

SAVING THE LAST FRESHWATER PEARL MUSSEL POPULATION IN ESTONIA

MARGARITIFERA MARGARITIFERA BREEDING AND HABITAT RESTORATION PLANS FOR ESTONIA AS PART OF COASTNET LIFE PROJECT

AUNE VEERSALU, ESTONIAN ENVIRONMENTAL BOARD, aune.veersalu@keskkonnaamet.ee
KUNNAR KLAAS, PÖLULA FISH REARING STATION, kunnar.klaas@rmk.ee

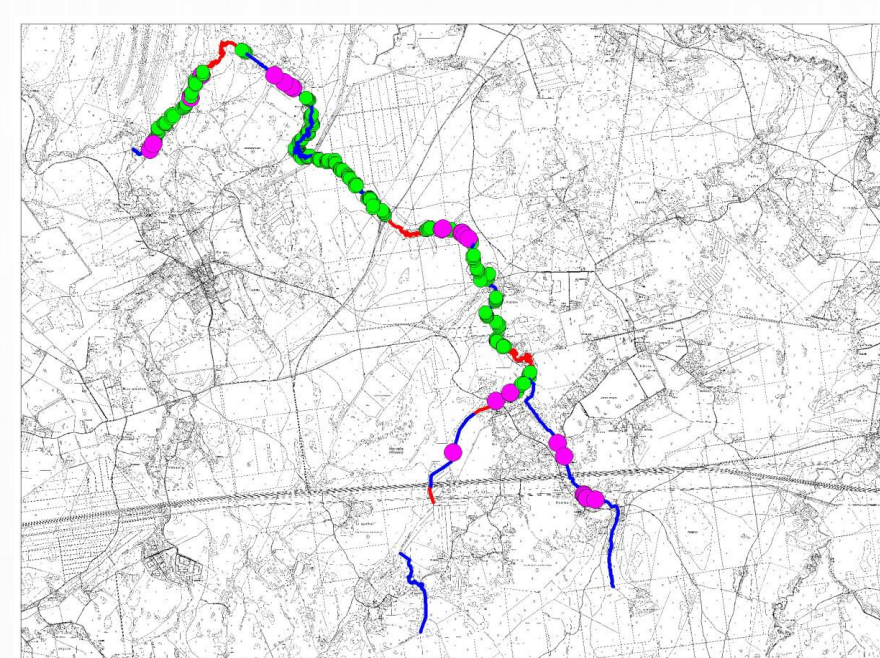


COASTNET LIFE - CoastNet LIFE

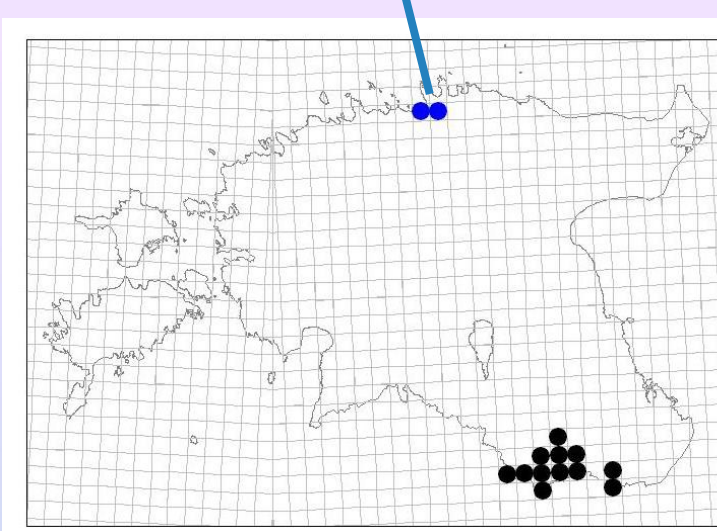
RESTORING THE BALTIC COASTAL HABITAT NETWORKS

State of population

- Historically widespread FPM is today in Estonia present in only one river in North-Estonia, Lahemaa. The river length is 31,8 km with the catchment area of 143,7 km². The population there is small and decreasing – estimated population number has decreased about 4 times from 36000-34000 individuals in 1994-1996, being now less than 10000 individuals.³
- Age-growth analyses showed normal growth curve, but increasing growth rate during last 20 years. All mussels analysed were more than 90 years old.¹ Smaller than 60 mm mussels are not found.
- FPM brooding in Pudisoo river is active, females are producing glochides and host fishes (trout) are infected with FPM larvae. Host fish density is good, but due to river condition no recruitment occurs.



