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Fisheries Management Focus Area Report

European Union - Finland

Focus Area Report on Management of Salmon Fisheries
EU - FINLAND

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1. Introduction

In Finland, there are two rivers discharging into the Barents Sea, northern Atlantic Ocean, that support populations of Atlantic salmon, the rivers Teno (Tana in Norwegian) and Näätämöjoki (Neidenelva in Norwegian; Fig. 1). Both of them are border rivers between Finland and Norway. Therefore, the management of the rivers and their salmon stocks is based on bilateral agreements between the governments of the two countries. This could be primarily seen as strength as the resource is jointly looked after by two governments, but there are also drawbacks, most importantly the slow process in negotiating the bilateral agreement at the government level. The current management system is rigid for rapid responses to potential changes in salmon stock status, and therefore, at the present, there are limited possibilities to establish reactive management structures that would meet the criteria of NASCO's Decision Structure.

2. Salmon fisheries

The River Teno salmon stocks are exploited in the river with various fishing methods including weir, gill net, seine, drift net and rod and line. The net fisheries are practiced by local people, mostly native Sámi people, and it is permitted by fishing rights based on land owning or inherited rights. Licences for some 15–20 000 angling days for tourists have been sold yearly over the recent years, more than 80% of those typically on the Finnish side.

Within the entire river system with tributaries included, the average proportions of different methods in salmon catches (in weight) in 1980s–2000s have been 59% for rods, 20% for weir, 9% for gill net and 12% drift net. In both Finland and Norway the proportion of salmon catch with rod and line fishing has increased since 1980s, whereas the proportions of weir and gill net fishing in Finland, and the proportion in drift net fishing in Norway have declined over the past two decades.

Fluctuations in the salmon catches of recreational fishermen, as in all fisheries, are at least partly dependent on the fishing effort. The number of recreational fishermen is unlimited and no quota or bag limit policies are practiced either in sport fishing or in different net fishing methods used by local fishermen. However, there is typically a positive relationship between the salmon stock abundance and the effort of recreational fishermen, even if their fishing effort shows a general long-term increase.

Effort of the various fishing methods can vary yearly, which can result in varying size-selective exploitation. Extreme flow in summer can prevent the use of weir and gill net. Similarly, late brake-up of ice followed by high and late spring flood can prevent effective drift net fishing, which is permitted from May 20 until June 15. Nevertheless, there are significant correlations in the catch between fishing methods indicating that environmental circumstances in general are stable enough allowing undisturbed fishing for all fishing

methods throughout the summer, and run size may generally drive the success of all fisheries.

According to tagging experiments, harvest rates in the river fisheries in the Teno river system may have reached the levels of 50–70% in 1990s (Erkinaro et al. 1999; Karppinen et al. 2003). No recent estimates of the exploitation rates are available.

In the River Näätämöjoki, fisheries for salmon mostly comprise rod and gill net fisheries. Gill nets are operated only on the Finnish side whereas a traditional seine net, "käpälä", is at use on the lowermost part of the river on the Norwegian side.

3. Fisheries management

Salmon fishing in the Teno and Näätämö river systems has been regulated since 1873 by bilateral agreements between Finland and Norway. General fishery agreements for both river systems are concluded between the governments of Finland and Norway, primarily regulating the local fisheries and their fishing rights. These agreements have been negotiated between the relevant authorities in both countries, in particular Ministries of Foreign Affairs, Ministry of Forestry and Agriculture (Finland) and the Norwegian Ministry of the Environment (Norway).

The latest general agreement for the River Teno, concluded in 1989, states e.g. that the fishing season commences on 20 May and terminates on 31 August. Net fishing is allowed for three days per week and drift net fishing can take place only from the beginning of the season until 15 June. All fishing is prohibited for one day per week (Sunday night-Monday night).

Tourist angling is regulated by regional authorities in both countries (Department of Environmental Affairs, Office of the County Governor of Finnmark, Norway, and the Fishery Unit, Employment and Economic Development Centre in Lapland, Finland). These regulations can be amended on a yearly basis. Currently, there are changes underway in Norway in that local people, including the Sámi organisations, will have stronger role in regional management of salmon stocks than before. This may bring along new elements to the bilateral management scheme of the border rivers.

Fisheries on salmon originating from the rivers Teno and Näätämöjoki have been regulated also in the ocean. The most important management actions include the prohibition of the high seas salmon fishing since 1984 in North Atlantic through NASCO convention. Norway has taken further steps in improving salmon stocks by closing entirely the drift net fishery at sea since 1989 and by limiting coastal net fisheries.

