parcel	Water body	Geographical coordinates of the base point						Size
			Latitude			Longitude			
			Grad	min	sec	Grad	min	sec	
Bolsheretsk	102	Sea of Okhotsk	53	30	52	156	00	46	Length 300 m, width - 2000 m
Bolsheretsk	104	Sea of Okhotsk	53	28	43	156	01	13	Length 300 m, width - 2000 m
Bolsheretsk	106	Sea of Okhotsk	53	26	34	156	01	48	Length 300 m, width - 2000 m
Bolsheretsk	107	Sea of Okhotsk	53	24	20	156	02	31	Length 300 m, width - 2000 m
Narody Severa	109	Sea of Okhotsk	53	22	14	156	03	09	Length 300 m, width - 2000 m
Narody Severa	111	Sea of Okhotsk	53	18	30	156	04	02	Length 300 m, width - 2000 m
Narody Severa	156	Sea of Okhotsk	52	35	40	156	16	37	Length 300 m, width - 2000 m
Narody Severa	159	Sea of Okhotsk	52	33	32	156	17	37	Length 300 m, width - 2000 m
Narody Severa	162	Sea of Okhotsk	52	31	25	156	18	32	Length 300 m, width - 2000 m
Bolsheretsk	173	Sea of Okhotsk	52	08	01	156	27	57	Length 300 m, width - 2000 m
Narody Severa	176	Sea of Okhotsk	52	04	48	156	28	31	Length 300 m, width - 2000 m
Bolsheretsk	182	Sea of Okhotsk	51	58	20	156	29	11	Length 300 m, width - 2000 m
Narody Severa	185	Sea of Okhotsk	51	53	45	156	29	39	Length 300 m, width - 2000 m
Bolsheretsk	702	Kikhchik river							Length 400 m
Bolsheretsk	703	Kikhchik river							Length 500 m
Narody Severa	704	Kikhchik river							Length 2000 m
Narody Severa	718	Bolshaia River							Length 1000 m

Narody Severa	719	Bolshaia River	Length 1000 m
Bolsheretsk	727	Bolshaia River	Length 2000 m
Narody Severa	734	Tolmachevo Lake	Area 10,4 sq km
Bolsheretsk	738	Opala River	Length 1500 m

Fishing parcels of Narody Severa and Bolsheretsk are included in two management units (Tab. 2). Under management unit we understand here the group of fishing parcels which are managed as a whole in terms of allocating recommended catch (what is decided by Anadromous Fish Commission).

Table 2.Management units where fishing parcels of Narody Severa and Bolsheretks are included (from materials of Anadromous Fish Commission of Kamchatka region,http://www.kamchatka.gov.ru/?cont=oiv_din&id=169&menu=4&menu2=0&oiv_id=102).

Location of management units (MU), i.e. group of fishing parcels	List of fishing parcels included	Name of Companies	Fishing parcels
MU1: Kikhchik, Mukhina, Khomutina, Utka, Mitoga and Bolshaia rivers and adjacent parts of Sea of Okhotsk	102-118,150-152, 154-157,159, 160, 162-164, 702-704, 706-713, 716-720, 723, 724, 727, 732, 734	“Bolsheretsk” LTD	102, 104-107, 702, 703, 727
		“RKZKomandor”OAO	103, 110, 112, 115, 116, 152, 157, 164, 711, 716, 723
		“Loid-Fish” LTD	108, 150, 154, 160, 706, 707, 713
		“RA Narody Severa" LTD	109, 111, 156, 159, 162, 704, 718, 719, 734
		“Oktiabrsky rybokombinat” LTD	113, 114, 118, 163, 717, 720
		“RPK Skop” LTD	117, 708, 709, 724, 732
		“Vitiaz-Avto” LTD	151, 710
		“Dary Kamchatki” LTD	155
		“Rybkholkam” LDT	165-169, 194, 195, 200, 209, 750, 754
		“Oktiabrsky rybokombinat” LTD	170, 171, 199
MU2: Opala, Golygina, Koshegochek, Iavinskaya, Ozernaya rivers and adjacent parts of the Sea of Okhotsk	165-188, 189-195, 196, 197, 198-204, 206-209, 738-740, 744-746, 747, 748, 749, 750, 751-760	“RPF KamNORiS” LTD	172
		“Bolsheretsk” LTD	173, 182, 738
		Loid-Fish LTD	174, 183, 186, 739
		RA Kolkhoz Krasny Truzhennik	175, 196, 744, 749, 753
		“RA Narody Severa” LTD	176, 185
		“Delta” LTD	177-181, 184, 198, 740, 755
		“OzernovskyRKZ № 55” OAO	187, 188, 192, 193, 202, 207, 208, 745, 748, 751, 756
		“Vitiaz-Avto” LDT	189-191, 197, 203, 204, 746, 747, 752

Location of management units (MU), i.e. group of fishing parcels	List of fishing parcels included	Name of Companies	Fishing parcels
		“Dary Kamchatki” LTD	201
		“SOI Khaiko” LTD	206, 760
		“Rybokombinat Zapadny” LTD	759
		“NIO Alyk” LTD	757, 758

In the first management unit Narody Severa and Bolsheretsk own 53% (10 of 19)of sea fishing parcels and 39% (7 of 18)of river fishing parcels. In the second unit – 9% (4 of 44) of sea fishing parcels and 4% (1 of 21) of river fishing parcels.
Catch of salmon by the companies is presented in Table 3 and Fig 2.

Table 3. Catch of salmon, mt by companies “Narody Severa” and “Bolsheretsk” (data provided by companies).

Species	Narody Severa						Bolsheretsk	
	2005	2006	2007	2008	2009	2010	2009	2010
Pink	282,75	2145,33	634	1736,64	210,25	5414,5	358,82	7690
Chum	86	132,726	195	85,8	563,5	669,355	442,8	1141,43
Sockeye	129	103,88	237	199,512	841,4	594,439	370,12	357,066
Coho	4,86	3	27,5	17,4	13,95	68,5	74,51	201
Chinook	1,62	20	0	0	8,35	0	0,2	0
Char	0	30,249	35	26,2	118,45	106,7	138,715	164,203

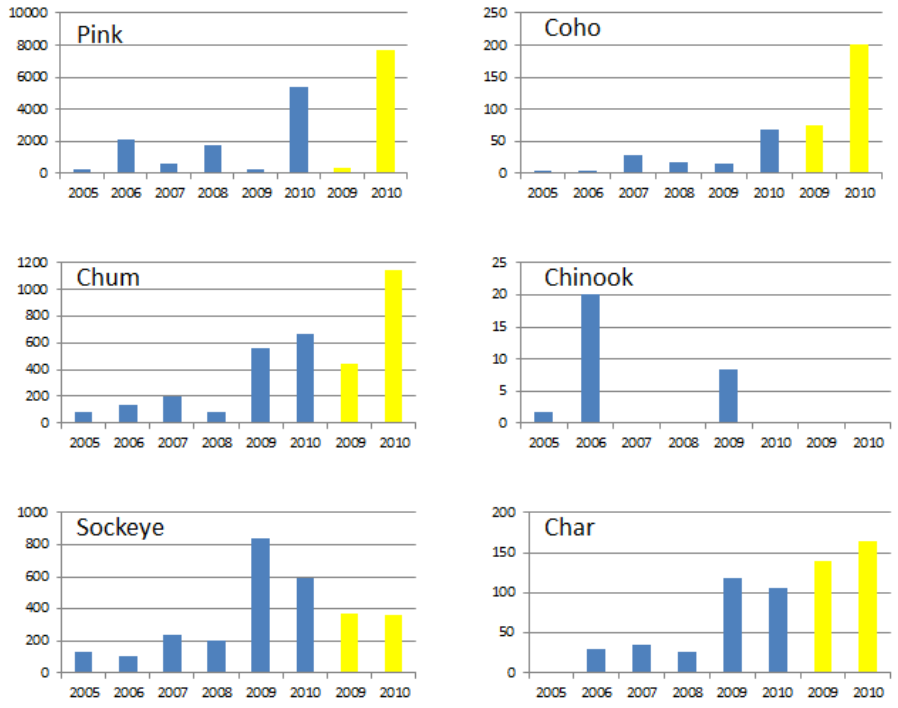

Figure 2.Catch of salmon, mt by companies “Narody Severa” (2005-2010, blue) and “Bolsheretsk” (2009-2010, yellow) (data provided by companies).

Ratio of catch (based on allocation of recommended catch by Anadromous Fish Commission in 2011) of the Management unit 1 and 2 (see Tab. 2) by species is as follows (Tab.4).

Table 4.Recommended catch, mt, of two management units where Bolsheretsk and Narody Sevea are included, and overall recommended catch in Kamchatka-Kuril fishery subzone and entire Western Kamchatka fishing area (based on allocation of recommended catch by Anadromous fish commission in May 2011(from materials of Anadromous Fish Commission of Kamchatka region,http://www.kamchatka.gov.ru/?cont=oiv_din&id=169&menu=4&menu2=0&oiv_id=102). The table does not allow assessment of absolute abundance because this is only fishing forecast, without reserved amount and spawning escapement, but allows analysis of relative contribution of different management units.

Area of fishing	Pink	Chum	Sockeye	Coho	Chinook
Western Kamchatka Area	729,1	42378,0	1038,2	664,9	0,0
Kamchatka-Kulril subzone	508,9	2766,0	12379,3	539,2	1,0
MU1	141,0 (28%)	1085,6 (39%)	1145,1 (9%)	196,8 (36%)	0,0 (0%)
MU2	203,0 (40%)	1288,7 (46%)	11037,0 (89%)	307,7 (57%)	1,0 (100%)

Long-term trends of catches are available for entire Western Kamchatka coast for period 1993-2009 (Fig. 3). At absence of data for smaller areas, in particular, for Bolshaia River,figures for Western Kamchatka can be considered as a proxy for changes of abundance for smaller areas. For instance, V.Bugaev (2003) reports high correlation coefficient (r=+0,836) for changes of abundance of sockeye in Bolshaia river and in Ozernaya river (basically representing sockeye of entire Western Kamchatka). Note that increasesincatches during recent years can be explained, at least partly, by changes in the management system that increased the amount of catch reported by companies. In previous years in Kamchatka, and in Bolshaia river in particular,unreported catch was very high, especially for such species as sockeye, coho and Chinook (Regionalnaia… 2008), because companies under reported or misreported to avoid paying taxes or to delay reaching quotas.

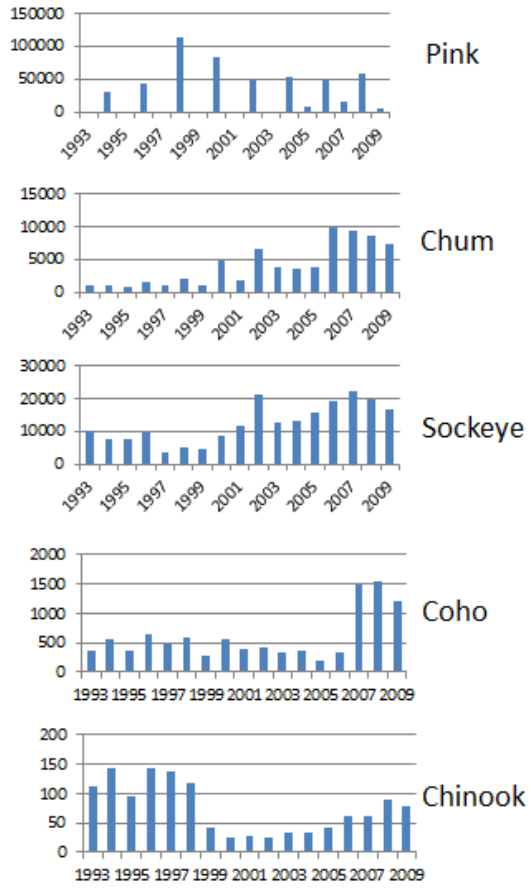

Figure 3.Catchers of Pacific salmon in the Western Kamchatka area (Rassadnikov 2006, 2009; Rassadnikov and Starovoitov 2007; Starovoitov and Rassadnikov, 2008).

Along with Narody Severa and Bolsheretskthere are a number of other companies participating in commercial fisheries and owning fishing parcels in the same management unites as Narody Severa and Bolsheretsk:

“RKZ Komandor” OAO – 11 fishing parcels
“Loid-Fish” LTD – 11 fishing parcels
“Oktiabrsky rybokombinat” LTD – 9 fishing parcels
“RPK Skop” LTD – 5 fishing parcels
“Vitiaz-Avto” LTD –11 fishing parcels
“Dary Kamchatki” LTD –2 fishing parcels
“Rybkholkam” LDT – 11 fishing parcels
“RPF KamNORiS” LTD – 1 fishing parcel
RA Kolkhoz Krasny Truzhennik – 5 fishing parcels
“Delta” LTD – 9 fishing parcels
“Ozernovsky RKZ № 55” OAO –11 fishing parcels
“SOI Khaiko” LTD – 2 fishing parcels
“Rybokombinat Zapadny” LTD – 1 fishing parcel
“NIO Alyk” LTD – 2 fishing parcels

In addition, the following companies are given fishing parcels for sport and recreational fishing, and also for hatcheries operating in the water bodies in the same locations as management unites which include Bolsheretsk and Narody Severa fisheries (Tab. 5)

Table 5. List of companies which are given fishing parcels for sport and recreational fishing, and also for hatcheries operating in the water bodies in the same locations as management unites which include Bolsheretsk and Narody Severa fisheries.

User	Location
FGU Sevvostrybvod	Sea of Okhotsk
FGU Sevvostrybvod	Sea of Okhotsk
"Andar" LTD	Kikhchik River
"Big-River" LTD	Bolshoe Lake
OOO "Red-Fish"	Bolshaia River
"Andar" LTD	Bolshaia River
"Big-River" LTD	Bolshaia River
FGU Sevvostrybvod	Bolshaia River
"Andar" LTD	Bystraia River
FGU Sevvostrybvod	Plotnikova River
"Malaia Ipelka" LTD	Opala River
"Kroton" LTD	Opala River

Biology of Pacific salmon in the Western Kamchatka

All Pacific salmon are monocyclic anadromous fish. The life cycle is divided into freshwater and marine phases. Spawning migration and spawn occur in July – September. Embryonic development takes several months. After this fry spend several weeks in the nest and then, in April-May leave the nest. First time they remain in coastal waters and then migrate to open sea. The simplest life cycle is typical for pink salmon, which spend only few days in river and one year in the sea. The next summerpink salmon return to their natal river for spawning (although some straying occurs as well). After spawning almost all Pacific salmon die. Thus all pink salmon spawn at age of two years, and this species forms two practically independent populations in the same river, entering the river in odd and even years. One of these populations usually predominates. In the Western coast of Kamchatka this is even year population. Other species of Pacific salmon have similar but longer life cycle. Chum salmon spendone-two months in the fresh water, coho salmon up to three years, and Chinook salmon even longer. Sockeye salmon also spend some years in freshwater, but live mostly in lakes. The main biological parameters of Pacific salmon in Kamchatka are provided in the tab. 6.

