A Brief Overview of the 2006-2007 Salmon Season

It has long been well known that the numbers of pink salmon that migrate to the East Coast of Kamchatka and Eastern Sakhalin to spawn are greater in odd-numbered years, while the numbers of pink salmon migrating to the West Coast of Kamchatka to spawn are greater in even-numbered years. For this reason, we shall present data on pink salmon catches for the Far East basin for the two preceding years: data for the 2006 run as a basis for forecasts in 2008, (Table 1.1), and data on the 2007 harvest of all species of salmon as the justification for the volumes of coastal fishing based on the fishing forecasts (Table 1.2).

We shall provide a comparative analysis of the "predicted vs. actual" type based upon such characteristics as total harvest and its structure for the entire coastal region and by individual areas.

The 2006 Salmon Run

The predicted amount of harvest of pacific salmon in the Far East Basin under Russian Federation Ministry of Agriculture Order 74 dated 15 March 2005 and Order 129 dated 05 May 2006, which were based upon the recommendations of the regional commercial fisheries institutes, was set at a level of 282479.4 MT (shore harvest) and 297649.4 MT (including Russian and foreign drift-net fisheries). The actual amount of salmon shore harvest was 273395.0 MT, and the amount including drift-net fisheries was 287965.96 MT (see Table 1.1).

Strictly speaking, the concept of a prediction provides for a certain allowance upwards or downwards, the need for which is obvious, considering the fact that predicted numbers are based on probabilities. These deviations are not the result of poor work by the institutes, but are unavoidable errors that creep into the evaluation process of:

- the densities of spawning fish at the spawning grounds and the actual harvest amounts (evaluation of poaching);
- the survivability of young salmon during the fresh-water period of its life, in evaluating its abundance during downstream migration, winter at-sea roaming, etc.

It is exceedingly difficult to estimate the survivability of salmon during the winter roaming period at sea.

To a significant degree, it is specifically due to this reason that the scientific research institutes operate at sea during the run, conducting drift-net and especially trawl surveys which provide information to get a picture of the numbers of salmon at sea, and use this as a basis for making corrections on their possible numbers as they come to shore and are subsequently harvested.

The predicted pink salmon harvest for the entire coastal region for 2006 (194,900 MT) ended up being too high by nearly 2.3 % (199,300 MT). The situation that developed on the East Coast of Sakhalin, where nearly 85,000 MT was harvested at a predicted amount of 18,500 MT, was particularly "tragic". At the same time, the West and East coasts of Kamchatka had harvests of pink salmon that were significantly lower than the predictions (Table 1.1).

For the entire Primorye Subzone (the SovGavan and Vanino regions in Khabarovskiy Krai and the Terney Region of Primorskiy Krai), the predicted harvest amount of pink salmon was just about right.

On the northern shore of the Sea of Okhotsk (Magadanskaya Oblast and Khabarovskiy Krai), the actual harvest of pink salmon was just over half of the TAC amount. The major component of the runs was natural fish. Fish enhancement efforts played practically no role in the dynamics of the pink salmon run, since the Magadan salmon hatcheries primarily cultivate chum salmon.

In the Amur River and its estuary, the harvest of pink salmon nearly equaled the predicted amount, comprising 2,300 MT.

The predicted TAC amount and its actual harvest for the remaining salmon species in 2006 are presented in Table 1.1.

