SakhalinRybVod FSE

Report
Center Severo-Kurilsk OIRMVBR
For 2007

Completed by:
Department Head **S.I. Borzov**

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1. Analysis of the stock conditions of the most important commercial fish.

The condition of the stocks of commercial fish for the waters surrounding the island of Iturup may be indirectly evaluated based on analysis of the catch sizes per unit of effort, measurement of the size and age compositions of the catches, increases in the percentage of by-catch of young fish, change in the growth rate and other indicators. In connection with the fact that we are conducting an analysis of the local portion of the various grouping of commercial target species, increases in the catch per unit of effort could be the very reason for the species redistribution within the boundaries of its range due to changing conditions.

The catch per unit of effort has been fairly stable over the past 5 years, which indicates that the impact of fisheries activities on the populations of commercial target species has been insignificant. This has also been confirmed by the size composition, which indicates the presence of several modal age and size groups, significant average linear sizes of individuals in the catches, and changing harvest generations. We consider one of the reasons for the insignificant impact on commercial populations to be the limited fishing areas and the use of bottom nets having mesh sizes of 65-70 mm.

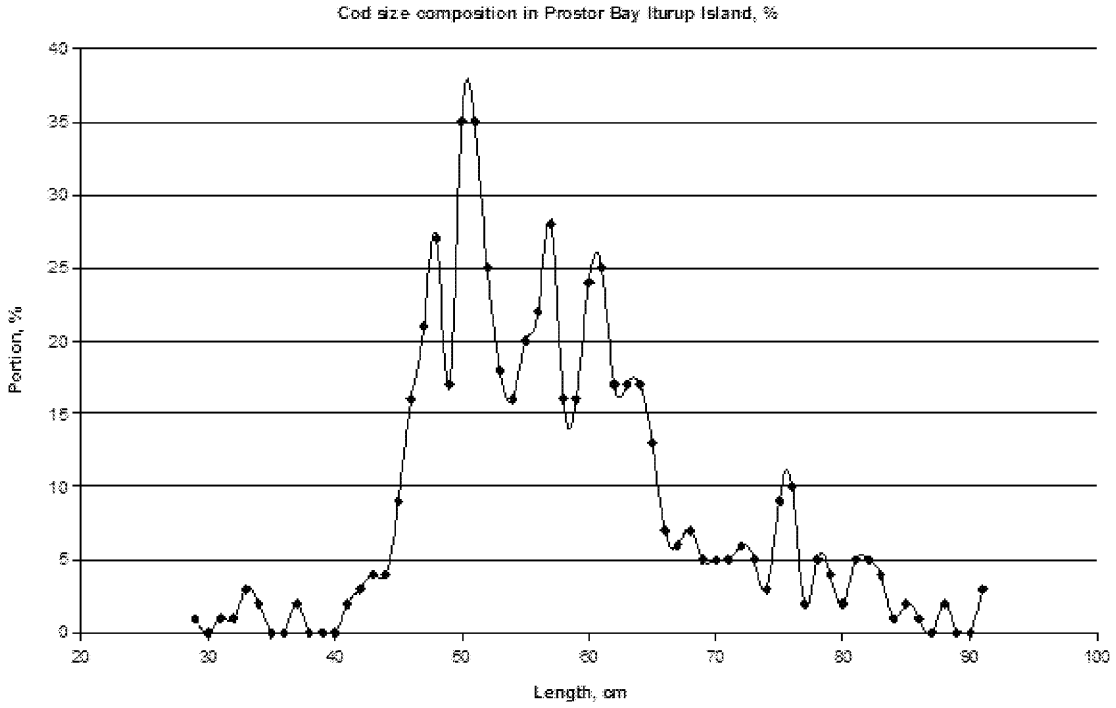
Table 1.1

Comparison of catches per effort of bottom nets by year

Year	Catch per effort (kg per 1000 m of net) by species						
	Cod	Pollock	Halibut	Flounder	Plaice	Greenling	Total
1999	271.1	285.5	18.1	2.6	62.8	6.4	646.5
2000	479.3	431.7	13.5	0.1	10.9	14.4	949.9
2001	854.6	549	37.6	2	30.1	20.1	1493.4
2002	594.9	785.8	21.5	0.9	23.4	18.3	1468.1
2003	690.7	727.7	21.5	3.5	23.3	9.3	1476
2004	617.40	413.60	17.10	1.70	45.20	17.20	1112.20
2005	585.30	386.20	11.60	1.10	6.40	19.20	1009.80
2006	284.0	668.0	2.0	0	0	13.0	968.0
2007	296.0	715.8	4.3	0.8	0	16.5	1033.4

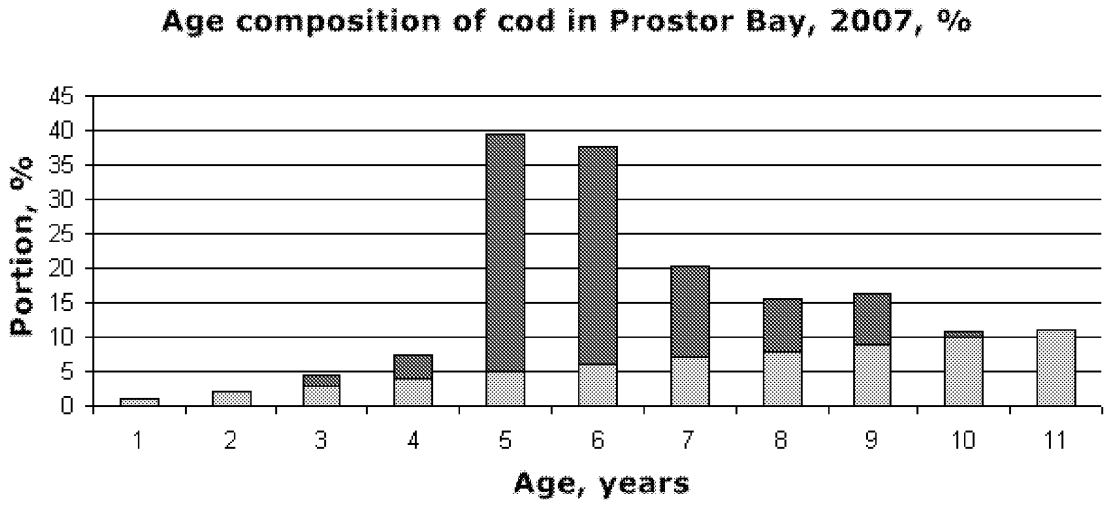
Pacific Cod. The size of the cod caught by small vessels operating in Prostor Bay varied from 29 to 99 cm, and averaged 59.02 cm, with an average weight of 2460 g. During the period operations were conducted, females showed a slight predominance in the catches (52 %). The majority of the fish was in feeding condition.