Salmon stocks in the rivers Teno and Näätämöjoki are conserved, maintained and enhanced only by fishery regulations. All fish releases are strictly prohibited in these river systems.

4. The salmon stocks exploited and their status

Salmon stock monitoring

Monitoring of the salmon stocks in the rivers Teno and Näätämöjoki are based on long-term investigations carried out jointly by Finnish and Norwegian authorities. The long-term monitoring programme includes:

- estimating the juvenile salmon abundances at permanent sampling sites (since 1979 for Teno, since 1990 for Näätämöjoki),
- catch and fishery statistics (present form since 1972)
- catch samples (since 1972)

These programmes are carried out by the Finnish Game and Fisheries Research Institute and the County Government of Finnmark, Norway.

Abundance

In the absence of true measures of the salmon run sizes, the salmon catch is considered to represent a surrogate of abundance. The lack of catch quotas for any fisheries in these rivers and significant correlations in the Atlantic salmon catches between fishing methods indicate that the estimated numbers of salmon caught may reflect actual variations in the populations. In addition, significant relationships between the estimated numbers of salmon in the catches and the abundance of juveniles in subsequent years indicate that the catch may be realistic surrogate of the stock size (Niemelä et al. 2005).

The significance of the River Teno system to the entire wild salmon production in the North Atlantic area is substantial. The total salmon production of the River Teno system including both sea and river catches and the spawning escapement is estimated to be up to 600 tonnes out of which 139 tonnes on the average has been caught annually in freshwater (range 70–250 tonnes in 1972–2006; Fig. 2). Annual salmon catch in the River Teno system is the highest single river catch within the distribution area of Atlantic salmon, and it has accounted for up to 15% of all riverine Atlantic salmon harvests in Europe (1995–2001) and as much as 22% in 2001. Annual salmon catches in the River Näätämöjoki vary typically between 6 and 12 metric tonnes.

In contrast to many areas around the North Atlantic Ocean, the salmon stocks of these northern rivers do not show a long-term decline but cyclic oscillation. The salmon catch of the Näätämöjoki show even an increasing trend over the past 30 years (Niemelä et al. 2004). Moreover, estimated abundances of 1SW and 2SW salmon and the previous spawners in the Teno have increased over the past 15 years (Niemelä et al. 2004, 2006). However, the estimated abundance of 3–4 SW salmon in the Teno seem to have somewhat decreased since the 1970s (Niemelä et al. 2004, 2006). Similarly to the catch estimates, the juvenile indices in both river systems also show a cyclic fluctuation, which is in good accordance with the estimated earlier and subsequent adult salmon abundances (Niemelä et al. 2001, 2005).

A recently established video monitoring site at the outlet of the large tributary, the River Utsjoki, has indicated increasing smolt numbers over the past two years. The adult salmon counts at the monitoring site have been well in accordance with other, independent indices of run sizes (catch statistics, spawner counts).

Although the general stock status shows no declining trend, it is likely that some stocks adapted to the uppermost distribution areas in the Teno river have recently become

threatened (Johansen et al. 2008). Concerns have been raised especially about the status of some MSW salmon stocks in the tributaries of the Teno river system.

Stock diversity

The River Teno salmon stock complex consists of several sub-stocks in different parts of the large main stem and there are more than 20 tributaries supporting spawning stocks. It has been estimated that a great majority of the potential production areas is utilized by salmon stocks. The stock complex shows high level of heterozygosity allowing a large number of genetically distinct sub-populations (Vähä et al. 2007), and their genetic structure also seem to be stable over time (Vähä et al. 2008). The Teno salmon show also very diverse life history traits including exceptionally large variation in freshwater residence time, age at maturity and the extent of ocean migration. The smolt ages vary between two and eight (mostly 3–5) and spawning run consist of yearly varying proportions of maiden individuals with one to five sea-winters and repeat spawners (Fig. 3) resulting in an exceptional total of 96 life history combinations of smolt ages, sea ages and previous spawning times.

Analyses of the contributions of the different salmon stocks in the catches of the mixed stock fisheries in the main stem of the Teno are currently underway. Genetic stock identification has started from the 1SW stocks and will be expanded to MSW stocks and their contributions to catches in 2008 and 2009.

