### Government Programme to Restore Migratory Fish in Finland

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## Overview

- Hydromorphological alterations, pressures and measures
- Migratory barriers in Finland
- A decade of policy steps
- Government Programme 2019 -
- How "NOUSU" works
- Showcases



## Heavily modified water bodies

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- The classification of artificial or heavily modified (HMWB) water bodies has proven to be understood several ways
- Water bodies can be classified as HMWB either according to the direct criteria or with the more specific evaluation with the HyMo-criteria. In this method water bodies are given points according to the level of anthropogenic changes in their hydrological and morphological pattern.
- HyMo assessment plays a key role in designation of HMWB with less stringent environmental objectives
- Method for HyMo evaluation:

**1** a) The impact of a set of measures, that don't cause significant adverse effect to an important use, and improve hydrological-morphological conditions on the components of the classification is assessed. And an overall assessment is made based of its effect on the ecological state. Then the impact assessment is changed to a state category

**1** b) Status of water quality assessed in those aspects where the deterioration is not caused by hydrological-morphological changes.

2. the worse of these is chosen to describe the state of the water body designated as artificial or heavily modified in relation to the good ecological potential

- Determining the class with the help of measures is probably the most difficult phase of the classification to understand - requires expert judgment
- In Finland, there is (so far) no exact numerical value set for a significant adverse effect, expert-assessed on a caseby-case basis

# HyMo measures

- In Finland, hydromorphological alterations are significant pressures in 983 waterbodies
- The Programs of Measures for 2022-2027:
  - Stream channel restorations needed in over 500 waterbodies
  - Flow regulation measures in 158 waterbodies
  - Fishpasses in almost 400 waterbodies

# Ecological impacts of hydromorphological pressures: dams and weirs

- One of the main impact of dams and weirs is loss of river connectivity
  - Restrict free movement of fish and other biota within river system
  - Especially devastating effects of migratory fish populations that need free access between feeding and spawning/nursing areas
  - Dam impoundments cause loss of riverine habitats
  - Impoundments hinder free movement of sediments that can cause negative effects on river habitat formation
  - Alteration of thermal regime
- For example, in Finland 80-90 % of the atlantic salmon populations have went to extinction largely due to hydropower dams



# Hydropower dams and other migration barriers in Finland



- 19 % of Finnish electricity production in 2023 from hydropower, significant role in adjustion of power output in the energy system
- 250 hydroelectric plants with 3 200 MW output, *however* 150 less than 10 MW → 50 % of electricity generation from 12 biggest plants
- In addition, there are thousands of smaller dams and obstacles harmful to fish migration in rivers and streams
- Hydropower permits under the Water Act are permanent
- 90 % of watercourses altered in some way, majority of migratory fish stocks are threatened
- Status of river restoration activities in the early 2000's when WFD was adopted:
  - Only few fishways were constructed or other large scale restoration projects launched
  - Fish stock maintenance and support was mainly based on fish farming and continuous stockins

Puharinen S-T, Belinskij A, Soininen N. Adapting Hydropower to European Union Water Law: Flexible Governance versus Legal Effectiveness in Sweden and Finland. *Transnational Environmental Law*. 2024;13(1):160-189. doi:10.1017/S2047102523000249

#### Only two salmon rivers remain

Natural reproduction, original stock Natural reproduction,

not original stock

Potential for reintroducing natural reproduction

Not likely to have any potential

Kalajoki Lestijoki Perhonjoki

Tornionjoki

Simojoki

Kyrönjoki Merikarvianjoki Kokemäenjoki

Eurajoki 🔨 🗸

Aurajoki 🗚

## Largest barriers in Finland /mainly hydropower

Ounas-

Kuiva-

joki

lijoki

ioki

Kiiminki-

Oulujoki

Siikajoki

Pyhäjoki

100 km

Karttakeskus

Porvoonjoki

Vantaanjoki

Koskenkylänjoki

Kymijoki

Source: Helsingin Sanomat

joki –Kemijoki

**Barrier** 8 Salmon rivers Natural reproduction, original stock Natural reproduction, not original stock Potential for reintroducing natural reproduction Not likely to have any potential

**Existing fish passages** 



# A decade of policy steps

- National Fish Passage Strategy 2012
- National Salmon and Sea Trout Strategy 2013
- Government "Spearhead Project" 2015-2019
  - strengthening threatened and endangered migratory fish species (state fund 8 M€)
- National Migratory Fish Programme 2019-
- Renewal of national Fish Passage Strategy

Background: public debate, NGO's and activists, local level activity, Corporate Social Responsibility, cross-party support, research...