Table.6. Biological characteristics of Pacific salmon and char in Kamchatka (based on Leman and Esin 2008)

Latin name	English name	Russian name	Weight, kg	Distribution (entire peninsular if not indicated)	Duration of stay in river after hatching	Duration of stay in sea	Period of in river migration	Period of spawning	Place of spawning	Dwarf forms	Landlocked	Multiple spawn
O. gorbuscha	Pink	Горбуша	1,2-1,5 (from 0,35 to 5,5)		Few days	About 14 months	Jul-Aug	Aug-Sep	River down- and middle stream			-
O. keta	Chum	Кета	3,5-4,5		Up to few months	1-5 years	3 races: summer (Jul-Aug), spring (Jun),	Few weeks after in river migrat	Low riches, side channels, tributaries of gravel-bed rivers			-

							autumn (Oct-Nov)	ion				
O. nerka	Sockeye	Нерка, красная	1,5-4,1	Large rivers and lakes	Lakes:1-3 years; Rivers: few months-2 years	1-5 years	Early May-Sept	Jul-Oct, up to Jan	Littoral in lakes, springs in rivers		+	-
O. tshawytscha	Chinook, King salmon	Чавыча	6,5-9,5, up to 20-30	Average and large rivers	Few months to 3 years; usually 1 year	2-4, up to 5 years	May-Jun	Jun-Jul up to late Aug	Mainstream rivers without ground waters	+		-
O. kisutch	Coho	Кижуч	3-3,5; up to 5-7		8 months-3 years	1 year	Late Jun-Dec	Up to Feb	Areas with ground waters, very upstream parts	+	+	-
O. (Parasalmo) mykiss	Steelhead, (anadromous)	Камчатскя семга	Up to 10-12.	West and in large rivers of East	2-4 years	1-4 years	Aug-Oct	May-Jun, after wintering in river	Variable	+	NA	++
O. (Parasalmo) mykiss	Rainbow trout (landlocked)	Микижа	0,5-1,5, up to 3-4		Up to 12 years	NA	NA	May-Jun	Variable		NA	++

With exclusion of chum and pink, all Pacific salmon species in Kamchatka form landlocked and dwarf forms. Dwarf forms (mature parr) are usually males which mature in rivers. Also, there is a form (also males) that leaves their river only for few months in summer, and returns to spawn together with anadromous forms. It is considered that presence of such forms allow species to adapt to non-favorable environmental conditions, in particular, poor feeding conditions in ocean. Landlocked forms are also quite numerous, such as for instance, kokani, the lake form of sockeye salmon. Presence of intraspecies structuring makes population modeling more complicated.

Five species of Pacific salmon have commercial significance – pink, chum, sockeye, coho and Chinook. Masu is less numerous and so far there is no official statistics for this species. Few species of char are commercially harvested and are assessed for recommended catch, but their significance is far lower than Pacific salmon. Steelhead salmon and rainbow trout are closely related and probably belong to the same species (researches are discussing is it species *Oncorhynchus* or *Parasalmo*). Anadromous steelhead salmon belongs to ETP species. This species can be caught while fishing for commercial purposes.

Fishery management

The main objective of salmon managementin the area of fishing is achieving spawning escapement, specifically by observing whether all areas potentially suitable for spawning are actually used by salmon to spawn. In 2009 regulations of the salmon fishing were changed from individual quota system to so-called Olympic system. Previously, TAC was determined and fishing terminated after the TAC, subdivided into individual quotas, was achieved. Now fishing may continue through the runif spawning escapement is on schedule to meet its goals.For management purposes, the Kamchatka peninsula coastal zone is subdivided into several management units, which

are given quota based on recommendations of the Fisheries research Institute KamchatNIRO. Western Kamchatka coast is subdivided into six management units. Each management unit contains number of fishing parcels. In particular, those two management units include fisheries under this pre-assessment, and have a total of59 and 64 fishing parcels (8 and 14 users respectively).

Poaching represents a serious threat for the salmon populations in the Russian Far East. In most cases it is poaching for roe. Roe is extracted fromfish caught with gillnets, beach seines or weirs (in case of small river). Both locals and outside people poach, although locals predominate.During the early 1990s, the population of this area conducted intensive illegal fishing operations due to absence of alternative occupations, weak state enforcement and easy access to resource.Generally, poaching in recent years has considerably decreased in comparison with 1990s due to more active protection from state agencies and their cooperation with fisheries companies.Governmental resources are very limited. One fishery inspector has under his responsibility 241 spawning rivers or, in total,806 km of river length. As such, antipoaching operations cannot succeed without participation and support from fishing companies.

Since 2002 KamchatNIRO has carried out a special research on scale of poaching in Kamchatka (Zaporozhets et al., 2007;Regionalnaia… 2008). This research continues till now, but the last published data reflectthe situation only through 2006. In the absence of more recent publications, we have to consider these data here although it is clear that currently situation considerably differs due to recent changes in management.

The following approaches were used for analysis of poaching production:

- Analysis of changes of sex ratio in the river mouth and spawning ground (assuming that poaching is mostly targeted on females).
- Comparison of official data and total removal obtained by modeling of catch per unit effort data.
- Comparison of current fisheries statistics and past statistical data assuming acceptable level of misreporting.
- Confidential surveys of people who have direct or indirect relation to poaching (legal and illegal businessmen, fisheries inspection, local population).
- Analysis of economical indices of fishery (official catch data, amount of products produced after adjusting to raw weight, total amount of fish products sold locally and imported adjusted to raw weight.

Taking into account subject of poaching and patterns of use of its production, poaching in Kamchatka, as well as in entire Russian Far East can be subdivided into the following categories:

- Industrial poaching: exceeding of quota by fisheries companies.
- Criminal poaching: organized illegal fishing in industrial scale and focused mostly on roe as the most expensive product.
- Everyday poaching of first type: unorganized illegal fishing of local population focused on selling of fish and roe (on the market, and/or to fishery processing factories and/or illegal packers).
- Everyday poaching of second type: unorganized illegal fishing of local population focused on personal consumption.

Industrial and everyday poaching use both fish and roe, whereas criminal poaching uses only roe. Geographically, industrial poaching takes place mostly in sea, mouths of spawning rivers and in large rivers, while criminal and everyday poaching are located in spawning rivers and in spawning grounds.

Estimates of poaching catches has high uncertainty because it includes number of assumptions, but overall, all the experts are in consent regarding two conclusions: (i) Scale of poaching is considerably different depending on development of transport infrastructure; (ii) In a number of large river systems, which are major contributors of commercial catch, scale of illegal catch may be not only comparable, but even (for low abundant species) exceed official catch many fold.

Historically, it is possible to separate two periods with different scale of poaching, first is before 1988, when percentage of poaching approached 0,5-1% of official catch and grew slowly, and second (1989-2001), when it grew very fast and approached very high magnitude. Overall, percentage of poaching catch for the last five years ranged from 53 to 70% of legal catch and is different across species. Averaged for period 2002-2006 annual catches averaged for all Kamchatka comprise for pink 16139 mt (28% of legal catch), chum – 20298 mt (201%), sockeye –

12376 mt (61%), coho – 4065 mt (376%), Chinook – 1110 mt (230%). Magnitude of poaching for entire Kamchatka peninsula in period from 2002 to 2006 was as following (Fig. 4).

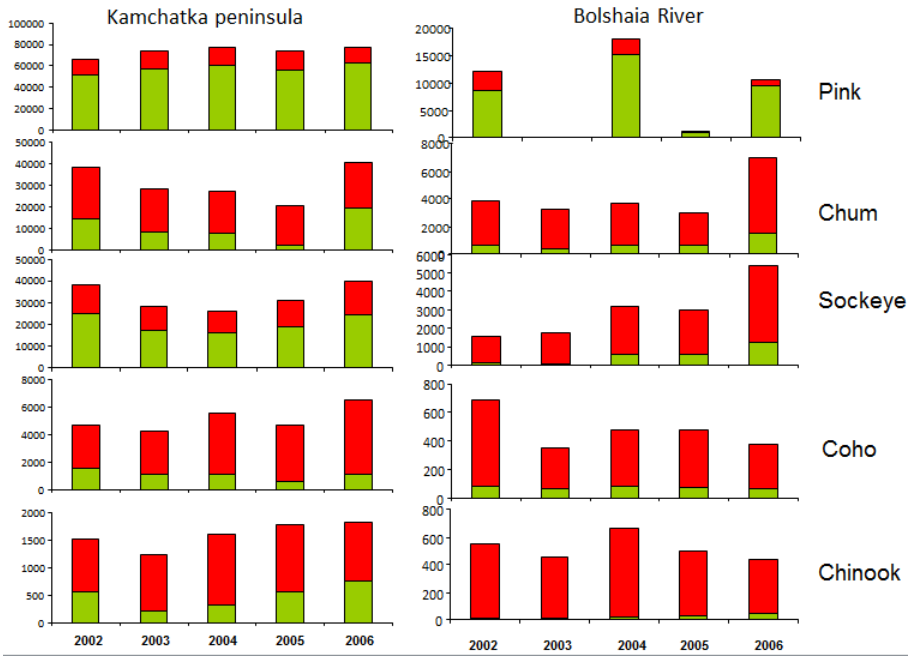

Figure 4. Legal (green) and illegal (red) landings, mt, of different species of Pacific salmon in Kamchatka peninsula and Bolshaia river 2002-2006, mt (according to Regionalnaia…. 2008)

Bolshaia River is the most accessible river of the western coast because of developed road system. This results in all the salmon species are under strong poaching pressure. During period 2002-2006 illegal catch comprised 1510 mt (22% of legal catch) of pink, 3393 mt of chum (438%) of chum, 2484 mt of sockeye (484%), 402 mt of coho (555%) and 498 mt (2109%) of chinook (Fig. 4). Overall, legal and illegal catch are similar in magnitude. Some examples of illegal fishing in this area are the following. According to survey data, in Bolshaia river basin in 2006, in the part of river between river mouth and Ust-Bolsheretsk, from mid-May to mid-June there were 50-60 poaching teams operating there, which caught about 500 mt or 230000 individuals of spring sockeye and 150 mt or 25000 individuals of chinook. In 2004-2005 average catch of poachers in Bolshaia river was in average 81% of official catch. Similar to other areas, poaching press on low-abundance species (sockeye, coho, Chinook) is much higher than on high-abundance (pink and chum). It is important that in years with lower salmon runs poaching is higher (58% in high-salmon years and 243% in low-years). Some data allow comparison of illegal catch by official and nonofficial fisherman. In 2006 official fisherman sometimes exceeded quota 50-fold. It was very often when they misreported one species as another. For instance, probably high catch of pink, 1500 mt just reflects misreporting because abundance of this species in Bolshaia river is very low. Indeed, it is known that fisherman often recorded chum instead of pink. Illegal catch of chum exceeded official catch in 12 times, sockeye – in 9 times higher, mostly due to unregistered catch of official users, for coho – 57-fold higher. Such extremely high values are typical for large and well-equipped teams, which have low limits on one of species. According to survey data, value of coefficient of illegal catch is inversely proportional to quota of the team. Criminal poaching was similar with illegal catch by official users. Effect of road on poaching is shown by the fact that after construction in 1996 a road along the Tolmacheva river, its contribution in reproduction of Bolshaia River basin decreased from 3,81 (1987-1996) to 0,55% (1997-2005), i.e. more that 6-fold.

Kikhchik and Opala Rivers are more difficult to access, than Bolshaia river. Main commercial species are pink, sockeye and chum, and, in some extent, coho. Chinook is not abundant here. Transport of poaching production is not easy because of necessity to cross several rivers and police control posts along the main road. Therefore in these rivers poaching pressure is lower than in Bolshaia River.

Since 2006 situation with poaching considerably changes but above information still have a value because high poaching of mid 2000s have serious and direct consequences for salmon populations, especially for species with long life cycle, and, moreover this is the most recent published data.

Recent reforms in the fishery management definitely resulted in decreasing of illegal fishing.Since 2008, fishing parcels were allocated to specific users for 20 years, and quota for individual companies were canceled, quota were only used for much larger management units. This stabilized the situation, resulted in more long-term activities of fishing companies towards reducing of illegal catch including illegal catch by fishing companies. Now companies have no any incentives to hide their catch and have much stronger motivation to protect their resources. At the same time, poaching has social reasons and social situation does not change very quickly to completely remove social causes of poaching.

In Bolshaia River basin companies coordinate their activities on control over poaching with enforcement agency, SVTU. Companies clearly understand that it is a must to protect their resource and SVTU understands it doesnot have sufficient resources to do this effectively without support from the companies. As a result, SVTU coordinates activities of companies and subdivided entire Bolshaia River basin into several areas, each of which is under individual responsibility of some company. For instance, in 2010 Narody Severa spent 2500000 rub for operation of anti-poaching brigade, 360000 of which were spent for salary.

Hatcheries

There are two hatcheries in the area under preassessment and both are situated in the Bolshaia River basin. History of hatcheries in Bolshaia River started as early as 1914 and they were among first salmon hatcheries in the Russian Far East. The first operated very short period, incubated eggs in 1914, 1915 and 1918, and released only in two years 0,62 and 1,5 mln of larvae (species is not mentioned) (Rossokhina 1988, cited by Zaporozhets and Zaporozhets 2011) and then was terminated. Another hatchery in Bolshaia river (its production was about 1 mln of larvae) was built up in 1956-57, but operated only till 1964 (Rossokhina 1988, cited by Zaporozhets and Zaporozhets 2011). This hatchery, called Malkinsky hatchery, has been reconstructed in period from 1992 to 1996. Malkinsky hatchery is situated in Kliuchevka river, which is a right tributary of Bystraia river (left tributary of Bolshaia river), near the geothermal water source. In 1980s four species of salmon were reared in the hatchery: Chinook, coho, sockeye and chum, and first two species predominated (more details in Zaporozhets and Zaporozhets 2011). No returns were recorded for chum despite on large size of released juveniles probably because of shortage of warm water. Since 1996 all the production of the Malkinskyand Ozerki hatchery has been marked with thermo marks.

General characteristics of Western Kamchatka hatcheries are provided in Table. 7.

Table 7. Characteristics of Pacific salmon hatcheries in Western Kamchatka (based on Sovremennye….. 2006, Markovtsev 2008).

Name of hatchery (year of foundation)	River of location	Production				
		Species	Number, mln	Return rate, %	Use of non-native eggs	Contribution in mixed population
Malkinsky (1982)	Bystraia River river (tributary of Bolshaia river)	Sockeye	0,41-0,72 (2000-2002), 0,7 (2008)	4,43		2,7-6,7% in Bolshaia River
		Chinook	0,30-1.18 (2000-2006), 0,7 (2008)	0,53		1% in mouth of Bolshaia river, 30-50% in Bystraia river (triburaty of

Name of hatchery (year of foundation)	River of location	Production				
		Species	Number, mln	Return rate, %	Use of non-native eggs	Contribution in mixed population
						Bolshaia)
Ozerki (1992)	Plotnikova river (tributary of Bolshaia river)	Chum	3,0-5,3 (2000-2002)	0,24-0,4	Part of eggs transported from Kliuchevka River (other tributary of Bolshaia River)	3,7% (2005) in Bolshaia, 1% in sea
		Sockeye	3,5-7,7 (2000-2002)	0,06-0,1	Part of eggs transported from Bystraia River (other tributary of Bolshaia River)	
		Coho	0,05-0,66	<1%		

More detailed description of these hatcheries is provided in the following tables (Tab. 8-11).

Table 8.Activities of Malkinsky hatchery on Chinook propagation in 2003-2010 (according to Sevvostrybvod, from Zaporozhets and Zaporozhets 2011).

Indicators	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Number of incubated eggs, thousand ind	1281	908	862	853	859	853	999
Mortality during incubation, %	3.5	3.8	4.7	3.3	6.3	5.8	7.0
Average temperature of incubation, grad C	7.7	7.4	6.5	6.8	6.6	7.3	6.5
Density during growth period, thousand ind / sq. m	1.5	1.4	1.3	1.4	1.3	1.3	1.0
Average temp during growth period grad C	7.7	7.5	8.8	7.7	7.5	7.8	6.9
Mortality during growth period %	3.6	3.0	4.0	2.2	1.9	1.0	3.8
Average weight of juveniles at release, g	8.1	7.9	8.6	9.0	10.5	10.1	7.3
Release, thousand ind	1177	839	779	799	780	784	*792

* In addition, in 2010, 85 thousand of juvenile of king salmon (weight 2,5 g) reared in Ozerki hatchery hatched from eggs transported from Malkino hatchery, were released to Kliuchevka river

Table 9.Activities of Malkinsky hatchery on sockeye propagation in 2003-2010 (according to Sevvostrybvod, from Zaporozhets and Zaporozhets 2011).