We believe that the decreases in catch per unit of effort of cod that have been noted over the past 2 years are due to the dominance in the catches of 1-2 age groups, which are probably of low numbers. It is possible that the reason for the fall-off in catches is due to overfishing in the spawning area on the Pacific side of Iturup Island and a resulting decline in the numbers of spawning fish on the spawning grounds.

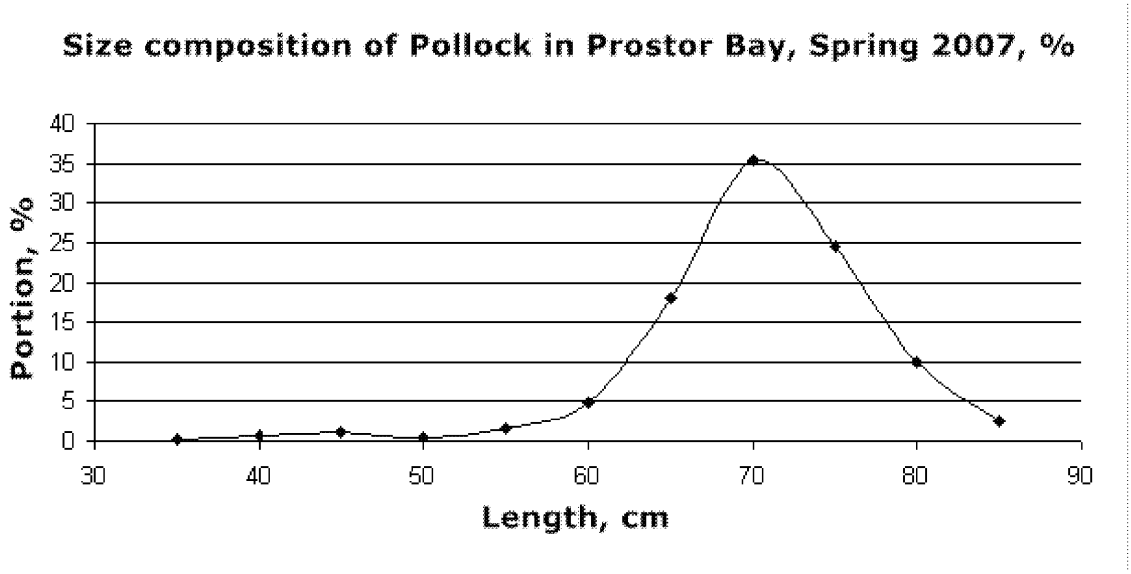


Cod feeding for the entire period was high. The average score for stomach fill was 2.6. Empty stomachs were noted in 28 % of the fish. Most frequently the stomachs contained young pollock and digested fish (up to 99 %), in individual instances were encountered lanternfishes, greenlings, squid and decapods.

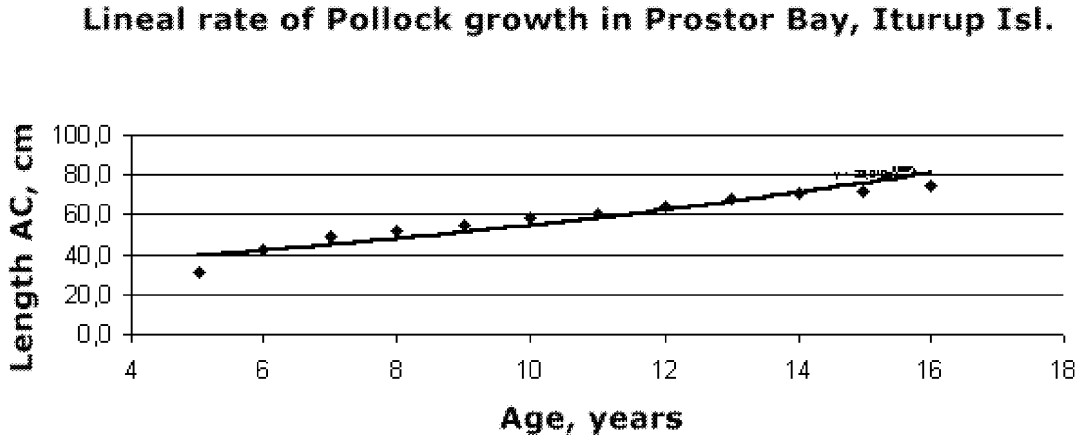
The individuals in the catches were from 3 and 11 years in age. The age composition had a predominance of individuals that were 5-6 years of age (66.1 %). In addition, a significant portion was represented by the older age group: 7-9 years, 28.0 %.



Pollock (*Theragra chalcogramma*). The sizes of pollock in the catches during the study period varied from 34 cm to 81 cm, comprising on the average 62.9 cm. The modulus was at 59-60 cm (Fig. 6).



