New Actions and Experiences regarding headwaters and freshwater pearl mussels

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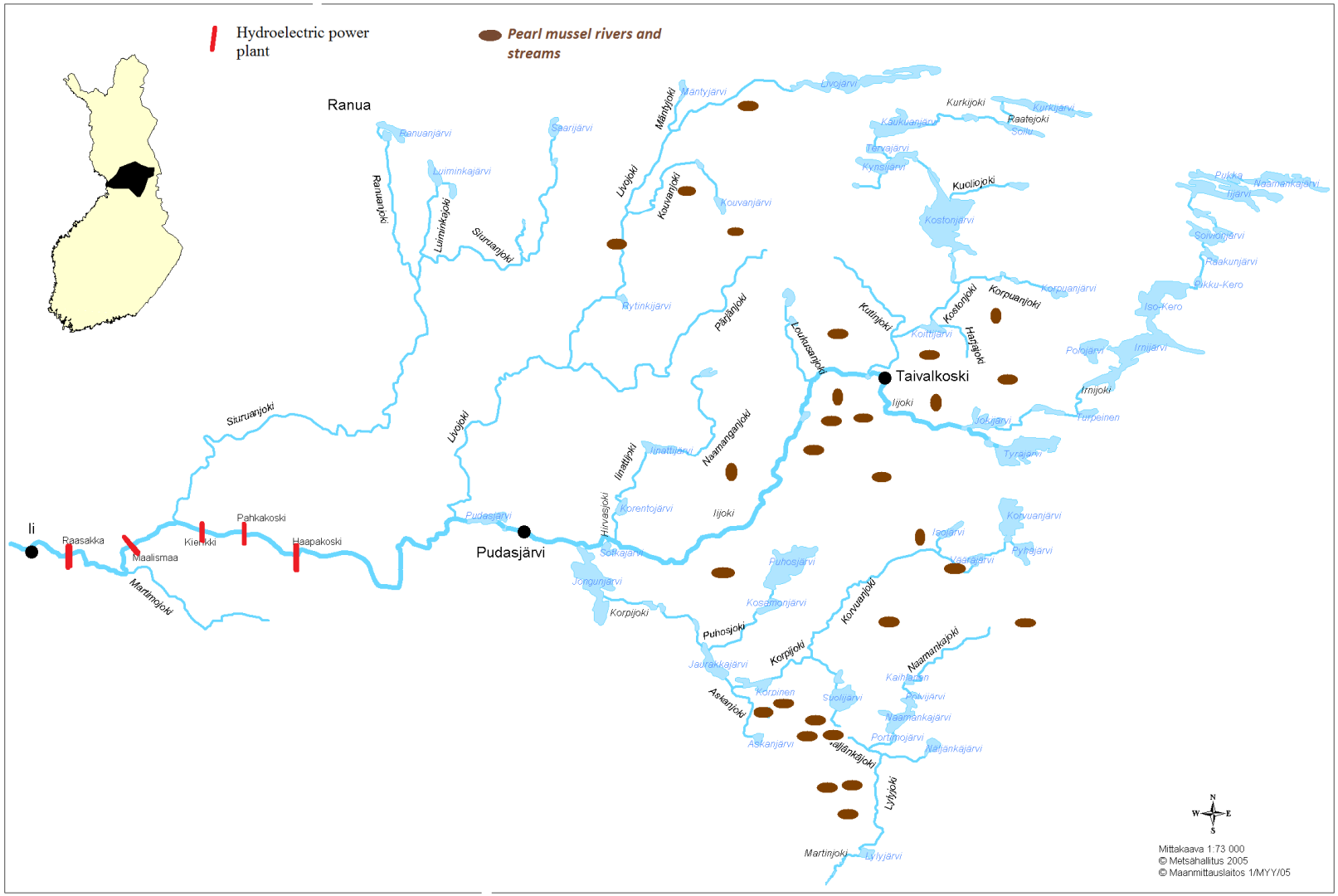
METSÄHALLITUS

