Ad Hoc Review Group

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Implementation Plan

Russian Federation

IMPLEMENTATION PLAN OF THE RUSSIAN FEDERATION

1. Introduction

Objectives of the national management strategy

In the light of the overall goals of Resolutions and Agreements adopted by NASCO under the Precautionary Approach aiming to promote the diversity and abundance of salmon stocks and to maintain all stocks above their conservation limits; to maintain and, where possible, to increase the current productive capacity of Atlantic salmon habitat; to minimise the possible adverse impacts of aquaculture, introductions and transfers and transgenics on the wild stocks of Atlantic salmon the main objectives of today's management strategy for Atlantic salmon in the Russian Federation are as follows:

1. to preserve biodiversity and enhance the number of Atlantic salmon;
2. to minimize the risk from management actions taken;
3. to rationally utilize natural biological resource to ensure continuity of its reproduction
4. to preserve Atlantic salmon habitat
5. to resolve socio-economic issues by improving economic returns to local communities through salmon fishing.

These objectives are defined by the Federal Law on Fisheries and Conservation of Aquatic Biological Resources, which prioritises the conservation of aquatic biological resources and their rational exploitation to their utilization as an object of the right of property or other rights.

1.2. Nature and extent of resource

In northern Russia the North Atlantic salmon are found in rivers of the five subjects of the Russian Federation – Murmansk and Archangelsk regions, Republic of Karelia, Komi Republic, Nenets Autonomous Okrug.

In the Murmansk region (Kola Peninsula) Atlantic salmon is found in 79 rivers (43 of them flow into Barents Sea and 36 into the White Sea). In Archangelsk region there are 23 salmon rivers, which flow into the White Sea. In Karelian Republic salmon is known to live in 17 rivers flowing into the White Sea. Located in the Nenets National Okrug is the lowest part of the Pechora river and three small salmon rivers, all of them belonging to the Barents Sea basin. The Komi Republic is the region, where the main part of the Pechora river catchment and some tributaries to the river Severnaya Dvina are located.

Of 79 salmon rivers on **the Kola Peninsula** four has the length of more than 200 km, eight - more than 100 km, the length of other rivers is no more than 100 km with those less than 50 km constituting the most numerous group (51 rivers).

The total area of spawning and nursery habitat in 42 Barents Sea rivers on the Kola Peninsula is 20.07 km^2, in 37 White Sea rivers – 52.23 km^2.

In Archangelsk region, Nenets National Okrug and Komi Republic best studied are the four largest rivers – Pechora, Mezen, Severnaya Dvina and Onega. The total catchment area – 813,900 km^2. In the catchment of the Severnaya Dvina river sustainable production of salmon is known to take place in 60 tributaries of the 1-4^{th} order. The total area of spawning and nursery habitat in the spawning tributaries of Severnay Dvina is 17.88 km^2.

In the catchment of the Mezen river 30 tributaries are known to have natural production of salmon, the area of mapped spawning and nursery habitat is 7.70 km^2. In the 1950s the Mezen river system was known for the highest catches of salmon in the White Sea basin, with the yearly catch of 150 t.

In the Onega river salmon production areas are in the main stem of the river and its eight tributaries of the first order. The spawning stock assessed on the basis of smolt counts in the river mouth in 2002-2006, adult counts at barrier fence and by hydroacoustic methods is about 5 000 fish.

In the Rupublic of Karelia the abundance of all 17 stocks is below their conservation limits.

In all large rivers of the White Sea basin (within the Archangelsk region) the area of spawning and nursery habitat is declining because of pollution from intensive logging.

1.3. Overview of fisheries

Recreational fishery was conducted based on both "catch-and-retain" and "catch-and-release" on all rivers of the Kola Peninsula in 2005. The catch was 3 409 and 23 592 salmon, respectively (Figs. 1, 2). Commercial fishery was conducted at 24 coastal netting stations in the White Sea from August to December and was supported by salmon from the autumn run. The 2005 catch was 40.9 t. Commercial fishing for salmon at barrier fences introduced in the late 1950s of the 20^{th} century was closed in 2003. The commercial fishery now exploits only a mixed stock of Atlantic salmon from the White Sea rivers, which may adversely affect the status of individual stocks of Atlantic salmon in this basin, and today's policy is to reduce and phase-out this fishery.

In Archangelsk region, Nenets National Okrug and Komi Republik salmon fishery took place from June to November 2005. The number of coastal netting stations was 41 and in-river stations 18. A total of 162 fishing gear was used by all types of fishery. Total catch was 21.31 t, including 1.1 t for hatcheries, 1.0 t in recreational fishery.

On the Pechora river only scientific fishery from July to September was carried out in 2005. The total catch by two drift nets was 2.5 t (536 salmon) in the season.

In Karelia 10 fishing gear were used at salmon fishing sites in 2005. Total catch was 0.9 t.

