Anne-Mari Ventelä

Worldviews

Hello, from Finland!

Hi, all; I’m the lake manager of large (150 km²) and shallow (5.6 m) Finnish Lake Säkylän Pyhäjärvi. My lake manager career started in year 2000, when I was recruited to Pyhäjärvi Lake as young post-doc, just finished with my Ph.D. thesis, “Lake restoration and trophic interactions: Is the classical food chain theory sufficient?” (Ventelä 1999). At that situation, leaving university and beginning the practical lake restoration work felt like huge step away from science and scientific world. However, the choice felt right because “saving the lakes” had been my dream since I started to study biology.

However, very soon I was contacted by Dr. Richard Lathrop from Wisconsin Dept. of Natural Resources and UW-Madison Center for Limnology. He and Dr. Richard Stedman, who was Resource Sociologist in the Canadian Forest Service, were inviting researchers and lake areas to join the new international project called “Sense-of-Place Attitudes in the World’s Temperate Lake Districts.” We joined the project and implemented it successfully also in Finland.

Dick Lathrop is an active NALMS member and one of the organizers of the 2001 NALMS international symposium in Madison. His idea was to invite European lake scientists to the symposium to give overviews of lake restoration in Europe. He had learned about our Lake Pyhäjärvi Restoration Project and was excited about our extensive biomanipulation work and many implemented external load mitigation measures. He invited me to give a presentation in Madison.

Our Pyhäjärvi Project executive board members were open-minded enough to see this as an important possibility and they sent me to Madison.

For a junior lake manager, the experience in Madison was impressive. I was very inspired by NALMS, especially the enthusiastic network of all types of actors, including scientist, lake managers, and citizens. I participated in two workshops and learned new methods and ideas in lake restoration and internal load issues. Many people in NALMS were combining science and lake restoration and for me, it was epoch-making to understand that there is no need to choose between science and practice, but you can successfully do both. I was also privileged to be invited to Dick Lathrop’s side program with other invited guests. I got to know Professor Brian Moss (UK), Professor Erik Jeppesen (Denmark), Dr. Peter Kasparzk and Dr. Gertrud Nürnberg (Canada). This was important, because it was the beginning of long-term scientific co-operation with Dick, Erik, Peter, and Gertrud. The co-operation has led to many joined papers in Lake and Reservoir Management (Stedman et al. 2007, Jeppesen et al. 2007) and other journals (Ventelä & Lathrop 2005, Nürnberg et al 2012 etc.). Thus, cooperation with Dick and NALMS gave me an international lake restoration network, which has supported my work ever since.

Pyhäjärvi – A Large and Shallow Eutrophic Lake

Lake Säkylän Pyhäjärvi is located in the center of an intensive agricultural area in southwest Finland. Pyhäjärvi has been an important fishing site and drinking water source for local people for centuries. Today, the lake
is used for recreational activities, commercial fisheries, and local industrial processes. The lake is an example of a large and shallow lake suffering from eutrophication. It has been classified as having “good” ecological status based on the criteria of the European Water Framework Directive, but this status is seriously threatened by high external nutrient loading. Currently, industrial and municipality waste waters are treated in waste water treatment plants and are not directly fed into the lake.

The lake is located in the boreal temperate zone (cool climate type). In winter, the mean air temperature is about -2.1ºC and the lake is normally frozen for 141 days on average. The catchment is also normally covered by snow in winter. At present, the recent climate variation seems to pose new challenges to the restoration work.

The first signs of eutrophication were observed in long-term monitoring data in the late 1980s. This received much attention in the local media, generating local activity to develop new collective methods and funding structures to stop this from developing further. Voluntary-based river basin scale co-management groups were established by regional environmental administrations and municipalities in 1989-91, aiming to promote water protection measures in agricultural areas. In 1995, local municipalities, private industries, and local associations founded the Pyhäjärvi Protection Fund (PPF), with the help of regional environmental and agricultural authorities, seeking to guarantee the necessary funds for the long-term restoration work for both the lake and the catchment. The basic annual funding collected from members was FIM 1 million in total (EUR 160,000). This kind of fund, with voluntary but strong long-term participation of municipalities and industry, was unique at the time.

PPF has now been working for 17 years. It offers basic funding for the Pyhäjärvi Restoration Program (PRP), which is managed by the local non-profit foundation, Pyhäjärvi Institute. Employees of Pyhäjärvi Institute are professionals in different fields of lake and catchment management. Since 2006 I have been the head of the aquatic environment section with six-eight employees, but I’m still also the manager of the Pyhäjärvi program. This kind of local independent unit like Pyhäjärvi Institute has proved to be a very good implementer and promoter of local voluntary actions as it forms a bridge between local inhabitants, regional and national administrations, the science community, and industry. In addition, it has good knowledge and experience of other available funding possibilities.

