

Norwegian Scientific Committee for Food and Environment
PO Box 222 Skøyen
0213 OSLO

Assignment - Assessment of the risk of adverse consequences for biological diversity regarding import and release of fertilized eggs and live fish from freshwater stationary salmon stock in Lake Vänern in Sweden to the Trysil/Femund Watercourse in Norway

The Norwegian Environment Agency refers to the collaboration agreement entered into between the Norwegian Environment Agency and the Scientific Committee for Food and Environment (VKM), as well as the power of attorney for assignments to VKM on risk assessments and hereby asks VKM to carry out a scientific risk assessment on transfer of salmon from Sweden to Norway. Väner-salmon is a freshwater stationary (landlocked) salmon stock with an original distribution area that includes Lake Vänern and the Klarälv/Trysil/Femund river. The salmon originally used the entire river system as a spawning and rearing area before the smolt migrated down to Lake Vänern, which is used as a growth area. Hydropower development over the past 100 years (nine in Sweden and two in Norway) has fragmented and isolated the population's spawning areas from its rearing areas. The migration route between Sweden and Norway was completely blocked in the 1960s with the construction of Hölje power plant regulation dam, which is the highest located power plant on Swedish side in the river system.

Background

Following up an initiative from the ministers of the Environment in Norway and Sweden, an Interreg project was started in 2010 with the intention of investigating whether, among other things, it is possible to re-establish the salmon stock on the Norwegian side. The project "Vänerlaxens Fria Gång" was established in 2010. The first period of the project was started up in January 2011 and ended in August 2014, reported in 2015. The second period, "Två länder - én elv ", started in March 2017 and will end during 2020. Project owners have in both periods been the County Administrative Board of Värmland and the County Governor of Hedmark (now Innlandet County).

The goal of the Interreg project are to examine the possibilities of strengthening (Swedish side) and re-establishing (Norwegian side) the Väner-salmon population in the Klarälv/Trysil/Femund river system. Three methods are proposed to be used to re-establish the salmon on Norwegian side:

- Introduction of fertilized Salmon eggs that are kept in a local cultivation facility until it is either planted in the river as eyed eggs or released as fry or smolts.
- Follow the Norwegian gene bank model, by during a number of years establish a broodstock with a documented origin in a fishing facility operated according to the gene bank model. From the broodstock, it is then possible to either transfer fertilized eggs that are planted directly in the river, or eggs are transferred to a local hatchery for hatching. The fish then are kept in the hatchery until it is released as fry and smolts. Over time the broodstock must be supplemented with new material.

- Migrating spawning fish are caught in the lower part of the watercourse and transported in tanks, after treatment, to the Norwegian side of the border and released in the river.

In the years that have passed since Femund/Trysil river were "separated" from Lake Vänern, the occurrence of alien organisms and infectious agents has developed differently in the Swedish and Norwegian sides of the watercourse. This applies to several infectious substances and alien species. As an example, there is confirmed *Gyrodactylus salaris* on salmon in Lake Vänern and in the river Klarälv, a parasite not found on the Norwegian side of the watercourse.

There will always be uncertainty about the risk associated with moving wild fish. In Norway, the Norwegian Environment Agency is responsible according introduction of alien organisms. The Norwegian Food Safety Authority has the administrative responsibility according disease in wild fish, and they follow up, in collaboration with the Norwegian Environment Agency. Cooperation has also been established between the Norwegian Food Safety Authority and the National Food Administration on the Swedish side.

Assignment

The Norwegian Environment Agency, in consultation with the Norwegian Food Safety Authority, asks VKM to assess the risk associated with the introduction of alien species and disease organisms (including *G. salaris*) when moving fertilized eggs or adult Väner-salmon, from Sweden to Norway.

The assessment shall include the three above-mentioned methods for introduction, and it is assumed that the individuals have undergone treatment in accordance with current Norwegian regulations before and during relocation. The assessment is based on annual transfers up until 2100.

Relevant reports / websites etc.:

- Garseth ÅH, Adolfsen P, Hansen H. Risk assessment - Import of roe and spawning fish from Vänern to the Femund and Trysilvassdraget. The Veterinary Institute's report series 12-2020 (in Norwegian). <https://www.vetinst.no/rapporter-og-publikasjoner/rapporter/2020/risikovording-import-av-rogn-og-gydefisk-fra-vanern-til-femund-og-trysilvassdraget>
- Olstad, K., Karlsson, S., Lo, H. & Palm, S. 2020. Conservation and re-establishment plan for Klarälvs laks in the Trysil / Femund watercourse. NINA Report 1789. Norwegian Institute for Natural History (in Norwegian). <https://brage.nina.no/nina-xmlui/handle/11250/2643469>
- Olstad, K., Hytterød, S. and Hansen, H. 2013. Risk of spreading *Gyrodactylus salaris* from Vänern and Klarälven to Norwegian watercourses by re-establishing salmon in Trysil- / Femundselva - NINA Report 991. 46 p. (in Norwegian). <https://brage.nina.no/nina-xmlui/handle/11250/2385235>.
- Hedenskog M, Gustafsson P, Qvenild T. (Eds.). 2015. Vänerlaxen's free movement. Two countries, one river. Ecological status and basis for action programs for the Klarälven, Trysilelva and Femundselva with tributaries. The County Administrative Board of Värmland County publ no. 2015: 17, ISBN 0284-6845. Fylkesmannen i Hedmark publ nr 2/2015, ISBN 82-7555-155-2, EAN 9788275551557. 356 pages. (in Swedish and Norwegian). <https://www.lansstyrelsen.se/varmland/tjanster/publikationer/vanerlaxens-fria-gang.-tva-lander.-en-alv..html>

- Engerdal municipality – website (in Norwegian).
<https://www.engerdal.kommune.no/Tema/arbeid-og-naering/N%C3%A6ring/Sider/Nytt-prosjekt-skal-f%C3%A5-laksen-tilbake-til-Trysilelva.aspx>

Conditions:

The report must be written in English with a supplementary Norwegian summary. The report is published in dialogue with the Norwegian Environment Agency.

The deadline for submission of the report is 01.04. 2021.

Contact person in the Norwegian Environment Agency: Øyvind Walsø

With regards

The Norwegian Environment Agency

Yngve Svarte
Deputy Director of Department

Raoul Bierach
Head of Section

Copy to:

The Norwegian Food Safety Authority, PO Box 383 2381 Brumunddal