All types of salmon fishing on rivers of the Russian Federation are licensed and quota-regulated. Quotas for all types of fisheries are allocated from an overall TAC established for the Barents Sea and White Sea stock complexes. In addition, the fisheries are regulated by effort controls including the type of fishing gear that may be used, method of fishing, time and fishing season and fishing sites. All fisheries are conducted in accordance with regional regulations.

1.4. Management entities involved in fishery regulation and habitat protection/restoration

In the Russian Federation the Atlantic salmon has a status of federal property and is managed in accordance with:

- Federal Law on Fisheries and Conservation of Aquatic Biological Resources adopted on 20 December 2004;
- relevant provisions of other Laws (Federal Law on Animal World, Water Code, Federal Law on Environment, Federal Law on Environmental Impact Assessment);
- regional fisheries regulations.

The Federal Law on Fisheries and Conservation of Aquatic Biological Resources gives the authority to manage federal property with respect to aquatic biological resources and to control and enforce in fisheries and conservation of aquatic biological resources to a number of bodies of executive power. These include federal authorities, bodies of subjects of the Russian Federation, bodies of local self-governance within their competence defined by statutory legal acts specifying the status of such bodies. Cooperation between federal and regional bodies of executive power of different levels is coordinated through the Basin Fisheries Science and Industry Council and the Territorial Fisheries Council with the membership including representatives of bodies of state power of the Russian Federation, bodies of the state power of subjects of the Russian Federation, bodies of local self-governance, regional bodies of executive power in fisheries and science.

After recent changes in the structure of the Russian Government (September 2007), the bodies responsible for management of Atlantic salmon include:

a) State Committee for Fisheries
   – adoption of TACs
   – allocation of TAC according to quota types (coastal fishery, scientific fishery, fishery for educational purposes, fishery for aquaculture purposes and introductions; recreational fishery).
   – allocation of the coastal fishery quota between users.
b) Ministry of Nature Management:
   – peer-review of scientific advice and biological substantiation of TACs by external experts.
c) Territorial Directorates for Fisheries (subordinate to the State Committee for Fisheries):
   - allocation of quotas for commercial fishery;
   - issuance of licences;
   - protection of anadromous fish in inland waters;
   - state control and law enforcement in fisheries and conservation of aquatic biological resources .
d) executive bodies of the Subjects of the Russian Federation:
   – allocation of quotas between users for recreational fishery, subsistence fishery by First Nations.
e) Basin Directorates for conservation and enhancement of aquatic biological resources, and fisheries management:
   – management of salmon fisheries;
   – rebuilding of salmon stocks and restoration of salmon habitat.
g) Regional Committees for Natural Resources
   - assessment of proposed nature conservation projects.

2. Status of stocks

Abundance

The status of salmon stocks in rivers of the Kola Peninsula has been assessed on the basis of adult counts and declared catch statistics available for 17 stocks, data from parr density surveys for 27 stocks and conservation limits (CL) defined for all 79 stocks. In 2005 pre-fishery abundance of salmon from the Barents Sea stock complex was estimated at 56,000 salmon and the White Sea complex at 188,000 salmon.

In Archangelsk region, Nenets National Okrug and Komi Republik the assessment of abundance of the White Sea stock complex was carried out on the basis of data on smolt counts in index

rivers. The abundance of spawning stock in the Severnaya Dvina varies from 30,000 to 45,000 salmon. The current abundance of spawning stock entering the Mezen river is estimated at 12,000 – 15,000 salmon.

In the Pechora river the abundance of salmon stock was estimated at 57,000 salmon according to scientific fishing in 2005.

In Karelian rivers the assessment of salmon abundance has not been undertaken and there is no data on the stock status available. Guess-estimation on the basis of catch statistics suggests that all stocks from rivers in this region are below their CLs.

The abundance of salmon and spawning escapement for the Russian stock complex were estimated by using the pre-fishery abundance model (Potter et al., 1998, 2004). The results have shown no long-term trend in the dynamics of Atlantic salmon abundance in Russian rivers (Fig. 3), and the spawning escapement after a long period of decline has been above its conservation limit only since 1990s. The number of spawning migrants in Russian rivers was at its peak in 2001. The total abundance of salmon has been declining since 2001 and is now close to the lower point in its cycle and the spawning stock is close to CL. The Russian stock complex is composed mostly of salmon from rivers of the Kola Peninsula. The status of most of these stocks is satisfactory and does not cause any concerns. However, it should be noted, that the status of individual stocks in rivers in this region varies significantly, therefore, the management of fisheries should take this into account, this is particularly relevant to the coastal fisheries.

Indicative of varying status of salmon stocks between rivers are densities of juvenile salmon (Fig. 4). The densities in spawning and nursery habitat in index rivers of the Barents Sea basin in 2004 were above the average for the previous 5 years. On the whole, current parr densities in rivers of the Barents Sea basin are rather high without any notable declining trends, particularly, where ‘catch-and-release’ is applied.

