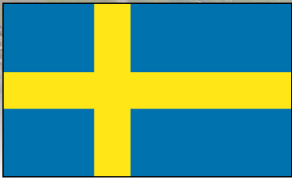


# Arctic Freshwater Biodiversity Monitoring Plan Sweden 2014 Implementation



The [Arctic Freshwater Biodiversity Monitoring Plan](#) outlines the framework for improving circumpolar monitoring efforts in Arctic freshwaters, including ponds, lakes, rivers, and their associated tributaries and wetlands. The Freshwater Plan provides Arctic countries, monitoring professionals and volunteers with a set of guidelines for common approaches and indicators in future monitoring activities, and for collecting existing data. The Freshwater Plan will facilitate information collection and analysis, identify and fill knowledge gaps, and provide better information for use in policy and decision-making.

The Freshwater Plan is the second of four long-term, integrated biodiversity monitoring plans produced by the [Circumpolar Biodiversity Monitoring Program \(CBMP\)](#) of the [Conservation of Arctic Flora and Fauna \(CAFF\)](#), the biodiversity working group of the Arctic Council, and was approved in 2013.

Canada and Sweden co-led the Freshwater Plan's development, which involved the work of experts from Arctic nations, Permanent Participants and other Arctic Council working groups. These experts identified focal ecosystem components, key drivers and indicators, and designed optimal sampling schemes, common parameters and standardized monitoring protocols for application across circumpolar Arctic freshwaters.



Landscape view over Niakjåkatj routes in Sarek National Park, Northern Sweden. Photo: Peter Rosén, Lappland Media.

## Top CBMP Freshwater Priorities in 2015

- Finalize the collection of national metadata summarizing existing paleo, historical and contemporary monitoring data (Project 1)
- Create summary maps for focal ecosystem components (Project 2)
- Produce summary reports describing existing data (Project 2)
- Aggregate existing data, national and regional dataset compilations, QA/QC, data agreements, and formatting (Project 3)
- Secure funding to support the activities of national Freshwater Expert Networks
- Promote and share the work of the CBMP Freshwater group at key international meetings and conferences, increasing partnerships and collaboration with Arctic colleagues

## Links with National Priorities

About 20% of Sweden's almost 100,000 lakes larger than one hectare are situated in the Arctic/Alpine region of the Scandinavian Peninsula. Monitoring of lakes and streams/rivers in Sweden consists of national and regional efforts coordinated by the [Swedish Agency for Marine and Water Management \(SWaM\)](#) and regional county boards, respectively. Monitoring is directed towards the requirements that are set by the [European Water Framework Directive](#) and national Environmental Objectives. The [Swedish Environmental Protection Agency \(EPA\)](#) is responsible for the coordination of contaminant monitoring in freshwater biota. Monitoring includes both water chemistry and a suite of focal ecosystem components, i.e. phytoplankton, zooplankton, benthic invertebrates and diatoms, and fish. Some of the lakes/streams have been monitored for over 25 years and the time series illustrate the decadal changes in water chemistry and biodiversity. The Department of Aquatic Sciences and Assessment at the [Swedish University of Agricultural Sciences \(SLU\)](#) is the national data host for freshwater monitoring data for lakes and streams/rivers.

Priorities for the Swedish Freshwater Expert Network (FEN) during 2014 have included the listing of ecological and paleolimnological studies on Swedish freshwaters, the identification of important research data sets (including the 'grey literature'), as well as of long-term data sets on ice-regimen and other proxies for ongoing change in Northern Sweden.

# Freshwater Expert Network Summary of 2014 Achievements

## Tobias Vrede

Associate professor at the Department of Aquatic Sciences and Assessment, Swedish University of Agricultural Sciences (SLU). Expertise in zooplankton ecology and lake food web dynamics.

**Contact:** [Tobias Vrede](#)

## Johan Östergren

Research Associate at the Department of Aquatic Resources, SLU and an expert in fish ecology, in particular diadromous salmonids.

**Contact:** [Johan Östergren](#)

## Jan Karlsson

Professor at Umeå University with specific expertise in in-lake processes and nutrient and carbon cycling in arctic/alpine lakes.

**Contact:** [Jan Karlsson](#)

## Maria Kahlert

Associate professor at the Department of Aquatic Sciences and Assessment (SLU) and an expert in benthic diatom ecology, in particular their use as indicators of ecological quality.

**Contact:** [Maria Kahlert](#)

## Willem Goedkoop

Professor at the Department of Aquatic Sciences and Assessment, SLU, who has expertise in benthic ecology, food web dynamics, and ecotoxicology. He is the Swedish representative to the CBMP's Freshwater Steering Group.

**Contact:** [Willem Goedkoop](#)

## Funding

Swedish participation in the FSG and FEN-work is funded annually by the [Swedish Agency for Marine and Water Management](#) (SWaM), the national authority that also funds and coordinates the national monitoring program for lakes and streams. Additional financial support comes from the so called 'authority support' that the Department of Aquatic Sciences and Assessment at the [Swedish University of Agricultural Sciences](#) supplies to the [Swedish EPA](#) and [SWaM](#).

## Data

Compilation of metadata has continued during 2014. Key studies and data, historical and paleolimnological data, sources have been compiled as part of the ongoing work. Particular focus has also been on identifying sites with data on aquatic macrophytes and epibenthic algae, as these FEC's not yet are part of internet-based national data bases. Also data on ice regimen and climate data have been collected from the Swedish Meteorological and Hydrological Institute (SMHI). The Swedish FEN has had a two-day FEN-workshop in Uppsala during 26–27 November to work on these issues.

## Communication

Annual progress reports are given to national authorities and to the Swedish CAFF-representative. An annual reconciliation with representatives from national authorities, including the Swedish CAFF-representative, and the Swedish representative of the CBMP terrestrial group was held in October 2014.

At the 2014 CAFF-meeting in Cambridge Bay (Canada), the Swedish co-lead gave a presentation on the progress of work of the CBMP-freshwater group.

At the Arctic Biodiversity Congress in Norway, CBMP-Freshwater organized a session and interacted with other CBMP-groups and Congress participants to promote and advance the work of the CBMP.

## For more information

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