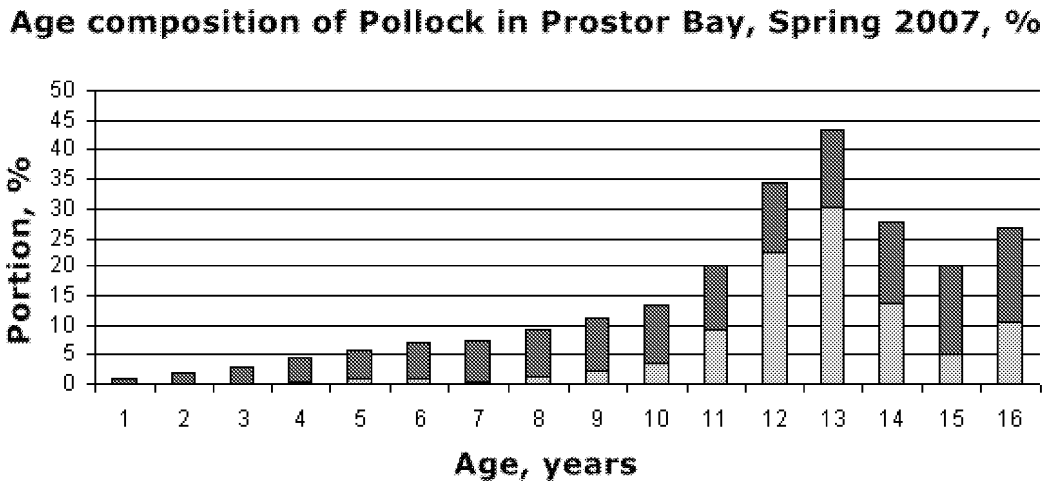
Pollock in Prostor Bay presents low indicators of linear and weight growth, with individuals of 10 years in age having a size of only 57-58 cm and a weight of 1577 g.



Stable catch indicators per unit of effort during the past number of years indicates a stable condition of the South Kuril population, to which the pollock of Prostor Bay, Iturup Isl-

and, belong. In 2008, the greatest probability is that pollock catches will increase or exceed the level of 2002-2003.

In the age composition of the catches in Prostor Bay 12-13 year fish were dominant, together comprising 52.5 %. The portion of fish younger than 11 years comprised only 9.2 %.



Atka Mackerel (*Pleurogrammus monopterigius*). Atka mackerel varied in size from 28 cm to 48 cm, and averaged 38.2 cm, with a modulus of 38 cm (Fig. 9). The average weight of fish in the catches was 923 grams. Males predominated and comprised 82%. The vast majority of the fish was in pre-spawning and spawning condition. The average score for fat content was -0.5. The average score for fill was 1.2. 48 % of the fish had empty stomachs. The major component of the food mass in the stomachs was copepods - 98 %. 2 % of the fish were noted with copepods.

Arabesque Greenling (*Pleurogrammus azonus*). Arabesque greenling was associated in the catches with Atka Mackerel, and comprised no more than an insignificant portion of all of the greenlings caught. It varied in length from 33 to 43 cm, comprising on the average 37.5 cm. The biological condition of this greenling was the same as for atka mackerel.

Blue Rockfish (*Sebastes glaucus*). Blue rockfish varied in size from 29 to 47 cm and on the average comprised 37.2 cm. The modulus was 38.0 cm (Fig. 15). The majority of fish in the school was represented by sexually mature individuals, mostly females with gonads in the IV-V stage of maturity. There have been practically non biological studies made on blue rockfish due to the fact that in the majority of cases it is encountered in catches only in very small numbers.

Halibuts. During the research period, two species of halibut were noted in bottom net and Danish seine catches in Prostor Bay: Greenland halibut – *Hyppoglossus stenolepis* and asiatic arrowtooth flounder [halibut] – *Atheresthes evermany.* Sizes of greenland halibut varied from 27 cm to 47 м, comprising on the average 38 cm. The sizes of arrowtooth halibut varied from 25 to 50 cm and comprised on the average 30-35 cm. All of the halibuts that were encountered in the catches were rather rare and in individual numbers. The vast majority of the fish were represented by immature individuals with stage II gonads.

Flounders. The species composition of the flounders in the catches of 2007 is presented as percentages in Table 2.1. Compared with previous years, the number of species decreased. Dominant in the catches were whitebelly and shrenk flounders. We believe that the change in species composition is a result of a later warming of coastal waters, leading to a later time for spawning migration.

Table 1.2

Species composition of flounders in the catches in Prostor Bay, 5JUN07.

#	Species name	%
1	Sharp-head flounder	4.1
2	Greenland halibut	2.5
3	Shrenk flounder	74.2
4	Whitebelly flounder	18.2
5	Korean flounder	1.0
	Total	100

Shrenk flounder (*Pleuronectes shrenki*). Fish size in the catches varied from 27 to 43 cm, with an average of 36.2 cm. The modulus was 36 cm.

The average weight of the fish in the catches was 810 grams. The majority of the mature fish was in feeding and pre-spawning condition.

Sharp-head flounder. (*Cleisthenes pinetorum*) Sizes varied from 30 to 47 cm, and on the average was 36 cm, with an average weight of 560 г. The vast majority of individuals was in spawning and pre-spawning condition.

Whitebelly flounder (*Pleuronectes mochigarei*). Sizes of whitebelly flounder varied in the catches from 22 to 45 cm, with a modulus of 32 cm, and average size of 32.46 cm, average weight of 840 г. The females and males were in feeding and pre-spawning condition.

