

Project information

Project title

Atlantic salmon; biological and genetic knowledge and resource use among local people

Year

2011/2012

Project leader

Martin Svenning, NINA

Participants

- Project leader: Martin Svenning, NINA

Participants:

- Einar Eythorsson, NIKU
- Camilla Brattland NIKU/UiT
- Jørn Weines, NIKU/UiT
- Morten Falkegård, NINA
- Eero Niemelä, County governor of Finnmark
- Vidar Wennevik, IMR

Flagship

Fjord and coast, Theme: Physical-biological coupling: Oceanography and habitat use by predators and their prey

Funding Source

Fram Centre

Summary of Results

Sub-goal 1: To document river origin of salmon caught by sea fishermen in Porsanger fjord from 2008-2013.

To determine the origin of the salmon caught in the sea fisheries in Finnmark, the genetic data of individuals were compared to a database of genetic profiles from 51 rivers in north Norway and Russia, using statistical assignment methods. These methods assigned each fish with a given probability to possible source populations. The precision of the assignment depends both on the coverage of the genetic baseline and the number and variability of the genetic markers used. Given a probability of 0.9, ca 10 % of salmon caught by the 27 fishermen along the Finnmark coast in 2008 had their origin from the three rivers (Børselv, Lakselva and Stabburselv) in Porsangerfjord (Svenning et al. 2011), while one third of salmon caught by the three fishermen located in the Porsangerfjord area originated from the three Porsangerfjord rivers. In the project period 2011-2013, five new fishermen will sample salmon along the whole Porsangerfjord to document the frequency of Porsanger river salmon along a gradient from the outer coastal area to the innermost part of the Porsangerfjord. The same fishermen will be interviewed (see NIKU-part).

Sub-goal 2: To establish sea age composition and growth of salmon captured 2008-2013.

The frequency of small-, median- and large salmon captured in 2011, was 28, 39 and 33 % respectively, while the frequency of Porsanger salmon captured amounted to 38, 33 and 30 %, i.e. a significant higher proportion of small salmon was captured within the Porsanger fjord region, compared to the outer Finnmark coastal areas in 2011.

It should be mentioned that a relatively large part of small salmon had spent two years in sea, i.e. more than 50 % of salmon smaller than 3 kg, and usually termed “one-sea winter salmon” were actual to-sea winter fish, i.e. salmon descending sea in 2006 and/or 2007 had experienced poor growth conditions during their sea residence (Svenning et al. 2009).

Sub-goal 3: To establish an extended timeline for changes and fluctuations in the fishery as expressed in fish statistics from sport fishery in the three salmon rivers in Porsanger, as well as from the sea fishermen fishing diaries and living memory in the period 1960-2013.

There are three major salmon rivers in the Porsanger fjord: Lakselva, Stabburselva and Børselva. All three have an official catch statistic dating back to 1966 (Figures 1-3), although the quality of the statistic varies annually, especially in the first couple of decades. The coastal catch statistic dates back to 1983 (Figure 4). Some work is still left to turn some of the catch records from before 1983 into a useful statistic.

A comparison of river and coastal catch in the Porsanger fjord is provided in Figure 5. In the time period 1983-2010, the river fisheries have caught over 50 % of the salmon catch in the fjord (long-term average 53 %). The coastal catch has contributed from 35 up to 62 % of the total salmon catch in Porsanger.

The coastal catch of salmon in Finnmark is a prime example of a mixed-stock fishery. An intensive fishery takes place along the outer coast, and here salmon stocks from a wide area (ranging southwest to east from southern Troms to Russia). The coastal fishery within the Porsanger fjord still is a mixed-stock fishery, but to a lesser degree than the outer coastal fishery. In the fjord, the local Porsanger stocks, most probably makes up the majority of the catch.

Using old tagging data and more recent genetic stock identification, an estimate can be made of the total catch of the Porsanger stocks in both river and coastal fisheries (Figures 6-8). For all three rivers, almost half of the salmon survived to spawn in 2010. The catches were mostly evenly distributed between the coastal fisheries and river fisheries. The exception to this was Lakselva, where a slightly higher percentage was taken in the coastal fisheries (most likely due to the higher average size of salmon in Lakselva compared with Stabburselva and Børselva, larger salmon is positively selected in the coastal fisheries).

