

Implementation of river continuity restoration in Finland



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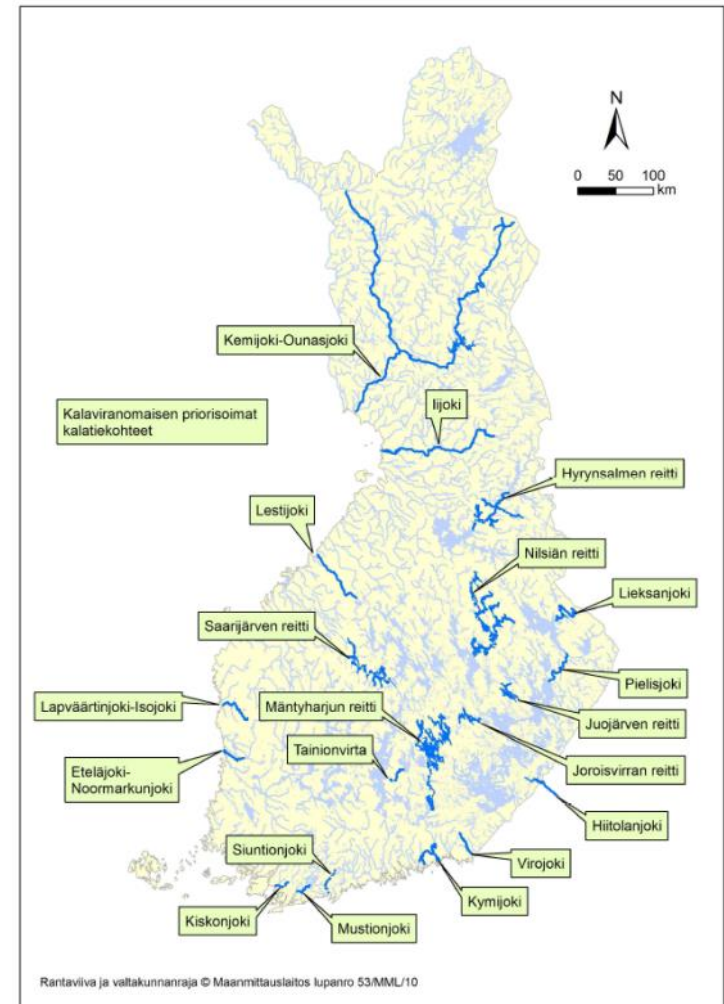
Finnish Environment Institute SYKE

Contents

- Fish pass strategy in Finland
- Government programme for reviving migrative fish stocks
- Examples of removal of barriers
- Research on fish passes, downstream migration and environmental flows
- Problems in renewal of hydropower permits
- Awareness raising for publicity about river continuity
- New reproduction areas in constructed rivers