Table 1.1

2006 predicted and actual salmon harvest in MT

RF Ministry of Agriculture Order 74 of 15 March 2005 and 129 of 05 May 2006

Fishing Area	Pink Salmon		Chum Salmon		Sockeye Salmon		Coho Salmon		Masu Salmon		Chinook Salmon		All Species	
(Subzone, Region)	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual
Chukotka	104.0	21.6	925.0	759.5	633.0	452.2							1662.0	1233.3
Karaginskaya	30260.0	13282.1	6821.0	6900.2	1272.0	1090.9	280.0	156.8			50.3	35.3	38683.3	21465.3
Petropav.-Komandor	500.0	327.0	2398.0	2238.3	3980.0	3862.5	652.0	599.2			819.0	650.1	8349.0	7677.1
West Kamchatka	31500.0	17523.4	7830.0	5966.7	376.0	253.2	327.0	207.8			57.0	9.9	40090.0	23961.0
Kamchatka-Kuril	73500.0	31605.6	4861.0	4243.2	22817.0	18943.3	218.0	119.4			68.0	52.4	101464.0	54963.9
North Sea of Okhotsk														
Magadan Oblast	620.0	244.8	1360.0	1479.9	2.0	0.3	120.0	83.1					2102.0	1807.1
Khabarovskiy Krai	518.0	230.0	8732.0	8615.0	45.0	45.0	225.0	130.2					9520.0	9020.2
Amur River and Estuary	2320.0	2301.0	4149.5	3962.0									6469.5	6263.0
North West Sakhalin	162.0	128.5	334.0	173.9									496.0	302.4
South West Sakhalin	244.0	374.5	2540.0	3584.1					9.0	1.45			2793.0	3960.1
East Sakhalin	18521.0	84913.8	5321.0	5051.4	1.0		5.0	0.6	18.0	7.8			23866.0	89973.6
South Kurils	32017.0	45614.3	8684.0	3506.9					2.0				41153.0	49121.2
North Kurils	2000.0	160.2	700.0	387.1	450.0	277.6	315.0	156.9			25.0	4.46	3490.0	986.3
Primorye (Khabarovskiy Krai)	2096.0	2073.0	20.5	3.0			0.1						2116.6	2076.0
Primorye (Primorskiy Krai)	540.0	508.4	110.3	61.1					25.0	15.2			675.3	584.7
All regions	194902.0	199308.2	54786.3	46931.3	29576.0	24925.0	2142.1	1453.9	54.0	24.5	1019.3	752.1	282479.7	273395.0
Percent of prediction	102.3		85.7		84.3		67.9		45.3		73.8		96.8	

Russian Drift-net - 6344.959 MT Japanese Drift-net - 8226.0 MT

TOTAL TAC - 297,950 MT HARVEST - 287,970 MT

Table 1.2

2007 predicted and actual salmon harvest in MT

RF Ministry of Agriculture Order 205 of 12 April 2007 and 318 of 06 June 2007

Fishing Area	Pink Salmon		Chum Salmon		Sockeye Salmon		Coho Salmon		Masu Salmon		Chinook Salmon		All Species	
(Subzone, Region)	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual
Chukotka	265.0	120.4	1079.0	908.6	723.0	337.1							2067.0	1366.0
Karaginskaya	78035.0	71218.7	11203.0	7427.0	3000.0	1676.7	500.0	181.4			50.0	72.9	92788.0	80576.6
Petropav.-Komandor	2600.0	1492.90	3245.0	2882.50	6200.0	5527.40	1563.0	1445.00			724.0	654.8	14332.0	12002.6
West Kamchatka	18300.0	7607.30	8516.0	6045.20	377.0	322.0	1077.0	925.10			57.0	18.3	28327.0	14917.9
Kamchatka-Kuril	11650.0	7984.50	3940.0	3364.60	18165.0	21980.9	769.0	565.10			67.0	44.60	34591.0	33939.7
North Sea of Okhotsk														
Magadan Oblast	14200.0	12801.0	1780.0	1612.3	2.5	1.6	154.0	135.1					16136.5	14549.9
Khabarovskiy Krai	8000.0	5224.3	12954.0	9621.2	75.0	55.1	487.0	405.7					21516.0	15306.4
Amur River and Estuary	1032.0	1008.7	5253.0	5129.1									6285.0	6137.8
North West Sakhalin	1609.0	1584.0	900.0	893.4									2509.0	2477.4
South West Sakhalin	2714.0	1527.0	4409.0	3454.0					9.0				7132.0	4981.0
East Sakhalin	109962.0	104107.0	6343.0	5858.0			20.0	2.7	18.0	0.9			116343.0	109968.6
South Kurils	42514.0	45854.0	9134.0	5887.0	6.0				1.0				51655.0	51741.0
North Kurils	1000.0	208.4	660.0	315.5	440.0	176.5	265.0	51.3			25.0	9.9	2390.0	761.7
Primorye (Khabarovskiy Krai)	1000.0	261.7	58.5	20.1			0.1						1058.6	281.9
Primorye (Primorskiy Krai)	21.0	8.2	80.3	70.6					13.0	9.3			114.3	88.1
All regions	292902.0	261008.1	69554.8	53489.1	28988.5	30077.3	4835.1	3711.4	41.0	10.1	923.0	800.6	397244.4	349096.6
Percent of prediction	89.11		76.90		103.76		76.76		24.71		86.74		87.88	