The condition of the stocks of salmons on Iturup Island is determined by the following factors:

- The area available for spawning;
- Conditions in coastal waters during the early sea portion of the salmon's life;
- Abundance of the parent generation;
- Presence of November floods (for pink salmon);
- Abundance of hatchery young;
- Intensity of drift-net fishing;
- Area available for feeding of the fry (sockeye salmon, coho, masu).

Pink Salmon. Due to the effectiveness of conservation efforts on the spawning grounds in the majority of waters and the increase in hatchery production, the condition of the stocks of pink salmon is quite stable. A tendency has been observed for the generations to alternate and for the even years to dominate. On the whole, pink salmon from the "southern population" predominated in the catches.

Salmon biological analysis data are presented in Tables .

In 2007, 990 individuals of pink salmon were examined by department specialists for signs of injury. There were 152 individuals, or 15.3 %, found with injuries, of which injuries from gilling in drift nets were found among 2.1 %, from long lining - 0.2 %, bites from sea animals 4.4 %, and ulcerations from ectoparasites - 8.6 %.

Chum Salmon. Due to a decrease in the intensity of ocean fisheries, the return of artificially reared fish and entry of a harvest population into the fisheries, there has been a marked increase in the abundance of spawning schools over the past three years. The population is being hindered from coming out of its depression only by a lack of spawners at the spawning sites. But for a number of the bodies of water which have an effective system of protection of the spawning grounds, a tendency towards increasing numbers is already being noted: Lake Sopochnoye, the Kuybyshevka River, Reydovaya River, Argunj River and Rybatskaya River. Increasing artificial enhancement of chum salmon in 2003-2005 (on the Osennyaya River and Kurilka River) should also help the populations to increase in numbers. We anticipate an increase in harvests as early as 2008-2010 to the levels of 10-12 thousand MT and an average density of spawners at the spawning grounds of up to 80-90 %.

Sockeye Salmon. Due to a decrease in ocean fisheries, there has also been a slight increase noted in the numbers of spawning schools, on the average by 30-40 %. Poaching and limited feeding conditions for the young salmon prevent the numbers from stabilizing.

Masu Salmon. Considering the intensity of poaching and catches of the young salmon by sports fishermen, population numbers in all of the rivers are very low. Without an effective conservation program, the numbers will not be able to increase. In light of the artificial enhancement efforts by the Reydovo Salmon Hatchery, an increase has been noted in the numbers of spawner fish in the river basin.

Smelt. Entry of the harvest generations of 2004-2005 has been noted. An increase in numbers has been noted for all of the regions on the island. Poachers have been actively expanding their fishing efforts, using hooks to "snag" the fish. In our opinion, the reason for the restrained numbers is poaching and fishing in the rivers during the false spawning of the fish in December – April. Control over the condition of the population has been hindered by the lack of scientific and commercial quotas. We will be conducting an analysis on the numbers caught by sports fishermen and poachers.

2. Effectiveness of enhancement of the main species of commercial fish.

Salmons. During the entire period of the spawning migration in 2007, relatively moderate air temperatures predominated, to 20-22 degrees C, and frequent but not very heavy precipitation. Thus, the salmon run into the rivers and spawning occurred under favorable conditions. There were no dried out spawning areas, and the average water level was 15-20 cm above the low-water line. There were 5 floods noted, in September - October, with the level rising by 0.8-1.4 meters. Because of the absence of any significant flooding during the vulnerable stages of development, it did not exert any negative influence on salmon egg survivability in the spawning rivers. In the spawning mounds that were opened up in the controlled bodies of water, no elevated egg or embryonic mortality was noted.

In 2007, the runs of pink salmon in the majority of base rivers on the island were at a maximum level. For this reason, for the majority of the bodies of water the density of spawners at the spawning grounds was high, and a deficit of spawners was noted only in the rivers of the south Pacific shoreline. The fish hatcheries were able to fully meet their egg targets.

Due to the warm winters, the spawning grounds on Iturup Island did not freeze.

Coastal water temperatures warmed to levels that were average for the time of year. 60-80 % of the young pink and chum salmon of the 2006 generation encountered favorable conditions, with coastal water temperatures above 2 degrees Celsius.

The spawning periods for flounders, greenlings, rockfish, and smelt were on the level of the average over many years. Greenling, smelt and rockfish fry were noted in coastal waters beginning 7-12 June.

2. 1 Observation of the embryonic and alevinic development of salmon.

Data on the examination of 20 spawning sites in March from the 2006 spawning season are presented in Table 2. 1

Table 2. 1

#	Water layer above the bottom	Egg-laying depth, cm		Speed, meters/sec	Number of fry	Survivability, %
Upper Current						
1	6	10	22	0.8	932	198.7
2	8	8	24	0.7	855	182.3
3	11	6	26	0.65	677	144.3
4	10	9	28	0.7	421	89.8
5	11	10	26	0.7	386	82.3
6	12	8	22	0.6	402	85.7
7	13	10	24	0.6	213	45.4
Middle Current						
8	14	8	24	0.7	377	80.4
9	12	10	32	0.6	329	70.1
10	10	12	26	0.55	184	39.2
11	11	14	22	0.5	111	23.7
12	12	12	27	0.55	234	49.9
13	8	11	28	0.4	152	32.4
14	8	14	32	0.45	82	17.5
Lower Current						

15	10	12	30	0.45	93	19.8
16	10	14	28	0.5	114	24.3
17	11	16	26	0.4	56	11.9
18	11	12	28	0.45	188	40.1
19	12	14	32	0.35	0	0.0
20	14	15	30	0.3	6	1.3
Average	10.7	11.3	26.7	0.54	290	61.1
Max.	16	16	32	0.8	932	198.7
Min.	7	6	22	0.35	0	0.0

Data on the examination of 20 spawning sites in December from the 2007 spawning season are presented in Table 2.2