INTERREG IV A NORD

Iijoki river basin

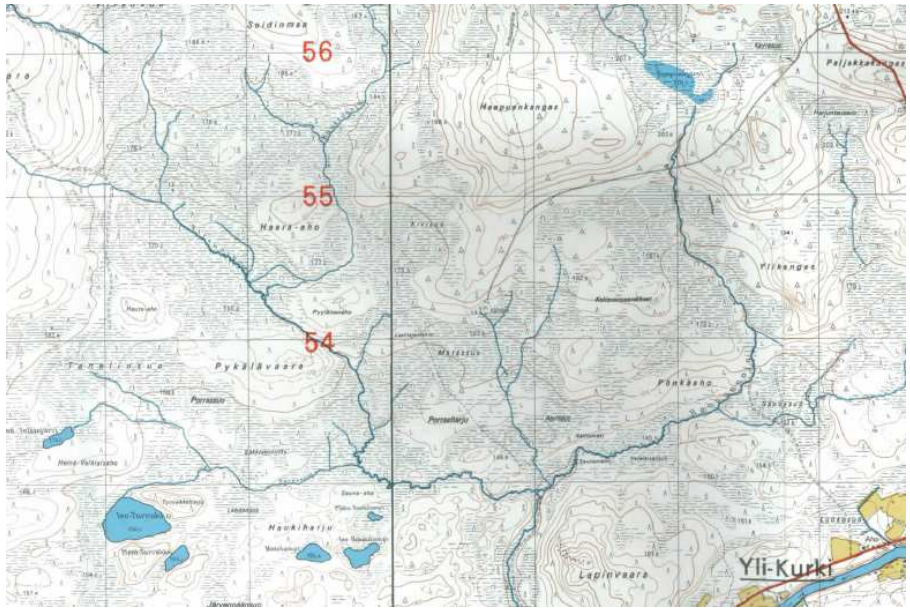
Around 1400 streams and brooks

- catchment area 14 190 km^3
- lake percentage 5,7 %
- mean flow (MQ) 171 m^3/s (HQ 1400, NQ 17)

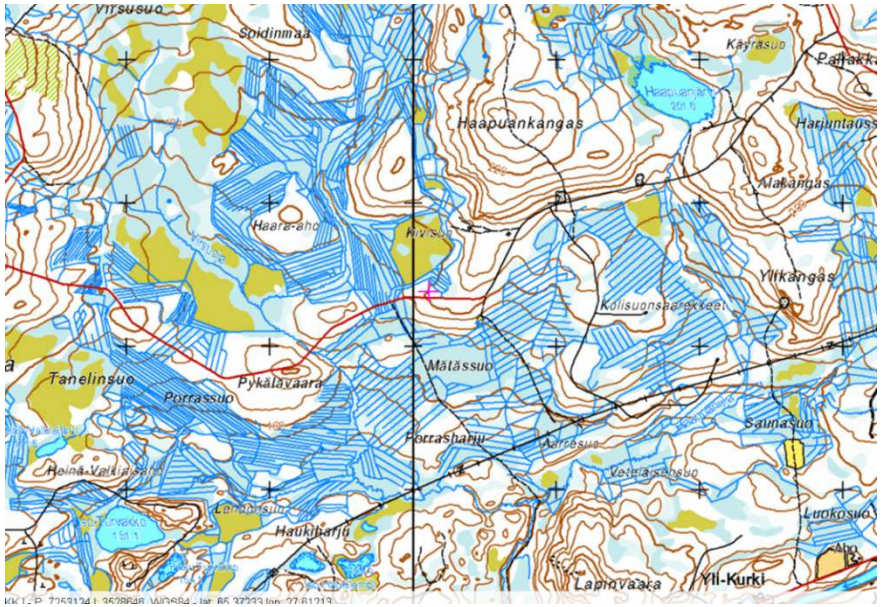


Peatland drainage for forestry in Finland has affected headwaters the most

Haapua stream, Catchment area year 1965



.. and nowadays



The biggest problem in the boreal forest streams: sand erosion in dug ditches, and sand drifting to the streams

Various deflectors

are used to

- collect sand
- allow the power of the flow to dig sand and pile it to advisable places.

Underminer structure.

Old bottom, wooden material and spawning gravel become visible after some time.

