

Project information

Project title

Influence of pollution and climate variation in rivers and coastal waters indicated by freshwater and marine bivalves

Year

2012/2013

Project leader

Paul E. Aspholm, Bioforsk

Participants

- **Bioforsk**
- **Akvaplan-niva**
- **NINA**

National & International Partners: Woods Hole Oceanographic Institute (USA), BATES College (USA), Metsähallitus Natural Heritage Services Lapland (Finland), University of Jyväskylä (Finland), Metsähallitus Natural Heritage Services Ostrabothnia (Finland), Lapland Centre for Economic Development (Finland), Transport and the Environment County Administrative Board of Norrbotten (Sweden), Institute of North Industrial Ecology Problems (INEP KSC) (Russia).

Flagship

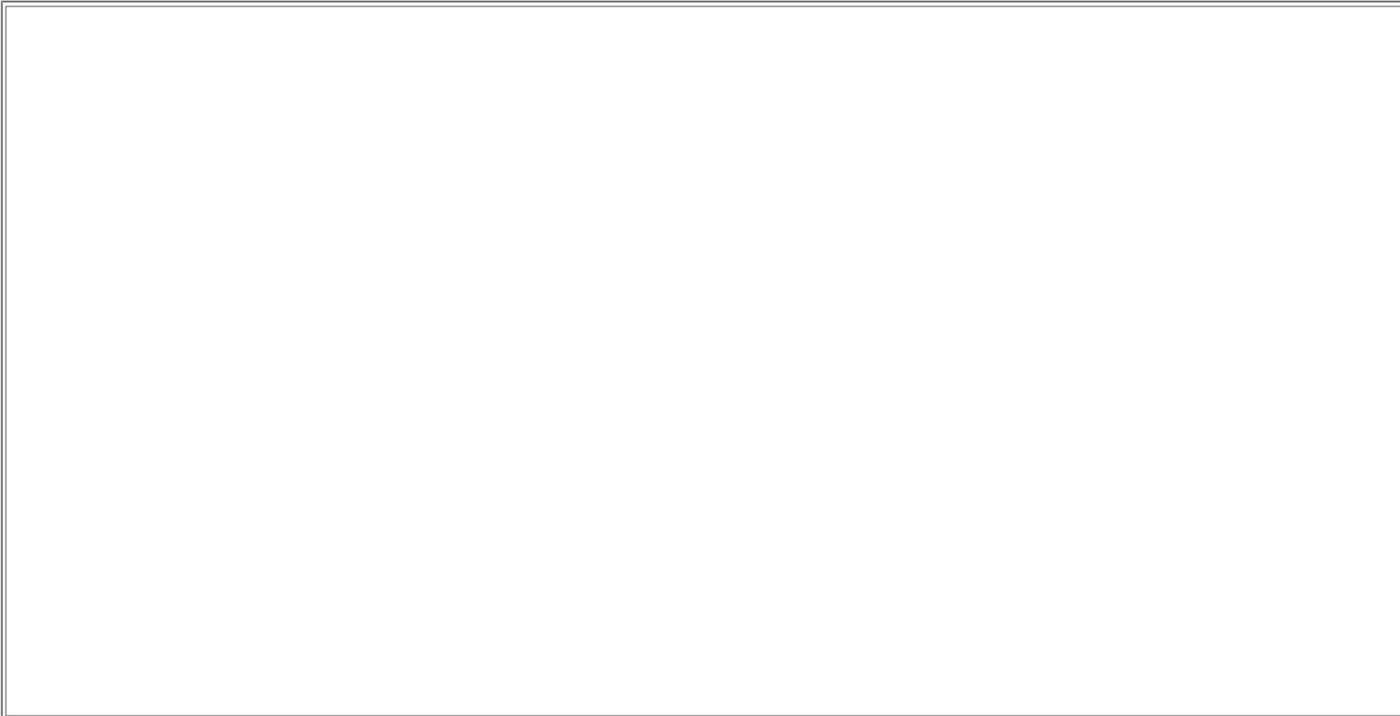
Hazardous substances, Theme: Animal health and ecosystem

Funding Source

Fram Centre

Summary of Results

The long lived freshwater pearl mussel and the marine bivalves specie; ocean quahog, have been analysed in order to reveal variation in growth and space and time. Freshwater pearl mussels have been collected in the Karpelva population and the ocean quahog from the Jarfjord in Sør-Varanger. They have been processed in Bates College in USA and analysed at Wood Hole Oceanographic institution USA. We have obtained old individuals (about 22 years old) with various growth rates and various accumulation of contaminations of heavy metals in the annulies in the shell. There remain still work to harmonize the annulies where the analyses have been taken. But the results so far have been very interesting and successful.



Preliminary data; on the photo above you see a slice of a freshwater mussel, note the bar indicating 1 mm, you may notice the annulies (approx. 0, but some are caused by other anomalies. The whitish spots are the sites where the laser ablation linked to ICP-MS has operated. The spots is double numbered from left towards right so this resemble the points on the graphs.

When these results are harmonized and the growth chronologies has been ensured in the various shells then we make the publications. The work so far is very promising.

Communicated Results

The project has been presented at the Fram Centre Day and has been presented on some meetings. Though the results are not finished.

Interdisciplinary Cooperation

Bioforsk, Akvaplan-niva, NINA. We would like to include social science in phase 2 (2013-2014). The project will involve ecologists, chemists, managers, social scientists and cultural heritage experts. The river mussel has been utilized for many centuries for its valuable pearls. In the Pasvik area, local people (Sami and others) harvested freshwater pearl mussel during generations. There are old settlements along the Pasvik River where large quantities of mussel shells have indicated regular harvests by Karelian, Finnish and Norwegian pearl fishers. These sites are both historically interesting but mussels from these sites will also be used for analysis of contaminants and growth (climate parameters) in an extended time setting. In phase II we like to include social science and cultural heritage aspects.

Budget in accordance to results

Without the Fram Centre funding this study would never have been able to be carried out.

If Yes

This work is making possible for use of monitoring pollution and climate for other environmental working companies and authorities.

Conclusions

1. Indicate future research and/or perspectives which the project results have led to

There is a need to follow up this work from some other areas and still there is much work needed to make the publications.

2. List and describe new methods or techniques that have been developed during the project or that the project has revealed a need for.

The method of calibrating the chronology among shells of different ages is developing. This is important for finding the correct year of creation of the annuli.