The situation is different for index rivers of the White Sea basin. For instance, the closure of commercial fishery on the Ponoi river in 1994 and the development of recreational fishing had a favourable effect on the productive capacity of the population. This increased the number of juvenile salmon in this river. Conversely, on the Umba river wild parr densities in spawning and nursery habitats decreased considerably. This was a consequence of dramatically declined numbers of spawners on spawning grounds. The reason behind was the impact of such anthropogenic factors as illegal in-river fishery as well as legal and illegal fisheries on salmon migration routes in the White Sea.

On the whole, overall exploitation rate on the Russian stock complex should not be increased and management of fisheries needs to be based on the assessment of status of individual stocks.

Biodiversity

For the Kola Peninsula there is data available on the age structure, spawning run dynamics, size and age structure and sex composition of adult salmon for 17 stocks. In the majority of rivers, for which long-term data are available, the proportion of grilse is increasing. For the whole region, the proportion of grilse in 2005 was about 67%. The average length and weight tend to decrease. In 2005 no 4SW salmon were reported in catches, the proportion of 3SW declined. The analysis of the age composition of smolts has shown increasing proportion of 4-yr-old fish.

In the Archangelsk region, Nenets National Okrug and Komi Republik there is data available on the age composition, spawning run dynamics, size and age composition and sex structure of

adult salmon from four stock complexes. For the Pechora river there are changes observed in the last 15 years both in the spawning run dynamics (later run times) and its structure – age structure and growth rate, which may, probably, be associated with global climate change. The number of 1SW and 2SW fish is increasing, whilst the number of 3SW salmon declines rapidly. However, information provided by the international project "Sustainable development of the Pechora area under changing nature and society" (SPAIS, funded in 2000-2003 through the INCO-COPERNICUS-2 programme within the EU 5th Framework Research Programme) on the subject "biological diversity of aquatic ecosystems in the Pechora area" suggested a high level of biological diversity of aquatic communities in the Pechora area, Atlantic salmon including.

There is no data available for Karelia.

Threatened or endangered stocks

On the Kola Peninsula most of the stocks are within safe biological limits and only 8 stocks are depleted. For these stocks the advice was given to close all types of fisheries and implement stock recovery plans.

In Archangelsk region, Nenets National Okrug and Komi Republik 6 stocks have been categorized as depleted. These are threatened stocks impacted by diamond mining in catchments of rivers of their origin.

In Karelia all 17 stocks are categorized as depleted.

3. Threats to stocks, and current management measures

3.1. Effects of all salmon fisheries

Kola Peninsula rivers:

- in-river commercial fishery – no fishery;
- commercial fishery on mixed stock in coastal areas in the White Sea has an adverse impact on Atlantic salmon stocks from some rivers;
- recreational catch-and-retain fishery – no threat;
- recreational catch-and-release fishery – no threat;
- illegal fishery – 54 stocks.

Applying the Decision Structure recommended by NASCO for management of fisheries Management Schemes were developed for 30 single stock and one mixed stock fishery. Such schemes require that a TAC is established and quotas are allocated according to the type of fishery (commercial or recreational), and fisheries regulations modified, as needed (dates of fishing, area, fishing gear etc.). To reduce the impact of mixed stock fisheries quotas allocated for coastal fisheries in the area of the Tersky coast of the White Sea were reduced from 60 t in 1999 to 44 t in 2006.

Archangelsk Region, Nenets National Okrug and Komi Republik:

- a small-scale commercial in-river fishery is conducted on the Pechora river in the Komi Republik. Over the last 30 years it took place only in 2003, 2005 and 2006. Quota uptake was no more than 21%;
- commercial mixed stock fishery in coastal areas of the White Sea has adverse impact on Atlantic salmon stocks from some rivers in the area;
- recreational catch-and-retain fishery is conducted on the Pechora river in the Komi Republik. In 2005 only 15% of the allocated quota was fished;

- recreational catch-and-release fishery – no;
- illegal fishery – 23 impacted stocks;
- fishery for semi-anadromous whitefish with drift nets on the Pechora river (by-catch of adult salmon). Number of salmon reported as by-catch in the whitefish fishery can vary considerably due to control and enforcement in all fisheries at present being quite inadequate. The reason is insufficient number of inspector on the river.

Management Schemes were developed for four single stock and one mixed stock fisheries. As above they provide for a TAC to be set and quotas allocated according to the type of fishery and fisheries regulations modified, if needed. To reduce the impact of mixed stock fishery on salmon populations a fixed quota was set.

Republic of Karelia:

- in-river commercial fishery – no fishery;
- commercial fishery in coastal areas in the White Sea on the basis of annually allocated quotas. In 2005 the catch was 0.92 t (92% of the allocated quota);
- illegal fishery – 17 stocks affected;
- recreational catch-and-retain fishery – no threat;

Management Schemes were developed for one single stock and one mixed stock fisheries. They provide for a TAC to be set and quotas allocated according to the type of fishery and, if needed, fisheries regulations modified.

Illegal fishery, according to experts, has significant adverse impact on the abundance of the most spawning stocks and success of natural production of salmon in all regions with salmon rivers. On the Kola Peninsula most affected are rivers located in the vicinity of large communities. In the Archangelsk Region, Nenets National Okrug and Komi Republik illegal fishery occurs everywhere in waters with salmon freshwater habitat with the largest illegal catch, about 80%, reported from the downstream parts of the Pechora river. According to estimates from different studies unreported catch may be up to four times larger than official declared catch.