Structure works 24/7, the power varies depending of the volume of the flow

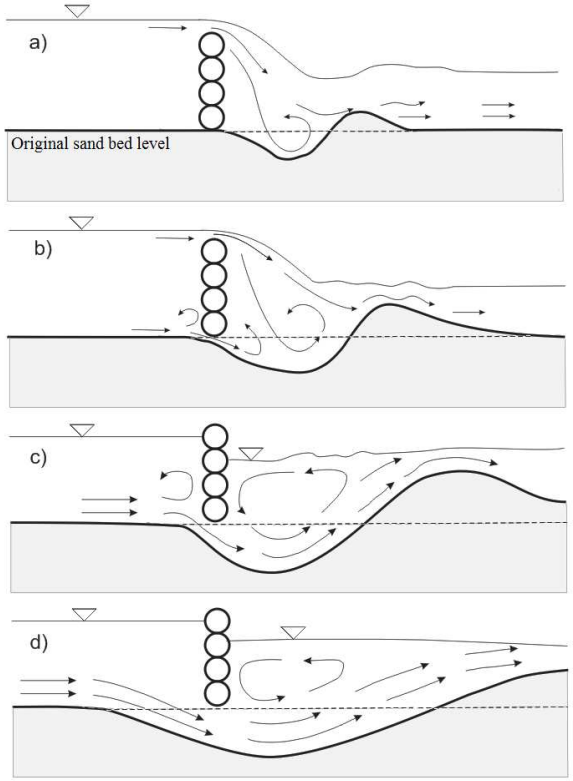
Spring flood. Water expands to floodplain.

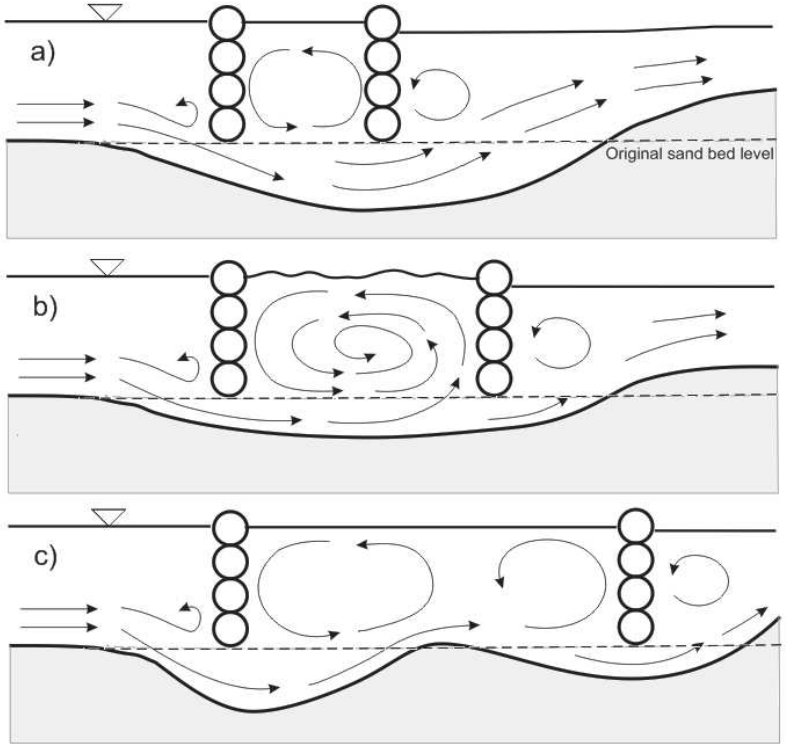
Wooden deflectors conduct sand and silt to the flooded area

When the flood is over, sand and silt sink and **stay** on the floodplain.

