

Jun 22nd, 4:30 PM - 4:45 PM

Session A3: Think Big: Adding Large Structures To Improve Ecosystem Health

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Swedish Agency
for Marine and
Water Management



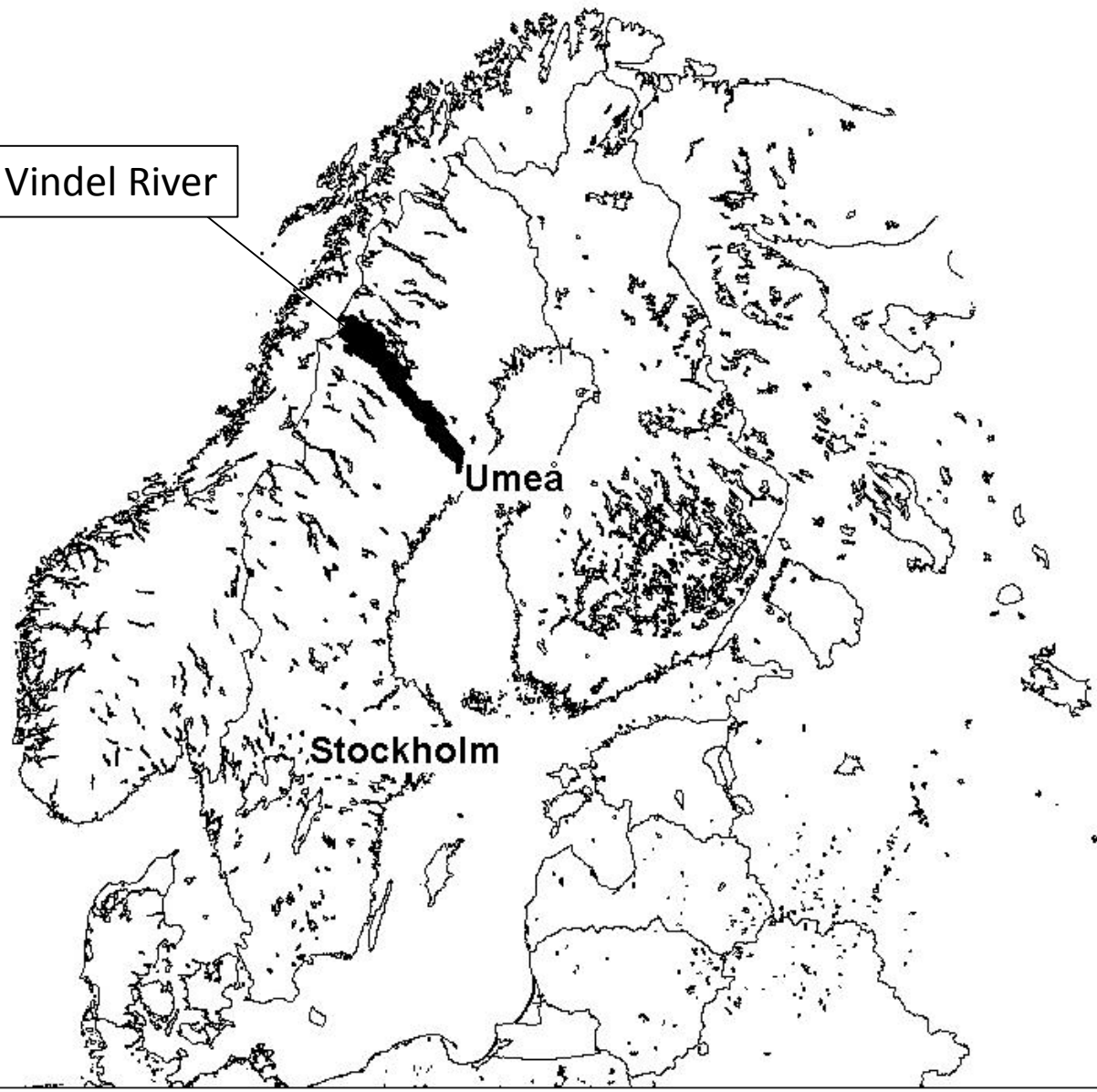
Think big!