In the Republik of Karelia overfishing in commercial fishery in 1980-1990 and unreported catch, the level of which for rivers flowing into the White Sea and for the coastal zone, had always been, according to fisheries inspectors, no less than official quotas, are the reasons behind poor status of stocks in this region.

In the past, post-smolts of Atlantic salmon were often reported as by-catch in the drift net fishery for herring in the White Sea. This was the reason for introduction of a ban on fishing for herring with drift nets in the White Sea. Besides, before salmon from Russian rivers occurred in catches of the Faroese fishers, tagging data (Hansen, Jakobsen, 2003) suggested that 20% of salmon in the feeding grounds in the Faroese fishing zone were of Russian origin. This problem is currently of no importance as no salmon fishery is conducted in the Faroese fishing zone. Furthermore, according to different estimates (Bakshtansky, 1970; Bakshtansky et al., 1985; 1991) based on the analysis of marine fisheries half of the Norwegian catch at sea, and even more, up to two thirds, at Finnmark, is composed of intercepted salmon of the Russian origin.

3.2. Factors affecting estuarine and freshwater salmon habitat

Kola Peninsula:

- hydropower – 5 stocks (rivers Paz, Tuloma, Teriberka, Voronja, Niva). Losses of habitat due to this development (impassable dams, changing the main stem into

discharge channels) are compensated by stocking. Fish passes were built only on the Tuloma river.
- weirs for water abstraction – 6 rivers;
- industrial and sewage discharges – 12 rivers. To reduce the adverse impacts from these discharges the regulations require that the companies, sources of pollution, to develop action plans to achieve levels of concentration of pollutants safe for aquatic biological resources and their habitat (through effective sewage treatment facilities, improving technologies etc.)
- loose log drifting – 2 rivers. Loose log drifting on salmon rivers is forbidden from early 1990s of the previous century. However, repercussions of this practice continue to show adversely on salmon habitat until now. Studies are currently underway to assess the impact of log drifting and to identify actions needed to restore salmon habitat.

Archangelsk region, Nenets National Okrug and Komi Republik:
- hydropower – 1 stock (Solza river). Some of the spawning and nursery habitat was lost due to flood. Losses are being compensated by stocking.
- weirs for water abstraction –1 stock;
- logging – 23 stocks;
- navigation – 1 stock, no data available on the extent of the impact;

There is a navigable channel, also used by salmon, between rivers Kula and Pinega (tributary to Severnaya Dvina).

Lower parts of the main stem of the Pechora and Vychegda rivers, to where discharges from plants in industrial zones of Vorkuta, Inta, Ukhta and Syktyvkar can occasionally take place, are impacted by economic activities only to a small extent. Studies by the Komi Science Centre of the Russian Academy of Sciences indicated that 16% of salmon rivers were exposed to the man-caused impacts. However, the water quality in those rivers does not cause any concerns about conditions in the salmon habitat. Most of the salmon spawning and nursery habitat is in natural undisturbed condition and can support higher level of production.

Republik of Karelia:
- hydropower development– 1 stock (river Kem) ;
- navigation – 1 stock (river Vyg). No details of the impact are available.
- logging – pollution of salmon rivers with wastes from log drifting is presently insignificant.

3.3. Impacts of aquaculture, introductions and transfers and transgenics

Kola Peninsula:
- aquaculture (occurrences of farm escapees) – 3 rivers. Marine salmon aquaculture facilities are located in the coastal zone of the Barents Sea in the west of the Kola Peninsula. There is only one company presently engaged in farming of salmon in sea cages from roe imported from Norway. The production is small, about 300 t per annum. Fish farming is subject to regular control by veterinary authorities and other nature conservation authorities.
- there are three hatcheries producing juveniles for stocking. Fish for parent stocks are sampled from four rivers. As required by the Williamsburg Resolution juveniles are released into native rivers.
- introductions and transfers (all projects on introduction of pink salmon (incubation of eggs and stocking of larvae) were closed in 1999. However, there are runs of pink

– diseases and parasites– no impacts identified;

Archangelsk Region, Nenets National Okrug and Komi Republik:

– aquaculture (occurrences of farm escapees) – no;
– there is one hatchery producing juveniles for stocking. Fish for parent stocks are sampled from one river. Juveniles are released into the same river.
– introductions and transfers (all projects on introduction of pink salmon (incubation of eggs and stocking of larvae) were closed in 1999. However, there are runs of pink salmon from natural production into the rivers – 23 rivers;
– diseases and parasites– no;

Republic of Karelia:

– aquaculture (occurrences of farm escapees) – no;
– introductions and transfers (all projects on introduction of pink salmon (incubation of eggs and releases of larvae) were closed in 1999. However, there are runs of pink salmon from natural production into the rivers – 17 rivers;
– there are two hatcheries producing juveniles for stocking. Fish for parent stocks are sampled from one river. Juveniles are released into the same river;
– diseases and parasites - *G.salaris* identified in 1 river (Keret);

At present all projects on introduction of pink salmon in northern Russia are closed. There are no imports of roe and stocking of juveniles by hatcheries into rivers with Atlantic salmon. The population is supported by natural production with only odd years generations contributing. To reduce the abundance of pink salmon advice has been given not to limit the fishery by quotas.