Russian Drift-net - 6241.79 MT Japanese Drift-net - 7940.0 MT

TOTAL TAC - 414,019.4 MT HARVEST - 363,278.4 MT

The 2007 Salmon Run

Under Ministry of Agriculture Order 205 of 12 April 2007, the shore TAC for salmon for 2007 was set at **397,200 MT**, and the total TAC (shore + drift-net catch) was set at **414,020 MT**. The actual harvest (shore + drift-net) ended up being somewhat lower than the predicted amount (see Table 1.2), and comprised **363,280 MT**, which was a historical maximum.

Nevertheless, errors in predicting salmon TAC are unavoidable.

As is obvious from the data in Table 1.2, the predicted TAC is not always borne out, and the actual harvest may deviate to the greater or lesser side. As has already been stated, one of the reasons for this is the fact that the current methodology for predicting the numbers of pacific salmon uses some approximate data. These errors are somewhat mitigated by the results of ocean counting during the salmon's anadromous migration, in particular of short-cycle pink salmon. In addition, as of the present time, TINRO-Center has developed a methodology for dividing the entire mass of migrating young salmon into two groups: the southern group (Sakhalin, Kuril Islands, Hokkaido), and the northern group (Western Kamchatka, Mainland seacoast of the Sea of Okhotsk).

Another problem that arises during the salmon run (2007 not being an exception to this) is the problem of multispecies fisheries, or, more accurately, the simultaneous harvest of several species of salmon. This problem arose in Kamchatka and the Sakhalin-Kuril region in 2007, and occurred several times in other fishing areas as well. This relates particularly to chum salmon, which starts being caught as a by-catch during the chinook fishery (beginning in May) and stops at the end of the char fishery (in October). At the same time, its TAC can be taken as early as July.

On the whole, for the entire coastal region, the salmon TAC in 2007 was 87.9% utilized: pink salmon – 89.1%; chum salmon – only 77.0%. Only for sockeye salmon was more than 100% of the TAC taken (Table 1.2).

Aside from the shore fishery, some of the salmon harvest occurs at sea: firstly, by Japan under the International Treaty of 12 May 1985 between Russia and Japan, and secondly, by Russia in order to perform monitoring of the salmon runs (see Tables 1.1 and 1.2).

2. The Average Period Background Condition Forecast in the Far East Basin during the 2008 Salmon Run

2.1. Basis for the Background Forecast for the 2007 Salmon Run

A. The Synoptic Situation

A forecast of the synoptic situation over the fishing areas (the Bering Sea, Sea of Okhotsk and Sea of Japan) is made for each month of the run (from July through September). The extent to which these forecasts are borne out for each of these three seas is checked on a monthly basis and is evaluated as follows: when the forecast situation coincides fully with the actual situation (forecasts have been made correctly for all three ten-day periods of the month), it is given a "**C**"; if partially correct (no fewer than two of the three ten-day periods), it is given a "**P**"; if the forecast has been totally incorrect (matching the actual in no more than one of the three ten-day periods), it is given an "**N**". Then the percentages of correct, partially correct, and incorrect forecasts are calculated.

Predicted	Actual
July: Above the Sea of Japan, the Sea of Okhotsk, and the Bering Sea, a low-gradient barometric field will form; weather conditions will be calm.	*Sea of Japan:* Emergence of continental low-pressure cells in the 1st and 2nd ten-day periods, dissemination of moderate southerly winds – **N** *Sea of Okhotsk:* Several moderate low-pressure cells above the western areas at the end of the month – **P** *Bering Sea:* **C**
August: First half of the month – continuation of calm weather conditions in all seas. A southerly low-pressure cell will enter the Sea of Japan at the end of the month, causing a strong south-easterly wind and worsening weather conditions. At the end of August, arctic low-pressure cells will influence the weather in the Sea of Okhotsk and the	*Sea of Japan:* The weather was influenced in the 3rd ten-day period by continental low-pressure cells moving over the northern areas, with predominantly north-easterly winds – **P** *Sea of Okhotsk:* **C**