Indicators	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Number of incubated eggs, thousand ind	631	797	625	590	605	606	660
Mortality during incubation, %	5.9	9.2	9.0	8.5	9.6	3.8	6.6
Average temperature of incubation, grad C	8.3	6.1	6.4	6.9	7.1	7.4	7.9
Density during growth period, thousand ind / sq.m	1.5	1.8	1.5	1.4	1.4	1.5	1.6
Average temp during growth period grad C	8.3	8.4	8.6	7.1	7.5	6.7	7.1
Mortality during growth period %	2.6	1.0	0.8	1.0	1.6	0.9	1.2
Average weight of juveniles at release, g	4.1	4.8	5.6	5.4	5.8	5.7	5.2
Release, thousand ind	576	710	561	533	534	*574	605

* In addition, in 2009, 4,8 mln of juvenile of sockeye salmon (weight 0,6 g) reared in "Ketkino" hatchery hatched from eggs transported from Malkino hatchery were released in Kliuchevka river

Ozerki hatchery was built in 1992 due to compensation for use of Russian fish resources by Japan,without specific biological justification. Results of activity of Ozerki hatchery are presented in the tables 7, 10 and 11. More details of rearing technology can be found in Zaporozhets and Zaporozhets (2011).

Table 10. Activities of Ozerki hatchery on chum salmon propagation in 1997-2010 (according to Sevvostrybvod)

Indicators	1997-1998	1998-1999	1999-2000	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Number of incubated eggs, thousand ind	2656	1563	3226	5862	5020	2602	1891	788	1265	1689	1739	1216
Mortality during incubation, %	4.5	5.3	5.0	8.9	7.1	7.8	4.4	4.8	8.7	6.5	6.1	6.1
Average temperature of incubation, grad C	4.8	5.1	5.0	4.5	4.9	4.1	4.8	4.6	4.3	4.3	4.7	4.9
Density during growth period, thousand ind / sq.m	7.8	9.0	8.4	9.4	15.0	7.4	6.4	9.3	6-4	7-6	6.6	7.0
Average temp during growth period grad C	4.2	4.1	4.0	3.8	4.2	3.8	3.8	3.8	3.5	3.5	3.9	3.9
Mortality during growth period %	1.2	2.4	0.9	1.3	2.3	0.9	1.1	0.6	2.0	1.3	1.5	1.5
Average weight of juveniles at release, g	0.8	0.9	1.1	0.9	1.0	0.9	0.8	0.8	0.9	0.9	0.9	1.1
Release, thousand ind	2502	1441	3030	5257	4551	2372	1783	744	1109	1548	1573	1117

Comment: in 2001 100% mortality of all larvae has occur because of contamination by chlorine-containing substances

Table 11. Activities of Ozerki hatchery on sockeye salmon propagation in 1997-2010 (according to Sevvostrybvod)

Indicators	1997-1998	1998-1999	1999-2000	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Number of incubated eggs, thousand ind	6312	16430	3831	8758	9760	11860	9771	5435	10198	9752	9895	11111
Mortality during incubation, %	9.4	5.2	7.0	10.0	6.0	8.3	8.6	10.1	7.7	10.2	4.2	8.0
Average temperature of incubation, grad C	4.7	4.9	4.9	4.3	4.7	4.0	4.6	4.5	4.1	4.2	4.5	4.7
Density during growth period, thousand ind / sq.m	14.1	13.2	12.6	12.0	11.5	11.1	8.8	9-7	10-8	11-8.5	10.6	16
Average temp during growth period grad C	4.2	4.0	4.0	3.9	3.6	3.7	3.9	3.7	3.6	3.9	4.2	4.1
Mortality during growth period %	1.2	1.4	0.9	2.8	4.9	34.9	0.5	0.7	0.9	1.2	1.3	1.1
Average weight of juveniles at release, g	0.5	0.4	0.5	0.8	0.8	0.7	0.5	0.5	1.0	0.9	1.1	1.0
Release, thousand ind	5643	15335	3528	7656	8713	7129	8830	4825	9283	8605	9052	10052

Comment: in 2001 100% mortality of all larvae has occur because of contamination by chlorine-containing substances

Number of returns to Kamchatka hatcheries, including Malkinsky and Ozerki hatcheries, is shown in Tab. 12.

Table 12.Number of returns to Kamchatka hatcheries in 1997-2010 according to thermomarking data, thousand ind (Zaporozhets and Zaporozhets 2011).

Hat-chery	Paratu nsky	Ketkino	Viliuisky		Ozerki		Malkinsky	
вид	Chum	Chum	Chum	Coho	Chum	Sockeye	Chinook	Sockeye
1997	18.38	1.24	0.76		0.34	0.85	0.09	0.32
1998	10.50	0.31	0.54		0.66	5.76	0.09	1.28
1999	37.11	2.91	0.52		0.94	0.38	0.03	2.27
2000	9.76	1.30	0.28		1.60	0.33	0.14	2.38
2001	12.44	0.15	0.31		1.81	0.24	0.10	4.41
2002	36.77	1.21	0.78		2.90	3.50	0.62	7.11
2003	52.11	0.22	0.40		1.86	2.36	0.41	12.18
2004	6.71	0.33	0.09		1.99	1.51	0.82	17.75
2005	3.53	0.12	0.21	0.40	0.88	0.02	0.10	3.31
2006	6.99	1.33	0.86	0.50	1.67	3.17	0.13	2.07
2007	9.10	5.28	0.71	1.52	1.65	2.75	0.08	2.29
2008	4.97	0.60		2.46	1.53	2.50	0.95	4.82
2009	4.93	2.22		2.50	0.95	3.00	0.79	2.34
2010	23.42	2.26		0.46	2.21	4.53	0.07	4.29

Chum salmon

Return rate (poaching in not taken into account) for chum from Ozerki hatchery is 0,4% (taking into account commercial fishing), and ratio of hatchery fish in population of chum in Bolshaia river in total is 3%. Otolith marking – based estimates give 3,7% (Kudzina 2006) for period 1993-2006. Rate of reproduction (number of spawners of progeny generation divided to number of spawners of parental generation, taking into account fishing mortality, for wild chum of Bolahsaia river was 7,7 (Zavarina 2010), and for hatchery fish – 3,5. Analysis shows that effectiveness of Ozerki hatchery is far from expectations. Its planned productivity was 130 mt, whereas real is 18 mt (Zaporozhets and Zaporozhets 2011). Similar or even lower estimates have been found for other three Kamchatka hatcheries in the Eastern coast, such estimates are absent for Malkinsky hatchery.

Sockeye salmon

Ratio of Malkinskysockeye production in Bolshaia River's sockeye population is 4% (Zaporozhets and Zaporozhets 2011). Similar ratio is for Ozerki hatchery (4%), although this hatchery releases 11 times more juveniles than Malkinsky.Effectiveness of Malkinsky hatchery is close to planned (according to governmentalprogram), but it is far lower in the Ozerki hatchery. Rate of reproduction of sockeye in Malkinsky hatchery is rather high – 28, whereas in Ozerki only 3%. Probably, the main reasons of low effectiveness of Ozerki hatchery are frequent transportation of eggs from other tributaries in Bolshaia River basin (Zaporozhets and Zaporozhets 2011). Other reasons are higher temperature and, respectively, higher growth rate of Malkinsky sockeye and lower densities.

Chinook salmon

Return rate of Malkinsky Chinook was 0,14% in 1990-92 and 0,06% in 1990-2006 (0,08 considering fishery removal). Rate of reproduction is 1,7 which is similar to wild fish. Ratio of hatchery Chinook in Bolshaia River basin is 1,7% and 0,9 mt in absolute value. Notably that the more juveniles are released the lower return rate is observed (Zaporozhets and Zaporozhets 2011).This may be because of problems with feeding in rivers just after release. Juveniles stay in the area near hatchery for some time. Food resources there are limited, and fish experience of deficiency of food. Moreover, in June, when releases take place, concentration of food is very low because of high water. Delays with release also results in minimal return rate. Return rate of Chinook in Kamchatka is considerably lower than in Alaska.

Economic analysis of hatchery operations in Kamchatka shows their very low profitability while comparing expenses for operation of hatcheries and profit for commercial fishery. Further pictures (Fig. 5) show expenses to hatchery operations and commercial value of return for hatcheries in Bolshaia River basin.

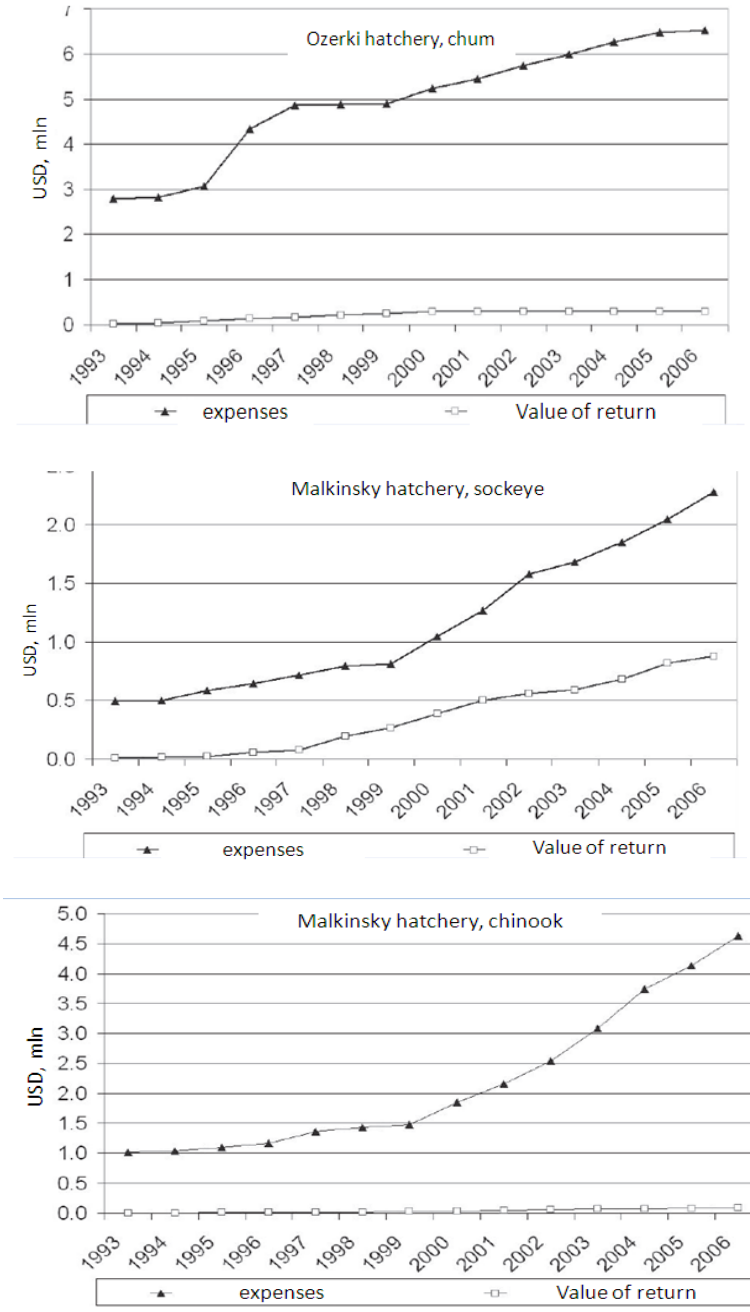

Figure 5.Value of return and expenses of Kamchatka hatcheries in 1990-2000s.

These pictures show that in most cases a value of return is only few percent of expenses, and only in the case of sockeye in Malkinsky does the hatchery value of return approach about 1/3 of expenses. In all cases, the hatchery operation of Ozerki and Malkinsky hatchery is far from profitability. This is also the case for other Kamchatka hatcheries (Zaporozhets and Zaporozets 2011). The reason of that is that hatchery effectiveness in Russia is mostly evaluated by number of released juveniles but not number of returns as should be (Zaporozhets and Zaporozets 2011).

There are some scientific data on interaction of wild and hatchery fish in Kamchatkarivers. Decrease of feeding intensity of juveniles (both wild and hatchery) right after mass release of hatchery production in streams has been found. The proposed reason of this is food limitation of river ecosystem (Leman and Chebanova 2002; Vvedenskaya

et al 2003, 2004). This may explain positive correlation between number of released juveniles and their mortality mentioned above. To avoid food deficiency juveniles may begin anadromous migration before being physiologically prepared for it. Hatchery juveniles possess number of behavioral patterns which cause their higher mortality, relative tothat of the wild fish (Zaporozhets and Zaporozhets 2011). Structure of their scale reflects stress which their experience right after release in the natural conditions (Fukuwaka, Kaeriayma 1994, Antonov et al., 2007, Zaporozhets and Zaporozhets 2011).

AccordingtoZaporozhetsandZaporozhets(2006, 2011)hatcherypopulationsofchum, sockeyeandchinookarecharacterizedwithlowerdiversityoftheiragestructure. For instance, hatchery sockeye have 8 age classes (combination of river and sea age) whereas wild populations have 16 age classes (Zaporozhets and Zaporozhets 2011). Hatchery Chinook, in addition, due to acceleration their development with warmer water, are smaller and younger than the wild fish. Certainly, interbreeding of hatchery and wild fish in natural spawning grounds, which may sometimes occur, may result in decrease of fitness of mixed population.

Researchers have different opinions on interaction of wild and hatchery fish in the ocean. Some of them think that increase of hatchery production results in lack of resources for the wild fish (Ruggerone et al. 2003, 2005), but others say that there is no such limitation (Shuntovand Temnykh 2004, Informatsia… 2010).

Contribution in local social sphere

The companiespay considerable attention to development of social sphere of the town Oktiabrsky. In addition to employing the local inhabitants in fish processing factories (see above), the companies contribute to maintaining social sphere of the Oktiabrsky. These activities are confirmed by several Certificates of Gratitude from municipal administration, State Pension Insurance Fund, Russian Red Cross, Social Refuge for kids and teenagers and other organizations.

Fish processing

The companies process (freeze) all caught fish at their own fish processing factories. Bolsheretsk company owns the factory with a capacity of 300 mt of production per day, and Narody Severa owns a factory with capacity 150 mt/day. Also, companies have large freezing facilities. There are plans to increase capacity of fish processing facilities and to process fish up to end product. In prospective, the companies plan to perform all the processing by themselves and to have direct links with distributing companies.

Ecosystem effects

Salmon fisheries are mostly based on spawning migrations with well-known and stable patterns. Thus the fisheries are very well localized in time and space: it occurs in July-September in downstream of rivers and coastal areas. Gears areset nets and beach seines. Bycatchin such fisheries is minimal. This has been confirmed by special research done on Sakhalin salmon fisheries.Among marine animals in the area are mentioned seals, killer whales, white whales, sea eagles, and cormorants. There were no mentionsof sea mammals or sea birds captured or killed by the gears. Beach seines do not normally affect marine mammals, and seals and killer whales avoid the set nets. Regarding bycatch (retained) fish species, fishing area of the companies is included in the distribution range (southern border of it) of steelhead salmon (*Oncorhynchus mykiss*) which may be caught in the gear. Bycatch of steelhead salmon and rainbow trout, which is a landlocked or semi-anadromous form of this species is rather small and is not considered as causing threat for this fish.

Removal of fish that,without fishing, would have died in the river after deposition of eggs, has consequences for river ecosystems. Possibly, the most serious of them is the decrease of food for predator animals like brown bearand predator birds, which to a considerable extent consists of spawning salmon. It is known that removal of salmon may decrease density of these predators, but nothing in respect to this factor in the area under pre-assessment. Moreover, removal of salmon results in decrease of nutrition in aquatic ecosystems, caused by decomposition of carcasses. It is known that these nutrients form a base for reach development of zooplankton in coastal area, which serves as food for young salmon just after downstream migration.

