

**IP(09)13**

***Protection, Restoration and Enhancement of Salmon Habitat  
Focus Area Report***

***Russian Federation***

## 1. Overview of salmon rivers within the jurisdiction

The Atlantic salmon occurs in the rivers of five regions of the Russian Federation – Murmansk region, Archangelsk region, Republic of Komy and Republic of Karelia, as well as in the Nenets Autonomous Okrug, which is a part of Archangelsk region (Fig 1).



**Figure 1. Administrative districts of the Russian Federation where the Atlantic Salmon rivers are situated.**

### Murmansk Region

Atlantic salmon inhabits 84 rivers of Murmansk Region. Lengths of the rivers range from 7 km (Rostoi River) to 426 km (Ponoi River). The total length of the main stems of the salmon rivers accounts for 4,569 km including 2,107 km for the Barents Sea rivers and 2,462 km for the White Sea rivers. The total catchment area of salmon rivers is estimated at 120,616 km<sup>2</sup>, including 59,669 km<sup>2</sup> for the Barents Sea rivers and 60,947 km<sup>2</sup> for the White Sea rivers. The total amount of first-order tributaries is 1,594.

Four rivers have length more than 200 km. These are Ponoi (426 km), Varzuga (254 km), Strelna (213 km) and Yokanga (203 km). The length of eight rivers is within 100 and 150 km. The length of other rivers does not exceed 100 km. The rivers with the length less than 50 km (51 rivers) compose the most numerous group. Only 23 rivers have catchment area that exceeds 1,000 km<sup>2</sup>. The largest river systems are Tuloma which catchment area is 21,500 km<sup>2</sup>, and Ponoi - 15,500 km<sup>2</sup>.

There are waterfalls almost on each salmon river of the Barents Sea basin and on some rivers draining in the White Sea. To some extent, these waterfalls limit an access of the Atlantic salmon to the spawning grounds. Waterfalls of the 12 rivers completely deny an access of the Atlantic salmon to the possible places for spawning above. There are dams on seven rivers (hydropower stations, water intakes) that make spawning areas above inaccessible for Atlantic salmon. Fishway facilities are constructed on both hydropower dams of the Tuloma River. Among them only fish ladder on the lower dam is functioning.

### **Republic of Karelia**

Presently the anadromous Atlantic salmon spawn in the 18 rivers of the Republic of Karelia, flowing into the White Sea. Six rivers have length within the range of 100-200 km. There are also a few landlocked salmon populations inhabiting some lakes of the catchments.

### **Archangelsk Region**

There are 349 salmon rivers of different orders in the Archangelsk Region with total length of 19,237 km. The largest salmon catchments are Severnaya Dvina river catchment (144 spawning tributaries), Mezen river catchment (40 spawning tributaries), Onega river catchment (9 spawning tributaries), Kuloy river catchment (13 spawning tributaries). Numerous small rivers (143) flowing directly into the White Sea have their own Atlantic salmon stocks. In the Onega river system salmon spawn in its main stem and in the left bank tributaries of first and second orders.

### **Nenets Autonomous Okrug**

The Nenets Autonomous Okrug (NAO) is a part of Archangelsk Region. There are 32 salmon rivers in NAO. The Pechora with its 11 first-order tributaries is the biggest one. The total length of the river is almost 2,000 km and only 230 km of the Pechora's lowest part is in NAO. Catchment of the middle and upper parts, where salmon actually spawn, is located within the Komi Republic. Other salmon rivers of NAO are small rivers. They run into the Barents Sea and have their own salmon populations.

### **Republic of Komi**

The largest three salmon rivers catchments situated in the Republic of Komi are Pechora, Vichegda and Mezen. Atlantic salmon spawning and nursery grounds are located in 82 tributaries of different order. In the Pechora river system salmon spawn in 33 rivers, in the Vichegda system salmon inhabits 33 waterways and in the Mezen within the Republic (538 km) there are 16 spawning tributaries.

The four largest river systems of Archangelsk Region, NAO and Republic of Komi - Pechora, Mezen, Severnaya Dvina and Onega have total length of 3,935 km with catchment area accounted for 813,900 km<sup>2</sup>.

## **2. Current status, the quantity and quality of salmon habitat**

### **Murmansk Region**

Most of Atlantic salmon rivers in Murmansk region have natural undamaged salmon habitat and their status can be classified as good. But there are some adverse human impacts on a number of rivers.