Sub-goal 4: To establish an extended timeline for changes and fluctuations in the fishery as expressed in fish statistics from sport fishery in the three salmon rivers in Porsanger, as well as from the sea fishermen fishing diaries and living memory in the period 1960-2013.

The project has co-organized the workshop “Salmon Voices” was held in Munich, Germany on the 7th - 9th of October 2011. Among the participants were social and natural scientists, indigenous representatives from Norway, Atlantic Canada and British Columbia, as well as from Marine Harvest. A written report containing the presentations and a summary of the end discussion will be produced and published by the Rachel Carson Centre during early 2012.

Sub-goal 5: To establish an extended timeline for changes and fluctuations in the fishery as expressed in fish statistics from sport fishery in the three salmon rivers in Porsanger, as well as from the sea fishermen fishing diaries and living memory in the period 1960-2013.

Interviews on local knowledge among salmon fishers in Porsanger fjord.

The aim is to document local knowledge/ fishermen’s reflections on relationships between changes in the salmon fishery and climate, ecological change and management regime 1960-2013 and to document local knowledge/ reflections on changes/fluctuations in the composition of salmon catches, mixed populations and parasites 1960-2013. (See WP III, project aims).

Five fishers have been interviewed, four of them participants in the NINA-part of the project as collectors of genetic samples. Transcription and analysis of the interviews will be completed in December.

Published Results/Planned Publications

1. Falkegård, M. 2011. Status og vurdering av laksen i nord. Sakkyndig notat til arbeidsutvalget som skal bistå i konsultasjonsprosessene knyttet til reguleringer i fisket etter anadrome laksefisk i Nord-Troms og Finnmark. (in Norwegian).
2. Svenning et al. 2009. Sjølaksefiske i Finnmark; ressurs og potensial. Rapport nr. 8-2009, Fylkesmannen i Finnmark, 19 p (in Norwegian).
3. Svenning et al. 2011. Genetisk opphav hos atlantisk laks (*Salmo salar*) fanga av sjølaksefiskere langs kysten av Finnmark sommeren og høsten 2008. Fisken og havet, nr. 7, 34 p. (in Norwegian)
4. Svenning et al. 2011. The large landings of sea-caught Atlantic salmon in north Norway; do they originate from Norwegian or Russian rivers? Poster, Salmon summit, NASCO, Symposium, La Rochelle, France, October 2011.
5. Proceedings from the workshop “Salmon Voices” in Munich, Germany 7th - 9th of October 2011. (See 5.1.)
6. NIKU oppdragsrapport 257/2011: Salmon Voices (Camilla Brattland)

Communicated Results

See 5.1, 6.1 and 6.2

The work on catch statistics and coupling the catch from coastal and river fisheries have been repeatedly used and presented in a recent working group for northern Troms and Finnmark. This group consisted of local representatives from coastal organizations, right holders from major rivers, the Sámediggi, county governors and the Directorate of nature management. See

<http://www.dirnat.no/content/500043427/Nytt-forslag-til-fiskereguleringer-for-Nord-Troms-og-Finnmark>

Interdisciplinary Cooperation

Interdisciplinary (biology-social science) linking biological research, local ecological knowledge and management; the role of fishers’ knowledge in salmon management.

Budget in accordance to results

- I. 1.The NIKU part of the project is 100% funded by the Fram Centre.
- II. 2.The NINA part of the project is 100 % funded by the Fram Centre.
- III. 3.The Munich workshop was co-funded by the German Ministry of Education and Research, Deutsches Museum, The Canadian Department of Foreign Affairs and Ludwig Maximillans Universität, Munchen.
- IV. 4.Provided continued funding for 2012 and 2013 the project will be completed as planned.

Could results from the project be subject for any commercial utilization

No

If Yes

Not directly. Utilization for management of commercial salmon fisheries

Conclusions

- I. a)Fisher participation in research and management of salmon and relations between indigenous people and the salmon farming industry.
- II. b)Improved methods for collection, analysis and storing of local knowledge from oral sources.
- III. c)The fisheries management in northern Troms and Finnmark is moving towards an adaptive knowledge-based management regime, which puts a high emphasis on monitoring of stock status and detailed knowledge (both scientific and local ecological knowledge) on the fisheries of different interest groups in different areas. The current project fits directly into this approach to management.