5.1 Historical background

The settlement near Bolshaia River is one of the first in Kamchatka; it is known since early 18 century, but towns Ust-Bolsherets and Oktiabrsky were founded in the 20th century. Since the very beginning of Kamchatka colonization, this area played a significant role in the local economy because of rich and diverse Pacific salmon resources. Until Perestroika the fishing has been carried out by very few governmental enterprises. Since beginning of the 1990 access to resources has been given to small private companies.

"Bolsheretsk" LTD was founded in 2005, the main activity is coastal fishery and fish processing. The fish processing plant is situated in Ust-Bolsheretsk district, in 4,5 kilometers from Oktyabrsky village at Bolshaya river mouth, on a sand spit between Sea of Okhotsk and Bolshaya river. The capacity of fish processing plant is 300 mt of production per day, also the company owns a cold storage for 2100 mt of fish production and 60 mt of caviar. Altogether, company produces up to 25 types of production. 14 tons of salmon caviar can be produced per day.

“Rybolovetskaya artel “Narody Severa” Ltd, was founded in 2005, the main activity is coastal fishery and fish processing. The fish processing plant is situated in Ust-Bolsheretsk district, in 4,5 kilometers from Oktyabrsky village to Bolshaya river mouth, on a sandspit between Okhotsk sea and Bolshaya river. The capacity of fish processing plant is 150 tons of production per day. Also, company is producing 22 tons of fishmeal per day. Company owns a cold storage for 700 tons of fish production and 20 tons of caviar.

Both companies participate in the Ust-Bolsheretsk District Fisheries Association, and are known as a stable enterprise, sustainable business partners.

6 GOVERNANCE

The current Russian Federation became independent of the former Soviet Union in 1991. As a federation, it consists of numerous jurisdictions with various levels of autonomy. The legal system is based on civil law system with judicial review of legislative acts. The federal government has centralized authority in Moscow, where final decisions are made. Kauffman et al. (2007) reviewed governance indicators of numerous countries for the World Bank: governance indicators follow a normal distribution with mean of zero, and most scores lie between -2.5 and 2.5, with higher scores corresponding to better outcomes. The analysis concluded that Russia scores at lower than mean levels, with scores ranging from -0.3 to -0.9.

The fisheries management consists of complex levels of authority for management and research, with final decisions centralized in Moscow. The Federal Agency for Fisheries is governed directly by the government of Russia, is the ultimate authority, reviewing recommendation passed up from the local level and passing directives back, as described in the next section.

6.1 Fishery management

6.1.1 National management

The local research fisheries institution, KamchatNIRO, plays a key role in producingfishery forecasts. Theforecasts are based on a regression model of abundance of parental and progeny generations using equations of Ricker, Sheppard and others. The model is based on data obtained by observers on commercial

fisheries, aerial observations, data on downstream migration of juveniles, and data on trawling of juveniles before feeding migration to high seas (Fig. 6).

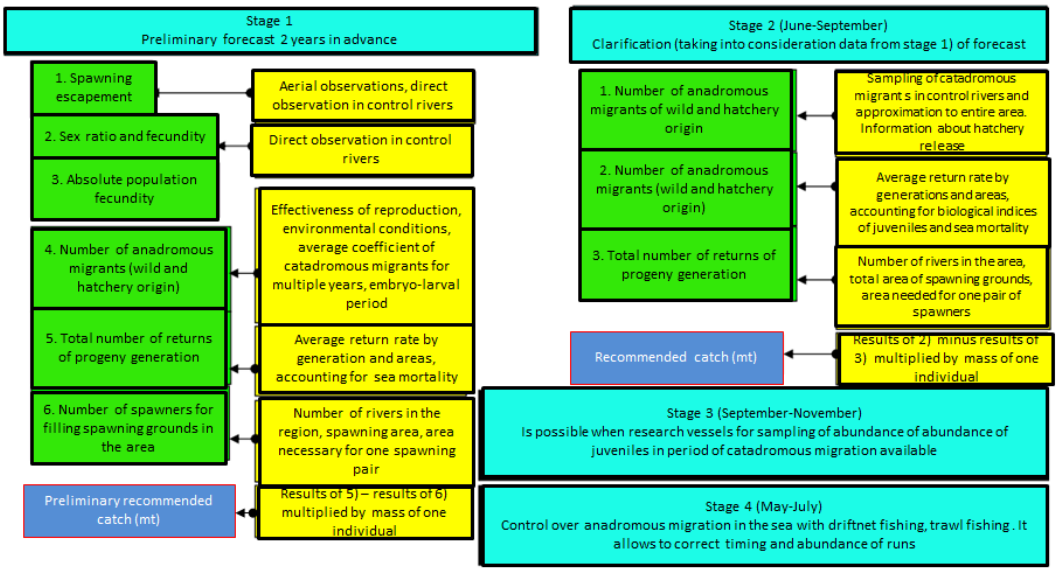

Figure 6.Main stages of issuing of the forecast (recommended catch) of Pacific salmon (Rassadnikov 2006).

Given that dynamics of populations in the same area is usually synchronous, several reference populations are studiedin details, at so-called fish monitoring stations,and then the forecast is extrapolated to the entire area. One of stations is situated in Bolshaia River.The proportion of each population in the area is considered to be constant and is determined based on long-term fisheries and research data.The base for forecastsare data obtained by observers on commercial fisheries, aerial observations, data on downstream migration of juveniles, and data on trawling of juveniles before feeding migration to high seas mouth during spawning migrations. In general, such data exist for salmon since 1957. Accuracy of fisheries forecast varies among species (Fig. 7). In average, for entire Western Kamchatka area for period 1993 – 2009 it is equal to 73% for pink, 16% for chum, 14% for sockeye, 34% for coho and 101% for Chinook salmon. Note that for all species except pink accuracy of forecasts increases during last decade.

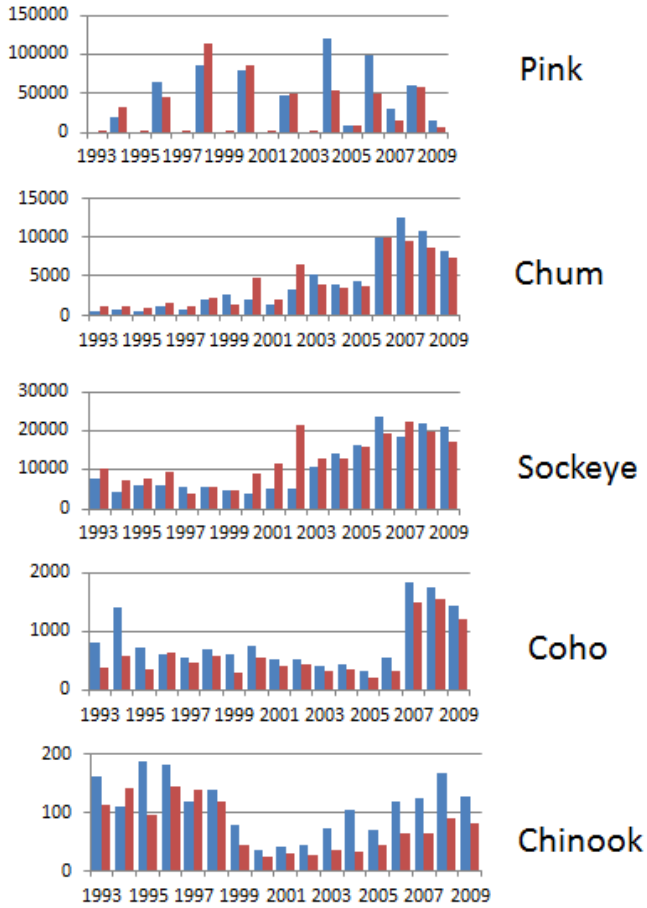

Figure 7.Forecasted (blue) and actual (red) catch of Pacific salmon in the Western coast of Kamchatka (data from Rassadnikov 2006, 2009; Rassadnikov and Starovoitov, 2007, Starovoitov and Rassadnikov, 2008).

The recommended catchis calculated as a difference between total number of returningfish estimated for a season and the target amount of spawners, given that total area of spawning grounds in the district and optimal density of spawners, which depends on river and species.The calculation of the forecasted catch factors in estimates of illegal catch, such that the total removals will not exceed the acceptablecatch.At higher than optimalspawning density on the spawning grounds, overspawningresults in decrease of recruits per spawnerdue to resorbtion of gonads and destruction of redds by later spawners. An obvious overspawning event occurred in the northwestern Kamchatka in 1983, when huge amount of spawners entered rivers because fishing facilities of the companies were not sufficient to prevent them. As a result, mortality of progeny was very high, and the next generation weak. Due to this, since this period odd generation of pink depressed and even generation dominants until present.

Since 2009 regulations of salmon fisheries were changed not only due to introduction of 20-year lease for fishing parcels, but also due to rejecting the Total Available Catch (TAC) and introduction of “Olympic system” of management. Due to this fisheries management became less complicated and more decisions can be accepted on local level.

The initial forecast provided by the local research team must be approved on different levels (Fig. 8). Firstly, the Research Council of the regional fisheries Institute must approve. Then the forecast is approved by headquarter research institute (VNIRO in Moscow), then by Far Eastern Fishery Research Council is directed to the Federal Agency for Fisheries. Due to rejecting of TAC, approval by the State Ecological Expertise on federal level has been also excluded from the process. This makes the process more quick and transparent,

but, at the same time, potentially less precautionary.During the period of approval discussion with stakeholders takes place with active participation of representatives of fisheries companies, local administrations and federal ministries.

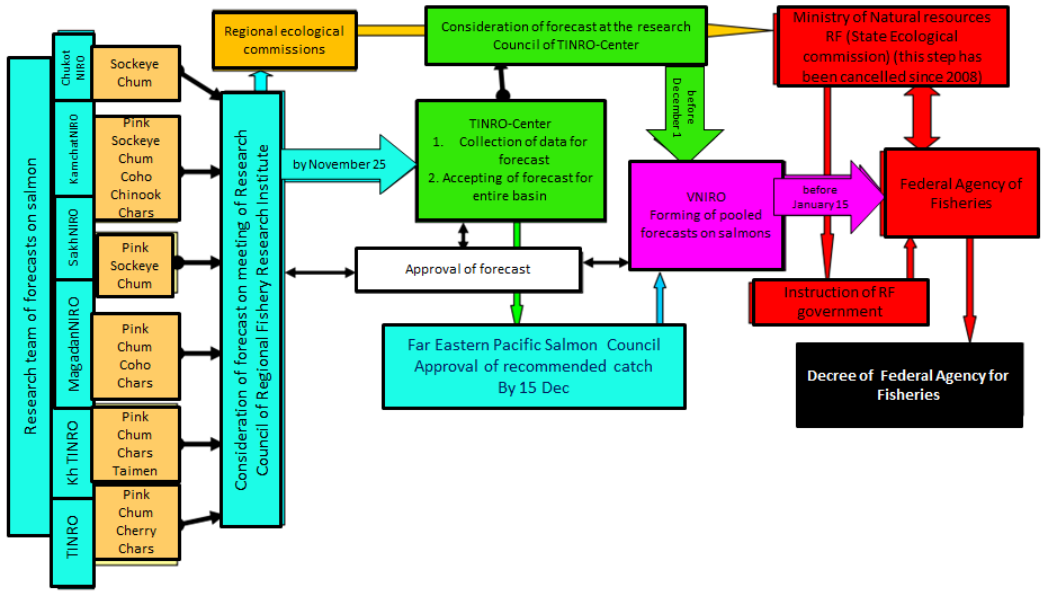

Figure 8. A procedure of issuing of the Pacific salmon recommended catch (Rassadnikov 2006).

The forecast can be changed at each of the approval stages, starting from the earliest steps (within the institute). The magnitude of such changes can be very different, but they are normally not large. Within each river, the quota is divided amongfisheries companies (about 80-90%), the fishery institute for research purposes (usually 5-10%), sport fishing and indigenous local inhabitants. Larger part of recommended catch for entire fishing area is distributed by Anadromous fish commission between management units which include number of fishing parcels (see above). Smaller part of recommended catch is reserved in order to provide flexibility of in-season management. Fishing is stopped when the recommended catch for particular management unit is achieved regardless catch of individual companies.Recent changes in management resulted in decrease of unreported catch. For companies it became not profitably to hide their actual catch, due to this reported catches last couple of years become closer to actual ones. One side effect of this is that recent dynamics of catches may not correctly reflect population abundance of salmon.

After the recommended catch for management unit is allocated, each company needs to apply for a formal permit which is issued by the state fisheries inspection, SVTU. The permit indicates period of fishing, fishing parcel with their coordinates (there is a cadastre where all fishing parcel are listed), type and number of gear, name of chief person of a team, and number of boats used.

During the fishing season, each company is required to fill a special journal, where all the fishing operations are registered: type of installation; construction of gear; and all fishing operations. Also, companies must indicate time of fishing and approximate amount of fish caught. The fishery is under in-season control, whichis under responsibility ofSVTU in rivers and under responsibility of State Marine Inspection in marine fishing parcels, where set nets are used.

Before and during fishing season KamchatNIRO conducts research that may lead to correction of recommended catch (Fig. 7). For such research they use research fishing, data of observers on commercial gear, and direct observations (including aerial) of utilization of spawning grounds. The procedure of termination of fishing is not complex and can be done by fisheries inspection (SVTU) based on recommendations of KamchatNIRO. SVTU terminate all fishing activity if necessary, and may implement special closed days to obtain spawning escapement

goals. Based on experience of last years, there are two free-of-fishing days per week in Bolshaia River (usually coincide with weekends).

Increasing of quota now, when approval by State Ecological Expertise is not necessary anymore, is also not difficult and can be done on local level based on recommendations of KamchatNIRO. Such a management system existed during 1990s, before introduction of the State Ecological Expertise and was considered quite convenient.

The Russian system does not have an explicit environmental policy for the salmon fisheries, but a number of Federal requirements apply to the protection of the environment. A number of regulations address environmental impact of business, but they are rather general. For instance, in the Law "On Protection of the Environment" (2001) (extracted from article 5) states that "Business activities of all subjects must follow such principles as:

- the right of a person on favorable environment;
- scientifically justified combination of interests of person, society and state with a goal of sustainable development and favorable environment;
- conservation, reproduction and rational use of natural resources as necessary preconditions of providing of favorable environment and ecological safety;
- presumption of ecological danger of planned business activities;
- compulsion of environmental assessment of planned business projects;
- priority of preservation of natural ecosystems, natural landscapes and natural complexes;
- protection of biodiversity;
- Prohibition of any activity with unpredictable environmental consequences, and realization of projects which may result in degradation of natural ecosystems and change or destruction of genetic diversity of plants, animals and other organisms, exhausting of natural resources and other negative changes of environment.

Article 26 reads in part: The amount of admissible extraction of components of natural environment must be established in accordance with limitation of the amount of extraction with the aim to conservation of natural and nature-anthropogenic objects, providing of sustainable functioning of natural ecosystems and preventing their degradation.

The Law "On Animal World" (extracted from article 22): Any activity resulting in changes of animal environment and deterioration of condition of their reproduction, feeding, rest and migration routes must be performed in accordance with rules of nature conservation.

Extract from Article 35: Use of objects of animal world should be performed together with system ofmeasures of conservation and reproduction of the animal world and protection of their environment.

The government fishing permits contain a requirement that the permit holder is responsible for the ecological sustainability of the area where fishing occurs. Discovery of destructive practices could lead to loss of the fishing permit, which provides an incentive for sustainable practices.

Some references concerning conservation of environment are contained also in federal laws directly related to fisheries: "On Fisheries and conservation of aquatic biological resources" and"The rules of fishing for the Far Eastern Fishery basin".

