PCF Yuzhno-Kurilsky Ryibokombinat Co., Ltd.

Research Program on the topic:

Current State and Historical Data on Sakhalin Taimen Population of Kunashir Island

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1. Research Problem

By the 21st century, wild untouched nature began to be valued all over the world. There is little of it left in overpopulated Asia and even in places as far from overpopulation as the Kuril Islands. There are many species of fish, invertebrates, birds, etc., listed as specially protected (ETP) species. On Kunashir Island there is only one species of fish listed in the Russian Red Data Book and the Sakhalin Region Red Data Book - Sakhalin Taimen *Parahucho perryi*. The number of this species throughout the Sakhalin Region and the Kuril Islands is small. In Japan, this species lives only on the island of Hokkaido, but in 57% of river basins it has almost disappeared (Edo, 2001).

At PCF Yuzhno-Kurilsky Ryibokombinat Co., Ltd. (YKRK), Pacific salmon are caught with trap nets in the coastal waters of Kunashir Island. It is necessary to find out whether this fishery affects the abundance and reproduction of taimen.

The last attempt to describe the taimen of Kunashir Island was made more than 20 years ago. Currently, there is no modern data on the biology and reproduction of this species on Kunashir. At the same time, there are historical data, a comparison of which with modern ones will allow us to assess the changes that have occurred over the past 50 – 60 years.

2. Research Aims and Objectives

This Research program **is aimed** at studying the current state of the Sakhalin Taimen on Kunashir Island, as well as meeting the requirements of Action # 8 of the FIP Workplan for 2022-2026.

Research Program Objectives:

- carry out expeditionary work to examine the spawning grounds of taimen in the water bodies of Kunashir Island; collect data through surveys of the local population and record the presence or absence of taimen in spawning grounds;

- identify, investigate and describe the modern features of the reproduction and life cycle of the Sakhalin Taimen on the island of Kunashir;

- find and study historical data; conduct a comparative analysis of the results of expeditionary work and literature data;

- identify and assess potential threats to the reproduction of Sakhalin Taimen in Kunashir, including the possible impact of the YKRK's salmon fishery;

- describe the legislative aspect and the current legal status of Sakhalin Taimen as a species included in the Russian Red Data Book and the Sakhalin Region Red Data Book;

- draw up a report in which to summarize and analyze the data obtained during the expedition work and the study of literary sources.

The data presented in the report will be used to make decisions within the Kunashir Island Fishery Improvement Project.

3. Object of Research

Sakhalin Taimen *Parahucho perryi* is a species with a narrow habitat and a small population, natural for predators. Its habitat is relatively small and includes the basins of the northern part of the Sea of Japan and adjacent areas of the southern part of the Sea of Okhotsk. From fresh waters, the taimen prefers to migrate no further than estuaries and the near-estuary seacoast. A significant obstacle to this is the waters of oceanic (increased) salinity. Sakhalin Taimen does not go far into the sea, like Pacific salmon. Its movements between fresh and salt water resemble the movements of the char – Dolly Varden Trout and Whitespotted Char. As a rule, in the sea, taimen stays directly near the shore. It is known that large taimen linger in the brackish lakes and lagoons of Sakhalin the longer, the more closely they are connected with the sea. Brackish-water lakes and tributaries of desalinated sea bays are favorable for marine feeding of this species.

4. Research Methods

The research methods will not go beyond the standard fishery scientific works within the range of this species. They include the analysis of literary sources and the results of field work in the area of feeding and reproduction of fish. Since there is very little information about the taimens of Kunashir Island in both Russian and foreign literature, sources on other areas of the Sakhalin Taimen's range will be used.

The problems of the possible entry of ETP fish species into fishing gear will be investigated by interviewing local fishermen and specialists, analyzing YKRK company statistics and questioning local residents.

Serebryanoye Lake (the coast of the Pacific Ocean) will be taken as a control water body for the study of Sakhalin Taimen on Kunashir Island. Other bodies of water are difficult to explore, so Lake Valentiny (the coast of the Sea of Okhotsk) will be surveyed if weather conditions and technical capabilities allow.

The issues of species relationships will be assessed based on the results of studying the ichthyofauna in the habitats of the Sakhalin Taimen. To do this, we will use the YKRK's catch statistics, survey data from local fishermen and, if possible (subject to obtaining a special permit from the Russian Ministry of Natural Resources), catch data in the lagoons of Lake Serebryanoye and Lake Valentiny with a beach seine net in May – that is, in the month when the Sakhalin Taimen migrates from the sea to the tributaries of the lagoons and back. In each of the visited lagoons, data will be collected on the state of amateur fishing, as well as spinning fishing, in order to find out the state of the potential feed base of the Sakhalin Taimen.

The state of natural reproduction of the Sakhalin Taimen *Parahucho perryi* will be studied during walking tours to known spawning grounds or sections of rivers potentially suitable for taimen spawning.

5. Field Research Technique

On the island of Kunashir, as in other parts of the taimen's range at close geographical latitudes, the most intensive migrations to the places of reproduction and feeding will be observed in May. To carry out field work, researchers will need the help of local specialists to resolve the issues of organizing transport for trips to the areas where commercial fishing gear is installed and organizing walking tours to spawning rivers and spawning areas of Sakhalin Taimen. In addition, they will need to organize beach seine fishing in lagoons (in case of obtaining a special permit) and assistance in attracting amateur fishermen for spinning fishing in lagoons and on the coast near the mouths of rivers where the Sakhalin Taimen lives. A boat with an outboard engine is needed to survey the lagoon to collect data on the distribution of salinity and water temperature.