Bering Sea, and a strengthening westerly wind is anticipated (to moderate speeds)	*Bering Sea:* The influence of the arctic low-pressure cells was felt not during the 3rd ten-day period, but during the 1st ten-day period of August – **P**
September: During the first half of the month, the Sea of Japan will be under the influence of an oceanic ridge, which will cause very favorable weather conditions. During the second half of September, the formation of low-pressure cells may increase in its eastern portion, changing to winds of a north-easterly direction. In the Sea of Okhotsk during September, polar low-pressure cells will emerge that will cause westerly and north-westerly winds, increasing in intensity. Increased low-pressure activity also was expected over the Bering Sea: during the 1st and 3rd ten-day periods over the north-western regions, and in the 2nd ten-day period over the eastern portion. At the end of the month, a south-easterly wind increasing in intensity was expected, and during the rest of the time a predominantly north-westerly wind direction was anticipated.	*Sea of Japan:* Low-pressure cells passed over the eastern portions with the formation of a predominantly north-easterly wind direction was observed during the 1st ten-day period; at the end of the month, in the northern areas of the sea continental low-pressure cells actively emerged, causing predominantly north-westerly winds – **N** *Sea of Okhotsk:* Polar low-pressure cells emerged in the 2nd half of the month – **P** *Bering Sea:* The weather situation that had been predicted for the 1st ten-day period was observed during the 2nd ten-day period, and vice-versa. Nevertheless, during the greater part of the month, north-easterly winds developed over the entire Basin, and at the end of September the south-easterly winds intensified – **C**
Conclusions: The forecasts of synoptic conditions for the July-September period for all seas were borne out as follows: **C** – 3, **P** – 4, **N** – 2. Thus the weather forecasts were correct 34% of the time, partially correct 44% of the time, and wrong 22 % of the time. The forecasts were most often correct for the Bering Sea and Sea of Okhotsk, and less correct for the Sea of Japan.	

B. The Hydrology

Sea of Japan

The forecast ocean conditions during the 2006 salmon run in the Sea of Japan matched the actual conditions to a satisfactory degree (Table 1.2), with the exception of the forecast position of the Polar Front and the temperature in the Polar Front zone (within the Russian economic zone between 41° and 43° and south of 41°N). As was anticipated, the summer of 2007 was significantly warmer than usual, but the predicted stable reinforcement of the warm currents was not seen, thus the forecast temperatures in the Polar Front zone for June-September ended up being too high; in July the error for the southern portion of the Russian zone reached 3.5°C. However, since the warm currents reactivated as early as Autumn of 2007 and continue to the present day, this error was not taken into consideration in the forecast for 2008, and the warm currents are again predicted to activate. At the same time, the forecast for the North-western portion of the sea was completely successful, with an error that did not exceed one degree C (Table 2.1).

[*break in text – resumes at p. 70*]

3.3.4. South Kuril Islands

Commercial salmon fisheries are conducted on the islands of Iturup and Kunashir. In spite of the geographic proximity of these islands, they are situated in different zoogeographical zones. While the levels of reproduction of pink and chum salmon on Iturup Island are the greatest in the region, Kunashir Island is situated on the periphery of the spawning portion of the geographic range of pink salmon, with the attendant consequences for its reproduction (Kaev, Romasenko, 2007), thus an evaluation of the condition of the stocks of pink and chum salmon are treated separately for each of these two islands.

3.3.4.1. Iturup Island

Pink Salmon

Pink salmon reproduces primarily in the rivers of the central and northern portion of the Sea of Okhotsk shoreline, thus over 90% of its catches are in Prostor Bay and Kurilskiy Bay, where, moreover, there are two large salmon hatcheries operating. The salmon stocks from even-numbered years have in recent years been at high levels. Beginning in 1996, the size of the catches has fluctuated from 25,000 to 43,500 MT, with an average of 32,100 MT, with the greatest catches occurring in 2006. The 2006 pink salmon generation produced a downstream migration in 2007 in the monitored Olya and Rybatskaya Rivers of 7.13 and 8.63 million fry, i.e., the total number of young pink salmon in 2007 was 368.2 million fish. In forecasting the numbers of pink salmon in 2006, the assumption was made that the multi-year variability of pink salmon numbers from a dominant line generation, a noticeable decline in survivability occurs with a periodicity of 10-12 years, thus in calculating the probable abundance for 2008, data from the 2002 spawning generation were not used. The average value for the return coefficient were calculated for the 1998, 2000 and 2004 spawning generations (8.18%). In accordance with this, the return of wild salmon in 2008 was to comprise 19.12 million fish. With 1.75 million spawners allowed into the rivers to spawn (600,000 m^2 of spawning area), the harvest was recommended at 17.37 million fish. In addition, 11.00 million hatchery fish were expected to return.