6.1.2 International management

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

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

The Convention authorizes research fishing for anadromous fish on the high seas if consistent with the NPAFC science program. The parties conduct joint research programs including exchange of information. The parties have an obligation to enforce the provisions of the Convention.

6.2 Other fisheries in vicinity

There are several other companies participating in fisheries in the Kikhchik, Bolshaia and Opala rivers (see tab. 2), and total catch of Narody Severa and Bolsherets companies not easy to calculate because lack of necessary data (statistical data on commercial catches in Bolshaia, Kikhchik and Opala rivers and catches of companies separately in these rivers and sea fishing parcels). Very approximately, catch of companies under assessment may represent from 5 to 30% of total catch in Bolshaia rivers (depending on species, higher for pink and sockeye and lower for chum and coho). arying depending on year and species.Migrating salmon from the Kikhchik-Bolshaia Opala populations pass through fisheries in other regions (both in the south) and experience interception. Also, fish from other river basins experience interception in Narody Severa and Bolsheretsk fisheries, in particular, sockeye from Ozernaya river/Kurilskoe lake is intercepted by sea set nets of companies fishing to the north from Ozernaya river basin. This interception is a subject of special research project which is carried out under agreement between KamchatNIRO and Bolsheretsk (copy of the contract for 2010 is provided by the company). But no quantitative data on interception were provided to the certification team.

7 STAKEHOLDERS

The identification of potential stakeholders in the fishery is specifically undertaken in the pre-assessment due to the requirements for MSC certification. As part of the MSC certification methodology, a thorough stakeholder consultation process must be conducted by a certification team. This means that stakeholders must be identified, contacted, and their opinions on the certification of the fishery solicited and reviewed by the certification team. This measure is considered part of the due diligence of the certification team to help ensure that no issue (large or small) is missed. It is also a measure included to try to build good will at the outset of the certification process.

Stakeholder groups that are largely directly involved in the fishery are noted below.

14 fishing companies own fishing parcels included in the same management unites together with Narody Severa and Bolsheretsk and use seine nets in the sea and beach seines in the rivers (they are listed on page 6). Also, 6 companies own fishing parcels for sport fishing (listed on page 7). In Bolshaia river, there are also four fishing parcels for providing traditional way of life (indigenous fishing).

Management and research agencies, include:

- Federal Agency for Fisheries
- SVTU, regional divisions of Federal Agency for Fisheries.
- Regional (Kamchatka) Fisheries Research Institute, KamchatNIRO.
- Regional (Russian Far East) Fisheries Research Institute,TINRO-Center.
- All-Russia Fisheries Research Institute,VNIRO.
- SevvostRybvod.

Conservation and academic oriented groups that have a direct interest in the Narody Severa and Bolsheretsk fishery include World Wildlife Fund

Public organization is a newly created Ust-Bolsheretsk Watershed Salmon Council, which includes administration, enforcement agencies, public and fisheries from the district.

8 STATE OF PREPAREDNESS FOR MSCFULL ASSESSMENT

The following tables provide information about the Narody Severa and Bolsheretsk Fishery, with respect to the MSC's Principles and Criteria for Sustainable Fishing. This is an informational tool to educate the Client about issues within the fishery that might arise during a full MSC assessment. As a preliminary scoring method, each Performance Indicator Category is color coded: Green equals likely to pass (score of ≥80), yellow equals likely to pass with conditions (score of ≥60-79), and red means likely to fail (score of <60). The analysis below uses the MSC Fishery Assessment Methodology version 2 (FAM v2.1).

8.1 Principle 1

<table>
<tr><th>Principle 1 Component</th><th>Performance Indicator Category</th><th>Performance Indicator</th></tr>
<tr><td>Outcome</td><td>1.1.1. Stock status - Pink
Chum
Sockeye
Coho
Chinook
Char</td><td>The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing

60: It is likely that the stock is above the point where recruitment would be impaired

80: It is highly likely that the stock is above the point where recruitment would be impaired.
The stock is at or fluctuating around its target reference point.

100: There is a highdegree of certainty that the stock is above the point where recruitment would be impaired.
There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.</td></tr>
<tr><td colspan="3">

The most abundant commercial species in the fisheries under assessment are is pink salmon, especially in even years, chum, and sockeye salmon. According to analysis of catch statistics, these species have maintained their abundance, and even increased it.
Coho salmon landings increased over the past few years, but this increase may have resulted in a reduction of unreported catch due to changes of management system.
Chinook salmon also occur in this area, but since 2010 there is a ban of Chinook salmon fishing in Bolshaia River, thus this species cannot be considered as target species in this fishery. According to information from the company, even minimal occurrence of Chinook in the catches may result in complete ban of fishing in the area. Therefore Chinook may be considered in this pre-assessment among retained species.
Chars (three species occur in the area, Salvelinus malma, S. leucomonas and S. alpinus, in theory, are managed in the same manner as Pacific salmon, but information on them is much less available. They are not even subdivided into species. This is probably because of chars are not targeted and are commercially less valuable. Fishing for chars is not considered to have caused a decline of their populations but information is not available to confirm this.
Bolshaia is a reference river, where fishery observing station is situated. As we understand based on distribution of management units, it represents a region which included Kikhchik, Mukhina, Khomutina, Utka, Mitoga and Bolshaia rivers.
Spawning escapement is controlled by direct observations on spawning grounds, which shows that there is a sufficient number of spawners to maintain population. At the same time, no information on spawning escapement was available for the assessment team. This very much complicates the assessment; the fishery could not pass a full assessment without full access to the data by an assessment team.

</td></tr>
</table>

Principle 1 Component	Performance Indicator Category	Performance Indicator
• Catch statistics for individual rivers (Bolshaia, Kikhchik, Opala) were not available for the assessment team. Because of that we judged about recent trends based on catch records on entire Western Kamchatka area and catch records of companies available for 2005-2010 for Narody Severa and for 2009-2010 for Bolsheretsk. Judgment based on trends of entire area is supported by reported positive correlations between abundance of species in individual rivers. In general, there is an increase of catches of most species except Chinook, during the last decade. But due to decrease of hidden catches in recent years, part of this increase may be not caused by actual increase of stock abundance. Research papers report increase of stock abundance of pink, chum and sockeye due to favorable ocean conditions. Available information on char does not explain the decline. • Bolsheretsk fishery collaborates with KamchatNIRO in carrying our research on stock assessment of salmon in the area. • Probability of overfishing is low as long as the rivers continueto meet spawning escapement goals under current system of management. • Interception of other stocks by Narody Severa and Bolsherets fisheries, as well as interception of stocks under assessment,are highly probably in this assessment. This is not only related to pink salmon due to their high straying, but also to other species which in-river migration may take place along the shore thus exposing fish to sea set nets. Additional information about migration routes and potential interception is necessary.		
Outcome	1.1.2. Reference points - Pink Chum Sockeye Coho Chinook Char	Limit and target reference points are appropriate for the stock 60: • Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category 80: • Reference points are appropriate for the stock and can be estimated. • The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity. • The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome. • For low trophic level species, the target reference point takes into account the ecological role of the stock. 100: • Reference points are appropriate for the stock and can be estimated. • The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of relevant precautionary issues. • The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty

Principle 1 Component	Performance Indicator Category	Performance Indicator
The reference points are based on spawning escapementdetermined on base of analysis of dependence of progeny*vs*parents (using for instance, Ricker model). Target reference points aredetermined for each salmon species for the entire area (northwestern Kamchatka) based on analysis of several reference rivers, aerial surveys of pre-spawning concentrations, research catch before starting commercial fishing, analysis of downstream migration of juveniles, trawling of pre-migration concentrations of juveniles. Such analyses allow determination of spawning escapement which is the basis for catch size allocated for fishing. Also, there are direct observations (with or without helicopters) on spawning grounds using reference locations. It does not appear that char have explicit reference points, and the species of char are not managed separately. Limit reference point is not used in management of salmon fishery in Russia. Management uses target reference point as both target and limit. Area of spawning grounds and their location is known for all species. Spawning escapement is determined for all species of Pacific salmon in the area under assessment since 1957.Quality of spawning grounds is taken into account while determining optimal spawning escapement, but no exact figures for reference points were provided. This scoring is based on information provided during meetings at the site visit; without documentation to confirm the analysis and rationale for the reference points, this would fail.		

Outcome	1.1.3. Recovery & Rebuilding (C2)	Where the stock is depleted, there is evidence of stock rebuilding 60: • Where stocks are depleted rebuilding strategies which have a reasonable expectation of success are in place. • Monitoring is in place to determine whether they are effective in rebuilding the stock within a specified timeframe. 80: • Where stocks are depleted rebuilding strategies are in place. • There is evidence that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a specified timeframe. 100: • Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the shortest practicable timeframe.
No applicable • Chinook is depleted species but it is not assessed because their fishing is prohibited in the area. • There is no other evidence of stock decline in recent years in the area of Kikhchik-Bolshaia-Opala Rivers. Situation with coho is unclear because of lack of information. Situation with stock abundance of all species of Pacific salmon, however, is of more concern in comparison with other Kamchatka rivers due to high poaching pressure (higher than in most other parts of Kamchatka except area surrounding Petropavlovsk-Kamchatsky and Kamchatka River basin). • The previous depression of the stock, ended by the beginning, 2000s was probably caused by natural reasons, in particularly, less favorable ocean conditions.		

Principle 1 Component	Performance Indicator Category	Performance Indicator
Harvest strategies	1.2.1. Performance of the harvest strategy	There is a robust and precautionary harvest strategy in place 60: • The harvest strategy is expectedto achieve stock management objectives reflected in the target and limit reference points. • The harvest strategy is likely to work based on prior experience or plausible argument. • Monitoring is in place that is expected to determine whether the harvest strategy is working. 80: • The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points. • The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives. 100: • The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points. • The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels. • The harvest strategy is periodically reviewed and improved as necessary.
• Evaluation of the harvest strategy suggests that current fishing operations have a moderate impact on the resource, principally because the harvest does not exceed acceptable fishing mortality. • The Fisheries inspection (SVTU) based on recommendations of research institute can close the fishery in-seasonif density of spawners on spawning ground is lower than thetarget(which also serves as the limit) reference point. Closures can occur quickly, but the new management system began only three years ago, thus it is difficult to judge how effective it is. • In the beginning of the season, only 2/3 of quota for the region (Kamchatka-Kuril subzone) is distributed between management units. The rest is distributed depending on results of in-season monitoring and current situation with fishing. In case of negative results (low spawning escapement) the quota may be allocated to other districts or not used at all. This decision is madelocally, by Commission on Anadromous Fish which includes representatives of administration, research institute, enforcement, companies, and indigenous people. • Surveys of the spawning grounds show that in most cases, a sufficient numbers of spawners reach the spawning grounds to reach spawning density goals in recent years. • The spawning escapement density goals are not regularly re-evaluated. • Due to importance of Bolshaia River for salmon populations, this river is investigated in details regarding location and quality of spawning grounds. The recommended spawning escapement factors in quality and area of spawning grounds.		

Principle 1 Component	Performance Indicator Category	Performance Indicator
Harvest strategies	1.2.2. Harvest control rules and tools	There are well defined and effective harvest control rules in place 60: • Generally understood harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached. • There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation. 80: • Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. • The selection of the harvest control rules takes into account the main uncertainties. • Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules. 100: • Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. • The design of the harvest control rules take into account a wide range of uncertainties. • Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.

- Program of monitoring of salmon populations in Bolshaia River is a part of overall research program of KamchatNIRO.
- Harvest control rules are clearly stated, based on achieving spawning escapement goals. Fishing parcels were distributed for period 2008-2027.
- While determining recommended catch, the research institute uses precautionary approach, decreasing fishing mortality if stock is decreasing its abundance.
- So far assessment team has no information about fisheries closures (except regular “nets out” periods during a season) because of insufficient spawning escapement as monitored by regular spawning ground surveys.

Principle 1 Component	Performance Indicator Category	Performance Indicator
Harvest strategies	1.2.3. Information / monitoring	Relevant information is collected to support the harvest strategy 60: • Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy. • Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule. 80: • Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy. • Stock abundance and fishery removals are regularlymonitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule. • There is good information on all other fishery removals from the stock. 100 • A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available. • All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.

- Monitoring data for salmon populations in Kamchatka Region exists since 1957, with catch recorded and occasional research data well before this, at least since 1920s.
- All companies keep records of time and amount of fish caught in their fisheries journals. Fisheries inspection also keeps records on size of catches.
- Fisheries inspection and the research institute estimate the amount of poaching that occurs in the river using all available approaches (observations on rivers including aerial observations, changes in sex ration of fish during upstream migration, surveys of local people etc.).
- Estimates of poaching show that it is quite significant especially for such species as sockeye, coho and Chinook. But last available data on poaching are available for period before 2006. Since that situation changed considerably due to enforcement efforts of companies and change of management system.
- Probably, catch companies reportsis close to actual catch because of changes of fishing rules last couple of years. Reports of unaccounted fish throughout Russian Far East fisheries for years before 2006 showed considerable illegal catch, but the current situation may be different from that and it is not known.
- The issue which is difficult to take into account refers to high seafisheries with driftnets. These fisheries take mostly focused on sockeye, with some by-catch of pink and chum salmon which are taken by drift nets and usually thrown away dead. It is considered that the combined chum and pink bycatch roughly equals the reported sockeye catch. This fish are taken into account by the research institute. The pressure of driftnet fishing is stable in recent years, which makes easier to account it for.
- Another issue is interception fishing. Given the open coast of northwestern Kamchatka, with quite homogenous hydrological conditions, migration

Principle 1 Component	Performance Indicator Category	Performance Indicator
along the shore, as a part of spawning migration, can be quite extensive. This makes catches in sea set nets quite difficult to use for fishery forecasts. This issue is taken into consideration by KamchatNIRO and a special research program focused on Kurilskoe Lake sockeye, is in progress.		

Principle 1 Component	Performance Indicator Category	Performance Indicator
Harvest strategies	1.2.4. Assessment	There is an adequate assessment of the stock status 60: • The assessment estimates stock status relative to reference points. • The assessment identifies major sources of uncertainty. 80: • The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points. • The assessment takes uncertainty into account. • The assessment of stock status is subject to peer review. 100: • The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery. • The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way. • The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored. • The assessment has been internally and externally peer reviewed.

- Assessments (stock status using a model and direct observations on spawning grounds) are conducted annually for entire region of Kamchatka peninsula, so forecasted catch is set on the most current available information.
- Stock assessment for period from 1957 to 2011 is based on assessment of overall Kamchatka Region, and especially on West Kamchatka area and Kamchatka-Kuril fishing subzone. We did not receive information on whether analysis of index (or control) rivers shows adequate statistical certainty or a description of what monitoring takes place to ensure the index remains appropriate.
- Assessment is based on number of indicators: size, age, and sex structure; monitoring of spawning grounds; downstream migration of juveniles; trawling of juveniles before migrating to feeding areas, and aerial assessment of pre-spawning near-mouth concentrations.
- In pink salmon, homing is not very strong; thus fish may stray from natal rivers to other rivers quite distance from the river of origin. Populations of other salmon species are more reproductively isolated and stocks from different branches within one river system can be isolated.
- Assessment methods and data used for calculating forecast by the KamchatNIRO are reviewed during phase of approval. First, on the level of the institute, when the Research Council of the institute approves forecasts issued by research group. Second, when KamchatNIRO together with VNIRO (headquarter fisheries research institute in Moscow) provide forecast for the Far Eastern Fishery Research Council (in Vladivostok), and then the proposal goes to the Federal Agency for Fisheries (Moscow). After approval by this body the forecast goes back along this chain. Therefore, there are number of steps of independent review of the assessment methods. The forecast may change during any of these steps, although it is not quite clear whether these changes result from science-based review or from by lobbying of stakeholders.
- Accuracy of forecasts (ratio of forecasted and actual catch), in average, for entire Western Kamchatka area for period 1993 – 2009 was equal to 73% for pink, 16% for chum, 14% for sockeye, 34% for coho and 101% for chinook salmon. Accuracy of forecast showed a tendency to increase last decade.
- Accuracy of the forecast is not so critical now when management is quite flexible and quickly responds on changes of the situation during fishing

Principle 1 Component	Performance Indicator Category	Performance Indicator
season.		

