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***Aquaculture, Introductions and Transfers and Transgenics  
Focus Area Report***

***The Russian Federation***



# The Focus Area Report on Aquaculture, Introductions and Transfers, and Transgenics.

## Russian Federation



Figure 1. Wild Atlantic salmon range in the Russian Federation.

## 1. Introduction

### 1.1 Aquaculture, introductions and transfers, and transgenics

Aquaculture activities in the Russian Federation are carried out at hatcheries of the Federal State Enterprises (FSE) for Atlantic salmon enhancement purposes in the Murmansk and Archangelsk regions and in the Republic of Karelia. There are also Atlantic salmon farms in the Murmansk region located closely to the Norway border.

At present there are no activities related to introductions and transgenics. In the past Pink salmon was introduced to the White sea salmon rivers. The pink salmon eggs were transported annually in 1930<sup>th</sup> and in 1960-1990<sup>th</sup> from the Russia's Far East and hatched in the salmon hatcheries in Murmansk and Archangelsk regions. The work was stopped in 2000<sup>th</sup>. Nowadays the Humpback salmon spawn naturally in all salmon rivers. In 2009 Humpback salmon declared catch in Murmansk region was 100 tonnes, two times more than declared Atlantic salmon catch.

### **Murmansk region**

Aquaculture activities in the Murmansk region are carried out at hatcheries of FSE "Murmanrybvod" (rearing of juvenile Atlantic salmon for artificial reproduction in the wild) and fish farms of different privately owned companies (rearing of salmon and trout at marine and freshwater cage farms).

#### **Salmon hatching**

Atlantic salmon are reared at three hatcheries also two fishing and holding sites are used for broodstock:

- Umba fish hatchery located on the Umba river;
- Fishing and holding site for salmon broodstock of the Umba fish hatchery;
- Kandalaksha experimental salmon farm located on the Niva river;
- Knyazhaya Guba fish hatchery located on the Knyazhaya river;
- Counting fence and holding site for salmon installed in the Kola river;
- Fish ladder of the Tuloma river.

Hatchery-reared juveniles are released into the rivers where broodstock was selected ("native rivers"), i.e. into the basins of rivers Kola, Tuloma, and Umba.

To estimate a return rate of hatchery fish, 100% of released fish are marked by adipose fin clip. Data on the recaptures of salmon tagged at hatcheries are used as indicators of their efficiency.

Hatching of Atlantic salmon by FSE "Murmanrybvod" is financed from the federal budget and carried out in accordance with scientific advice provided by PINRO (sites, dates, and number of released fish).

In 2009, 493 500 Atlantic salmon yearlings were released from hatcheries, whereof 290 000 were released into the basin of the Umba river, 136 000 – into that of the Kola river and 62 500 – into that of the Tuloma river.

Return rate of released salmon to the river is estimated as 0.5 – 1%. In practice, salmon entering the rivers are totally counted only in the Tuloma river. The Kola

river counting fence is placed some 30 km from the river outlet and the Uмба river only partially blocked with the counting fence.

Low efficiency of salmon rearing facilities suggests that quantitative changes in the approach to Atlantic salmon hatching have long been a necessity. This is even more important as in the future there may arise the need for stocking of some other rivers where, at present, there is natural reproduction but the abundance of salmon stocks is on the decline. To optimize salmon enhancement, technical reconstruction of the existing hatcheries is required.

#### Rearing of salmon at marine cage farms

Salmon farms are located westward of the Rybachiy Peninsula in the Ambarnaya and Pechenga Bays of the Barents Sea. Salmon are reared by two privately owned companies, “*Gigante Pechenga Ltd.*” and “*Russkiy Losos Ltd.*”, which use Norwegian technologies and standards. Equipment, feeds, and planting stock are purchased abroad.

#### *“Gigante Pechenga Ltd.”*

This company produces farmed Atlantic salmon in marine cages located in the Pechenga Bay where the big salmon river Pechenga flows in. The company has no broodstock of its own. In 2001 - 2009, the company imported 566 000 smolts and 2 800 000 eggs of Atlantic salmon from Norway. Annual production of salmon varied between 100-350 tonnes. Projected production capacity is 10 700 tonnes.

Salmon eggs were incubated at a private fish farm in the Murmansk region. Juveniles were reared in the facilities placed in the freshwater lake. Smoltified fish were vaccinated by vaccines certified in the Russian Federation and released in the marine farms.

#### *“Russkiy Losos Ltd.”*

The company rears Atlantic salmon in marine cages in the Barents Sea, the Ambarnaya and Pechenga Bays. The company has no broodstock of its own. Projected production capacity for 2015 is 12 000 tonnes. No production has been declared yet.

