

Project information

Project title

Atlantic salmon; an interdisciplinary approach, combining natural and social science, to improve the management of salmon sea-fisheries in northern co

Year

2013/2014

Project leader

Martin Svenning, NINA

Participants

- Project leader/institution: Martin-A. Svenning, NINA
- Participants: Einar Eythórsson og Camilla Brattland, NIKU

Flagship

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

Funding Source

Fram Centre

Summary of Results

Highlights:

WP1: River origin of Atlantic salmon

- Relatively high incidence of Russian salmon in outer Porsangerfjord
- The incidence of salmon from rivers in Porsangerfjord increased from 11 % at the outermost cite to 68 % at the innermost cite
- Higher proportion of small salmon in Porsangerfjord compared to most other sites in Finnmark

WP2: ECOPATH

- Strong diet overlap/competition between anadromous fish and top-predators
- Atlantic salmon strongly dependent on small pelagic fish
- Sea growth varied among years, may be due to climate (amount of 2SW salmon < 3 kg varied from 5 to 65 % among years)

WP3: Farmed fish (based on interviews and scale reading)

- Experienced sea fishermen “recognized” only 55 % of farmed fish
- Incidence of farmed salmon was ca 10 % in Finnmark catches
- Proportion of farmed fish decreased strongly inwards Porsangerfjord

For the Management

The harvesting of mixed salmon stocks in the salmon sea-fishery is a management challenge, since it has been impossible to measure the harvested amount from each salmon stock. This is particularly problematic in the case of stocks spawning in Russia and Finland. The results from the project show which stocks are harvested in the Porsangerfjord. In general, there are small amounts of Russian salmon in the catches, particularly in the inner part of Porsangerfjord. The same pattern applies to escaped farmed salmon. The knowledge about which stocks are harvested by the sea-salmon fishers is extremely important for the management agencies. The project results also show that there is a big overlap between the diet of anadrome species (salmon) and top-predators (seal) in the Porsangerfjord. The salmon is dependent on small pelagic species. The abundance of herring and other pelagic species is highly variable in the Porsangerfjord, climate may be one of the factors that explain this variation. There is also a great variation in the weight of 2-year old salmon; the amount of 2-year old individuals below 3 kg. varied from 5% to 65% between years. It is not clear how these variations are related to climate.

Analysis of catches from the Porsangerfjord reveal a clear difference between the outer and the inner part of the fjord. The amount of Russian salmon and escaped farmed salmon was considerably higher in the outer areas, and the amount of local salmon (from rivers in Porsangerfjord) was lower (on one location it was only 11%). In the inner part of the fjord the situation is the opposite, up to 68% of the catches in this part of the fjord is local salmon. Fishers are to a certain degree able to see differences between local salmon and salmon from the Alta- and Tana rivers. In 55% of cases, fishers are able to see the difference between wild salmon and escaped farmed salmon in their catches. For Finnmark County as a whole, the amount of escaped farmed salmon in sea-salmon catches is approximately 10%.

Published Results/Planned Publications

A manuscript has been prepared for ICES JOURNAL OF MARINE SCIENCE, title: “*Mapping of spatial and temporal distribution of salmon stocks in the Porsanger fjord: Management implications for the mixed-stock salmon sea fishery in North Norway*”

Communicated Results

- Einar Eythorsson & Martin Svenning: *Atlantic salmon; how to combine natural science and experience-based knowledge for*

adaptive management of sea-salmon fisheries in Porsangerfjord? Workshop for Flaggskip Fjord & Kyst, Sommerøy 24-25. mars 2014.

- Einar Eythórsson: *How is local ecological knowledge applied in research at the FRAM-centre?* Workshop on multidisciplinary research and traditional/local knowledge, FRAM centre, 16. november 2012.
- Martin-A. Svenning: Coastal migratory patterns of the Barents Sea salmon. Migratory patterns, exploitation and management. Research seminar, Svanhovd, 10-11th December 2013.
- Martin-A. Svenning: The incidence of farmed salmon in the sea fishery along the North-Norwegian coast. Research seminar, Svanhovd, 10-11th December 2013.

Interdisciplinary Cooperation

The project is multi-disciplinary, with participants from biology and social science. The opportunity to combine biological knowledge and fishers' experience-based knowledge has been positive, also the combination of genetic analyses and the studies of management implications/challenges. Multidisciplinary research, and particularly multi-disciplinary publication is however time-consuming.

Budget in accordance to results

The funds from the FRAM centre flagship, the internal funds and analyses funded by the KOLARCTIC salmon project have contributed to the realisation of the project activity in 2013. With use of additional internal funds, the article manuscript will be finalised in the first half of 2014. The multidisciplinary work has been totally dependent on the Flagship funding.

Could results from the project be subject for any commercial utilization

No

Conclusions

The results from the project show that there is a potential for involvement of sea-salmon fishers as participants in future research projects. The project has also revealed management challenges related to harvest of mixed salmon stocks, which are particularly relevant for salmon that spawns in Russia and Finland.

In terms of methodology, the project has contributed experience from project collaboration between scientists and fishers, and from combination of biological and sociological methods. These experiences are important for further research on the management of salmon and the salmon fishery in Norway. It is important to secure continued funding for this research.