National fish pass strategy 2012

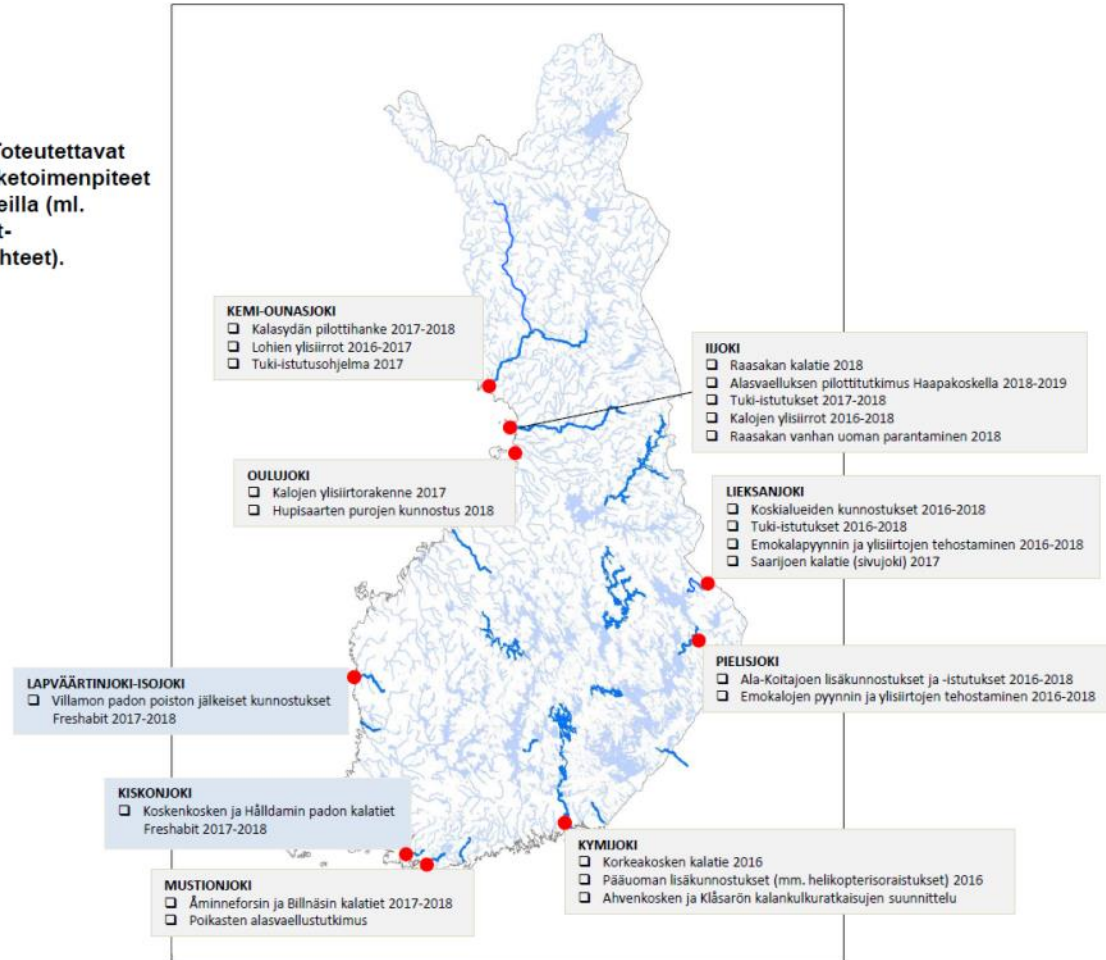
- Reiving endangered and weakened migrativife fish stocks
- Changin policy from stockings to natural reproduction
- Priority river basins are named
- Rivers with
 - Vanished Salmon stocks
 - Endangered Lake salmon stock
 - Endangered Sea trout stocks



Implementation of the fish pass strategy by the government programme 2017

- New solutions for management of fish stocks in constructed rivers
- Fish passes, restoration of reproduction areas, new habitats

Kuva 2. Toteutettavat kärkihanketoimenpiteet pilottialueilla (ml. Freshabit-kalatiekohteet).



Dam removals

- **Koskenylänkoski dam** 1993
- Old factory dam, remnants for cultural history
- Sea trout habitat, sport fishing



Sågarsfors, Siuntionjoki 2006

- Dam of a small hydro power plant was demolished
- Voluntary buying and stopping the use of the power plant

Mikko Koivurinta



- The rapid under the former inundated area was restored for fish
- A bypass channel for the steep rapid was constructed, discharge 1-2 m³/s
- Serves as fish pass and habitat for trout



Ongoing projects of dam removal

- Cities have decisions to remove dams, to revive their rivers for migrative fish and recreation, SYKE is participating
- **Tikkurilankoski dam, Vantaa city, removal 2018-2019**



TIKKURILANKOSKEN YLEISSUUNNITELMA

RAMBOLL

Municipal power companies have made decisions to stop small power plants

- **Tourujoki power plant, Jyväskylä city, removal 2019-2020**
- A new rapid with 13 m elevation will be constructed
- The vision for trout, recreation and tourism won renewable energy



Ramboll

Lahnaskoski dam, River Hiitolanjoki

- Vantaa Energy made the decision 2017 to sell the powerplant
- The dam will be partly demolished 2019-2020
- Helps the revival of lake salmon, migrating from Ladoga Lake, Russia



Replacing dams with nature-like weirs

- Many regulation dams have been modified to nature-like weirs, enabling existing water levels but also fish migration



Fish passes at power plants

Kissakoski 2012

- Nature-like fish passes are preferred, suit for all species
- Video monitoring 2017: 17 000 fish, also weak swimmers
- Good location of entrance at the dam



Bypasses as compensative habitats Imatra urban brook 2015

New constructed channel with 300/ 150 litres/sec



Planned and constructed to be optimal habitat for trout
Touristic landscape
Planning: MA-architects, SYKE

Results

- **2016:** "Fish willing to spawn is searching for a mate in the Urban brook"
- Best area 50 first summer juveniles/100m²
- **2017:** High density of trout juveniles,
- Best area 130 first summer juveniles/100 m²