First of all due to hydropower development without considering Atlantic salmon requirements, salmon populations of rivers Paz, Niva, Teriberka and Voronja were almost entirely lost. Small spawning and nursery grounds in the main channels remained only in the very low parts of the river Paz and the river Niva. In Teriberka river and Voronja river salmon spawn in two lowest tributaries only. Area of spawning and nursery grounds declined significantly in the Tuloma river system, where salmon occur to spawn only in the tributaries flowing into the lower reservoir.

In 1987 the Russian Government prohibited logging development in the rivers inhabited by salmon. Such logging development has damaged dramatically salmon's habitat in a number of rivers. Logjams and blockages impeded spawning migrations and littered spawning and nursery grounds. Besides, decaying wood affected adversely hydro chemical water composition, incomplete mineralization of organic matters caused sedimentation of areas, earlier inhabited by salmon for spawning and juvenile habitation. The Umba river suffered from logging most of all. The reasons are not only river clogging with wood floating wastes but salmon juvenile habitat destruction. It was noted that wood floating changes river's hydrologic conditions. Modification of riffles and rapids (that appear as spawning and nursery grounds) for wood floating, sharply increases stream speed and changes bottom relief. For example due to the technical preparation for wood floating (deepening and river-channel straightening, weir and leading cribs constructing) the Viala River (a tributary of Umba) became a complete raceway, without coverts for salmon juveniles. Consequences of logging development on other salmon rivers of the Kola Peninsula are less significant. For instance, on the Kola river logging was conducted and due to that there are still insignificant amount of logs in pools and holes. In some places, half-destroyed dams and banks were left. Spawning and nursery grounds in the Tuloma catchment become silty in the places where bridges were built for timber removal and then destroyed by floods.

Western part of Murmansk region has developed infrastructure and some industrial centers on which regional economics is based. The main activities are mining and chemical industry which affect salmon habitat most of all. Rock mineral and ore fields were intensively processed for a long period mainly using an open-cut method. Consequently, heavy industry for a long time influence adversely some rivers of the Barents Sea basin such as Pechenga, Ura, Kola and Tuloma and some rivers of the White Sea basin such as Umba, Niva and Lotta. Plants of chemical industry, ferrous and non-ferrous metallurgy, rare metals industry contaminate water bodies most of all. The most unfavorable situation is in the Pechenga river system.

Pollution by domestic wastewaters is mostly significant off the towns on the rivers Pechenga, Kola and Umba. There are around 20 different sources of contamination in the Kola river catchment. Annually 10 waste disposal facilities discharge into the Kola river about 15 million m<sup>3</sup> of wastewaters. Dangerous situations caused by dung wastewaters and fertilizers discharged into river from adjacent farms, fields and dung-yards usually happen during flood periods in downstream section of the river. Parr densities in the areas located nearby such discharges are extremely low.

In Murmansk Region acidity of the water is increasing from east to the west. The most unfavorable situation of water acidification occurs in the western part of the Barents Sea catchment. A period of maximum pH decrease is quite short-term and could last for only 5-6 days.

The water mineralization of the salmon rivers of Murmansk Region is rather low (from 12 to 85 mg/l). However, in the rivers where industrial and domestic wastewaters were discharged (rivers Pechenga, Uмба, Niva) water mineralization in a low water winter period could reach 257-563 mg/l. Besides, as a result of direct industrial and domestic waste waters discharge by mining and metallurgical plants, towns and villages some salmon rivers of the White Sea basin become polluted. For instance concentration of nickel and copper remains at the natural level only in the rivers faraway from industrial centers (Ponoi, Chapoma, etc.).

The current quantity of salmon habitat in the biggest rivers of Murmansk region is given in the Table 1.

**Table 1. Quantity of Salmon Habitat in the biggest rivers of Murmansk region**

River	Length, km	Catchment, sq km	Spawning and nursery grounds, sq ha
Pechenga	101	1 829	160
Big Vestern Litsa	99	1 688	125
Tuloma	60	21 500	245
Kola	75	3 846	133
Rynda	98	1 019	90
Kharlovka	126	2 016	165
Varzina	28	473	100
Yokanga	203	5 944	257
Ponoi	426	15 467	1 734
Strelna	213	2 774	280
Kitsa	52	1 480	82
Varzuga	254	9 836	1 219
Uмба	125	6 249	503

### **Republic of Karelia**

Almost all salmon rivers are located in sparsely populated areas and difficult to access. Logging consequences are insignificant. Due to hydropower development two rivers have almost completely lost their spawning and nursery grounds. Salmon populations of these rivers are supported by stockings.