Thus, the recommended 2008 harvest amount for Iturup Island was set at 28.37 million fish, or 38,867 MT. In 2007, the ratio of numbers of early returning and late returning fish shifted drastically in favor of the early arrivals. Based on the observations of previous years, the tendency is for the changes in this ratio in generations from even-numbered and odd-numbered years to be similar. In this regard, the pink salmon run in 2008 may also show an increase in the amount of early fish (see Fig. 3.25). In order to harvest the commercial quota, there are no restrictions on the number of trap nets set, providing they have been distributed in accordance with the approved scheme.

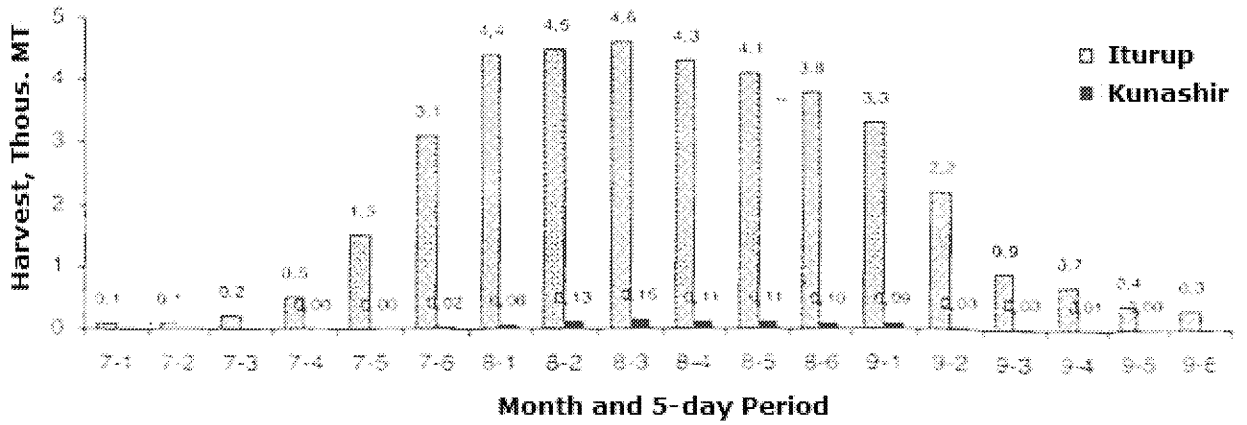

Fig. 3.25 Probable dynamics of Pink Salmon harvests on Iturup and Kunashir Islands in 2008

Chum Salmon

The chum salmon fishery on Iturup Island at present is based primarily upon the stocks of hatchery populations produced by the Reydovo Salmon Hatchery, so the data of this hatchery are used to calculate the return. The decline in survivability of the last two generations to return is a short-term phenomenon. The 2003 generation return was preliminarily determined (based on 2+ and 3+) to be at the level of the two most abundant generations (1999 and 2000), while the numbers of fish in the 2+ age group of the 2004 generation are greater than ever before. For this reason, in calculating the stocks, we will ignore the data from the non-abundant 2002 generation, and use the average survivability figure for the three previous generations (1999, 2000, and 2001) of 4.95%. Based on the calculation, which was arrived at in a similar manner to the previously described regions, it follows that the return of chum salmon in 2008 to the Reydovo Salmon Hatchery will be 1,167,000 fish. Over the 2003-2006 period, this hatchery released an average of 23.42 million chum salmon fry each year. There were also releases of small lots of chum salmon from one reconstructed hatchery and three new salmon hatcheries. Thus, the hatcheries released 35.75 million fry of this salmon species each year. The calculated total return of hatchery fish on Iturup Island is 1,785,600 fish, or 7,071 MT. In recent years, there has been an increase observed in the stocks of wild chum. The numbers of spawning fish at the spawning grounds have reached 100,000. However, no separate calculations have been made for the possible harvest of the wild populations of chum salmon. Chum salmon is practically ubiquitous on Iturup Island, and spawns in the base rivers of the salmon hatcheries as well; i.e., the harvest of chum in the base rivers consists partially of wild fish, since the fish in the catches are not differentiated by origin. This by-catch leads to an increase in the calculated value of the return coefficient. In this regard, it must be assumed that the increase in commercial harvests of chum salmon on Iturup Island is due in part to the gradual recovery of the wild populations. Thus, the size of the possible harvest of chum salmon on Iturup Island will be 7,071 MT, which includes fish from hatchery and wild populations. In connection with the fact that the greatest amount of fish is harvested in the area of the river mouths of the salmon hatchery base rivers, the maximum harvest period is at the end of September and October (Fig. 3.26).