In 2007-2008, 800 000 smolts of Atlantic salmon were delivered to the Ambarnaya Bay from Norway and Scotland. In 2009, it was planned to deliver 1 500 000 smolts to the Pechenga Bay from Norway.

### **The Republic of Karelia**

#### Salmon hatching

In the Republic of Karelia, Atlantic salmon are hatched for enhancement purposes by FSE “Karelrybvod”. Subordinated to FSE “Karelrybvod” are FSE “Kemsky Fish Hatchery”, “Vygsky Fish Hatchery”, and “Karelskaya Fish Hatching Station”. These hatcheries work with indigenous populations of Atlantic salmon.

### Rearing of salmon at marine cage farms

There are no marine salmon rearing farms. However, there are freshwater facilities for rearing rainbow trout.

## *Archangelsk region*

### Salmon hatching

In the Archangelsk region, Atlantic salmon are hatched for enhancement purposes by FSE “Sevrybvod” at two fish farms, Solzensky production and experimental salmon farm and Onezhsky fish hatchery.

These farms work with indigenous populations of Atlantic salmon. Total capacity of the two facilities is presently 270 000 salmon juveniles (Solzensky production and experimental salmon farm – 200 000 salmon juveniles aged 1 –2 years of 18 g average weight, Onezhsky fish hatchery – 70 000 juveniles aged 2 years of 12 g average weight).

The facilities are used to rear not only the Atlantic salmon, but also sea trout. Besides, at the Solzensky farm, the experiments at creating a broodstock of hatchery-reared Atlantic salmon are being conducted.

A total of 205 000 juvenile salmon were released in 2009.

All reared juveniles are adipose fin clip before release. Tagging results indicate that all Atlantic salmon spawners caught in the Solza river are of hatchery origin. Of all spawners caught in the Kozha river, up to 50% were found to be a hatchery origin.

## *Republic of Komi and Nenets Autonomous Okrug*

To present, there has been no aquaculture of any fish species.

The quality of aquatic biological resources in the Pechora river basin is unique not only in terms of value of its components, but also in terms of the gene pool purity in valuable fish species, which has not suffered from adverse impacts of fish culture and introduction.

## **1.2. Structure of policy and management related to aquaculture, introductions, transfers and transgenics**

At present, there is no a Federal Law outlining the policy for the development of aquaculture sector in the Russian economy, defining the priorities and development objectives, means and methods of state support, goals that should be set by control authorities, powers of regional authorities and their responsibility for the implementation of state policy regarding aquaculture.

New provisions of the Water Code of the Russian Federation introduced zoning of water protection areas and made the coastal strip open for free use, thereby complicating the engineering of land-based aquaculture facilities, which made it difficult to obtain ground areas for the construction of on-shore infrastructure.

There is no legal basis for the designing of aquaculture facilities and establishment of a system for the control of production and biotechnological safety. Numerous drafts of the Federal Law “*On aquaculture*” developed in recent years do not consider these fundamental issues, making references to current Russian legislation which does not give any answers to these questions either.

In the absence of a basic law regulating aquaculture-related activities, the control of fish farming facilities is restricted to the monitoring of wild populations’ environment, i.e. of the impact of fish culture on fisheries waters (environmental law), and to health protection of wild populations through the control of epizootic state at the existing farms (veterinary law).

The Federal law of 20.12.2004 No.166-FZ “*On fisheries and conservation of aquatic biological resources*” stipulates that

*“Fish culture (aquaculture) is the activity consisting in keeping and breeding, including rearing, of aquatic biological resources in partially wild conditions or in an artificially created environment, and fishing (catching) of these aquatic biological resources in cases specified by this federal law”.*

*“Fish farming is entrepreneurial activity consisting in keeping and breeding, including rearing, of aquatic biological resources in partially wild conditions or in an artificially created environment, and their fishing (catching) with a subsequent sale of catches of aquatic biological resources”.*

In 2008-2009, the Federal Agency for Fisheries of the Russian Federation has prepared a number of normative documents (rules and procedures) regulating fish culture, enhancement and acclimatization of aquatic biological resources on the basis of the Federal Law of 20.12.2004 No. 166-FZ “*On fisheries and conservation of aquatic biological resources*”.

The most important one is *“The Rules of organization and conducting of a tender for obtaining the right to conclude an agreement on the allotment of a fishing site for fish farming”*, approved by the Regulation of the Government of the Russian Federation of 14.02.2009 No.136 *“On the conducting of a tender for obtaining the right to conclude an agreement on the allotment of a fishing site for fish farming and on the conclusion of such an agreement”*.