The population structure of the River Näätämöjoki salmon stock is less complex compared to that of the River Teno. However, the Näätämöjoki stock consists of both grilse and MSW salmon, which comprises c. 30% of the catch on the average. The proportions of 2SW and 3SW salmon have been c. 20% and 10%, and there are also a small proportion of 4SW salmon in the population.

Biological reference points

The recently started process towards developing spawning targets for Norwegian salmon rivers (Hindar et al. 2007), includes first, tentative biological reference points for the different populations of the River Teno stock complex and for the River Näätämöjoki salmon stock. This is the first time when biological reference points have been suggested for these populations. Finland and Norway have decided to start a process for tailoring and fine-tuning these reference points by use of all possible information collected for these specific salmon stocks. This work has been planned to get started in 2008.

The early stage of the process in setting the biological reference points for the Rivers Teno and Näätämöjoki does not allow, as of yet, examination of the stock status relative to the specified abundance criteria.

5. Future processes in monitoring and management of the salmon stocks

In 2007, a joint Finnish-Norwegian working group, with members from both countries, undertook the task to draft a salmon stock monitoring program, including knowledge requirements and research collaboration, that will meet the future challenges for a sustainable management of the River Teno salmon. The program should aim to meet the data requirements of NASCO's *Decision Structure for Management of North Atlantic*

Salmon Fisheries, and the *River Inventory*. The final report of the working group was delivered in January 2008 (Johansen et al. 2008) suggesting several modifications to the current salmon stock monitoring program. The working group adopted a new approach for establishing spawning targets, recently developed by Hindar et al. (2007) for 180 Norwegian salmon rivers, as a starting point in developing tailored biological reference points for the different populations of the River Teno stock complex. Following the information needs of the *Decision structure,* planning of the future monitoring program includes evaluation of the compliance with the set reference points, taking into account the abundance criteria, diversity criteria and the means to address the selectivity of fisheries, other threatening factors, and evaluation of the effects of the taken management actions. Implementation of this plan should take place after the river-specific modifications of the spawner target model have been carried out, tentatively planned for 2009. After this, the five-year monitoring regime of salmon fisheries will come into effect, following the cycle of the new Norwegian management plan. The relevant authorities in Finland and Norway have tentatively agreed to start planning these actions in spring 2008.

A joint Finnish-Norwegian expert group consisting of key scientists and managers has been planned to replace the preparatory working group in 2008, and take responsibility of steering the bilateral monitoring of the salmon stock status and corresponding research activities. A more thorough review of the stock status relative to reference points, effectiveness of management actions and possible information deficiencies is planned to take place every fifth year, the next one planned tentatively for 2012, following the Norwegian five-year cycle in salmon stock management that has come into effect in 2008. The present management regime with the bilateral agreements between the governments does not allow fast reactions to advice; only tourist angling can be bilaterally regulated on a yearly basis by the regional authorities in both countries. Therefore, the expert group is planned to prepare suggestions towards evaluating possibilities for alternative, more flexible management regimes that could allow implementation of NASCO Agreements, Guidelines and Resolutions. At this stage, it is too early to foresee the timing of such change. Currently, this development has mostly been focused on the management of the River Teno salmon, but corresponding actions are planned for the River Näätämöjoki.

Various socio-economic factors are going to take a prominent role in the future management regime, since the Norwegian regional management system is in a process of involving local people, especially the Sámi, and their organisations providing them with a clearly stronger role than before in the management of the Northern Norwegian salmon rivers.