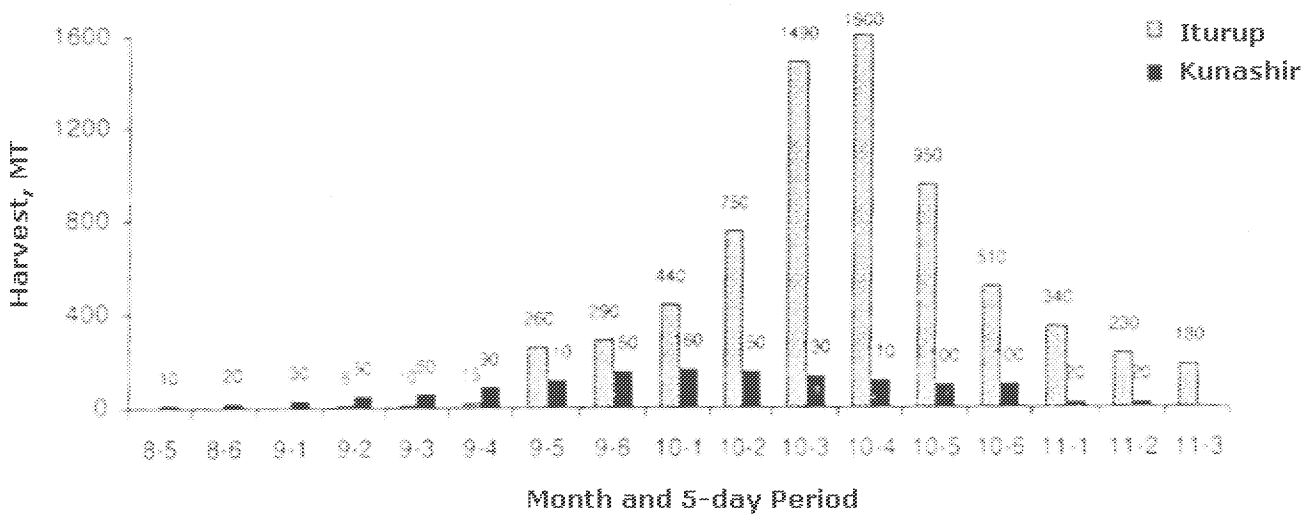

Fig. 3.26 Probable dynamics of Chum Salmon harvests on Iturup and Kunashir Islands in 2008

3.3.4.2. Kunashir Island

Pink Salmon

The largest catches of pink salmon are in the Sea of Okhotsk and Pacific shorelines in the central and northern portion of the island, coinciding with the locations of its spawning rivers. Catches in even-numbered years have been 2.5 times greater than in the odd-numbered years. However, in 2004, a sharp decline occurred in the numbers of pink salmon, and no restoration in the stocks of even-numbered year generations was seen in 2006. 457,000 spawning fish entered the rivers, and based on fish counting conducted in the Ilyushina River, their spawning led to a downstream migration of 22.1 million fry. This is the lowest number of young salmon for

all of the years of observation, caused not only by the low number of parent fish at the spawning grounds, but also by the decrease in the survivability of the fish during their embryonic and sac-fry development periods. For pink salmon reproduction on Kunashir Island, an inverse proportion of generational survivability to the numbers of downstream migrants is characteristic ($r=-0.52$; $P\leq0.05$; $n=15$). Based on this, the calculations use a return coefficient of 7%, corresponding to a figure of 22 million downstream migrants. The probable number of pink salmon in 2008 will be 1.55 million fish.

