

The Chum Salmon Population of Lebedinoe Lake

Historical Review:

Winter chum salmon spawns in the waters of Iturup Island, where it is widely distributed in rivers and lakes. Due to the extremely mountainous nature of the landscape, the density of the river network (0,84 km per km²) here is not as great as on Sakhalin Island (1,3 km per km²), although the lithological composition of the rock from which the Kuril Islands were formed through recent volcanic action allows groundwater to circulate deeply and flow energetically into rivers and lakes. For this reason, the amount of groundwater flowing into the rivers of the Kuril Islands during an average year amounts to about 50 % of the annual flow, while for the majority of the rivers on Sakhalin Island this figure varies between 20 and 30 %. This abundant outflow of groundwater also explains the broad distribution of chum in the rivers and lakes (predominantly lagoon-type), with the only exceptions being those rivers that pass over waterfalls that the chum cannot overcome and bodies of water that are overly aggressive (such as the Sernaya River and others).

The first mention of raising pacific salmon in the watershed of the Kurilka River dates to the end of the 19th century. However, over the entire period there has been no mention of raising chum salmon on Lebedinoe Lake or of taking broodfish, raising smolts or releasing young salmon into the lake. There has been no harvesting of chum salmon in the lake itself.

The calculated area of chum spawning grounds in the lake is 4250 square meters, and in the streams flowing into the lake it is 2500 square meters (for a total of 6750 square meters). According to the results of research conducted by specialists of the Federal State-Funded Institution SakhalinRybVod, the numbers of chum salmon spawning in the lake comprised 11 – 12 thousand fish in 2008 and 2009 (101-103%).

A detailed study of the lake was conducted in August 1985, and based upon its results the lake was listed as a spawning site (see Appendix).

In 2003, ichthyologists of the Kurile Island branch of the FSFI SakhalinRybVod collected chum downstream migrants in the lake that originated in streams and the lake itself, and determined the chum salmon downstream timing as follows:

Average Biological Indicators for Chum Salmon downstream migrants in the Bezmyanniy River and Lebedinoe Lake

Date	Water Body	Average Length, mm	Average Weight, mgm
30MAY2003	Bezmyanniy River	37.7	404
05JUN2003		38.2	395
10JUN2003		37.6	382
15JUN2003		38.4	386

Average Biological Indicators for Chum Salmon downstream migrants in Zmeyka Channel, Lebedinoe Lake

Date	Water Body	Average Length, mm	Average Weight, mgm
25MAY2003	Zmeyka	40.4	467
30MAY2003		40.4	483
05JUN2003		42.9	628
10JUN2003		42.8	595
15JUN2003		41.6	520

Timing of Chum Salmon Downstream Migration

	Dates
Start of Downstream Migr.	10-20 APR
Peak run	20 MAY– 10 JUN
End of Downstream Migr.	20-25 JUL

Chum salmon broodfish were harvested in the lake in 2007-2008 by Vavilov Institute specialists in order to obtain biological material for research relating to the genetic identification of chum schools on Iturup Island. Total numbers taken are presented below:

	Year material taken	Numbers of chum taken
1	2007	42
2	2008	31
Total		73

Results of observations and research were compiled as a report and were discussed in September 2011 at public hearings in which independent third parties also took part.

Lebedinoe Lake is a component of the Kurilka River spawning system. It is a fresh water lake fed by streams which drains through the Zmeyka Channel into the Kurilka River, through which it flows into the Sea of Okhotsk. The Kurilskiy Fish Hatchery, situated on the Kurilka River, is engaged in the rearing of humpback salmon (73 million smolts released) and chum salmon (20 million smolts released), respectively, and the entire spawning Kurilka River and its tributaries lie within the field of vision of projects aimed at allowing broodfish through and following the progress of the humpback and chum salmon to the spawning grounds. There has been a reasonably stable penetration of chum breeders into the lake (albeit in small numbers). In addition there is an understanding of the need to expand monitoring of Lebedinoe Lake and a plan is currently being developed to accomplish this.

The plan includes the following operations:

1. Visual examination of the lake and the streams that flow into it.
2. Estimation of the numbers of chum salmon.
3. Determination of the dynamics of the entry of chum broodfish into Lebedinoe Lake.
4. Collection of otoliths from chum following their spawning in the lake and the streams.
5. Collection of morphometric data from broodfish.
6. Evaluation of the anthropogenic load on the lake's ecosystem.

Results obtained from carrying out the observation plan will make the following possible:

1. Evaluation of the population's condition (numbers, sizes, ages, and straying of chum broodfish)
2. Identification of possible risks (fishing, poaching, hatchery fish)
3. Development of a plan for future action for monitoring the chum population of Lebedinoe Lake.

Implementation of these operations is planned for 2013. A detailed plan for conducting these operations will be presented to the SCS and on the JSC Gidrostroy website before 01.03.2013.

With respect to the opinion of interested parties, in particular Mr. Randy Ericson, concerning the condition of the chum population in Lebedinoe Lake, the following needs to be pointed out:

1. Is there a risk of genetic mixing?

- Based upon current observations and materials, the likelihood of the risk that the population from the Kurilskiy Fish Hatchery would mix with the “wild” population in Lebedinoe Lake has not been determined or proven.

2. Could the natural chum population (lake fish) be overfished in a commercial fishery?

This is unlikely in a commercial fishery due to the following circumstances:

2.1. The timing for the beginning and the end of fishing for the pro-estuarine and estuarine fishery has been set.

2.2. Harvest in these regions is maintained at an even level over the entire fishery, monitored and controlled by specialists from FSFI SakhalinRybVod and with the cooperation of the fish hatchery.

2.3. Overfishing is also precluded during the harvest of broodstock for the fish hatchery, inasmuch as only those broodfish that approach the egg extracting station are used. Broodfish from tributaries or other streams, whether belonging to the Kurilka River system or to any other system, are not used.

3. What plans are there in order to protect the chum of Lebedinoe Lake from future impact from the artificial rearing program? Is there a plan for restoration of lake chum?

These questions miss the mark for the following reasons:

3.1. There has been no definite determination or direct proof that the artificial rearing program would impact the lake form of chum in Lebedinoe Lake. It has been definitely determined that the chum in Lebedinoe Lake has continued to remain a small but stable population over the entire period of time that the JSC Gidrostroy hatchery has been in operation.

A decision to develop a plan to restore lake chum would be premature and would require serious justification.

In this regard, at present and for the near future JSC Gidrostroy is not contemplating the Federal Program for Fish Hatchery Construction, including for Lebedinoe Lake, and is not planning to build a fish hatchery on Lebedinoe Lake.

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