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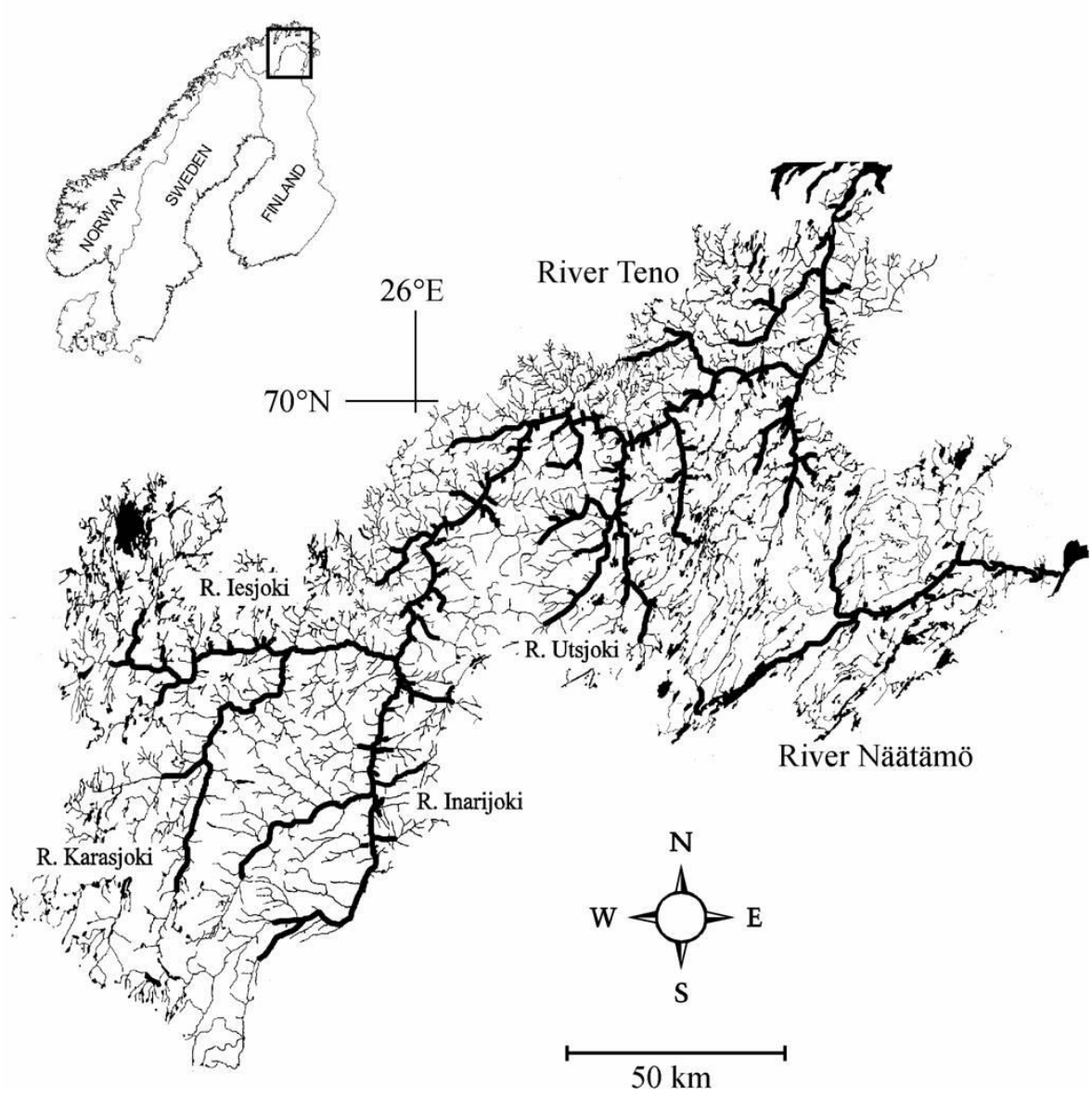

Fig. 1. The rivers Teno and Näätämöjoki in the northernmost Finland and Norway. Distribution area of Atlantic salmon is indicated by thick black lines.