Table 2.2

#	Water layer above the bottom	Egg-laying depth, cm	Speed, meters/sec	Total number of eggs	Live eggs	Dead eggs	Survivability, %
Upper Current							
1	15	6	35	0.8	1278	990	288	77.5
2	12	7	32	0.75	1496	1057	439	70.7
3	9	10	41	0.75	1506	1040	466	69.1
4	20	8	36	0.7	1633	1450	183	88.8
5	15	12	38	0.7	1974	1609	365	81.5
6	10	10	45	0.8	1986	1170	816	58.9
7	12	11	34	0.7	1566	1210	356	77.3
Middle Current							
8	6	6	32	0.7	1415	940	475	66.4
9	20	8	28	0.7	1354	1145	209	84.6
10	13	12	32	0.6	645	460	185	71.3
11	15	10	28	0.65	2320	2206	114	95.1
12	8	11	29	0.6	854	658	196	77.0
13	18	16	32	0.6	1524	1008	516	66.1
14	9	9	34	0.6	862	320	542	37.1
15	10	12	36	0.55	1542	1287	255	83.5
Lower Current							
16	12	12	32	0.6	322	245	77	76.1
17	16	14	30	0.5	198	101	97	51.0
18	25	14	32	0.4	574	240	334	41.8
19	15	14	30	0.5	154	53	101	34.4
20	8	15	32	0.45	320	224	96	70.0
Average	13.4	10.8	28.8	0.63	1176	870	305	68.9
Max.	25	16	45	0.8	2320	2206	816	95.1
Min.	6	6	28	0.4	154	53	77	34.4

2. 2 Calculation of the downstream migration of young salmon.

During the reporting year, the station workers conducted research on the numbers of salmon downstream migrants in the main controlled body of water, the Olya River, from 1 May through 25 June. During the entire downstream migration period of the young salmon, the hydrological and hydrochemical condition of the water was normal. Flood waters passed through from 3 May through 3 June. A forcible wash-out of pink salmon fry (3-5 % of the young salmon) with incompletely absorbed yolk sacks was noted on 5 May through 21 May. Due to the late onset of spring, the temperature regime in coastal waters became optimal by the middle of the third ten-day period in May.

The graph of the dynamics of downstream migration for young salmon, temperature changes in the Olya River and at sea, and fluctuations in water levels in the river is presented in Fig. 1.

2. 3 Predicted salmon runs in the Kuril Island Commercial Fisheries Area for 2007.

Pink Salmon. Year 2006 generation. Considering the great abundance of the parent generation, the high spawner density at the spawning sites on the island and return of the odd-year generation, as well as the low temperatures in coastal waters during the downstream migration period, the run of pink salmon spawners on Iturup Island in 2007 may be expected to be on the level of the average amount (25-27 thousand MT).

Chum Salmon. Fisheries in 2008 are justified in the Reydovaya River, Kurilka River and Osennyaya River. The predicted numbers of commercially available fish from the Reydovo Salmon Hatchery are at a level of 7200 MT, from the Kurilsk Salmon Hatchery at a level of 2500 MT and from the Osenniy Salmon Hatchery of 800 MT. Considering the return of commercial fish from the three hatcheries and natural reproduction, the harvest amount for 2008 would be at a level of 10-11 thousand MT.

Table 2.3.

Calculation of the commercial abundance of chum salmon from the Reydovo Salmon Hatchery in 2008.

Year of release	Number of downstream migrants, thousand	Age, years	Return coeff.	Number of spawners, ind.	Average weight, kg	Total weight, MT	Age composition, %
2006	23582	2+	0.13	30657	2.58	79.1	1.1
2005	23582	3+	4.89	1153160	3.68	4243.6	58.9
2004	23118	4+	2.88	665798	4.17	2776.4	38.6
2003	22737	5+	0.1	22737	4.4	100.0	1.4
				1872352	3.84	7199.1	100.0

Table 2.4.

Calculation of commercial abundance of chum salmon from the Kurilsk Salmon Hatchery in 2008.

Year of release	Number of downstream migrants, thousand	Age, yrs	Coefficient of Return	Number of spawners, ind.	Average weight, kg	Total weight, MT	Age composition, %
2006	17540	2+	0.1	17540	2.43	42.6	1.8
2005	13840	3+	3.57	494088	3.23	1595.9	66.0

2004	10380	4+	1.91	198258	3.94	781.1	32.3
2003	920	5+	0.08	736	4.34	0.0	0.0
				710622	3.404993	2419.7	100.0

Table 2.5.

Calculation of commercial abundance of chum salmon from Osenniy Salmon Hatchery in 2008.