Measures are taken to minimize the risk of spread of parasite *G.salaris*, other parasites and diseases. They are developed on the basis of "Instructions on veterinary control of transfers of live fish, fertilized eggs, crustaceans and other aquatic organisms", which have been effective in the Russian Federation since 1971. When aquatic organisms are imported into the Russian Federation from abroad the importer shall fulfill the "Veterinary requirements to import of live fish, fertilized eggs, crustaceans, mollusks, forage invertebrates and other aquatic organisms into the Russian Federation", No. 13-8-01/1-17, approved by the Veterinary Department of the Agriculture Ministry of the Russian Federation on 23 December 1999. Besides, effective on the territory of the Russian Federation is the Instruction on measures to counteract *G.salaris*, approved by the Veterinary Department on 8 June 1998.

Regional regulations for preventing the transmission and spread of *G.salaris*, other parasites and diseases have been so far developed and are effective in the Murmansk region only, which is, in the first place, linked to the development of salmon farming there.

These regulations include:

– measures for control of the epizootic situation in areas, where aquaculture facilities are sited, and measures to prevent the spread of *G.salaris*, other parasites and diseases;
– measures for preventing escapes of fish during movement and handling of stocks at aquaculture units; development of contingency plans to be implemented in the event of accidents, which have led to significant escapes;
– mechanism for control of movement of fish at aquaculture units;

- possibility of moving an aquaculture unit to another site, if its non-compliance with any of veterinary and sanitary or biotechnological standards has been identified during operations;
- measures to minimize the risk of diseases in cultured fish and their transmission, which include vaccination of fish, use of optimal stocking densities, careful handling, frequent inspection of fish, proper diet and feeding regimes, avoidance of unnecessary disturbance of fish, detailed health inspections, disinfection of transportation equipment etc.

All aquaculture units have a list of prevailing infectious diseases and parasites, and the methods in practice for their control and prevention are detailed in an annual plan of veterinary/ sanitary and preventive measures established for each disease-free unit. At facilities with diseases, which require introduction of restrictions, plans of therapeutic/preventive and curative measures are established.

Movement of live fish into the Murmansk region from abroad has been forbidden following a direction by the Chief state veterinary inspector based on the collective decision with the Murmansk Regional Administration.

The Veterinary Service of the Murmansk region has developed a Program for veterinary and sanitary control of aquaculture facilities, which provides for regular (at least 4 times a year) veterinary and sanitary inspection of farms and ichthyopathological examination of reared fish.

To minimize the risk of spread of *G.salaris* via recreational fishery the Polar Research Institute and Murmansk Veterinary Laboratory developed and issued an informational leaflet, which included information on the parasite, possible ways of its transmission to rivers and established requirements to be fulfilled by anglers to avoid transmission of this monogenea with tackle.

In 1997 to eradicate *G.salaris* in Karelia a program was developed for treatment of infected river with rotenone, however, so far it has not been implemented for lack of funding. Therefore, to reduce the risk of infection with parasite juveniles of salmon are released at low temperatures under ice in the second half of April, when the parasite is not active. The juveniles are stocked as 2-yr-olds in the downstream of the river. Most of them do not stay in the river for a long time, as they are released as pre-smolts and leave the river within a week. To minimize the risk of spread of *G.salris* recreational fishery of salmon on the Keret river is allowed only from the river bank.

3.4. Other influences affecting salmon abundance or diversity

Waterfalls impassable for salmon on 27 rivers on the Kola Peninsula. High numbers of predatory fish and competitors for food in lower parts of salmon rivers and estuaries.

4. Management approach

At present full implementation of NASCO's Resolutions and Agreements in Russia is often hampered by serious structural and financial problems. In particular, federal and regional systems of executive power in fisheries underwent re-organisation many times over the past three years (the last was in September 2007). Sources of funding still remain unresolved, for example, for the proposed "Programme of scientific research and management actions for conservation, restoration and sustainable exploitation of Atlantic salmon in rivers of the Kola Peninsula" with the implementation period from 2007 to 2017. In the light of this there is often little point in planning the projects involving considerable investment, such as, for instance, restoration of salmon habitat or studies of salmon at sea. It should also be noted that most of the

Russian salmon rivers are located in areas with poor infrastructure. There are almost no industries there, practically no roads. On the one hand, this contributes to preservation of salmon habitat, on the other, creates social and economic tensions among local people, for whom hunting and fishing have always been their main business and source of their livelihood, and who have always been supported by state subsidies. Therefore, status of salmon stocks in such areas as, for instance, the Republic of Karelia, is to a large extent dependent on how quickly the programmes of socio-economic development in such regions are developed and implemented.