Enhancement	1.3.1. Outcome	Enhancement activities do not negatively impact wild stocks or substitute for a stock rebuilding strategy 60: • It is likely that the enhancement activities do not have significant negative impacts on the local adaptation, reproductive performance and productivity of wild stocks based on reasonable estimates of likely proportions of hatchery-origin fish in the natural spawning escapement. It is likely that hatchery-origin spawners occur in a small proportion of the natural spawning populations/locations and that they represent a small fraction of the total natural spawning escapement. • Enhancement activities are not routinely used as a stock rebuilding strategy but may be temporarily in place as a conservation measure to preserve or restore wild diversity threatened by human or natural impacts. 80: • It is highly likely that the enhancement activities do not have significant negative impacts on the local adaptation, reproductive performance and productivity of wild stocks, based on appropriate levels of marking and monitoring to reliably estimate proportions of hatchery-origin fish in the natural spawning escapement. It is highly likely that hatchery-origin spawners occur in a small proportion of the natural spawning populations/locations and that they represent a small proportion of the total natural spawning escapement for individual spawning populations. • Enhancement activities are not used as a stock rebuilding strategy. 100: • There is a high degree of certainty that the enhancement activities do not have significant negative impacts on the local adaptation, reproductive performance and productivity of wild stocks, based on appropriate levels of marking and monitoring to reliably estimate proportions of hatchery origin fish in the natural spawning escapement. • There are no salmon enhancement programs within expected straying distances of the natural spawning areas, which periodic monitoring has verified. • Enhancement activities are not used as a stock rebuilding strategy.
• There are two hatcheries in the area producing chum, sockeye, coho and Chinook situated in Bolshaia river. • Other two rivers in the pre-assessment area, Kikhchik and Opala, have no hatcheries. • Contribution of hatcheries to mixed stock is not significant (maximum up to 7% for entire Bolshaia River). There are two hatcheries in Bolshaia		

Principle 1 Component	Performance Indicator Category	Performance Indicator
River basin producing chum, sockeye, Chinook and coho. Their contribution in overall catch of Bolshala River is very low (maximal on chum, but does not exceed 7%). Thermal marking programs have operated since 1996, thus abundant information is available on activities of these hatcheries. • Marking program works quite well. This allows a conclusion that hatcheries at the moment do not have notable effect on wild stock excluding streams with hatcheries. • In Bystraia River, where Malkinsky hatchery is situated, contribution of hatchery-origin fish into mixed population (sockeye) may approach 50%. In this case hatchery may negatively affect wild fish.		

Enhancement	1.3.2. Management	Effective enhancement and fishery strategies are in place to address effects of enhancement activities on wild stock status. 60: Practices and protocols are in place and considered likely to protect wild stocks from significant detrimental impacts of enhancement, based on plausible argument. 80: There is a strategy in place and confidence that the strategy will protect wild stocks from significant detrimental impacts of enhancement, based on evidence that the strategy is effectively achieving the outcome metrics used to define these minimum impacts (e.g., related to verifying and achieving acceptable proportions of hatchery-origin fish in the natural spawning escapement). 100: There is a comprehensive strategy in place and clear evidence for successful protection of wild stocks from significant detrimental impacts of enhancement.
• There is number of research addressing interaction of wild and hatchery fish. Some of these research show local negative effect (competition) of hatchery fish on the wild. • In all cases, management of hatchery fish is directed to reduce interaction between wildand hatchery fish. Although the goal of reducing this interaction is mostly to decrease mortality of hatchery fish, this also results in decrease of pressure on wild population. However, evidence was not presented for achieving metrics to demonstrate minimal impacts.		

Enhancement	1.3.3. Information	Relevant information is collected and assessments are adequate to determine the effect of enhancement activities on wild stock status. 60: • Some relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock. • The effect of enhancement activities on wild stock status, productivity and diversity are taken into account. 80: 100: • A comprehensive range of relevant information is available on the contribution of enhanced fish to the harvest and escapement of the wild stock. • The assessment is appropriate and takes into account the major features relevant to the biology of the species and the effects of any enhancement activities on the wild stock status, productivity and diversity.
• Thermal marking in Kamchatka hatcheries exists since 1996, and is accompanies by research programs of analysis of returns. This allows for quantitative assessment of hatchery production in both small tributaries where hatcheries are situated and in larger rivers (Bolshaia River) where these tributaries enter. • There is a number of research projects addressing interaction between hatchery and wild fish allowing to identify possible effects of hatchery on wild fish.		

8.2 Principle 2

Principle 2 Component	Performance Indicator Category	Draft Performance Indicator
Retained species (other than target)	2.1.1. Outcome – status	Retained species are being harvested in a manner that is precautionary and sustainable. 60: • Main retained species are <u>likely</u> to be within biologically based limits or if outside the limits there are <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding of the depleted species. • If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery. 80: • Main retained species are <u>highly likely</u> to be within biologically based limits,or if outside the limits there is a <u>partial strategy</u> of <u>demonstrably effective</u> management measures in place such that the fishery does not hinder recovery and rebuilding. 100: • There is a <u>high degree of certainty</u> that retained species are within biologically based limits. • Target reference points are defined and retained species are at or fluctuating around their target reference points.
• As Chinook salmon would not pass certification as a target species, it should be considered as a retained species where legally kept, or as a bycatch species if retention is prohibited. As Chinook is below the limit reference point and considered depleted, it would cause this indicator to fail if it cannot be shown that management actions act to prevent the fishery from hindering recovery of the stock. • Noother information about retained species is available for this particular pre-assessment. Companies process all the fish they catch for human consumption or, if fish is not suitable for human consumption, they process it for fish meal. At the same time, probably there is a little amount of retained catch which may be used for personal consumption, such as rainbow trout, semi-anadromous or river form of steelhead salmon *Oncorhynchus mykiss*, which isnot managed and no information about the stock status is available because it has no commercial significance and salmon fishing is not considered to potentially cause its decline.		

Principle 2 Component	Performance Indicator Category	Draft Performance Indicator
Retained species (other than target)	2.1.2. Management – Harvest strategy	An effective harvest strategy has been implemented for retained species. 60: • There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding. • The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species). 80: • There is a partial strategy in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding. • There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved. • There is some evidence that the partial strategy is being implemented successfully. 100: • There is a strategy in place for managing retained species. • The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work. • There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. • There is some evidence that the strategy is achieving its overall objective.
• Chinook are managed to achieve spawning escapement goals. This partial strategy generates confidence that it should work, but it is not clear how effective the management strategy is or how well it is implemented. • Rainbow trout is not managed but it is not a main species.		

Principle 2 Component	Performance Indicator Category	Draft Performance Indicator
Retained species (other than target)	2.1.3. Management – Information / monitoring	Relevant information is collected to support the management of the retained species. 60: • Qualitative information is available on the amount of main retained species taken by the fishery. • Information is adequate to qualitatively assess outcome status with respect to biologically based limits. • Information is adequate to support measures to manage main retained species 80: • Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery. • Information is sufficient to estimate outcome status with respect to biologically based limits. • Information is adequate to support a partial strategy to manage main retained species. • Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy). 100: • Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations. • Information is sufficient to quantitatively estimate outcome status with a high degree of certainty. • Information is adequate to support a comprehensive strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective. • Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
• Catch information and spawning escapement information for Chinook is available. This is sufficient to determine an overfished status. Data continue to be collected for Chinook. • According to regulations, all information about retained species is collected by fisheries inspection and research institute. We could not confirm that this happens. Any data for rainbow trout are not used for management.		
Bycatch	2.2.1. Outcome – Status	The fishery does not lead to the depletion of bycatch species. 60: • Main bycatch species are likely to be within biologically based limits,or if outside such limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding. • If the status is poorly known there are measures or practices in place that are expected result in the fishery

Principle 2 Component	Performance Indicator Category	Draft Performance Indicator
		not causing the bycatch species to be biologically based limits or hindering recovery. 80: • Main bycatch species are highly likely to be within biologically based limits or if outside such limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding. 100: • There is a high degree of certainty that bycatch species are within biologically based limits.
• Bycatch (discards) in the fishery is not assessed quantitatively, but scientists, managers, and fishermen report it as very low. Among potential species can be codfish Gadidae, flatfish *Platichthysstellatus*, smelt *Osmerus* spp., and Cottids. If discarded, cottids and flatfish probably stay alive because they are very resistant to handling and set nets are not much traumatic gear. The research institute does not pay much attention to species composition of bycatch because this not considered as a big issue.However, the wide distribution and small catch of these species suggests minimal impacts from bycatch. • Data from other salmon fisheries in the Russian Far East, in particularly, in Sakhalin Island, and also anecdotal datafrom other assessments in Kamchatka, say that bycatch in salmon fisheries with set nets and beach seines is very small.		
Bycatch	2.2.2. Management – Management strategy	Management objectives and strategies seek to minimizebycatch. 60: • There are measures in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery. • The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species). 80: • There is a partial strategy in place, if necessary, for managing bycatch that is expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery. • There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or the species involved. • There is some evidence that the partial strategy is being implemented successfully. 100: • There is a strategy in place for managing and minimising bycatch. • The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work. • There is clear evidence that the strategy is being implemented successfully, and intended changes are

Principle 2 Component	Performance Indicator Category	Draft Performance Indicator
		occurring. There is some evidence that the strategy is achieving its objective.
• No management concerning mentioned bycatch species exists. The small amount of observed (anecdotal) catch caused the management agencies to consider this not important. • The small amounts of bycatch, generally much less than 5% of the target catch, would not require a bycatch strategy for these speciesat the 80 level if data confirm the small amounts.		

Bycatch	2.2.3 Management – Information / monitoring	Information on the nature and extent of bycatch is adequate to determine the risk posed by the fishery. 60: • Qualitative information is available on the amount of main bycatch species affected by the fishery. • Information is adequate to broadly understand outcome status with respect to biologically based limits. • Information is adequate to support measures to manage bycatch. 80: • Qualitative information and some quantitative information are available on the amount of main bycatch species affected by the fishery. • Information is sufficient to estimate outcome status with respect to biologically based limits. • Information is adequate to support a partial strategy to manage main bycatch species. • Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy). 100: • Accurate and verifiable information is available on the amount of all bycatch and the consequences for the status of affected populations. • Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty. • Information is adequate to support a comprehensivestrategy to manage bycatch, and evaluate with a high degree of certainty whether a strategy is achieving its objective. • Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.

Principle 2 Component	Performance Indicator Category	Draft Performance Indicator
• According to fisheries regulations, bycatch should be monitored by fisheries institute, but no such information was provided. According to anecdotal data and other assessments in this area, abundance of bycatch species has not changed in recent years, and is considered acceptable.		

ETP species	2.3.1. Outcome – Status	The impacts of the fishery do not threaten populations of ETP species. 60: • Known effects of the fishery are <u>likely</u> to be within limits of national and international requirements for protection of ETP species. • Known direct effects are <u>unlikely</u> to create <u>unacceptable impacts</u> to ETP species. 80: • The effects of the fishery are known and are <u>highly likely</u> to be within limits of national and international requirements for protection of ETP species. • Direct effects are <u>highly unlikely</u> to create <u>unacceptable impacts</u> to ETP species. • Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts. 100: • There is a <u>high degree of certainty</u> that the effects of the fishery are within limits of national and international requirements for protection of ETP species. • There is a <u>high degree of confidence</u> that there are <u>no significant detrimental effects (direct and indirect)</u> of the fishery on ETP species.
• The only potential ETP species which could suffer at this fishery is Kamchatka steelhead*Parasalmopenshinensis (or Oncorhynchus (Parasalmo) mykiss).* This is anadromous form. It is very close to mykiss*Parasalmomykiss*, which is a landlocked form. Some researchers think that these are different species, but most researchers consider them as anadromous and landlocked forms of the same species. There are also semi-anadromous forms which feeding in the coastal zone and can be caught by set nets. • Kamchatka steelhead is in the Red book of Kamchatka Krayand thus is protected from catch. • Kamchatka steelhead enter river in September-November, i.e. later than main fishing season of Pacific salmon. Because of this it can be rarely caught in the set nets in this area. • Catches of Kamchatka steelhead were not mentioned by the company. • In the area also there are killer whales, white whales, seals, cormorants, sea eagles, but they easily avoid set nets.		

ETP species	2.3.2. Management – Management strategy	The fishery has in place precautionary objectives and management strategies to minimize mortality of, or injuries to, ETP species. 60: • There are measures in place that minimise mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species. • The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species). 80: • There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality that is designed to be highly likely to achieve national and international requirements for the protection of ETP species. • There is an objective basis for confidence that the strategy will work, based on some information directly about the fishery and/or the species involved. • There is evidence that the strategy is being implemented successfully. 100: • There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality that is designed to achieve above national and international requirements for the protection of ETP species. • The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work. • There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is evidence that the strategy is achieving its objective.
• So far the company does not have management plan or strategy for ETP species. However, there are plans to develop management plans for fisheries; the All-Russian Research Institute For Fisheries and Oceanography (VNIRO, Moscow) is now developing a generic management plan for salmon fisheries. If demonstrated as low impact on ETP species, the fishery would require only a simple strategy for ETP species to maintain minimal impacts.		

ETP species	2.3.3. Management – Information / monitoring	Relevant information is collected to support the management of fishery impacts on ETP species. 60: • Information is adequate to broadly understand the impact of the fishery on ETP species. • Information is adequate to support measures to manage the impacts on ETP species • Information is sufficient to qualitatively estimate the fishery related mortality of ETP species. 80: • Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the

		ETP species, and if so, to measure trends and support a full strategy to manage impacts. • Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species. 100: • Information is sufficient to quantitatively estimate outcome status with a high degree of certainty. • Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. • Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
• No documentation of the reportedly minimal ETP interactions occurs. As managers and scientists consider catches of ETP species as low, there is no special monitoring of them. All available information from Sakhalin and Kamchatka salmon fisheries say that impact of salmon set nets on marine mammals is minimal. • Recent scientific data show that landlocked and anadromous forms are just intra-species forms of the same species. This finding may require reconsideration of protection status of Kamchatka steelhead.		
Habitat	2.4.1. Outcome – Status	The fishery maintains habitat impacts within acceptable levels. 60: • The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. 80: • The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. 100: • There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
• The company uses set nets and beach seines. Set nets have wings of up to 1500 m length set up perpendicularly to the sea coastline. Some damage to the bottom communities can be caused while anchoring the nets, but this damage is minor and local. • Beach seines in river mouths, potentially may damage the bottom.However, fishing occurs in the same location over the years; thus, the effect on benthic communities is very local. No special research to study effect of beach seines on benthic biota has been carried out. • Narody Severa uses passage through Bolshaia River and KamchatNIRO calculates damage of this passage to the environment. To compensate this environmental damage, the company is obliged to pay to Paratunka hatchery (Paratunka is a river situated in the eastern coast of Kamchatka near Petropavlovsk-Kamchatsky).		

Habitat	2.4.2. Management – Management strategy	Strategies have been developed and implemented to address and restrain impacts of the fishery on habitats. 60: • There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of

		performance. • The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats). 80: • There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. • There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or habitats involved. • There is some evidence that the partial strategy is being implemented successfully. 100: • There is a strategy in place for managing the impact of the fishery on habitat types. • The strategy is mainly based on information directly about the fishery and/or habitats involved, and testing supports high confidence that the strategy will work. • There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.
• No strategy for addressing and restraining habitat impacts has been developed and the impact of the gear is not assessed. Habitat damage is considered minor and not a problem. Set nets damage bottom only while anchoring. Beach seines can impact the bottom, but this damage is considered minor because beach seines are generally restricted to a small location at the same locations. Intensity of impact is not large also because beach seines are supplied with not-heavy sinkers to prevent catch of various things from bottom (trunks etc.). Moreover, salmon are caught not from bottom, but rather near surface.		