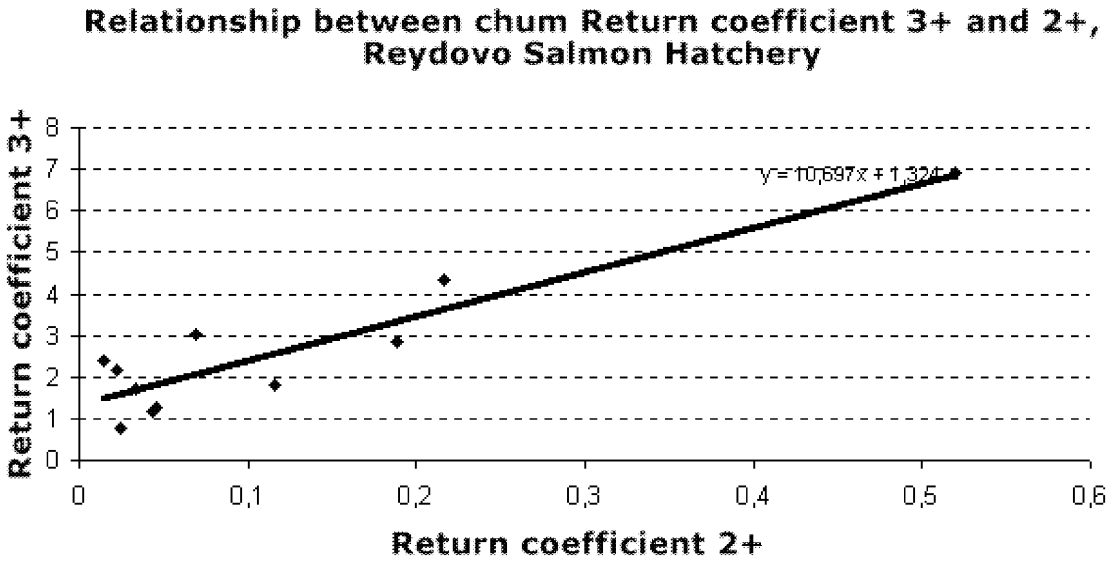
Year of release	Number of downstream migrants, thousand	Age, yrs	Coefficient of Return	Number of spawners, ind.	Average weight, kg	Total weight, MT	Age composition, %
2006	4000	2+	0.1	4000	2.58	10.3	1.6
2005	4500	3+	3.80	171000	3.68	629.3	98.4
2004		4+	2.88	0	4.17	0.0	0.0
2003		5+	0.1	0	4.4	0.0	0.0
				175000	3.65	639.6	100.0

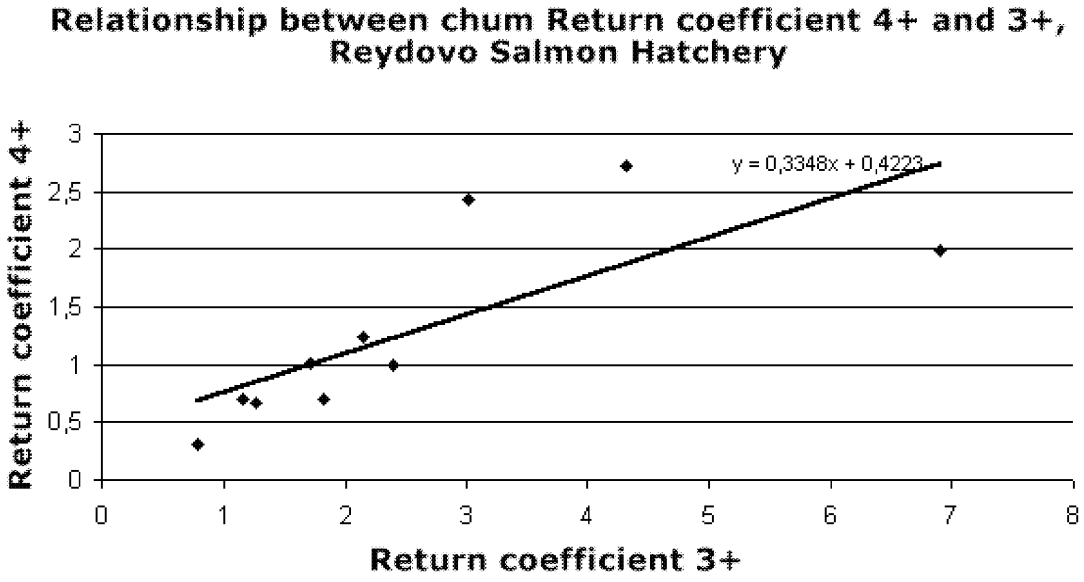
Table 2.6.

Coefficients of chum salmon return from the Reydovo Salmon Hatchery by age.

Year of release	Release of young salmon, thousand.	Average weight of young salmon, mg	Age, yrs				Generation
			2+	3+	4+	5+	
1993	2 161	1220	0.520	6.900	1.990	0.160	9.570
1994	20 000	1206	0.024	0.790	0.314	0.026	1.154
1995	11 400	1157	0.045	1.262	0.669	0.039	2.015
1996	10 747	1109	0.034	1.707	1.015	0.162	2.918
1997	10 510	1040	0.043	1.159	0.693	0.052	1.947
1998	8 950	1003	0.115	1.823	0.709	0.125	2.772
1999	15 270	736	0.217	4.324	2.722	0.121	7.384
2000	23 234	889	0.069	3.009	2.424	0.158	5.660
2001	22 921	1134	0.014	2.400	0.998	0.068	3.480
2002	22737	1160	0.022	2.153	1.235	0.069	3.479
2003	23118	1118	0.189	2.855	1.036		4.080
2004	23582	1136	0.310	7.423			7.733
2005	23582		0.331				0.331
2006							
			0.133	2.58	1.277	0.101	

These forecasts on the numbers of commercially available fish are based on the established and reliable relationship between the coefficients of chum salmon return for a single generation.





Sockeye Salmon. Due to the lack of data on the downstream migration of the young salmon, any prediction on numbers is difficult to make. Considering the numbers in the population over the past five years and the comparatively low value for their survivability during the fresh water stage, the number of sockeye spawners in Krasivoye Lake in 2008 will likely not exceed 15-20 thousand.

3. The effectiveness of current fisheries regulation measures.

The fisheries regulation system, based upon the issuing of quotas for harvest and division of target species by fishing areas, is in our opinion sufficiently effective, and is justified for the fisheries of the vast majority of target species. The main factor which interferes with the efficient utilization of a number of species through fisheries is the excessive number of species included within the TAC quota system. For the species of pacific salmon whose numbers are subject to significant fluctuations and for which there is a limit for allowing their escapement into the spawning streams, this system creates a number of restrictions that interfere with regulation. What is needed is not a TAC, rather a total number of fish in the run (harvest), based upon which the enterprises could be allocated quotas in percentages. The restriction of fishing when the spawning areas have become overcrowded when there are small streams that are associated with unfavorable hydrological regimes creates a situation that can lead to massive pre-spawning mortality and worsening reproductive conditions.