Management of fisheries:

The effectiveness of fisheries management is warranted by effective implementation of a combination of elements: scientific prediction of returns and total allowable catch of salmon, enforcement of fisheries regulations for rational exploitation of the resource by all types of fishery, prioritizing specific types of fishery, taking actions to avoid the by-catch of juvenile and adult salmon in other fisheries, creating conditions to minimize unreported catches, resolving socio-economic problems.

In the light of the above the following actions are planned for 2007-2011:

Kola Peninsula:

- new regulations for fisheries in the White and Barents Sea basins are being developed. These will include new regulatory measures for fisheries taking into account requirements of the Federal Law On Fisheries and Conservation of aquatic biological resources and other legal acts of the Russian Federation and NASCO recommendations concerning management of fisheries (2007);
- establishing TAC and allocating quotas according to the type of fishery (yearly);
- phasing-out commercial fisheries in the coastal area of the White Sea (2007-2011)
- increasing quota for recreational fishery by reducing the quota for commercial fishery in the White Sea rivers as well as by enhancing the abundance of salmon through actions to protect salmon and its habitat and regulatory measures for the fishery in the White and Barents Sea rivers (2007-2011);
- developing further catch-and-release fishery by publicizing and promoting it among Russian anglers, as mainly foreign anglers currently apply this fishing method (2007-2011);
- corrective measures for the fisheries (2007-2011);
- development of bye-laws regulating the use of aquatic biological resources at fishing sites on salmon rivers (2007-2011).

Archangelsk Region, Nenets National Okrug and Komi Republik :

- new regulations for fisheries in the White and Barents Sea (2007);
- establishing TAC and allocating quotas according to the type of fishery (yearly)
- maintaining low quota for commercial fisheries in the coastal area in the White Sea (2007-2011);
- increasing quotas for recreational fishery through development and implementation of programmes for recreational fishery on rivers Pechora, Onega, Mezen, Severnaya Dvina (2007-2011);
- promoting “catch-and-release” fishery through developing programmes for recreational fishery, catch-and-release including, on rivers Pechora, Onega, Mezen, Severnaya Dvina (2007-2011);

Republic of Karelia:

- new regulations for fisheries in the White and Barents Seas (2007);
- establishing TAC and allocating quotas according to the type of fishery (yearly)
- phasing-out commercial fisheries in the coastal area of the White Sea (2007-2011);
- increasing quotas for recreational fishery as a result of actions to protect salmon and its habitat and regulation of fisheries (2007-2011);

4.2. Protect and restore salmon habitat

Most salmon rivers do not presently require any actions for restoration of natural salmon spawning and nursery habitat.

Kola Peninsula:

- continued monitoring (2007-2011);
- encouraging and involving users of fisheries sites in habitat protection and restoration (2007-2011);
- development and implementation of habitat restoration programmes with involvement of companies, which are sources of pollution (2007-2011);
- channeling penalties for pollution to restoration of salmon habitat in water bodies in the area affected by companies, sources of pollution (2007-2011).

Archangelsk Region, Nenets National Okrug and Komi Republik :

- continued monitoring (2007-2011);
- projects are needed to clear rivers from debris after loose log drifting and restore spawning and nursery habitat at some sites, as the main channel was straightened to ease the log drifting. However, for lack of funding no projects are planned for the next five years.

Republic of Karelia:

- development of fisheries characteristics of water bodies and their parts and impact assessment of economic activities carried out or planned in water bodies with salmon freshwater habitat (2007-2011);
- work was carried out at individual sites on the Keret river to remove wastes from logging and other pollution by mechanical means, further work is needed to restore spawning and nursery habitat, however no projects are planned in the next five years for lack of funding.

4.3 Manage aquaculture, introductions and transfers

Kola Peninsula:

- according to measures already in force: ban on import of live fish (eggs only) from other regions and from abroad, compliance with veterinary regulations, development of contingency plans in case of farm escapes, continued studies in areas with fish farming (monitoring, genetic studies) (2007-2011);
- establishing inventory of “fisheries sites” for aquaculture (2007-2011);
- development and implementation of new regional regulations for aquaculture operations at “fisheries sites” on the basis of NASCO recommendations (Williamsburg Resolution) (2007-2011);
- parasitological studies to monitor salmon rivers close to the border between Karelian Republic and Finland for *G.salaris* (2007-2011);
- parasitological studies of juvenile Atlantic salmon at hatcheries (four times a year on a yearly basis)

It was recommended not to regulate the pink salmon fishery by quotas to ensure maximum harvest in fisheries for other aquatic biological resources and in research fishing.

Archangelsk Region, Nenets National Okrug and Komi Republik :

No actions.

Republic of Karelia:

- Monitoring of the spread of *G. salaris* in the river Keret and to other rivers (2007-2011).