### **Archangelsk Region**

The main threats for salmon habitat in Archangelsk region are pollution caused by industrial and domestic waste water discharges, deforestation, mining operations and consequences of logging conducted in most rivers of the region till 1987. Roads development, bridges building, oil and gas pipelining also lead to adverse changes in salmon habitat.

Water in the main stems of some big rivers such as Onega, Severnaya Dvina and Mezen is assessed as polluted water. Typical contaminants are iron, zinc, copper, manganese, aluminum and oil products. Basic sources of pollution are wastewaters from pulp and paper industry, woodworking industry, housing and communal services as well as from vessels of river and marine fleets. It's believed that water pollution in the main river channels doesn't affect much salmon reproduction as there are no spawning grounds there. Treatment of wastewaters in the region is improving and also over last 10 years the fleet operations in the region decreased which consequently lead to decreased pollution from it. It is worth saying that 15-30 years ago water pollution was more intensive because of logging development on most rivers of Archangelsk region.

Spawning and nursery grounds of the Onega river system account for 7.7 km<sup>2</sup>. In the Severnaya Dvina river system salmon is registered to spawn in 60 tributaries of 1-4 orders. All spawning and nursery grounds of salmon spawning tributaries of the system account for 17.9 km<sup>2</sup>. Atlantic salmon spawn in 30 tributaries of the Mezen River. Total area of spawning and nursery ground there is 9.02 km<sup>2</sup>.

It's been noted recently that areas of salmon spawning and nursery grounds are decreasing in all big rivers within Archangelsk Region due to an intensive deforestation.

#### **Republic of Komi**

The majority of the salmon rivers remain primeval. Salmon spawning and nursery grounds in the Republic are conserved in the majority (more than 80%) of salmon spawning rivers. Besides, many salmon rivers are in the Komi's protected areas where economical activity is prohibited. There is a system of protected areas in the Komi Republic - ichthyological and complex nature reserves. In 1990, the "Ugid-va" national park was opened. Pechoro-Ilichskiy State Natural Biosphere Reserve and its protected zone play a positive role in the reproduction of valuable salmonids in the upper stream of the Pechora river and some its tributaries. Nowadays there are 15 ichthyological natural reserves in the Komi Republic with total area of 1.114 million ha or 3.14 % of the Republic area.

### **3. The process for identifying and designating priority/key habitat areas or issues to be addressed**

Priority/key areas of habitat are identified in the following way:

- a. **Monitoring:** on the basis of results from regular monitoring of salmon rivers.
- b. **Management:** on the basis of assessment of proposals for economic activities that could have impacts on habitat; approval of economic activities takes place only provided that all requirements of environmental legislation are met, potential damages to aquatic biota compensated (authority of the Territorial Directorate of the Federal Agency for Fisheries).
- c. **Control and enforcement:** inspection of companies and organizations carrying out activities on water bodies and water (fish) protection zones; control of compliance with specified requirements in accordance with legislation of the Russian Federation (authority of Territorial Directorates of the Federal Agency for Fisheries (Rosrybolovstvo)).

#### **4. The activities and approaches used to share and exchange information on habitat issues, and best management practices, between relevant bodies within the jurisdiction**

**Control of the status of salmon habitat in rivers is the authority of the State.** Control of the use and protection of water bodies and environment are the responsibility of designated state management authorities (Territorial Directorates of Rosrybolovstvo, Basin Directorates on Fisheries and Protection of Aquatic Biological Resources, executive power bodies of subjects of the Russian Federation)

With the aim of developing and implementing joint measures, exchanging information and best management practices for the bodies of executive power to effectively fulfill their duties in protecting salmon habitat the territorial directorates of the Federal Agency for Fisheries cooperate closely with the federal and regional bodies (subjects of the Russian Federation) of executive power responsible for conservation of environment.

This is secured legislatively and regulated by standard by-laws such as Governmental Regulations of the Russian Federation and regional standard acts developed in compliance with federal norms.

In 2005-2008, this cooperation and coordination developed through joint participation in various meetings at regional levels dedicated to issues relating to planning and implementing of economic activities by companies and organizations and assessment of impact of those on the environment.

Information exchange and consultations with Federal Service for Supervision of Natural Resources Usage (Rosprirodnadzor), Ministry of Natural Resources and Environment are taking place on a regular basis.

For developing and implementing joint control and inspection actions, Agreements on cooperation and coordination were concluded with Federal Service for Supervision of Natural Resources Usage (Rosprirodnadzor), Ministry of Natural Resources and Environment.