The pink salmon run in 2007 on Iturup Island was noted as being one of the most abundant runs of the past 10 years. In connection with this, the department specialists issued a recommendation that the escapement of the fish to the spawning areas be controlled in order to head off a massive die-off of the salmon during the 2007 season.

1. In keeping with an order issued by SakhalinRybVod FSE, joint operating groups were established to study the spawning bodies of water in order to evaluate the density of spawners at the spawning sites and to determine the ecological conditions for the aquatic species.
2. The hydrological conditions in the base spawning rivers were monitored daily.
3. According to the research on the aquatic species, regimes for regulating the escapement of fish to the spawning areas were investigated (using fishing sectors, not using fishing sectors, fishing using beach seines in the bay, erection of river barriers, etc.)
4. Once 5,347 MT was harvested in the rivers, we were able to avert a die-off of pre-spawning fish from starvation.

Considering the fact that the salmon harvest quota system is not based upon a general regional principle, we believe that the regulation of the pink and chum salmon fishery in 2007 was not adequately effective.

4. Utilization of aquatic biological resources and the unutilized harvest reserves.

Based upon the analysis of the condition of the populations of the target species presented in Section 2, we consider the utilization of a number of target species to be inadequately efficient. We have identified the following reasons for this fact:

First, a portion of the allocated quotas is not utilized because of limitations on the areas and times of fishing. The fishery is of a traditional, seasonal nature. The ability to expand the fishing period is hindered by an inadequate numbers of coastal fisheries vessels and an absence of ports in which to take cover. Some target species (*Alaria* sea cabbage), in spite of significant biomass and quotas, are not utilized due to a lack of the specialized equipment and the establishment of time periods for the harvest of traditional fisheries species (salmon). For some species (anchovy, blue rockfish) fishing is not profitable due to an underdeveloped sales market. A number of specialized fisheries (halibut, squid, rockfish, tuna) is under-developed.

Second, it is likely that quotas that have been allocated for the area are too small as a result of the absence of trustworthy scientific resource studies. Also, not all abundant species represented in the catches are subject to quotas. In coastal waters, for example, the biomass represented by such species as rock greenling, sand lance, sand fish, trumpet snail, etc., is significant.

Third, too great a number of commercial species have been included in the list of TAC quotas.

One of the problems of developing the fishing industry on the island is that of the processing of fish offal. At present, approximately 20 % is discharged into the ocean, although it could be processed into meal and frozen as liver, soft roe, etc..

One of the reserves for increasing the harvest of fish in coastal waters is the artificial reproduction of salmon. If an additional 30-40 million downstream migrants of chum salmon could enter the coastal waters, it would be possible to stabilize the chum salmon harvest at a level of 10-12 thousand MT.

The above notwithstanding, thanks to the development of a fish processing base in various parts of the island the appearance of a number of competitive enterprises, there have been a number of steps taken in the region to increase the harvest and improve the extent to which the bioresources are utilized.

The Federal Kuril Island Development Program provides for conducting resource research to evaluate the stocks of aquatic bioresources and bring new target species into the fisheries, as well as the construction of new salmon hatcheries of up to 100 million salmon fry capacity, which should permit the raw materials base of this region to be more fully utilized.

5. Salmon runs in the waters of Iturup Island.

5.1 Pink Salmon.

The reporting year was characterized by the following anomalies in the runs of pink salmon.

An unusually abundant spawning run of pink salmon of the southern and northern populations. There was a displacement of the timing of the run to an earlier period (by 5-7 days), and a very compressed and short period year end run, with an abrupt fall in numbers.

The beginning of the migration into the rivers on the island was noted earlier than the many-year average: into the Kuybyshevka River - beginning 10 June; the Kurilka River - beginning 12 June; the Reydovaya River and Olya River - from 15 June.

During July, the intensity of the pink salmon run in the rivers was low in the majority of the bodies of water on the island, with the exception of 4 rivers, the Rybatskaya River, Kurilka River, Saratovka River and Kuybyshevka River. The time of the most intensive "beginning" of the run in these rivers was earlier on the average by 5-6 days.

During the first ten days of August, the intensity of the run was weak in the majority of the bodies of water on the island, with the exception of the Skaljnaya River, Rybatskaya River, Kurilka River, Argunj River, Reydovaya River and Saratovka River, where the run occurred 5-7 days earlier than the many-year average.

The mass run into the rivers for the majority of the bodies of water in the southern portion of the island was noted from the beginning of the second 10-day period. The start of the mass run in the Kuybyshevka River was from 13 August, the Reydovaya River -10 August, the Rybatskaya River - from 15 August and the Skaljnaya River - from 15 August. This year, the maximum run abundance for all regions on the island has been noted on the Sea of Okhotsk shore. The pink salmon runs into the rivers of the south Pacific shore were very weak, with spawner density not exceeding 35-40 %.

The end of the mass run into the Gornaya River, Vodopadnaya River, Zhemchuzhnaya River and Kuybyshevka River was on 15 September, the Kurilka River - 5 September, the Vysokotravnaya River and Khvoynaya River - on 7 September, the Reydovaya River and Argunj River - on 20 September, the Olya River, Saratovka River and Skaljnaya River - on 30 September, the Medvezhjya River, Tsirk River, Slavnaya River, Chistaya River and Aktivniy Creek - on 23-25 September.

The end of the run of pink salmon into the spawning bodies of water of the island occurs at the end of the month of October.

As of 30 October, 51800 pink salmon individuals had entered the Olya River. The end of the run into the river was noted on 30 October. The mass spawning continued until the end of the month.

