



Agenda Item 6.2
For Information

Council

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***The management approach to North Atlantic salmon fisheries in
Finland***

Example from the River Teno

(Tabled by EU (Finland))

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Introduction

The River Teno runs to the Barents Sea in Norwegian territory, and forms the borderline between the northernmost Finland and Norway. The catchment area is c. 17 000 km², and there is c. 1200 km salmon distribution area in different tributaries and in the main stem. The Atlantic salmon population complex in the River Teno system is very diverse, with c. 30 genetically distinct salmon populations and a very wide variability in life histories (smolt ages 2-8 years, sea ages 1-5 years, previous spawners; more than 100 life history combinations in total)

River Teno system is one of the few remaining large river systems that still support abundant Atlantic salmon stocks with little or no human impact to the system, except for fishing. Large part of the fishery in the river is mixed stock fishery, as salmon from the tributaries are fished mainly in the main stem.

Management of the salmon stocks is based on bilateral agreements between the governments of Finland and Norway. All aquaculture activities and transfers of live fish and eggs from other catchments are strictly forbidden in the catchment area of the River Teno

At the moment, new regime for the Atlantic salmon stock management is under preparation, aiming to systematic and target-based management, based on spawning targets according to NASCO guidelines. At the same time, new detailed information has been produced to enable the target-based approach.

Requirements for assessment of the status of the salmon stocks

Setting population-specific reference points (conservation limits, spawning targets)

Construction of river- and population-specific spawning targets requires information on salmon distribution, habitat quality, and stock-recruitment relationships. After setting preliminary targets for some of the River Teno tributaries following the Norwegian methodology in 2007, revised spawning targets have been established in 2014, and have now been set for virtually all salmon populations of the Teno system.

Monitoring the target attainment

The monitoring can be carried out by counting the ascending fish, or by assessment of the spawning populations e.g. by diving counts. In many cases, catch statistics and exploration rates have also been used in assessment. At the moment, spawning target attainment has been assessed in six tributaries situated in the upper, middle and lower parts of the Teno watershed. Spawning target attainment varies from year to year, but especially tributaries in upper parts of River Teno watershed spawning stock have constantly been far below the target levels.

Assignment of the mixed stock catches to the populations of origin

Salmon fishing of the River Teno takes place largely in the main stem of the system. As the tributary stocks migrate through the main stem, fishing in the river is mostly mixed stock fishery. Assigning the river of origin of individual salmon in mixed-stock catches in various fisheries can be done by combining genetic samples and detailed catch information by age groups and life histories. This information is needed for assessing the factors of fishing mortality in the mixed-stock fishery in the main stem.

Socioeconomic and cultural aspects

River Teno is a large watershed between two countries. There are many different ways to use the salmon resource. Salmon fishing is an important part of the indigenous Sámi culture and there are restrictions in the access to fisheries for people from outside the river valley. Besides angling, traditional fishing methods like drift nets, gill nets and weirs are used actively. Tourism is a very important livelihood in the remote Utsjoki municipality, and tourist activities are mainly linked to salmon fishing season. Besides multiple fisher groups involved, there are also complex issues concerning fishing rights. In both countries there are exceptions in the overall fishing rights system that are applied in River Teno. This means that there are many stakeholder groups that are involved in the fishery and who need to be informed as the new regime for fishing rules is being planned. It is also important to consider that stakeholders receive enough information on the fisheries management, where many concepts, e.g. the biological ones may not be familiar in local context.

There have been many events to distribute information about key concepts like spawning targets and stock recovery plan, to ensure the acceptance of these basic concepts and strengthen confidence to planned regime. It has been important to repeat the message and coordinate information between management and research.

Altogether socioeconomic and cultural aspects make a challenge to fisheries management. Measures should be targeted in a way that will ensure biological sustainability but also minimize harmful effects to local culture and economy. In the case of the River Teno, the new genetic information seems to give some promising possibilities for more precise targeting of measures.

Genetics of the river Teno salmon

River Teno salmon stock consists of 20-30 different populations with clear genetic differences between the sub-populations in various parts of the watershed (Vähä et al. 2007). This genetic information makes it possible to distinguish different populations from the main stem catch.

Besides the genetic diversity observed, there is a steady pattern in spawning migration timing in the Teno main-stem for the different populations and life history groups. The different migration times can be used in targeting and tailoring the fishing restrictions to vulnerable stocks (figure 1).