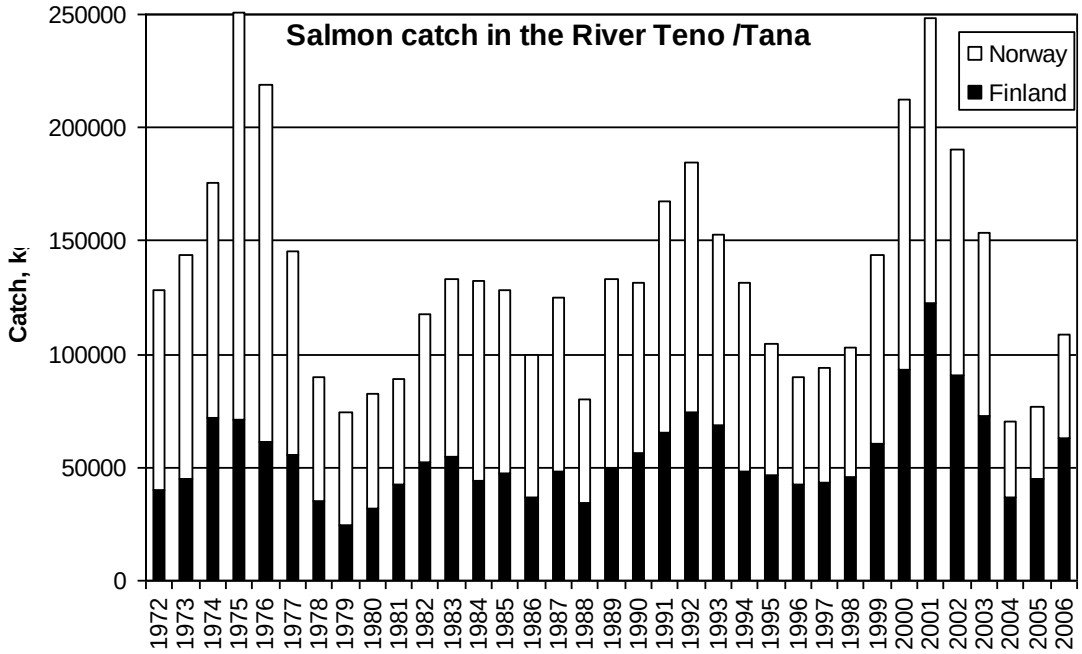

Fig. 2. Atlantic salmon catch in the River Teno.

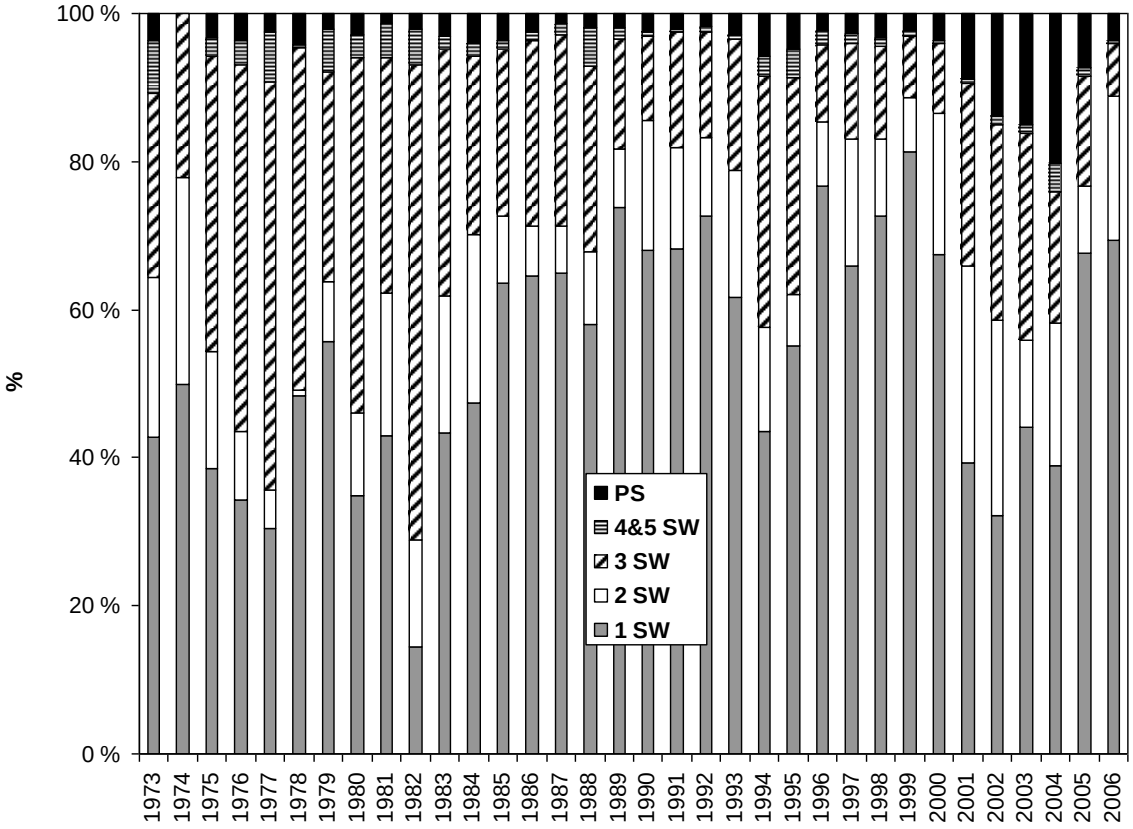

Fig. 3. Sea age distribution (%) of Atlantic salmon in the River Teno. PS=previous spawners.