6. Deadlines for Collecting Information and Processing the Received Data in 2023

January 2023: preparation of the Research Program on the topic: "Current State and Historical Data on Sakhalin Taimen Population of Kunashir Island"

February 2023: search for literary sources about the Sakhalin Taimen in Sakhalin, Hokkaido and the Kuril Islands, translations from English and Japanese. Receipt of materials on

fishing for the last 5-10 years from PCF Yuzhno-Kurilsky Ryibokombinat Co., Ltd. Discussion of the Research Program and the plan of expedition work with the Client company.

March 2023: search for additional literary sources on the hydrology of lakes and lagoons of Kunashir; preparation of field instruments for determining salinity and water temperature; communication with representatives of the Client company.

April 2023: preparation for expedition work: drawing up a plan, identifying contact persons and areas of their responsibility on the island of Kunashir, purchasing air tickets to Kunashir, booking hotels.

May 2023: a trip to Yuzhno-Sakhalinsk and Yuzhno-Kurilsk for field work in the period from May 3 to May 23 (arrival in Yuzhno-Kurilsk on May 5; departure from Yuzhno-Kurilsk on May 20). Creation of computer databases of field research. Primary analysis of the received data.

June 2023: processing and analysis of data obtained during the previous period and during the expedition work.

July 2023: preparation and writing of the final report on the topic "Current State and Historical Data on Sakhalin Taimen Population of Kunashir Island".

7. Expected Results

The results of studies of lagoons (control water bodies) on the coasts of the Pacific Ocean and the Sea of Okhotsk, databases and the final document will be presented in the form of a scientific report with several chapters reflecting the goals achieved. The report will also include recommendations for the YKRK company to organize fishing operations, taking into account the conservation of Sakhalin Taimen stocks in the watercourses of Kunashir Island.

The final report will include the following chapters:

1. **The current state of taimen habitats in the watercourses of Kunashir Island**

This chapter will collect materials obtained in the field on the territory of Kunashir Island. Instrumental survey "Distribution of temperature and salinity" on the example of the lagoon of Lake Serebryanoe, where the reproduction of Sakhalin Taimen was noted. A series of photographs

of the habitats and feeding sites of the Sakhalin Taimen in the watercourses of Kunashir Island. Assessment of the condition of taimen feeding sites.

2. **Modern composition of ichthyofauna of rivers and lagoons of Kunashir Island**

This chapter will collect materials from field studies on the territory of Kunashir Island. The results of fishing with small-mesh beach seine in several lagoons of Kunashir (if possible). Assessment of the state of the potential food base of the Sakhalin Taimen in the lagoons of Kunashir.

3. **The state of natural reproduction of Sakhalin Taimen *Parahucho perryi***

This chapter will present materials collected in the field on the territory of Kunashir Island. Geomorphological and hydrological description of the potential spawning grounds for Sakhalin Taimen. Description of the spawning area and spawning nest (if possible). A series of photographs of the spawning grounds of the Sakhalin Taimen in the watercourses of Kunashir Island. Assessment of the current state of taimen reproduction.

4. **Amateur and sports fishing in the area of Kunashir Island**

This chapter will reflect information on amateur and sport fishing (trap nets and spinning) on the coasts of Kunashir Island from the Pacific Ocean and the Sea of Okhotsk, as well as an assessment of the fishing pressure of these types of fishing on the habitats of the Sakhalin Taimen. Fishing with amateur fishing gear on rivers marked as habitats for Sakhalin Taimen.

5. **Potential by-catch in Pink Salmon and Chum Salmon fisheries over the past decade**

Analysis of the YKRK's salmon fishing materials for the last 5-10 years; schematic map of the distribution of commercial fishing gear along the Kunashir coast from the Pacific Ocean and the Sea of Okhotsk; catch volumes of Pink Salmon, Masu Salmon, Char and Chum Salmon; timing of fishing. Assessment of the state of objects of the potential feed base of the Sakhalin Taimen on the island of Kunashir.

6. **Population status of Sakhalin Taimen *Parahucho perryi* on Kunashir Island**

This chapter will present materials on the population status of Sakhalin Taimen stocks according to literature data. Analysis of the scientific literature of Russia, Japan and the USA.

7. **The position of the Russian Legislation in relation to ETP fish species**

This chapter will reflect the documents of the Russian Federal Law, documents of the IUCN (International Union for Conservation of Nature), and the Code of Conduct for Responsible Fisheries regarding specially protected (ETP) fish species in the Russian Federation.

8. **Scientific recommendations for YKRK regarding the organization of salmon fishing**

This chapter will present an analysis of the YKRK's salmon fishing materials for the last 5-10 years; schematic map of the distribution of commercial fishing gear along the Kunashir coast; catch volumes of Pink Salmon, Masu Salmon, Char and Chum Salmon; timing of fishing. In addition, scientific recommendations will be substantiated and presented for the YKRK company regarding the conduct of fishing operations in the Sakhalin Taimen habitat area in order to protect ETP fish species and their populations.

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