4.4. Actions to be taken in relation to other influences

- monitoring of by-catch of salmon in pelagic fisheries in the Norwegian Sea. It is important to take account of potential by-catch of post-smolts in pelagic fisheries, however no accurate assessment of this impact is presently available. Studies undertaken by Russia since 2002 suggest that by-catch of salmon is not a significant factor behind salmon mortality at sea (2007-2011);
- sampling programmes on the fishery for herring and pink salmon in coastal areas of the White Sea to identify potential by-catch of salmon (2007-2011).

5. Evaluation

Kola Peninsula: Regional Directorate for Conservation and Enhancement of Aquatic Biological Resources and Fisheries Management (Murmanrybvod) and Territorial Directorate of the State Committee for Fisheries are responsible for the following:

- compilation of catch statistics from all types of fishery;
- collection of data on age, size and weight and sex composition of salmon from recreational fishery;
- enhancement of fish stocks;
- monitoring of salmon habitat;
- assessment of potential impact from any proposed project on salmon and its habitat.

17 index rivers are monitored yearly by the Polar Research Institute of Marine Fisheries and Oceanography (PINRO), Murmansk, to assess the status of salmon production and sample biological data. This includes assessment of adult returns, studies of spawning run and smolt migration dynamics, collection of data on size, weight and sex composition of adult salmon, parr densities estimates at standard stations, tagging of adult salmon and juveniles. This information along with catch statistics is used for predicting salmon returns to Russian rivers, determining TAC, monitoring the status of individual stocks and their habitat and recommending necessary management measures.

Archangelsk Region, Nenets National Okrug and Komi Republik: 28 index rivers (including tributaries) are monitored yearly to assess the status of salmon production and sample biological data. This includes assessment of adult returns, studies of spawning run and smolt migration dynamics, collection of data on size and weight and sex composition of adult salmon, parr densities estimates at standard stations, smolt counts. This information along with catch statistics is used for predicting salmon returns to Russian rivers, determining TAC, monitoring the status of individual stocks and their habitat and recommending necessary management measures.

Republic of Karelia: Catch statistics is compiled, biological data is sampled, state assessment and monitoring of stocks and efficacy of management of all types of fisheries are carried out. Effectiveness of enhancement projects is assessed. Monitoring of *G.salaris*.

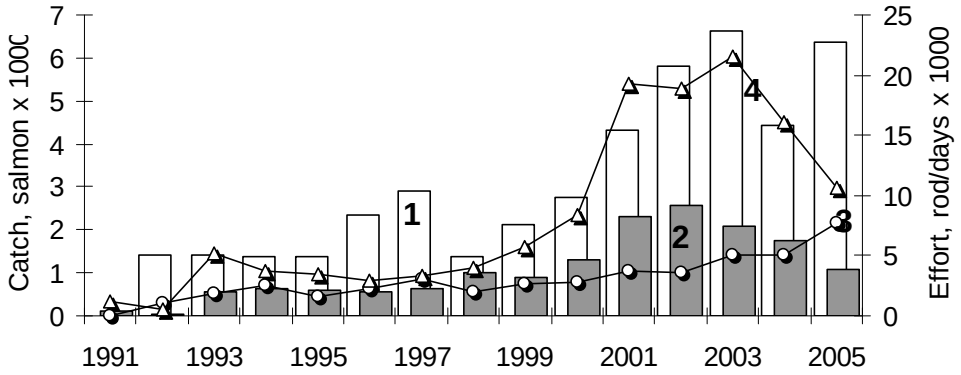

Figure 1. Recreational Atlantic salmon catches “catch-and-release” (1), “catch-and-retain” (2) and effort “catch-and-release” (3), “catch-and-retain” (4) in the Barents sea rivers of the Kola Peninsula in 1995-2005.

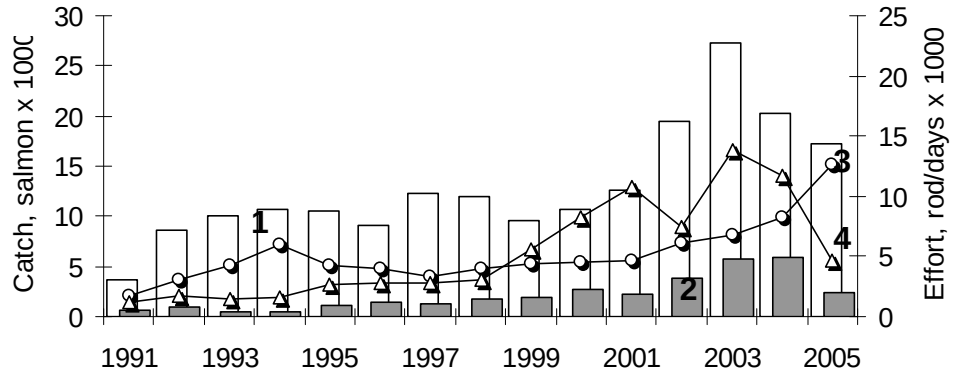

Figure 2. Recreational Atlantic salmon catches “catch-and-release” (1), “catch-and-retain” (2) and effort “catch-and-release” (3), “catch-and-retain” (4) in the White sea rivers of the Kola Peninsula in 1995-2005.