For ensuring an optimum level of reproduction in pink salmon generations having this level of abundance and dominance by early fish, it is sufficient to allow 1 million spawners to enter the rivers. Accordingly, 0.55 million fish, or 853 MT, are recommended for harvest. As a result of the low numbers, fishing should be conducted only by trap nets set up under the approved scheme. The runs of pink salmon to Kunashir Island are also formed as a result of different seasonal groups (early and late), thus the timing of the spawning migration is spread out from late July to the beginning of October. However, in recent years and along the lines of even-numbered years, there has been a decline in the percentage of late pink salmon, as a result of which the duration of the fish run has decreased and shifted to a later timing. Accordingly, the greatest catches will be seen in the second half of August (see Fig. 3.25).

Chum Salmon

The prediction is based upon the relationship between the numbers of downstream migrant fry and the numbers of adults of age in consideration of the generational split into different age groups. However, it is not possible to form a correct evaluation of the survivability of the fish in the local chum populations during the at-sea portion of their life cycle, since the fishery is based upon a mix of schools of local and transitory fish migrating to different areas to reproduce. Harvesting these fish as by-catch during the fishery is unavoidable, thus the calculation of future catches is based upon the total value of the return coefficient, which reflects the sum total of chum harvested commercially. Calculation of the probable numbers of chum is carried out based on the scheme used for evaluating the hatchery chum return, except that instead of the number of fry released by the hatchery, data are used on the numbers of wild downstream migrant fry from the rivers. In 2003-2006, between 7.8 and 40.2 million fry migrated downstream from the spawning grounds. By using the average figure for the return coefficient from the previous five generations (3.81%), the probable number of chum in the waters of Kunashir Island will be 457,000 fish. The optimum reproduction level requires 75,000 spawners to be allowed into the rivers and lakes to spawn. Accordingly, the TAC will be 382,000 fish, or 1,310 MT.

We would like to point out again that the numbers are calculated based upon the probable by-catch of transitory fish, the percentage of which can vary from year to year, from the level of individual fish (1994-1995, 1999) to comprising the main mass of fish in the catches (1991, 1996, 2001-2004, 2006). This high variability in the by-catch number is caused by the extremely low statistical reliability of the calculated values of the return coefficient. In this regard, it is recommended that the chum fishery in the coastal waters of Kunashir Island be conducted without regard to the size of the harvest, but using only trap nets (passive fishing gear) set up in accordance with the approved scheme.

On the whole, the harvest is recommended at a level of 39,720 MT of pink salmon, and 8,381 MT of chum salmon. In distributing the commercial fishing quotas, a reserve should be provided for chum salmon (2,000 MT), needed both for protecting the stocks when it occurs as by-catch during the pink salmon fishery when there is a broad overlap of the run timing of these two salmon species, as well as for maintaining an uninterrupted fishery on Kunashir Island in case of the appearance of great numbers of transitory chum in the zone of trap net fishing. On the south Kuril islands, the calculated harvest of pink salmon, especially for Iturup Island, may turn out to be too large, for the same reasons as for eastern Sakhalin Island. However, fluctuations in the stocks of pink salmon in the zone are not very great, so it would be sufficient for the second stage of quota allocation to set aside a reserve in an amount of no less than one quarter of the TAC (10,000 MT).

In organizing a salmon fishery, the anticipated timing of the arrival of pink and chum salmon presented in the text for the various regions and in the respective tables should be used as a reference point, taking into consideration the time needed to set up the trap nets (5-7 days before the start of the fishing itself).

The TAC amounts for Sakhalin salmon are presented in Table 3.45.

Table 3.45

Sakhalin Oblast Pacific Salmon TAC For 2008

Region	Pink Salmon	Chum Salmon	Masu Salmon	Sockeye Salmon	Coho Salmon
61.06.2. South-western Sakhalin	498	4,364	9	-	-
61.06.2. North-western Sakhalin	695	801	-	-	-
61.05.3. Eastern Sakhalin	83,000	6,851	18	-	111
Aniva Bay	27,675	403	12	-	-
South East	30,986	4,850	3	-	5
Terpenie Bay	23,069	1,100	3	-	15
North East	1,270	478	-	-	81
61.04. Southern Kuril Islands	39,720	8,381	1	1	-
Iturup	38,867	7,071	1	1	-
Kunashir	853	1,310	-	-	-
Total	123,913	20,397	28	1	111

Note: Does not include Northern Kuril Islands, where test fishing amounts are set by VNIRO