The effect ja design of underminer structures

(Research in Thesis Hannu Marttila, 2010, University of Oulu)





The Haapuanoja Case

- FPM stream. Known pop. size ~ 1500
- Local brown trout population density in Haapunoja: 6-32 ind / 100 m^2
- Both the **local brown trout** and the **sea trout** are **host fish**
- Problems:
  - Ditching → Accumulation of **sand** at the bottom of the stream
  - No juveniles born after 1960 (Iijoki dammed), migrating salmon and sea trout no longer able to return to the river from the sea
    - original fish stocks exists and fishways are now planned

Before restoration

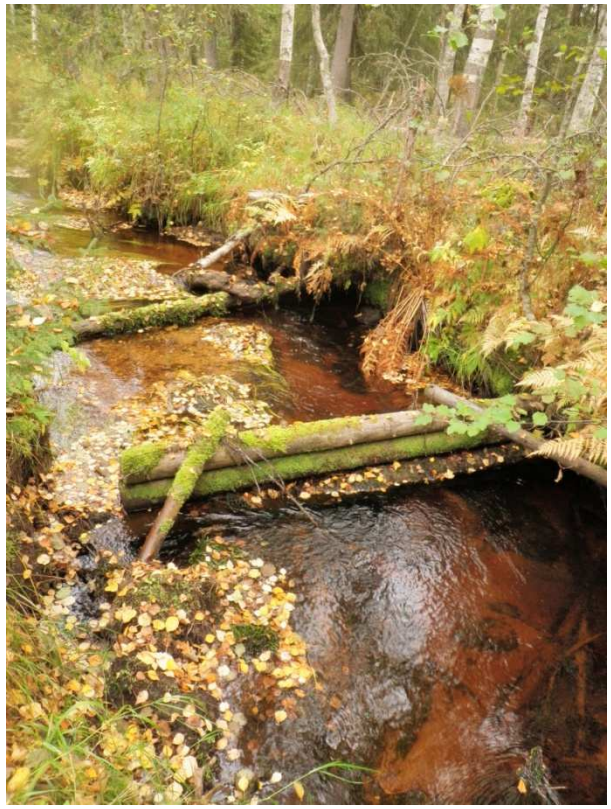
we collected old pearl mussels,440 ind, and moved them upstream.

Next summer we brought them back to the restored area.

Deflectors have already lifted a lot of sand to floodplain.

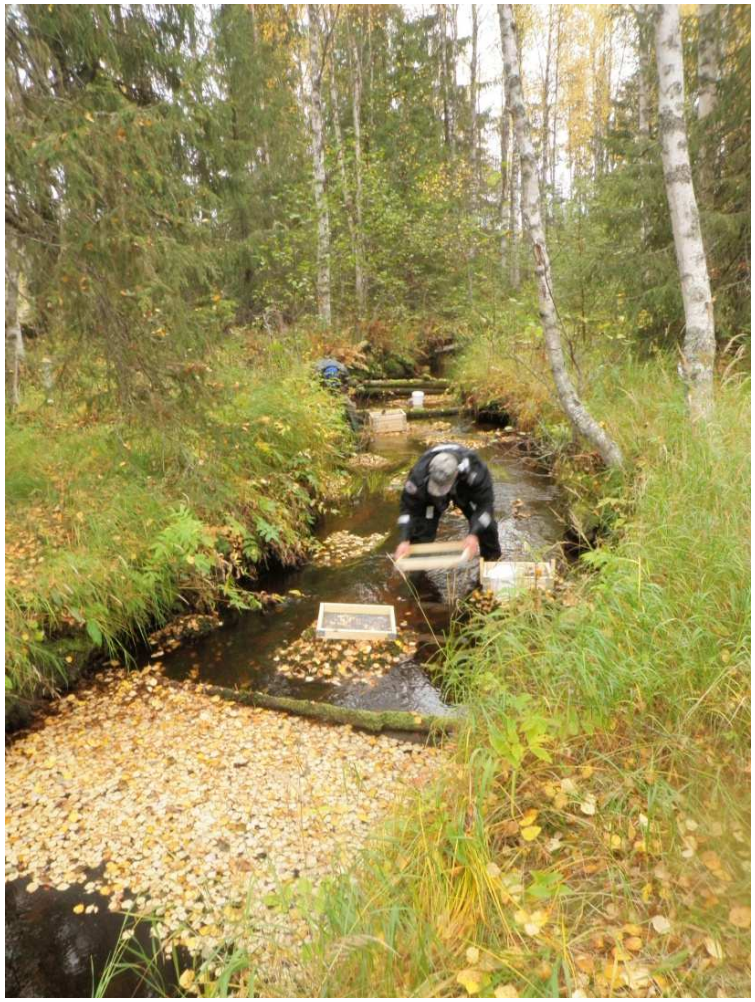
- ~120 deflectors (various designs) were built within 1,3 km
- More spawning gravel for the trout
- Deflectors keeps the spawning gravel clean

