

Project information

Keywords

Fish migrations, aquaculture, oceanographic modelling

Project title

How to avoid conflicts between wild and farmed salmonids? -Finding good locations for aquaculture.

Year

2017

Project leader

Jenny Jensen

Geographical localization of the research project in decimal degrees (max 5 per project, ex. 70,662°N and 23,707°E)

70,122N 23,102E

Participants

Akvaplan-niva (Jenny Jensen, Guttorm Christensen)

UiT - The Arctic University (Jo Espen Tau Strand)

IMR - Havforskningsinstituttet (Rosa Maria Serra LLinares)

Flagship

MIKON

Funding Source

Main project: Kompetanseklynge Laks SA.

The main project have a yearly budget of approximately 2,3 million NOK

Summary of Results

The project is suggested as a three-year project with MIKON, where 2017 is the first year and mainly includes fieldwork. The project is a part of a bigger project (hereafter referred to as the main project), which combines fish migratory behavior data of Atlantic salmon with oceanographic modelling data with the aim of understanding not only where in the fjord fishes reside, but *why* they stay in different fjord areas. By understanding which underlying factors controls the migratory behavior, the knowledge can be transferred to other populations and other fjord systems. With this understanding, the ultimate goal of the project is to be able to give knowledge-based advice on best localization of new fish farms in both the study fjord (Alta) and other fjord systems in order to avoid spreading of the parasite salmon lice from farmed to wild fish. The main project deals only with Atlantic salmon, but there are two more anadromous fish species in Norway, brown trout and Arctic charr. These species gets less attention in relation to the salmon lice problem than Atlantic salmon, but may suffer more from heavy salmon lice infections as these species reside in the coastal areas where the fish farming occurs while Atlantic salmon only migrates through coastal areas on their way to their open ocean feeding grounds.

The MIKON project was executed according to the plan described in the proposal. The plan was to tag 35 Arctic charr and 35 brown trout smolts. However, an additional 29 tags were relocated from another project, meaning that 45 Arctic charr and 54 brown

trout could be tagged.

Acoustic telemetry is being used to study the fish migrations. This includes tagging fish with acoustic transmitters, and detecting the tags with acoustic receivers/loggers. The main project includes placement of 123 loggers on rigs in arrays across the Alta fjord system, and tagging 200 Atlantic salmon smolts and 100 escaped farmed adult Atlantic salmon yearly.

The project have suffered some loss of receivers/loggers, but not enough to be problematic. According to the plan in the project proposal, full scale data analysis are planned for 2019 when two consecutive years of field data have been collected in 2017 and 2018. The data from 2017 have gone through a quality control, and are of good standard. Preliminary findings includes that the Arctic charr and brown trout smolts resides for long periods in river mouth areas. This is very important knowledge for managers of these species, as these habitats often do not include any form for management plans. This is good for the fishes in relation to the fish farming industry, as these areas are normally not utilized for farming purposes and the low salinity kills infectious stages of the parasites. However, many smolts of both species left the river mouths and resided in more marine areas of the fjord. Surprisingly, this type of behavior was more common towards the end of their marine residency time. Salmon lice infections in the fish farms are normally more severe during the late part of the summer, wherefore this behavior may make the Arctic charr and brown trout smolts more prone to parasite infections.

Master and PhD-students involved in the project

The MIKON project has a master student involved called Benjamin Atencio. Benjamin will finish his master thesis at UiT – The Arctic University during spring 2019. He has participated in fieldwork during 2017, and will be included in the field program during 2018. He will start working on the data from the Arctic charr and brown trout during the coming winter. When all field data are collected in 2018 (provided funding), the partner at IMR (Rosa Maria Serra Llinares) will be strongly involved in analysis and publishing of scientific papers from the projects as she is pursuing a PhD related to salmon lice and anadromous fish

For the Management

The findings from the project will be of great importance for managers, as it involves both basic biological understanding of two less researched fish species, and as it deals with one of norways largest industries aquaculture.

Published Results/Planned Publications

Only fieldwork planned for 2017

Communicated Results

No

Interdisciplinary Cooperation

No

Budget in accordance to results

The project was executed according to the field plan, with only minor adjustments

Could results from the project be subject for any commercial utilization

No

Conclusions

The project included mostly fieldwork during 2017, and was executed according to the field plan. Preliminary analysis of the results includes new basic biological understanding of the migratory behavior of Arctic charr and brown trout, as well as interesting aspects of their migratory behavior which will be investigated more thoroughly in relation to the spreading of salmon lice from fish farms when all field data have been collected in 2018.