• Fpm alive in Pudisoo river
• Dead shells
• Beavers (according to survey in 2011)³



FPM in Estonia:
The only remaining site is in the river Pudisoo/Pärljõgi, Lahemaa (blue dots). Black dots - extinct populations³

The aim of the project is to restore important coastal and archipelagic habitats, such as sun-lit environments, coastal meadows, herb-rich forests and wooded pastures. Restoration of these areas improves the living conditions of e.g. the Apollo butterfly and the hermit beetle. The area to be managed includes Finnish coastal nature from the Bothnian Bay to the HANKO Archipelago as well as the northern coast of Estonia in e.g. Tallinn and the Lahemaa National Park.

Fpm: action plan is prepared for breeding *Margaritifera margaritifera* artificially. The implementation period of the project is 2018–2025.

Threats

• Melioration

- Destroyed upstream mires, leading to
 - low water levels in the river
 - increased
 - floods, too strong and quick
 - pH
 - fine sediments and nutrients in the river
 - water temperature
- Sediment bond on ditch tempted beavers

• Beavers! Biggest threat at the moment.



Põlula fish rearing station



Pilot breeding plan for FPM

* Work on FPM captive breeding will be carried out together with Põlula fish rearing station.

* Practical work was started this autumn (2019). Adult trout were caught near the Pudisoo river mouth in order to get fry and start host fish stocking for fpm.

Next autumn fpm glochidia will be gathered at the river and taken to laboratory for infestation 0+ trout/ Or host fishes will be taken to the river in mesh bags and then infected fish back to station. There the infected fish will be kept in circular flow tanks at 10°C until collecting period.

* Reintroduction. In regular intervals juvenile mussels will be transferred into sieve-walled wooden boxes/other field cages. Boxes will be placed into river, where habitat quality is the highest. In order to figure out best places, water fluctuation and river catchment analyzes are carried out.

* The problem at Põlula station is hard water, so for keeping and feeding juveniles for some time after they'll leave host fish we have to carry water to the station from FPM home river. For now, home river condition is maybe not good enough to put juveniles straight into the field cages and to the river, so we plan to keep at least part of juveniles until they'll reach 1 mm in length. ² As we have no experience, we'll like to try different rearing methods to see what works for us. All advices are welcome. Thank you!

Estonia has been granted an exception for the HD - on the Castor beaver (HD annex V). In Estonia, hunting beavers is permitted in case of damage caused by the beaver, with permission from the EEB. Beavers cause huge damages to pearl mussel and salmon habitats.

Habitat restoration



Cleaning fpm habitats and creating suitable microhabitats for juveniles with Pirkko-Liisa Luhta ja Eero Moilanen from Hydrologia-Life project working as supervisors. The project team, Estonian Fund for Nature, volunteers and local people working together at Pudisoo river. July 2019.

References:

- Aliana Meret (Dunca) & Björn Medell Larsen. Growth analyses of fresh water pearl mussel shells from Pudisoo river, Estonia. Bivalvia Rapport (2015) nr.11.
- Christian Scheder, Birgit Lerchegger, Michael Jung, Daniela Csar, Clemens Gumpinger. Practical experience in the rearing of freshwater pearl mussels (*Margaritifera margaritifera*): advantages of a worksaving infection approach, survival, and growth of early life stages. Hydrobiologia (2014) 735:203–212
- Ebapärlikarbi *Margaritifera margaritifera* L. seire ja eriuuringute tulemuste analüüs aastatel 1991–2010, 2015 ja 2018. Koost. N. Laanetu. Loodushoiu ühing Lutra raport Keskkonnaagentuurile (2018).