The Rules establish the procedure of organization and conducting of a tender for obtaining the right to conclude an agreement on the allotment of a fishing site for fish farming to legal entities and individual manufacturers registered in the Russian Federation in accordance with the Federal Law *“On state registration of legal entities and individual manufacturers”* in order to conduct fish farming.

The tender is conducted with respect to fishing sites located in the inland waters of the Russian Federation, including inland seas of the Russian Federation, and in the territorial sea of the Russian Federation and specified in the list approved by the executive authority of the appropriate subject of the Russian Federation by agreement with the Federal Agency for Fisheries.

Pursuant to Article 18 of the Federal Law of 20.12.2004 No. 166-FZ *“On fisheries and conservation of aquatic biological resources”*, a fishing site can be an entire fisheries water body or its part.

A fishing site is delimited by certain boundaries and can be used to carry out commercial fishery in the inland waters of the Russian Federation; coastal fishery; fish farming; fishery to support the traditional way of living and traditional economic activities of indigenous small nations of the North, Siberia and the Far East; and recreational fishery. Boundaries of a fishing site are determined according to the procedure established by the federal executive authority in fisheries.

A fishing site can be used for one or several of the mentioned purposes.

On the basis of Article 18 *“The Procedure to establish the boundaries of fishing sites”* approved by the Order of the Federal Agency for Fisheries of 22.04.2009 No.338 was developed. The Procedure introduces the order to establish boundaries of fishing sites in the inland waters of the Russian Federation, including inland seas of the Russian Federation, and in the territorial sea of the Russian Federation.

Removal of aquatic biological resources for fish culture purposes is specified by *“The Procedure of fishery for the purpose of fish rearing, enhancement and acclimatization of aquatic biological resources”*, approved by the Order of the Federal Agency for Fisheries of 01.04.2009 No. 257.



The Procedure establishes the procedure of fishery with the purpose of fish rearing, enhancement and acclimatization of aquatic biological resources in the inland waters of the Russian Federation, including inland seas of the Russian Federation, in the territorial sea of the Russian Federation, on the continental shelf of the Russian Federation, in the exclusive economic zone of the Russian Federation, in the Azov and Caspian Seas.

Economic activities pertinent to artificial reproduction of aquatic biological resources are also regulated by “*The Rules for the organization of artificial reproduction of aquatic biological resources in fishery valuable waters*” approved by the regulation of the Government of the Russian Federation of 25.08.2008 No.645.

The Rules establish the procedure for the organization of artificial reproduction of aquatic biological resources in fishery valuable waters.

Artificial reproduction of aquatic biological resources in fisheries waters includes the following activities:

- catching (fishing) of aquatic biological resources for eggs, milt (sperm) and broodstock;
- rearing with a following release of juveniles (larvae) of aquatic biological resources into fishery valuable waters;
- capture of predatory and low value aquatic biological resources to prevent predation on juveniles of valuable aquatic species at release sites.

Artificial reproduction of aquatic biological resources in fishery valuable waters is carried out under agreements between legal entities and the Federal Agency for Fisheries.

Acclimatization regulations are set out in “*The Procedure for implementation of measures to acclimatize aquatic biological resources*” approved by the Ministry of Agriculture of the Russian Federation of 17.01.2007 No.4.

The Procedure establishes the rules applied to acclimatization and introduction of aquatic biological resources into fishery valuable waters by legal entities.

Prior to acclimatization, a biological substantiation should be developed and approved.

“*Criteria and procedures for the development of a biological substantiation to establish fisheries areas*” are approved by the Order of the Federal Agency for Fisheries of 21.07.2009 No.638.

The document sets up the criteria used to establish protected fisheries areas and introduces the procedure for the development of an appropriate biological substantiation.

According to Article 49 of the Federal Law of 20.12.2004 No. 166-FZ “*On fisheries and conservation of aquatic biological resources*”, fishery valuable waters or their parts which are important for conservation of valuable species of aquatic biological resources can be declared protected fisheries areas. The protected fisheries area is a water body or a part thereof with an adjacent territory where a special regime of economic and other activities is established in order to conserve aquatic biological resources and create the conditions for the development of fish rearing and fishing.

It can be temporarily or permanently prohibited to conduct economic or other activities in full or in part.

The procedure for establishing protected fisheries areas and types of economic or other activities completely or partially prohibited in such zones are established by the Government or the Russian Federation.

## **2. Implementation of the Williamsburg Resolution**

### **Murmansk region**

On an industrial scale, marine farming in the Murmansk region is poorly developed, with an annual output not exceeding 350 tonnes of Atlantic salmon. Cage farms in the Tuloma river basin have not produced more than 100 tonnes of Rainbow trout a year.