The goal of Pyhäjärvi Restoration Program is to improve or maintain the good water quality of Pyhäjärvi (measured as total phosphorus and chlorophyll concentrations, and phytoplankton biomass and composition). In order to receive this goal, five main themes of actions are implemented:
(1) external load reduction, (2) biomanipulation, (3) education, (4) information services, and (5) research and monitoring. The basic funding of PRP comes from local industry and municipalities, but additional resources are needed in all themes. Thus, there are several projects funded by different EU programs, foundations and government, that supplement and support the basic work and funding. The mean annual budget is about EUR 500,000.

Work has progressed as planned. For the last ten years the water quality of the lake has remained good in summer time, when the recreational use of the lake is most intensive. Pyhäjärvi Restoration Program has developed and we have been able to fulfill the goals of the program. The further eutrophication of Pyhäjärvi has not continued, but the water quality has remained good for last ten years. The local industry and municipalities, which give the annual basic funding to us, have been satisfied with the result. Nowadays, international co-operation is the basic element of our work.

Finland (North Europe) has 187,888 lakes (56,000 with area more than one hectare). The water quality is generally good or even excellent. However, in some areas, like the Pyhäjärvi region, intensive agriculture, together with forestry, developing municipalities, and industry with wastewaters have caused undesired water quality effects since the 1950s. There is still a great need for resources in lake restoration. Especially we are lacking the national-scale organization connecting all the actors from local lake societies to administration and scientists. That would be needed and I think NALMS is a good example for us. Pyhäjärvi Institute currently has a national project, where we try to enhance the networking in lake and river restoration, together with other actors. As part of the project, I had a great pleasure to join NALMS’ International Symposium again in 2012, again in Madison. It was very nice experience and even more, it felt like coming back to home. I hope to see you again soon.

References


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have a lot they need to learn from the teacher. However, in this case, the topic of water was something the students interacted with every day and had many pre-formed conceptions about. The open environment of this class period allowed the students to voice their thoughts, to explain why they answered the questions the way they did, and to challenge me to answer their many questions. The conversation was enjoyed all around, but I think that perhaps I benefited the most. I felt light and giddy with the joy of teaching and sharing information. I felt a surge of motivation to continue down the difficult graduate path and become an environmental educator.

Why You Should Get Involved

My experiences were derived from participation in a fellowship, and without that fellowship requirement I may not have found myself in that position, standing in a 6th grade classroom in front of those curious minds, and feeling the joy that came from the experience. I believe that many others would benefit from taking the time to spend a few hours, or even a day, in a local school. Here are my top reasons why:

1. If you are used to spending most of your day in an office, or with other adults, you will probably enjoy the bubbling environment of a classroom. Even for parents, who may already have those inquisitive kids around them daily, participating in the classroom is a good way to connect more deeply with your children’s school, teacher, and fellow students.

2. If you are passionate about your local lake or environmental issues, you have a captive audience (not to mention our future society) to share your knowledge with! I dream of a world where children are taught environmental science from Kindergarten on up to 12th grade. Before that world becomes a reality, we can volunteer some time to share what we know about the complex natural world with young, impressionable minds. Who knows – you may have an impact on a child that will create a lake manager, limnologist or community activist in the future.

3. Many companies, governmental organizations and universities need to have “outreach” to satisfy certain requirements on grants or projects, or just for good PR (think: broader impacts to society). Giving a presentation to a classroom could be a good way to satisfy outreach requirements, and could also forge the way for stronger relationships and future projects that are mutually beneficial.

If you are interested in taking this step and working with a local school, I recommend you look up possible schools or teachers in your area and give them a call. I imagine that most schools will invite outside participation from the community, even with all the test-prep that consumes our schools these days, there are some built in days for different activities such as a guest lecturer.

Lesson Ideas and Resources

Once you make that first step and get permission to visit the school, you may want to brainstorm some ideas for a lesson. To help, here are some examples from a few online resources that I have used in the past:

- Teach Engineering: Resources for K-12: http://www.teachengineering.org
  - Example: Hands-on Activity: Pea Soup Ponds – learn how water can be polluted by algal blooms
    - Example: Life Sciences – Get to the Point: Nonpoint Source Pollution

These are just a few examples of useful resources, using your knowledge, creativity, and a little help from the Web will unlock a multitude of ideas and activities. I hope you give it a try!

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