

The Northern European Network Connecting Forests, Forestry and Water issues

The workshop goals were to summarise the current state of knowledge on effects of forestry on water quality, and to identify and pursue opportunities for future project proposals. The focus was set on synergies and trade-offs between forestry and aquatic ecology, particularly forest management strategies needed to increase soil and surface-water resilience to increasing pressures from climate change, as well as anticipated increases in harvest intensity and forest drainage. Presentations were made and discussions held about the state-of-the-art in boreal and temperate forestry and water quality research with representatives from operational forestry and scientists. During the workshop, we lay foundations for sharing and implementing concrete plans for future research collaboration.

Background of the Network

The Baltic Sea is one of the threatened environments on the planet. A legacy of point source and diffuse pollution combined with limited seawater exchange means that the sea experiences long lasting and widespread periods of anoxia. Today, excessive nutrient inputs from human activities in the catchment are an on-going impediment to achieving acceptable marine water quality. Baltic Sea Region (BSR) forests plays a key role in mitigating the effects of urban, industrial and agricultural polluters on Baltic Sea water quality since runoff from forests has generally low nutrient concentrations. Thus, runoff from forestland can play an important role in diluting and minimizing the negative effects of human activities on water quality in the BSR.

New tools

New tools based on laser scanning have already shown their potential for water management in the BSR. The best example of this revolution is “Depth To Water” (DTW) maps which, over the course of a few years, have gone from an area of academic research to a widely used practical forest planning tool. Using these maps on tablet computers and in forest machinery, it has been possible to plan, implement and evaluate stand harvesting so as to reduce the negative impacts on surface waters. The deployment of DTW maps allows extraction routes, landings and transfer points to be selected and planned to optimise operations in advance. Furthermore, the use of such tools could potentially provide guidance for reducing harvest time and fuel consumption.

The current generation of DTW maps are brilliant as a visual tool to help machine operators plan activities. However, they are static and do not allow incorporation of observations made in the field or the consequences of changing weather conditions. DTW maps and associated forest planning tools could be developed further to incorporate seasonal and short-term changes in groundwater levels. There is great potential to use in-situ water level loggers, observations made in the field and smart sensors coupled with telemetry systems to transfer groundwater levels to DTW maps in real time.



Improvements to Current Practice

In addition to technical innovations, new approaches to traditional water protection measures including the management of riparian forests and drainage systems must be explored further to maintain or improve water quality. For instance, one idea is that nutrients, which are exported from a regeneration area, could be taken up by the riparian trees and then exported during thinning or harvesting of riparian trees.

Policy Innovations

There are several policy innovations, which could support more sustainable management of forest waters in the BSR. Payment for Ecosystem Services could better recognise the many water-related benefits that can be obtained from managed forests. Forest certification schemes could focus more on environmental consideration measures to water management. Most forestlands in the BSR are certified under one or more forest certification schemes. There are also opportunities to exchange knowledge regarding different models for governance and best practices between regions.

In total 27 persons attended the workshop, representing nine countries (Denmark, Finland, Estonia, Latvia, Lithuania, Poland, United Kingdom, Norway and Sweden).

SNS Research Briefs

Lars Högbom

The Northern European Network Connecting Forests, Forestry and Water issues SNS
N2016-03

Published February, 2017

Nordic Forest Research (SNS)