**The overall strategy in protecting salmon habitat** requires control of all activities having impact on salmon habitat. All water bodies including those with anadromous fish habitat are in the federal ownership. Salmon habitat protection is regulated by federal laws and local by-laws. Among them are the Federal Laws and regulations: “On fisheries and conservation of aquatic biological resources”, “On the Protection of Environment”; “On Animal World”; “Water Code”; “Fisheries regulations for the Northern Basin”, different environmental by-laws developed by subjects the Federation.

The “Water Code” is the main piece of legislation that regulates relations in the use of waters. It defines procedures of allocating the water bodies for use and specifies main requirements to prevent their deterioration when conducting economic activities. The Water Code covers all water bodies and adjacent land within the water protection zone.

Legislation requirements are based on the need to preserve natural conditions in the habitat of aquatic biological resources establishing the allowed impact levels. In case when impact exceeds the established norms, the burden of responsibility is with the water user, who is to propose conservation measures to reduce the adverse impact and eliminate its effects. In case of impact exceeding the allowable level, specific measures of compensation are applied - such as charge for environment pollution. In case of non-compliance with existing regulations, the water user is

penalized and must compensate the damage to environment, voluntarily or forcibly. These requirements are defined by the Federal Law “On Protection of Environment”.

With the aim of protecting the spawning habitat and providing access of adult salmon to spawning grounds, the Federal Law “On Animal World” introduces restrictions to avoid blocking of spawning migrations.

Any economic activity planned on salmon rivers or close to them, must be approved by relevant authorities and conducted in such way as not to damage salmon habitat. To this end a project proposal is sent to the Basin Directorates for assessment and determining the conditions under which the economic activity can be conducted, taking into account fisheries value of the water body and the need to protect salmon habitat. Then on the basis of the project assessment by the Basin Directorate the Territorial Directorate of Rosrybolovstvo approves the economic activity and specifies requirements to be fulfilled to minimize any adverse impact on aquatic biological resources and their habitat. The Territorial Directorate shall further control the activity and apply disciplinary actions in case of violations.

If the proposed activity will anyway cause the habitat degradation (development works on salmon migration routes, reduction in food availability due to construction of bridges across salmon rivers, accidental discharges of pollutants), the damage shall be assessed and compensation payments are directed for enhancement activities and restoration of habitat. Compensation is paid by the organization, whose activities led to unavoidable damage to the Atlantic salmon habitat.

## **5. Already made or planned activities on development of detailed Plans of habitat protection, restoration and enlargement**

The detailed Plans of salmon habitat protection, conservation and restoration for specific rivers are under development. There are a number of objective reasons that delayed the process, including that up till now the legislative basis to regulate the relations in the fisheries sector and its restructuring have not finished yet. Therefore, from 2005 to 2008 under the administrative reform in the Russian Federation, assignment of functions and powers in conservation of aquatic biological resources and protection of their habitat changed three times among three different authorities. Development of legislation was very slow. It was not before 2008 when statutory acts to implement the federal laws, regulating conservation of aquatic biological resources and protection of their habitat were adopted.

Procedures for the timely implementation of correction measures and imposing of “the burden of proof” on the participants in the activities potentially affecting the environment

In 2008, the Government of the Russian Federation adopted regulations regarding the procedures for approval of the placement of industrial and other objects, as well as for the implementation of the new technologies affecting the aquatic resources and their environment in order to prevent or reduce the adverse impact of such activities.

State habitat control and enforcement authorities (territorial directorates of the State Agency for Fisheries) are, in accordance with their responsibilities, in charge of overall measures for the protection of the aquatic environment, including that of salmon. These authorities keep record of all companies and enterprises whose activities affect the aquatic environment and control their compliance with the relevant environment protection regulations.



Specifically, the quality of discharged waters is controlled by the territorial directorates of the State Agency for Fisheries under the Program of the ecological control of the water pollution sources. To prevent water pollution and clogging and conserve the aquatic environment, a discharge reduction plan is being elaborated. The plan involves a step-by-step achievement of the allowable discharge levels established for fisheries-important waters.

Another condition required for the coordination of water diversion and discharge procedures is the obligation of water consuming companies to submit the results from chemical analyses of the discharged waters, to present data on water quality from control sites of water bodies and waterways and to report about the existence and implementation of measures to reduce pollution.

Analysis of the data available shows the impact of discharge on a water body. Pollutant content on a control site exceeding the allowable levels involves tighter requirements concerning the limits of interim coordinated discharge.

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