Habitat	2.4.3. Management – Information / monitoring	There is adequate knowledge of the impacts of the fishery on habitats. 60: • There is a basic understanding of the types and distribution of main habitats in the area of the fishery. • Information is adequate to broadly understand the main impacts of gear use on the main habitats, including spatial extent of interaction. 80: • The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery. • Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear. • Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures). 100:

		• The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types. • Changes in habitat distributions over time are measured. • The physical impacts of the gear on the habitat types have been quantified fully.
• Effect of fishing gear is considered minimal so there are no plans of its monitoring. Assessments of this gear in other regions (i.e., Iturup and Sakhalin) have shown minimal impacts. • There are only few settlements along the Northwestern Kamchatka coast. By-products of the fisheries (guts, heads) are placed in special areas organized by administration. • To minimize such an impact, the company has facilities for production fish meal.		

Ecosystem structure	2.5.1. Outcome – Status	The fishery maintains impacts on ecosystem structure within acceptable levels. 60: • The fishery is <u>unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. 80: • The fishery is <u>highly unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. 100: • There is <u>evidence</u> that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
The status of this particular ecosystem'sstructure is not known.. Harvestprevents some fish from reaching the upper river and the spawning grounds,which has consequences for river and adjacent ecosystems. At the same time, at the moment there is no evidences of degradation of local ecosystem, The nearest location, where ecosystem monitoring occurs, is South-Kamchatka Federal reserve, which includes Kurilskoe Lake. Non-detectable changes of the ecosystem were found there. The same can be concluded from anecdotal data from other parts of Kamchatka peninsula and from Sakhalin island, where MRAG carried out assessments of salmon fisheries, The removal of salmon may affect the ecosystems in the following ways:: • Removing forage for predator animals and birds, which rely to a considerable extent on spawning salmon.In the KamchatkaRiver basin, a number of studies have shown positive correlation between abundance of sockeye salmon and brown bear and eagles *(Haliaeetuspelagicus, H. albicilla).* Thus overfishing may negatively affect abundance of these species. At the same time, ration of wild animals implicitly taking into consideration while optimizing spawning escapement, and no evidences on reduce of number of predator animals and birds are known. • Decrease of nutrition in aquatic ecosystems, caused by decomposition of carcasses. It is known that these nutrients form a base for development of zooplankton in coastal area, which serves a food for young salmon just after downstream migration.If such effect would occur, one might expect decline of local salmon populations, which is not the case		
Ecosystem structure	2.5.2. Management – Management strategy	Strategies have been developed and implemented to address and restrain impacts of the fishery on ecosystem structure. 60: • There are <u>measures</u> in place, if necessary, that take into account potential impacts of the fishery on key

		elements of the ecosystem. • The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/ ecosystems). 80: • There is a partial strategy in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance. • There is a partial strategy in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance. • There is some evidence that the measures comprising the partial strategy are being implemented successfully. 100: • There is a strategy that consists of a plan, containing measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem.
• No explicit strategy for addressing and restraining fishery impacts on ecosystem function andstructure has been developed.However, the choices of gear – trap nets and beach seines – are themselves measures to minimize ecosystem impacts, based on the certification of Iturup salmon and information in the draft report for Sakhalin salmon. Becausethe overall impacts of the fishery on the ecosystem seem low, strategies for bycatch (discarded) species, ETP species, habitat, and the ecosystem as a wholeare lacking. If the fishery is demonstrated to have a low impact on retained species, bycatch species, ETP species, and habitat, it would likely have low impacts oneecosystem structure,trophic relationships, and biodiversity.If so, anecosystem management strategycould require only that the fishery maintain the minimal impacts.		
Ecosystem Structure	2.5.3. Management – Information / monitoring	There is adequate knowledge of the impacts of the fishery on ecosystem structure. 60: • Information is adequate to identify the key elements of the ecosystem (e.g. trophic structure and function, community composition, productivity pattern and biodiversity). • Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail. 80: • Information is adequate to broadly understand the functions of the key elements of the ecosystem. • Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but may not have been investigated in detail. • The main functions of the Components (i.e. target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known. • Sufficient information is available on the impacts of the fishery on these Components to allow some of the

		main consequences for the ecosystem to be inferred. • Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures). 100: • Information is adequate to broadly understand the key elements of the ecosystem. • Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated. • The impacts of the fishery on target, Bycatch, Retained and ETP species and Habitats are identified and the main functions of these Components in the ecosystem are understood. • Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred. • Information is sufficient to support the development of strategies to manage ecosystem impacts.
• No comprehensive systematic studies of the impact of salmon harvest on river ecosystems have been done so far in the Russia Far East. There are studies which show that decomposing bodies of parents provide nutrients for food of progeny in estuaries, but it seems that these effects have not been studied quantitatively. The basic biology of salmon is well studied and conceptual information on salmon trophic requirements is available. Studies in other regions of the world provide information that could put the impacts of the fishery on the ecosystem into a general context. • Currently there are no plans for monitoring the effects of salmon harvest on river ecosystems. It must be quite a large research project.		

8.3 Principle 3

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
Governance and policy	3.1.1. Legal and/or customary framework	The management system exists within an appropriate and effective legal and/or customary framework that: - Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 & 2, - Observes the legal and customary rights of people dependent on fishing for food and livelihood, and - Incorporates an appropriate dispute resolution framework. The fishery is not conducted under a controversial unilateral exemption to an international agreement. 60: • The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2. • The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system. • Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery. • The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. 80: • The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2. • The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery. • The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges. • The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. 100: • The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
		• The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective. • The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges. • The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom on people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
Management of salmon fisheries is conducted according to Russian laws and regulations: • Water Resources Code; • Federal Law on the Animal World; • Federal Law on Protection of Environment • Federal Law on fishing and conservation of aquatic biological resources; • The Far Eastern Regional Code issued by the Ministry of Agriculture; • Guidelines on conducting tenders for rights to use fishing parcels for catching Pacific Salmon during coastal fishing (issued by the Ministry of Agriculture); • Guidelines on conducting fishing to support traditional livelihoods for indigenous peoples of the North, Siberia, and Russian Far East (issued by the Ministry of Agriculture); • Guidelines for Pacific salmon fisheries (issued by the Ministry of Agriculture) • The fishery is not conducted under a controversial, unilateral exemption to an international agreement. While the framework has all the pieces required, we could not determine if the management system has a transparent mechanism for resolution of legal disputes. In case of conflicts, there is an opportunity to appeal to the court, but such opportunity is rarelyutilized. The fishery deals with resourcesthat are essential for the local population of the area, living in Oktiabrskoe and Bolsheretsk towns, a total population of about 4300 inhabitants. So far, there is no official documentation explicitly describing a new system of management of salmon fisheries in Kamchataka, although an idea how this system works can be obtained from analysis of documents of Anadromous Fish Commission published through Internet.		
Governance and policy	3.1.2. Consultation, roles and responsibilities	The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties. 60: • Organisations and individuals involved in the management process have been identified. Functions, roles

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
		and responsibilities are generally understood. • The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system. 80: • Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction. • The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained. • The consultation process provides opportunity for all interested and affected parties to be involved. • 100: • Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. • The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used. • The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
• Management process is quite complicated, with involvement of number of organizations, and role of various organizations is not always easy to understand. The process of determining forecast for catch is complicated and includes many steps where it can be changed depending on influence of different groups. However, as far as we know, during these consultations and approvals, the forecast it is not changed much in comparison with primary figures provided by KamchatNIRO. • Recommended catch is allocated for particular management units each of which include several rivers and adjacent area of the sea. In particular, Kamchatka-Kuril fisheries subzone, which includes management units subject for this preassessment, includes there management units. • Consultations and decision making is organized in framework of Anadromous Fish Commission, which allocates part of recommended catch (about 2/3) to management units in the beginning of fishing season and keeps the rest of recommended catch (1/3) as a reserve to distribute it during the fishing season depending on current situation. • Recommended catch can be changed depending on in-season information of abundance of fish in migration routes and at spawning grounds. • Mechanisms for involvement of environment and different interest groups as well as the broader community are not well developed, but the Narody Severa and Bolsheretsk fisheries are under the attention of WWF-Russia. • In total, both companies employ almost 600 workers during a high season. These workers are mostly occupied in fish processing plants. About half of the workers are from Kamchatka (quarter from Oktiabrsky town and quarter from city of Petropavlovsk-Kamchatsky). • Fisheries greatly contribute to development of the local community. However, as these are a private company, there are currently no mechanisms for local stakeholders to participate in fishery management (trade unions are not much developed).		

Governance and policy	3.1.3 Long term objectives	Long-term objectives to guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>implicit</u> within management policy.
• The over-arching fisheries and resource regulations cited earlier in this report lay out long-term objectives and long-term goals for the salmon fisheries of the Russian Far East. However, it is clear from the stock assessment and quota setting procedures that maintaining adequate spawning escapement is an implicit objective. Ecological objectives are far less clear. • The company demonstrated its strategy towards sustainable use of fish resources in Kikhchik-Bolshaia-Opala river basins and organizing there long-term program on monitoring of fish populations, by building of modern fish-processing factory and by serious contribution to social sphere of local settlements. • The area has no other serious alternative resources of existence except fishing. In addition to Pacific salmon, other fish such as pollock, cod, navaga, flounder, halibut, bullhead are important commercial species for company. • The companies participate at the Association of Fisheries of Ust-Bolsheretsk district. • In the district, the Ust-Bolsheretsk Watershed Salmon Council has been organized recently. It includes administration, enforcement agencies, public and fisheries from the district. Protection of salmon resources is among its main functions. It is difficult, however to judge about its effectiveness at the moment because it is a very new organization. • Ratio of companies in total catch in the Kikhichk-Bolshaia-Opala rivers area ranges from 5 to 50% depending on species and year. Thus, it is important to know long-term objectives of other participants of the fishery. According to the information from fisheries, relationships with other companies are well established, but more information about this is needed.		

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
• Companies do not accept illegal production to process in their fish-processing plants. This confirms companies' principal negative attitude regarding poaching.		

Governance and policy	3.1.4. Incentives for sustainable fishing	The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing. 60: • The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2. 80: • The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise. 100: The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices.
• The new management system reduces incentives to under- or mis-report by eliminating individual TACs, and provides incentives for a long term view by issuing 20 year leases. • The threat of losing a fishing permit for particular location, resulted from violation of fishing rules, provides an incentive for sustainable fishing. • No subsidies are provided to fishery by the government. Rather, the community contributes to improve governmental functions, such as supporting of social sphere of coastal villages, maintaining of traditional life style of indigenous people and enforcement. • Profit from salmon fisheries is now directed mostly to further improvement of fish-processing technologies and to support social sphere of local population.		

Fishery- specific management system	3.2.1. Fishery-specific objectives	The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2. 60: • Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system. 80: • Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system.

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
		100: • Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system.
• The fisheries closely collaborate with KamchatNIRO in framework of research on stock assessment of Pacific salmon in the area. The program is in good accordance with MSC principle 1 but does not pay much attention to retained species (except Pacific salmons) and ETP species (Kamchatka steelhead). • Sustainability of fisheries is essential for the company because the fishing stations are allocated to the fisheries for 20 years and because of large investments in fish processing. • No formal management plan is accepted so far. • Being a long-term and complex user of local natural resources, the companies Narody Severa and Bolsheretsk understand that healthy stocks of target and retained species, and healthy ecosystem is crucial for existence of development of the business in the area with very limited other resources.		

Fishery- specific management system	3.2.2. Decision-making processes	The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives 60: • There are informal decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. • Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions. 80: • There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. • Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. • Decision-making processes use the precautionary approach and are based on best available information. • Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. 100: • There are established decision-making processes that result in measures and strategies to achieve the

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
		fishery-specific objectives. • Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. • Decision-making processes use the precautionary approach and are based on best available information. • Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
• The government and the company consult in the management of the fishery. • The company is managed by Director, who makes decisions concerning fishing. • Decision-making processes respond to issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner, according to the community information. • Decision-making uses the precautionary approach and is based on best available information, according to the community.		

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
Fishery- specific management system	3.2.3. Compliance & enforcement	Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with. 60: • Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment, and there is a reasonable expectation that they are effective. • Sanctions to deal with non-compliance exist and there is some evidence that they are applied. • Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery. 80: • A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules. • Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence. • Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery. • There is no evidence of systematic non-compliance. 100: • A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules. • Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence. • There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery. • There is no evidence of systematic non-compliance.
• The fishery is monitored by state fisheries inspection. Commercial fishing companies tend to comply with regulations, but it is not clear that all do. Criminal poaching is a bigger problem than illegal activities from the companies. • Illegal fishing is an important problem requiring an urgent solution. This area is characterized with high poaching even in comparison with other areas of Kamchatka. Fisheries in the area intend to solve this problem cooperatively and in a systemic way, taking care about social sphere of villages and offering to locals well paid employment in the companies. • Information about status of poaching in the area is not available after 2006. Although there is a hope that situation has been improved, thorough		

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
analysis of the current status of poaching in the area is needed, especially given that respective research is carried out by KamchatNIRO. • At the same time, there are governmental fisheries inspectors who fulfill their function with an organizational help from the companies.		

Fishery- specific management system	3.2.4. Research plan	The fishery has a research plan that addresses the information needs of management. The management system conducts research required in the plan. 60: • Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2. • Research results are available to interested parties. 80: • A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. • Research results are disseminated to all interested parties in a timely fashion. 100: • A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. • Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.
• There is a special Concept of the Far Eastern basin program of research of Pacific salmon which regularly publishes its research results. • Bolshaia River is one of the best-studied rivers in Kamchatka and well represented in the Federal Research plan. • Bolshaia is one of reference rivers where research is the most comprehensive in comparison with other rivers. • The Bolsheretsk company collaborates with KamchatNIRO on stock assessment of Pacific salmon in the area.		

Fishery- specific management system	3.2.5. Monitoring and evaluation	There is a system that monitors and evaluates the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system. 60: • The fishery has in place mechanisms to evaluate some parts of the management system and is subject to occasional internal review. 80: • The fishery has in place mechanisms to evaluate key parts of the management system and is subject to

Principle 3 Component	Performance Indicator Category	Draft Performance Indicator
		regular internal and occasional external review. 100: • The fishery has in place mechanisms to evaluate all parts of the management system and is subject to regular internal and external review.
• The annual forecast-setting process by the specialized Commission for Anadromous Fish evaluated the performance of fisheries while making decision about long-term distribution of quota and fishing parcels. This commission takes into account in-season information to most effectively distributes rest additional recommended catch if appears.		

9 MOVING FROM PRE-ASSESSMENT TO FULL ASSESSMENT

9.1 Key Issues That Could Lead to Non-conformance in a Full MSC Evaluation

Under the MSC system, when an evaluation team finds the fishery does not meet the MSC standard in a given area, the area is identified as a non-conformance. There are a few areas where this could occur in the Narody Severa and Bolsheretsk fisheries. In addition to these areas, there are issues that arise that can rise to the level of controversy and objection under the MSC system, where stakeholders outside the fishery may object to the fishery being certified. There is the potential for this to occur in a few areasin this fishery.