Photo Markus Tapaninen



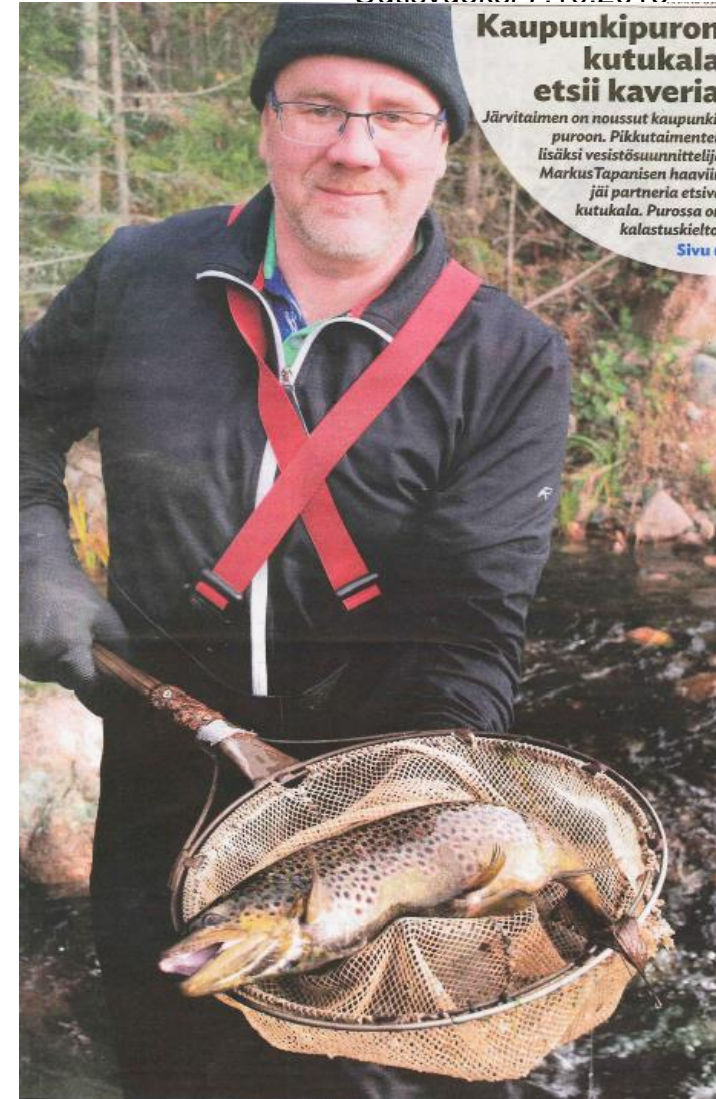
S Y K E

Uutisvuoksi 7.10.2016

Kaupunkipuron kutukala etsii kaveria

Järvitaimen on noussut kaupunkipuroon. Pikkutaimenten lisäksi vesistösuunnittelija Markus Tapanisen haaviin jäi partneria etsivä kutukala. Purossa on kalastuskielto.

Sivu 6



Problem1:

Big rivers with chain of power plants

- Natural river sections far upstream, salmon should migrate 5...6 powerplants through fish passes – only few fish passes constructed
- Problems with downstream migration
- Salmon smolts do not find their way downstream to the sea
- Dammed river section cause danger by predation
- Turbines cause mortality for smolts and kelts after spawning

Measures:

- Catch and transport of fish has begun as a preliminary option
- Promising results for the endangered lake trout of the Lake Saimaa
- Planning of downstream migration facilities has begun
- Would be needed: - Nature-like fish passes as compensative reproduction areas
- - Environmental flows for dry river sections

Problem 2: Permanent hydropower permits

- Voluntary measures by power companies have lead only for minimum solutions
- Big resistance for renewal of permits with existing stocking requirements
- Big resistance for giving enough year round discharge for fish passes and environmental flow for dry river sections
- **Measures:**
- New promising result about beginning of natural reproduction can make discussion with power companies easier
- Pressure for renewing water law and permitting is increasing

Public opinion is for migrative fish

- TV- advertisement of a big commercial chain together with WWF:
- "K- Fish Paths: Making love/spawning belongs to everyone"
 - Loving couples are facing a barrier



Removing small obstacles

- Small old dams without permits
- Culverts, especially on forest roads
- Projects to promote inventory and measures: SYKE, Metsähallitus (Board of forestry), WWF



Conclusions

- Finland has a good strategy for reviving continuity and fish stocks
- Modernizing old hydropower permits is a problem
- Awareness for the need of reviving lost fish stocks is high
- Removal of dams and constructing fish passes is ongoing
- Research of compensative habitats is promising

Thank you for your interest!