Developed and prepared for approval are the Interim veterinary and sanitary rules for marine farms. They set up standards and requirements for design and construction of fish farms, their water supply, control of production activity, treatment and disinfection of production equipment, utilization of biological waste, fish feeding and quality of delivered feeds, veterinary services, and transportation of planting stock.

At all farms, plans of fish escaping emergency measures have been developed and endorsed at the regional level.

For control purposes there is a mandatory requirement to conduct ecological monitoring in accordance with long-term programmes developed by research institutions.

Regional Veterinary State Service on a regular basis carries out year-round monitoring of epizootic state at all fish hatcheries (rearing for enhancement purposes) and fish farming (commercial production) aquaculture facilities in the Murmansk region.

To minimize the risk of diseases and parasitic infection induced by fish farming industry, aquaculture facilities are put in quarantine if they import smolts from abroad.

In 2008, two marine farms rearing Atlantic salmon, which were situated in the Pechenga Bay of the Barents Sea, were quarantined. They were put into quarantine as they received planting stock (vaccinated Atlantic salmon smolts) from abroad.

In the period of planting stock delivery a complex of laboratory tests on imported smolts was performed at each farm in order to avoid specially dangerous and quarantined fish diseases.

Investigations on smolts delivered to the marine cage farm of “Gigante Pechenga Ltd.” were carried out in the ichthyopathology laboratory of the Ya.R.Kovalenko All-Russia Research Institute of Experimental Veterinary. The laboratory conducted investigations to reveal viruses causing specially dangerous and quarantined fish diseases: Infectious Haematopoietic Necrosis (IHN), Infectious Salmon Anaemia (ISA), Viral Haemorrhagic Septicaemia (VHS) and Infectious Pancreatic Necrosis (IPN) and reported the results to be negative. Bacteriological tests on Atlantic salmon have not revealed the growth of pathogenic bacterial microflora, rating the results of bacteriological tests as negative.

Investigations on smolts delivered to the marine cage farm No.2 of “Russkiy Losos Ltd.” were carried out in the laboratory of Federal State Enterprise “VNIIZZh” (virusological investigations) and State Regional Veterinary Enterprise “Murmansk Regional Veterinary Laboratory” (bacteriological investigations). The tests have not revealed viruses of Infectious Haematopoietic Necrosis (IHN), Infectious Pancreatic Necrosis (IPN), Infectious Salmon Anaemia (ISA), or agents causing salmon aeromonosis or myxobacteriosis.

### **Archangelsk Region, Republic of Komi, and Nenets Autonomous Okrug**

There are no facilities for marine or freshwater Atlantic salmon farming in the Archangelsk Region and Nenets Autonomous Okrug.

To minimize the adverse genetic impacts on wild Atlantic salmon stocks, salmon farms of FSE “Sevrybvod” release their production into the waters where spawners were caught.

To minimize the risk of diseases and parasitic infection, FSE “Sevrybvod” is taking the following preventive measures:

- Salmonids and their eggs are not transported from outside the area;
- Non-indigenous fish are not introduced into salmon rivers and no such introductions are planned;
- Transgenic salmon is not used and it is not planned to work with such salmon.

### **Republic of Karelia**

FSE “Karelybvod” has analyzed the operation of aquaculture facilities in the Republic of Karelia in the light of NASCO Williamsburg Resolution.

To minimize the adverse impact of aquaculture, introductions and transgenics on the wild salmon stocks, FSE “Karelybvod” and the subordinate fish farming

enterprises have been cooperating with PINRO, the Northern Fisheries Research Institute of the Petrozavodsk State University, and the Institute of Biology of the Karelia Scientific Centre of the Russian Academy of Sciences.

FSE “Karelrybvod” applies the precautionary approach in its activities and has the “burden of responsibility”. Atlantic salmon culture is based on the appropriate piscicultural and biological rationale.

FSE “Karelrybvod” takes the following steps to minimize the impact of aquaculture, introductions and transgenics:

- There is no salmon farming or ranching in the area;
- FSE “Karelrybvod” and subordinate aquaculture facilities make every effort to reduce negative genetic and other biological impacts of enhancement activities. Eggs are kept separately and juveniles are released into the rivers of their origin; releases into rivers that are not native are prohibited;
- The risk of diseases and parasitic infection is reduced due to permanent veterinary and sanitary control at aquaculture facilities;
- Only the local indigenous White Sea population of Atlantic salmon are used for fish rearing;
- Aquaculture facilities subordinate to FSE “Karelrybvod” do not use transgenic salmonids and it is not planned to work with such salmon.