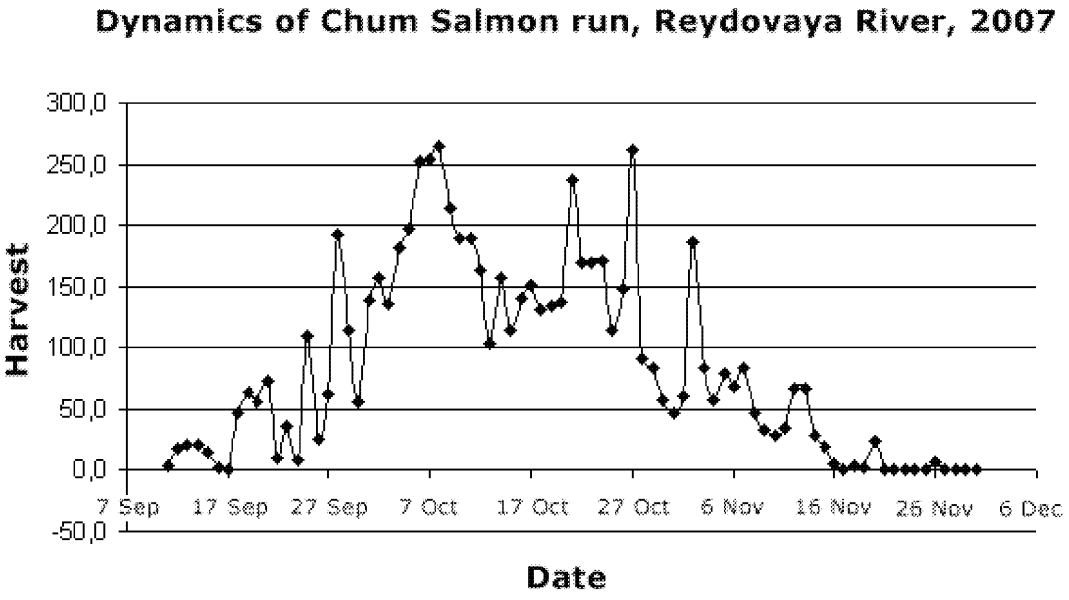
Beginning at the end of the first ten-day period in September, mass spawning was noted on many of the bodies of water on the island.

For the final data on pink salmon spawner density at the spawning sites of the bodies of water as of 31 October, see Table 5.1.

5.2 Chum Salmon.

The reporting year was characterized by the greatest abundance of chum in the runs into the bodies of water on Iturup Island since the history of observations began in 1941. The spawning migration occurred earlier by 5-7 days. The start of the run was marked by greater numbers of fish, and the mass run was stretched out and lacked a sharp increase in numbers of fish. The mass chum salmon run into the Reydovaya River was noted from 5 October through

10 November, into Lake Sopochnoye from 5 through 25 October, into the Rybatskaya River from 8 through 25 October, and the Kuybyshevka River from 14 through 30 October.



In the remaining bodies of water, the chum salmon run was weak without a sharp delineation of the mass run. Data on chum salmon spawner density on the spawning grounds are presented in Table 5.2.

Table 5.2

#	Body of Water	Area of spawning grounds, sq.m.	Total number of spawners, ind.	Spawner density, %
1	Reydovaya River	6400	19970	195
2	Argunj River	4600	6950	94
3	Lake Reydovoye	7400	1850	15
4	Lake Sopochnoye	26500	43200	102
5	Rybatskaya River	3600	7890	136
6	Kuybyshevka River	17000	29240	108
7	Lake Kuybyshevskoye	20000	53600	168
8	Lake Lebedinoye	6750	3650	33.7
9	Kurilka River	11500	28250	153
10	Tsirk River	2500	4610	115
		106250	199210	117.8

In age composition, the spawning rivers were dominated by individuals of 3+ from 55.6 to 91.5 % due to the entry of the 2003 harvest generation. The portion of five-year fish was small and varied from 4.4 to 13 %. Due to the entry into the fishery of the first return from the Osenniy Salmon Hatchery there was an increase in the portion of three-year fish to 40 %.

Table 5.3.

Age composition chum spawning populations on Iturup Island in 2007, %

#	Body of Water	Age composition, %				Number of individuals
		2+	3+	4+	5+	
1	Reydovaya River	3.7	84.0	11.5	0.8	700
2	Kurilka River	2.9	91.5	4.7	0.9	800
3	Rybatskaya River	1.0	95.0	1.0	3.0	100
4	Lake Sopochnoye	1.0	88.0	9.0	2.0	100
5	Lake Kuybyshevskoye	2.0	84.0	13.0	1.0	100
6	Osennyaya River	40.0	55.6	4.4	0	100
7	Lake Blagodatnoye	2.0	90.0	6.0	2.0	100
	Total					2000

Comparison of the average indicators for chum salmon of different spawning populations shows a higher value for the chum from natural populations than from hatchery populations. In addition, in 2007, a decrease in linear and weight characteristics among the spawners for all bodies of water due to their greater numbers. During age determination, the absence of a summer growth zone was seen in some Reydovaya River chum salmon. In addition, for the first time for the Reydovaya River chum, an individual of age 1+ was noted.

Table 5.4.

#	Body of Water	Average length AC, cm	Weight, g	Fecundity, ind.
1	Reydovaya River	66.6	3240	2188
2	Kurilka River	65.1	3090	2135
3	Rybatskaya River	66.7	3394	2349
4	Lake Sopochnoye	65.2	3596	2365
5	Lake Kuybyshevskoye	65.4	3257	
6	Osennyaya River	64.4	2912	
7	Lake Blagodatnoye	66.9	3413	2112

5.3 Sockeye Salmon in Krasivoye Lake.

The number of sockeye spawners in 2007 comprised around 15,000. The spawning run was noted to be small, with two minor upswings in migration intensity.