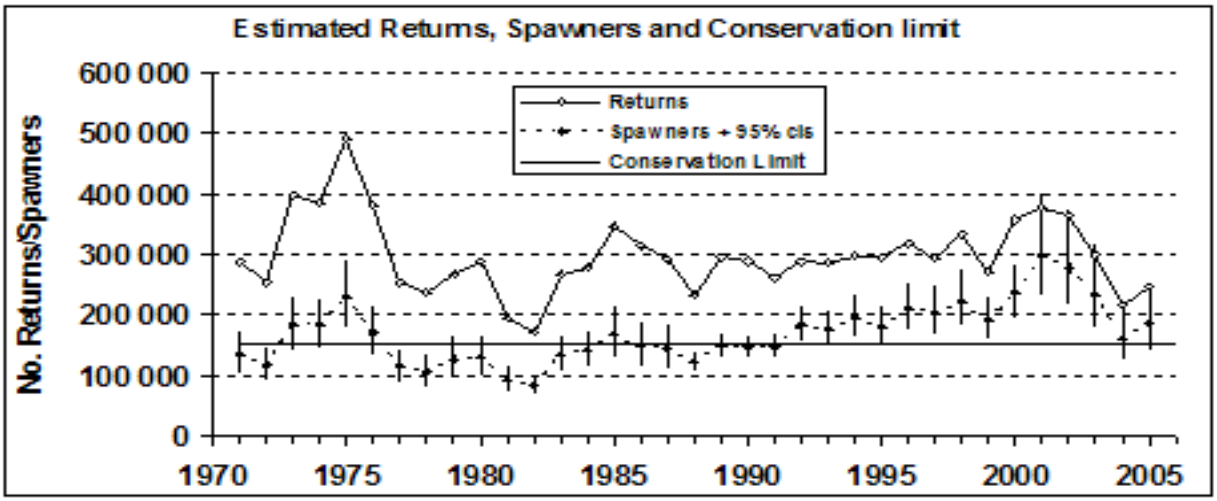

Figure 3. Estimated Atlantic salmon returns and number of spawners to the Russian rivers in 1970-2005.

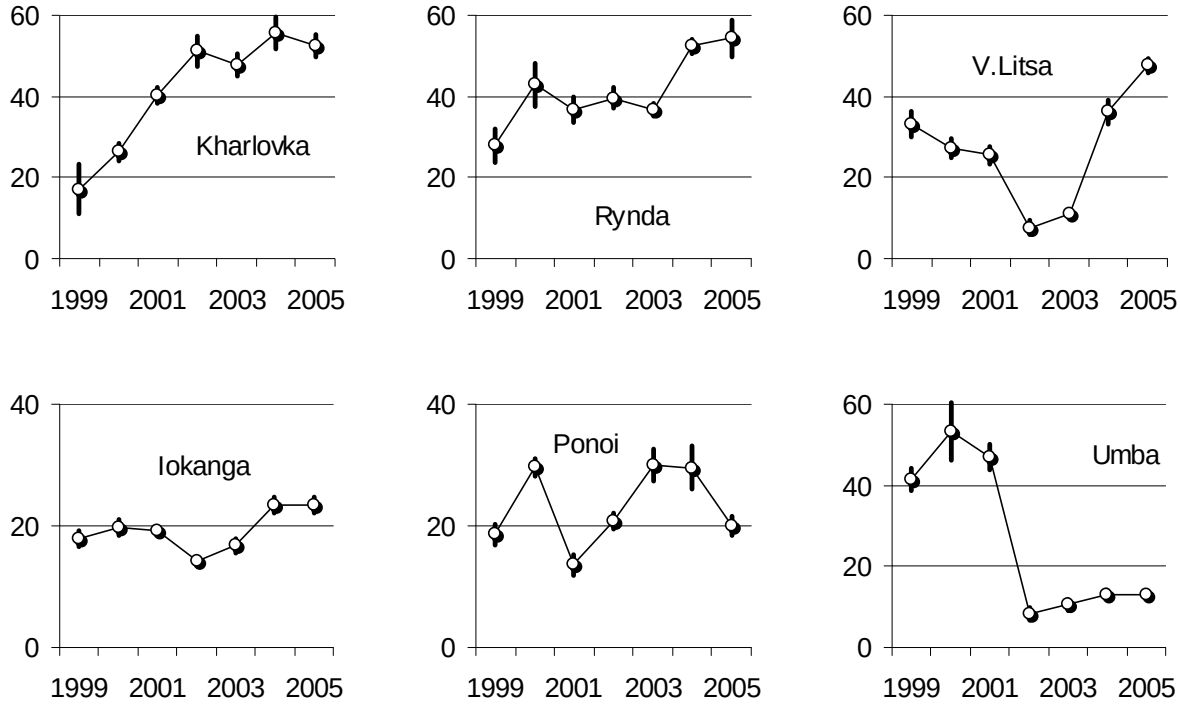

Figure 4. Parr densities in the nursery areas of index rivers on the Kola Peninsula in 1999-2005 (numbers per 100 sq m).