Key Factors that could lead to non-conformance or controversy:

P1. Stock health

- Reference point are apparently calculated, but were not provided. We could not fully assess the reference points.
- No data on spawning escapement were available for the assessment team. Absence of this crucial information complicated the pre-assessment very much, and the fishery could not pass an assessment without these data.
- It is not clear how the stock assessment treats bycatch of pink and chum salmon in the open ocean sockeye fishery. The stock assessment should demonstrate that the determination of the spawning escapement density target and limit factors in the productivity represented by the pink and chum removed through the open ocean fishery.
- Intercepting of other stocks by Narody Severa and Bolsheretsk fisheries as well as interception of Kikhchik-Bolshaia-Opala River populations are probably highly in this assessment. This is not only related to pink salmon due to their high straying, but also to other species which in-river migration may take place along the shore, thus exposing fish to sea set nets. Additional information about migration routes and potential interception is necessary. The unit of certification includes all stocks caught, so information on interceptions is critical to passing an assessment.

P2. Ecosystem health

- Although managers and scientists concluded that no adverse impacts from the fishery occur for retained species, bycatch, threatened-endangered-protected species, or trophic structure, no documentation or analysis to support this conclusion was presented. This is especially important for the protected Kamchatka steelhead. Managers and scientists could explore two approaches for documentation: 1) begin a program to explicitly collect data for the five components of Principle 2; 2) evaluate fishery impacts from other, well-studied fisheries (e.g., Iturup, Alaska), and draw inferences as appropriate for the Narody Severa and Bolsheretsk fisheries. For example in approach (2), evaluation of information on run timing of target salmon fishing with the availability of Kamchatka steelhead could determine explicitly whether any risk to steelhead occurs from the fishery.

P3. Management system

- The legal and customary framework has all the components for sustainable fishery management, and received a green rating. However, as a possible point that may arise, the legal system is not used much in the Russian Far East fisheries, perhaps as a carryover from the more repressive Soviet system that generates a reluctance on the part of individuals to use the system. Thus, a de facto limitation on the legal system may exist.
- The complex series of evaluations of the stock assessment and quotas allows some stakeholder participation, but doesn't seem to seek it. It is not clear how stakeholder information is used. Private companies are not obliged under the Russian system to seek stakeholder consultation.
- Long term objectives for the management system and short term objectives for the fishery are not explicit. We could not find management plans that lay out the objectives. However, the spawning escapement

targets demonstrate an implicit objective. Federal laws set general ecological policy, but do not explicitly address fisheries.

- Compliance and enforcement received a red score. They are very difficult to assess. It is known that poaching is widespread through the region, and especially intensive in Bolshaia River basin. Last published data (2006) show extremely high poaching level. There is a hope that current poaching is lower, but documentation regarding this is necessary. Such data potentially exist, because KamchatNIRO carries out special research., but summarization of this is needed. The reputation for corruption in the Russian Far East fishery system, in which some companies underreport or mis-report catches or pay bribes for allocation fishing locations, is widespread but difficult to confirm. Poaching and corruption do not pose an immediate risk to sustainability, if the fishery reaches or exceeds escapement goals, but demonstrate a potential risk. These issues could cause an assessment team to give low scores, depending on the information available. These issues are very likely to generate substantial controversy and possibly objections to certification.
- Some changes in fisheries management took place recent years, in particularly, fishing parcels were distributed for 20 years. This changes may result in positive changes in fisheries, which are already reported (in particularly, less corruption which was very high in early distributing parcels and quotas and decrease of hidden catch). At the same time, more time is needed to prove effectiveness of this new system.
- A substantial amount of research occurs in the Kamchatka region, but no regional research plan was available to us to demonstrate that the research occurs in a systematic way to address the management needs for the fishery.
- Ratio of company in total catch in the Kihchik-Bolshaia-Opala rivers ranges from 5 to 50% depending on species and year. Thus, it is important to know long-term objectives of other participants of the fishery. According to company, relationships with other companies are well established, but more information about this is needed.

9.2 Other Issues for Certification

Because the monitoring/information and compliance/enforcement indicators received a “red” designation in this pre-assessment, the fishery has a reasonable chance of scoring below 60 in a number of cases, and would likely receive numerous conditions. Some of the “yellow” indicators may drop to red with more intense review during a full assessment.The company and the authorities have taken many positive steps for the fishing area, in case of involvement (or, at least, providing information) of other companies using the same resource, is close to ready for full assessment. We suggest that the clients consider addressing the areas of possible non-conformance and controversy we have outlined above before moving to full certification. This strategy would increase the probability of passing, and passing with fewer conditions. Perhaps the Narody Severa and Bolsheretsk fisheries meet the MSC standards for some of these topics, but the assessment team did not receive information to demonstrate it. As part of preparation for a full assessment, clients (sometimes with support of the government) often prepare an assessment of the performance indicators against the scoring guidelines to demonstrate the status of the fishery (for example, http://www.msc.org/track-a-fishery/certified/pacific/iturup-island-pink-and-chum-salmon/iturup-island-pink-and-chum-salmon).Moving to full assessment should take into account working relations with the management authorities. The Narody Severa and Bolsheretsk will have to have good working relations with regional and federal management authorities, and should obtain an agreement for cooperation for this process to go as smoothly as possible. If achieving the conditions requires participation from entities other than the client (e.g., by the management and enforcement agencies), those entities must agree to participate in activities of the client action plan. Without this commitment, the client action plan would not meet the minimum requirements and the fishery could not receive certification.

Satisfying conditions. The pre-assessment predicts that the fishery will receive several fails (scores less than 60) and several conditions (scores greater than or equal to 60, but less than 80). We emphasize that the MSC requires addressing the conditions such that the scores reach at least 80 by the time of the re-assessment (5 years). In many cases, fulfilling the conditions may require resources beyond the reach of the client. We encourage the client to consider how to address the underlying causes that lead to conditions in advance of the decision to enter full assessment, especially if the conditions require actions by or cooperation with federal and regional bodies. The MSC specifies that if a client action plan to achieve the conditions does not have a high likelihood of success, the fishery cannot pass. Moving to full assessment should take into account working relations with the management authorities and any measures that require resources of the management

authorities. This fishery will have to have good working relations with the federal and regional management and research agencies, and you should advise them of your interest before announcing any full assessment for the fishery assessment process to go smoothly.

The ultimate decision rests with the client, but we predict some difficulties and substantial controversy until the key issues identified above are addressed.

9.3 Fishery Site Visit for Full Assessment

Should the client decide to move forward with full assessment, we recommend that the required full assessment site visits take place in Petropavlovsk-Kamchatsky and in Oktiabrsky village. This would allow consultation with the authorities in P-K and with the local stakeholders.

10 THE CERTIFICATION PROCESS

To carry out a successful certification of the Narody Severa and Bolsheretsk fisheries, the certification team must make sure it follows the required steps. We have outlined the steps below to inform the readers as to what would occur should a full certification be sought by the fishery. We also believe that a successful full assessment will depend on a comprehensive stakeholder consultation process, which in and of itself will be a significant portion of the MSC evaluation process given the number of fishing nations and conservation groups interested in these fisheries.

10.1 Assemble Evaluation Team

MRAG would select a team with appropriate expertise and experience. Before making a final selection of team members, stakeholder groups (industry, government, and conservation groups) would be interviewed for their concerns and their opinions on the available and appropriate experts.

The most significant issue at this step will be to ensure that at least one agreed expert has significant expertise in bycatch of fisheries, and in specific management of bycatch on birds and other listed or sensitive species.

10.2 Setting performance criteria

The MSC Principles are by necessity general. This makes it difficult to actually know exactly what to examine in evaluating the performance of the management, resource, and ecosystem measures in the fishery. As a result, the MSC Principles and Criteria need to be translated in 'Performance Indicators' and some guidelines need to be set up for use by the evaluation team in scoring the performance of the fishery against the 'Performance Indicators'.

A generic set of Performance Indicators and scoring guidelines for fisheries has been assembled by the MSC (the Fishery Assessment Methodology Version 2 – FAM v2). The team will review the generic set of Performance Indicators and scoring guidelines and make recommendations where required to the MSC for any modifications found necessary for the evaluation of the fishery. The assessment team will announce on the MSC website that the fishery will use FAM v2 for the assessment.

10.3 Stakeholder Consultation

The MSC certification process requires that the evaluation team meets with stakeholders of the fishery and allow them to provide input regarding the certification of the fishery. There is no specific requirement to address directly or indirectly the concerns raised by the stakeholders, but it is obvious that if legitimate concerns are raised they must be taken into consideration by the evaluation team. Stakeholder consultation is necessary for two reasons: (1) it allows the stakeholders to voice opinions so they are engaged in the process, and (2) it

provides the evaluation team with the widest possible views of the fishery so that the team can successfully cover all aspects of the fishery in the evaluation process.

The stakeholder consultation is not designed to be an open-ended process, nor one of casting aspersions. Stakeholders will be asked to submit issues in writing and to provide supporting documentation. Political arguments and arm-waving accusations are less likely to merit much consideration, as they provide nothing for the evaluation team to critically examine with regard to the fishery's performance.

10.4 Data collection and review

With indicators selected, performance levels identified, and stakeholders interviewed, the team will collect and review all necessary and relevant information to assess the fishery. This will mean meeting with and interviewing all relevant scientists and staff engaged in the management of the fishery. The team will be requesting documentation on the status of stocks, management operations, management regulations, enforcement, environmental impacts, gear, etc. The team will also be asking for data on bycatch, discards, implications for threatened and endangered species, ecosystem impacts from gear, ecosystem impacts from removal of salmon, ecosystem productivity, and more.

The client must recognize that any and all data and information used in the full assessment must be made public. Many documents in Russia are not publicly available, so the client and the government must be willing to release key documents, such as management plans, research plans, and stock assessments, for public review.

10.5 Performance scoring

After all data is reviewed, the team will meet to work through a consensus process of scoring each performance indicator to determine if it meets or exceeds the minimum performance levels set forth by the MSC Principles and Criteria. The findings of this meeting will determine if each of the fisheries pass the certification process.

10.6 Draft report

A report will be drafted and sent to the Client for internal review. This helps to ensure that the team has not seriously missed or misinterpreted any information pertinent to the evaluation of the fishery. The evaluation team will then take the comments of the Client and revise the report as appropriate.

10.7 Peer review

Following client review, experts of equal or greater stature to those conducting the evaluation will conduct a peer review required by the MSC. Several issues need to be addressed by the peer review process.

1. Peer reviews must determine if the information included in the assessment has been accurately reported and that there are no other data, which have been ignored or overlooked which would give a contrary picture of the fishery.
2. A peer review must determine if the management in the fishery is comprehensive and that arrangements for management and research investigations which have, or are planned to be undertaken, for the fishery, are adequate for resource protection and management of this type of fishery.
3. Lastly, a peer review must determine if the assessment procedures, practices, and results meet the certification standards of the MSC.

To accomplish all these tasks, the peer review team should have a high level of technical competence, regional expertise, and objectivity (especially as defined by stakeholders outside the industry).

10.8 Dispute Resolution

Under the MSC procedures, the client can object to the aspects of the assessment. MRAG Americas and the MSC have policies in place to resolve disputes, which we can provide upon request.

10.9 Objections Resolution

The MSC has instituted an Objections Procedure that is an avenue for any person or organization to dispute the findings of an MSC fishery assessment. The initial step in the Objections Procedure involves the assessment team, and involves responses to specific complaints that may be raised by an objecting party. The costs for this are hard to predict, and not provided with this budget.

The second part of the MSC Objections Procedure involves a major review of the assessment process by an Objections Panel convened by the MSC. This is not the responsibility of the client, but the MSC Objections Panel does have the right to call on the original evaluation team to answer questions. At this time we are unable to provide any additional guidance on the possible costs for this part of the objections process.

11 BUDGET ESTIMATE AND JUSTIFICATION

11.1 Professional Services

Each fishery is slightly different in terms of the amount of time required to travel to and meet with fishery managers, fishery scientists, and stakeholders. In addition, each fishery has a different amount of information to review and understand. All of these factors play a role in estimating a final budget. We will give all these factors careful consideration and use our past experience to estimate the time requirements for the different steps in the certification process in preparing an estimated budget for this project. The tasks required to complete a full assessment are shown below:

1 Team Selection
2 Review and Revise Performance Indicators
  a. Draft Performance Indicators
  b. Revise and Finalize Performance Indicators based on Public comments
4 Review Submitted Fishery Data
5 Interview Key Fishery managers, scientists, and stakeholders
  a. Managers, Scientists
  b. Stakeholders (industry and conservation organizations)
6 Fishing Vessel Inspections
7 Evaluating and Scoring Fishery against Performance Indicators
8 Reporting
  a. Draft Report
  b. Discuss Conditions/Requirements with Applicant/Client
  c. Revise Draft\ Report based on Client Comments
  d. Revise Draft Report based on peer review comments
  e. Revise Draft Report based on public review process

A full budget for conducting an assessment of this fishery is not provided at this time because the fishery is unlikely to pass. However, based on assessments of other Russian salmon fisheries, a full assessment would likely costUS$85,000 to 100,000. MRAG would prepare a detailed budget should a client desire to move the fishery forward to full assessment.

11.2 Expenses

Estimates for travel and related expenses are difficult to estimate. Expenses vary based on location of each assessment team member; the number of meetings required between the team and fisheries managers, fisheries scientists, and stakeholders; and the changing market structure for airlines and hotels. It is estimated that the assessment team will need to have at least 3 main meetings and working sessions. The first meeting to initiate the project and draft the performance indicators and scoring guidelines. This meeting will also include a consultation with the client and with key stakeholders. A second meeting is required to interview fishery scientists and managers, and key stakeholders. A third meeting is required to evaluate and score the fishery against the performance indicators. In some cases, the assessment team is able to score the fishery at the end of the second scheduled meeting. If this can take place, it reduces the need for a third meeting and therefore eliminates the additional costs. However, it is important to note that it is often impossible to determine at the outset of a project whether a third meeting will be required, as the basis for the decision is often how well other tasks have been completed by the end of the interviewing processes.

To estimate expenses we will assume that site visitwill beheld in two locations to allow the team to interview scientists, managers, fishery representatives, and other stakeholders.Should there end up being a need to hold additional meetings complete interviews, then travel related expenses could be increased.

The budget does not include costs for translation of documents or English-Russian interpretation at meetings, as we cannot predict the amount of work required in this regard. A budget for a full assessment assumes that the client will arrange for translation and interpretation.

In summary, expenses will be estimated on best available information and at current market rates, and are subject to change. Estimates will be provided under separate cover to protect confidential information, and will be based on:

- Airfares
- Hotels
- Food
- Ground Transport
- Meeting Facilities
- Miscellaneous (phone, fax, copying, etc.)

11.3 Post-Certification Costs

11.3.1 Chain of Custody

Under the MSC program, each processor must also get qualified to make the claim that products come from a certified fishery and can carry the MSC logo. The Chain of Custody would be examined and documented to the extent possible for the client. A separate cost estimate could be prepared to cover this issue should the fishery be certified.

11.3.2 Annual Surveillance

An MSC certification requires that there is an annual audit of random aspects of the fishery and its operations. This is normally a limited operation, conducted by 2-3 team members in a period of a few days site visit and a brief report. The cost of a routine annual surveillance for this fishery could be expected to be up to 15%-20% of the initial certification costs. However, this could go higher or lower. For example, if the full assessment sets forth a number of conditions, or major aspects of the fishery change after certification, the surveillance costs could be higher. On the other hand, if the fishery evaluation goes smoothly and there are few issues, the costs for surveillance could drop to as low as 5%-10% of initial certification costs.

12 TIME REQUIREMENTS FOR CERTIFICATION

From the initiation of a certification evaluation, we anticipate that it will take a minimum of 13-15 months to complete the entire certification process. This is based on 5 items:

- Full cooperation from the Narody Severa and Bolsheretsk fishery and the various fishers in accessing information/data about the policies, fishing practices, and management of the fishery.
- Timely and accurate translations of documents and availability of qualified interpreters.
- Full cooperation from the MSC
- Cooperation from stakeholders in eliciting comments
- Availability of appropriate experts to participate on the evaluation team and on the peer review panel.

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