### **Finlands National Fish Passage Strategy**





mmm.fi/en/fisheries/strategies-and-programmes/ fish-passage-strategy

- Strategy was adopted as a Government Resolution in 2012
- The need for the strategy arose from requirements of the Water Framework Directive
- The strategy aims to steer the development towards better reconciliation of the partly conflicting objectives
  - emphasizes collaboration and diverse measures
  - Strategy points out 20 modified watersheds with 55 migration barriers as the most critical cases, where measures enhancing fish migration should be assessed.

### Government programmes 2019-2023 & 2023-2027



- "We will launch a national programme to restore migratory fish stocks"
  - Restoring a natural cycle in waters with built structures will continue on the basis of the National Fish Passage Strategy
  - Migration barriers will be removed and fish breeding grounds restored. Solutions will be introduced to help fish get past the barriers
  - Migratory fish projects will be implemented through broad cooperation. Fisheries obligations will be updated by the public authorities.
- We will update the Water Act to extend the fisheries obligations to plants with a "zero obligation"
- 15 M € funding for 2019-2023, 8 M € for 2023-2027
- 2023: "The government improves the living conditions of migratory fish by, among other things, restoring stream waters"
- 2023 NOUSU extended to cover also down-migration and follow-up
- 2023 Government programme has also several activities related to production of hydropower, which means coordination and balancing of these two targets

# Migratory fish programme NOUSU were launched in 2020

- Partnership and co-operation
- Wide range of actions
- Key principles for funding projects:
  - Real impact
  - Broad support and coopeartion
  - Capable actors
  - Max 50% state aid
- Updating of fisheries obligations



#### Statements of the Government programme

OBJECTIVE: Improving living conditions of migratory fish and restore natural cycle in running waters

#### National programme NOUSU (Ministry of Agriculture and Forestry)

MEASURE 1: Building fish passages and structures for downstream migration MEASURE 2: Removing migration barriers and promoting projects in which small hydropower plants will be shut down

MEASURE 3: Restoring rivers and streams and building artificial reproduction areas

#### WAY OF ACTING 1: COOPERATION

•Migratory fish projects will be implemented through broad cooperation. State fund will be allocated to the projects with high commitment by stakeholders.

#### WAY OF ACTING 2: RENEWAL OF OBLIGATIONS OF LEGAL PERMITS Fisheries obligations will be updated by the public authorities

#### Updating the Water Act (Ministry of Justice)

MEASURE 4: Updating the Water Act to extend the fisheries obligations to plants with a "zero obligation" (old water permits with no obligations to compensate harm to fish stocks)



### ...What have we achieved?

km

Free kilometers	870
Freeing up kilometers	2527 (preliminary)

Number of projects

14 /	Constructed water projects: (fishways, downstream structures)	18
	Dam removal or alteration and renovations (no electricity production)	35
	Decommissioning of small hydropower	13
	Research & development	35
	Other projects	4
	Projects in total	105*

# Hiitolanjoki 2019-2023

- 3,5 million euro project to restore Hiitolanjoki river and to abolish 3 hydropower plants
- Nationally recognized status, long-running local support
- Funding 50% from state + from local authorities, WWF, private donors, companies
- Obligation to build fish passages to owner
- Plants bought by a local foundation
- dams were removed during 2021-2023 Restoration of formerly lost rapids and spawning areas for brown trout and lake-migrating salmon. Restored connecitivity to spawining areas in headwaters
- Has been a great success, juvenile salmonid densities extremely high in the restored areas (> 400 ind./ 100 m2









## Saramojoki 2021

- 1,7 million euro project (50% statefunded) to restore Saramojoki river and to abolish 1 hydropower plant
- Opens 120 kilometers of potential spawning ground for brown trout
- Initiative from plant owner, Pohjois-Karjalan Sähkö, faced with the option of renovating the plant



### Virtaankoski 2023-2024

- 2,5 million euro project to restore Tainionvirta river and to abolish 1 hydropower plant
- The River Tainionvirta is one of the most important watercourses discharging into Lake Päijänne
- Opens tens of kilometers of river system and potential spawning grounds for migratory fish
- Funding from local authorities, private donors, WWF, companies



### Jyllinkoski 2023-2024

- 0,9 million euro project to abolish 1 hydropower plant
- The River Karvianjoki has its own wild brown trout population and freshwater pearl mussel population
- Initiative from plant owner,
  Vatajankosken Sähkö Oy, faced with the option of renovating the plant

NOUSU projects that improved the migration and living conditions of migratory fish during the last five years

- Construction of fishway or -passage
- Dam removal or alteration
- Decommissioning of small hydropower
- Research & development





### Key takeaways

Building a support base both nationally and locally Adopting supporting policies and strategies Working together with broad set of actors Multiplying state aid with fundraising Combining voluntary and regulatory measures Local successes can inspire nationally There are no major legal changes underway

... It helps having 1,6 million recreational fishers!

# Thank you for your attention!

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Lieksanjoki, Murrookoski