In 2007, 20 000 juvenile mussels were released into the stream



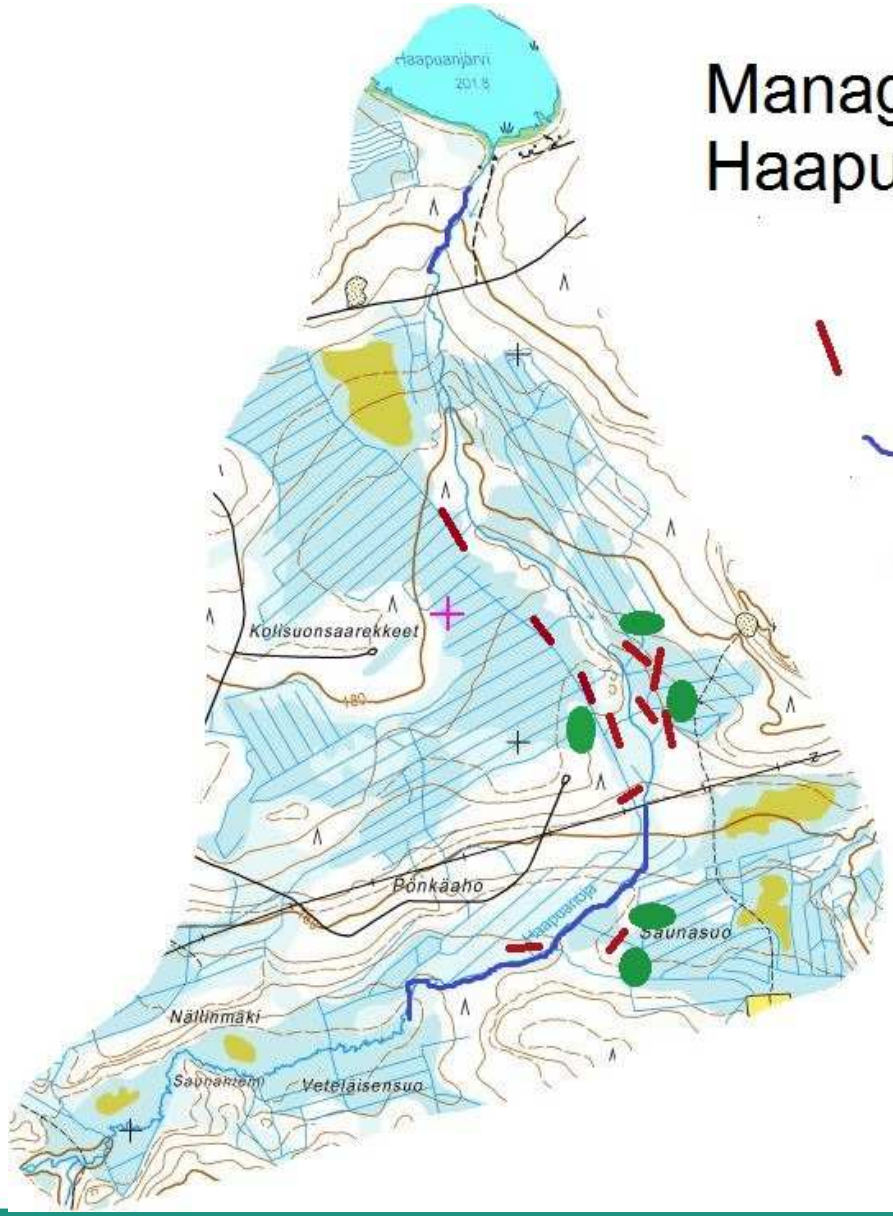
Stream six years after restoration

Sieving the bottom for juvenile mussels (2013)



We found one. We suspect there are more.

Management in the Haapua catchment area



ditch blocked off

renovation area

overland flow field

Restoration of peatland forestry areas

At least 30 % of ditching of peatlands has been unprofitable. The growth of forest has been scarce, or it hasn’t grown at all. About 80 000 hectares in Iijoki area.

Thank you!