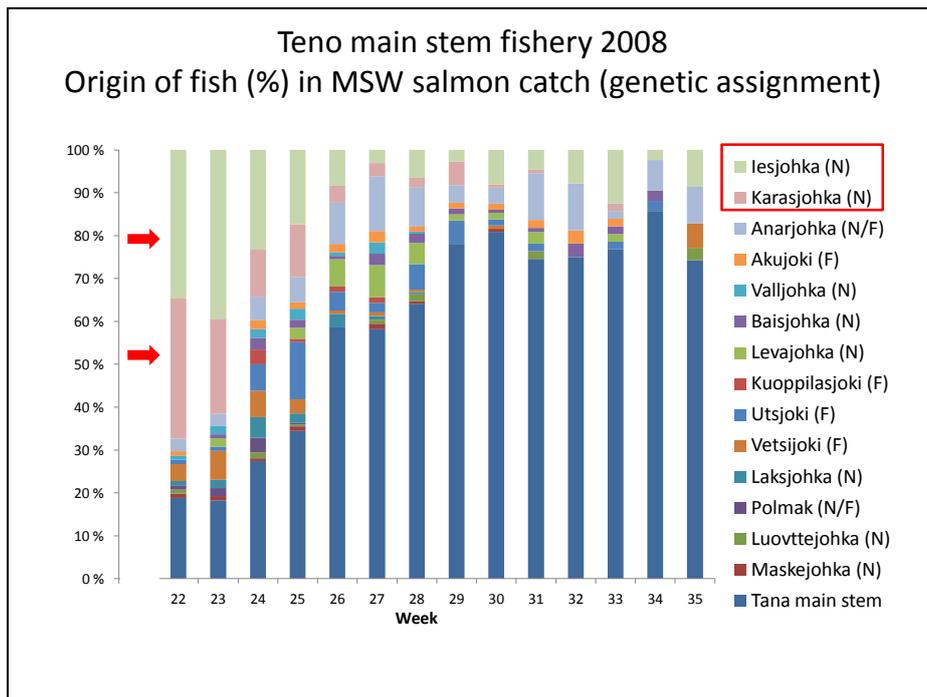


Figure 1. Weekly stock composition of salmon caught in the Teno main stem mixed-stock fishery in 2008 for MSW fish

Combining catch samples, catch statistics and genetic information gives more detailed possibilities to quantify the catch composition at different times and places within the fishing season (figure 2).

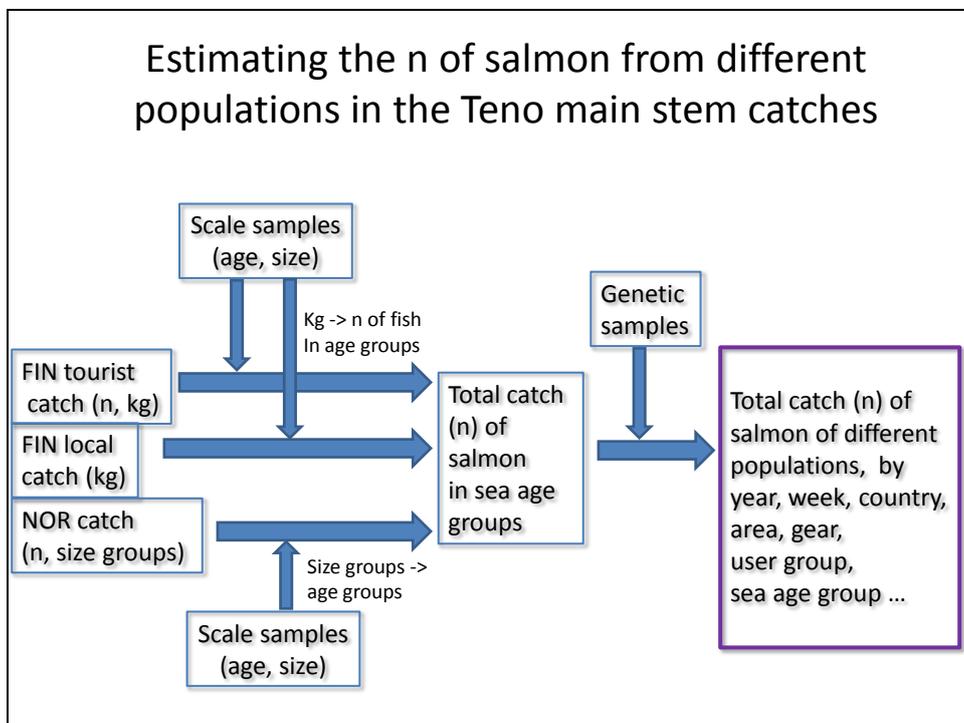


Figure 2. Different sources of information and the process used for constructing the population-specific estimate of catch in the Teno main stem.

Good scientific basis for the new management system

Combining catch statistics, scale samples and genetic information gives possibility to study the salmon fisheries of the River Teno in detail and to examine catches from different gear types, user groups or areas, for example. It enables identification of critical elements for vulnerable populations in mixed stock fishery of the River Teno main stem. More detailed information is valuable also for the stakeholders, in providing a more comprehensive picture on the complexity of the salmon management.

At the moment, genetic data from the main stem fishery are available for 2006-2008 and 2011-2012. There are also recent corresponding, complementary data on the River Teno salmon in mixed-stock fishery on the Norwegian coast (KOLARCTIC project). This information in concert gives a good basis for science-based, population-specific and tailored management measures.

References:

Anon. 2012. Status of the river Tana salmon populations. Report 1-2012 of the working group on salmon monitoring and research in the Tana river system. 99 p.

Vähä, J.-P., Erkinaro, J., Niemelä, E. & Primmer, C. R. 2007. Life-history and habitat features influence the within-river genetic structure of Atlantic salmon. *Molecular Ecology*, 16, 2638-2654.