

The effect of beaver dams on long-term population survival of the freshwater pearl mussel *Margaritifera margaritifera*

Background

Beavers had extensive distributions in the northern hemisphere until the early 1800s, after which intensive hunting reduced both their range-size and population densities. The European beaver (*Castor fiber*) was exterminated in Sweden during the 19th century and reintroduced in the 1920s. Subsequently, its distribution range expanded rapidly, and beavers are now found throughout Sweden, excepting the mountains and southern tip. The Swedish population is still growing, and estimated to be about 130 000 individuals. The FPM is an endangered species in Sweden that for its life cycle is highly dependent on salmonid fish species. It has been presumed that beaver dams are barriers for migrating salmonids, even though the scientific evidence is ambiguous. If beaver dams indeed are barriers for migrating fish, they could have detrimental effects on the FPM. On the other hand, beavers, salmonid fish species and FPM probably co-existed for several centuries before the beaver was exterminated. Also sedimentation has been identified as a threat to the long term survival of the FPM and beaver dams might reduce stream sediment loads, favoring FPM in running stream sections.

Primary questions

1. To which extent co-occur beaver dams, salmonid fish species and FPM? Is there for example a relationship between the abundance of salmonid fish species and the abundance and age structure of FPM?
2. Does the population size and age structure of the FPM differ between localities up- and downstream of beaver dams?
- 3 Do beaver dams work as sedimentation traps, improving the habitat conditions for the FPM?

Work plan and methods

1. Development of a geographic information system (GIS) consisting of known localities of a) beaver dams, b) salmonids based on the national register of electro-fishing, and c) FPM.
2. Field study in streams with known occurrence of FPM and beaver dams and streams with known occurrence of FPM but without beavers. Estimation of the age structure and population size of FPM in beaver systems with a cascade of beaver dams will be estimated. Quantifying of sedimentation in beaver systems.

Extent

Preferably 60 credits, but 30 credits might also work.

Contact

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