Adding large structures to improve ecosystem health



Johanna Gardeström¹, Daniel Palm, Daniel Holmqvist & Christer Nilsson¹
Dept. of Ecology and Environmental Sciences , Umeå University

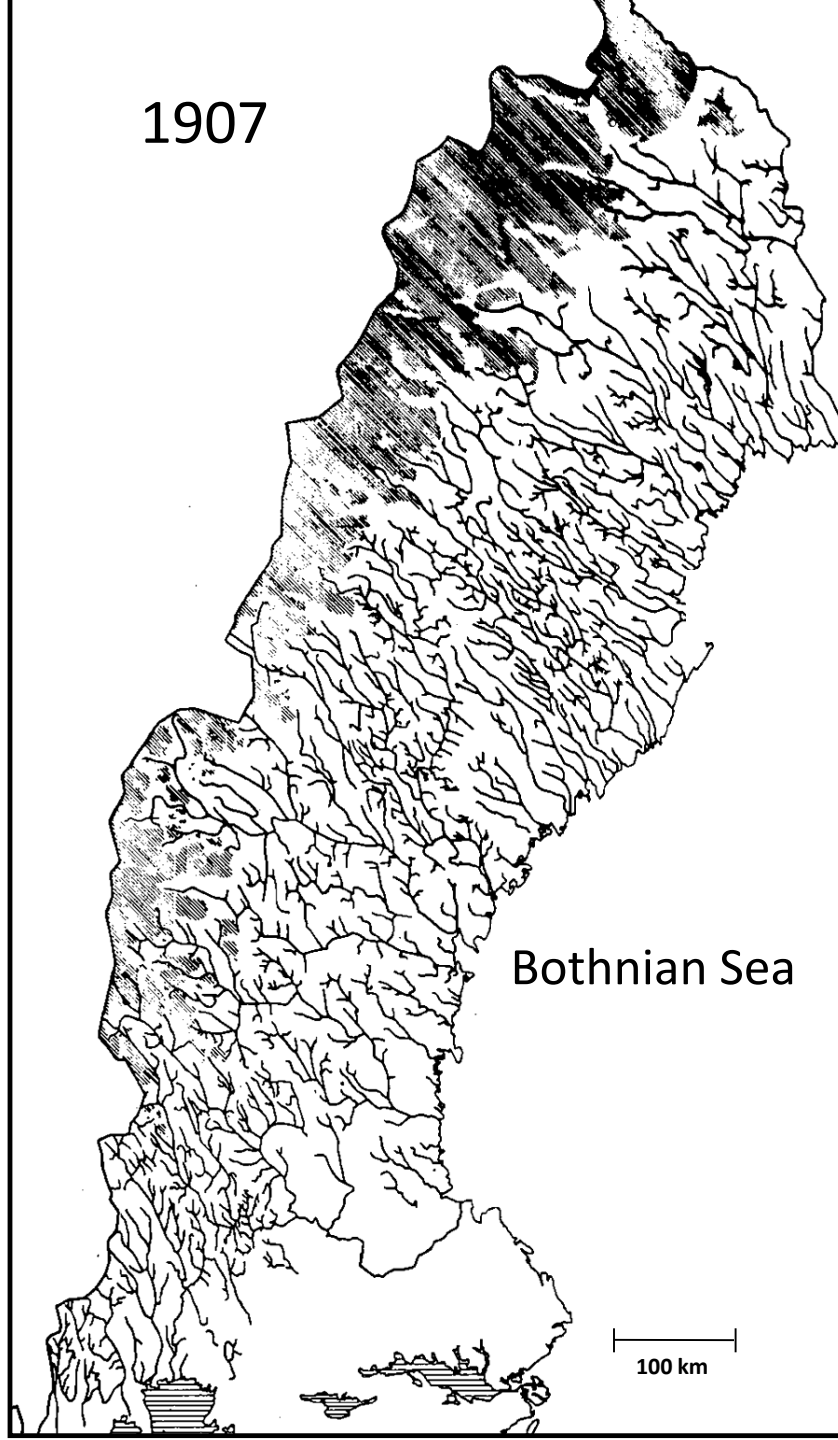
Vindel River





Water ways

1907

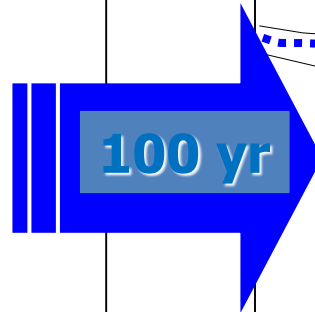
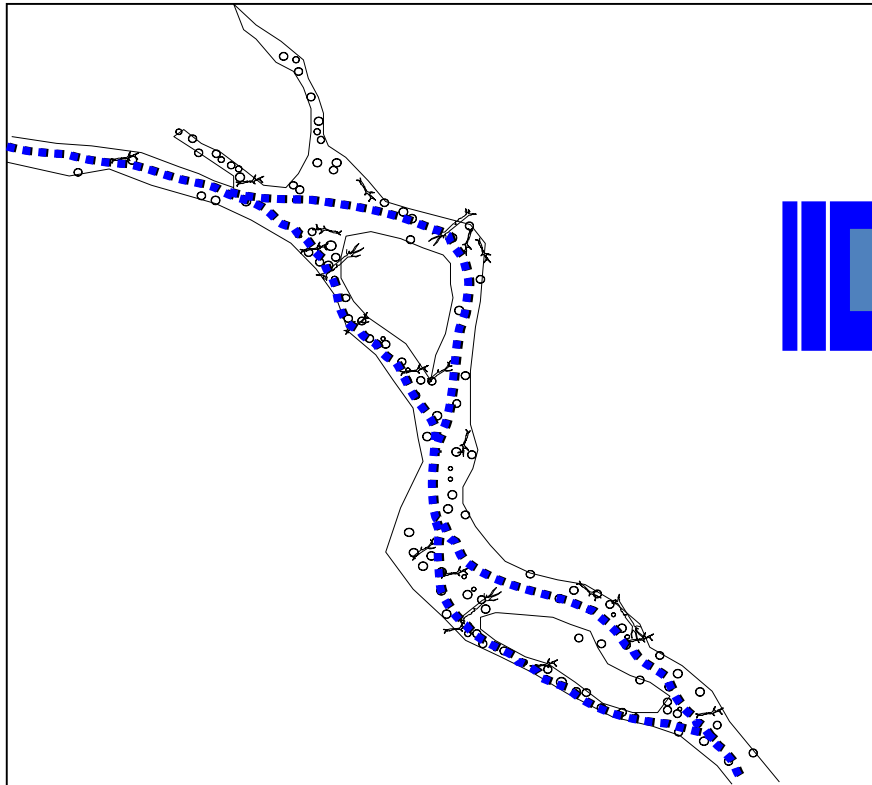


Bothnian Sea

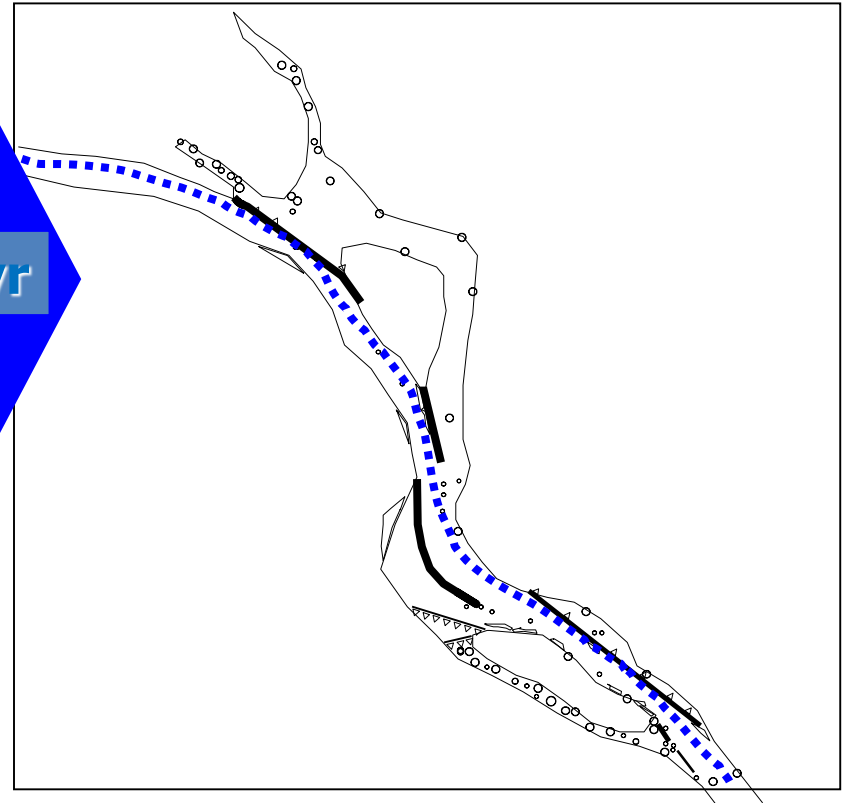
100 km

Vindel River:
Large scale timber floating
activities from 1850 to 1976

Pre-1850



1950s









Vindel River LIFE

Project participants



Swedish Agency
for Marine and
Water Management



Budget

2 675 513 €

Start: 01/01/10 - End: 31/10/15







Demonstration restoration/Re-restoration

10 tributaries have been restored with more **advanced methods**:

- Large boulders and trees were moved from upland to the channel
- Side channels were re-opened
- Totally 6 km

Each site has a reference site upstream









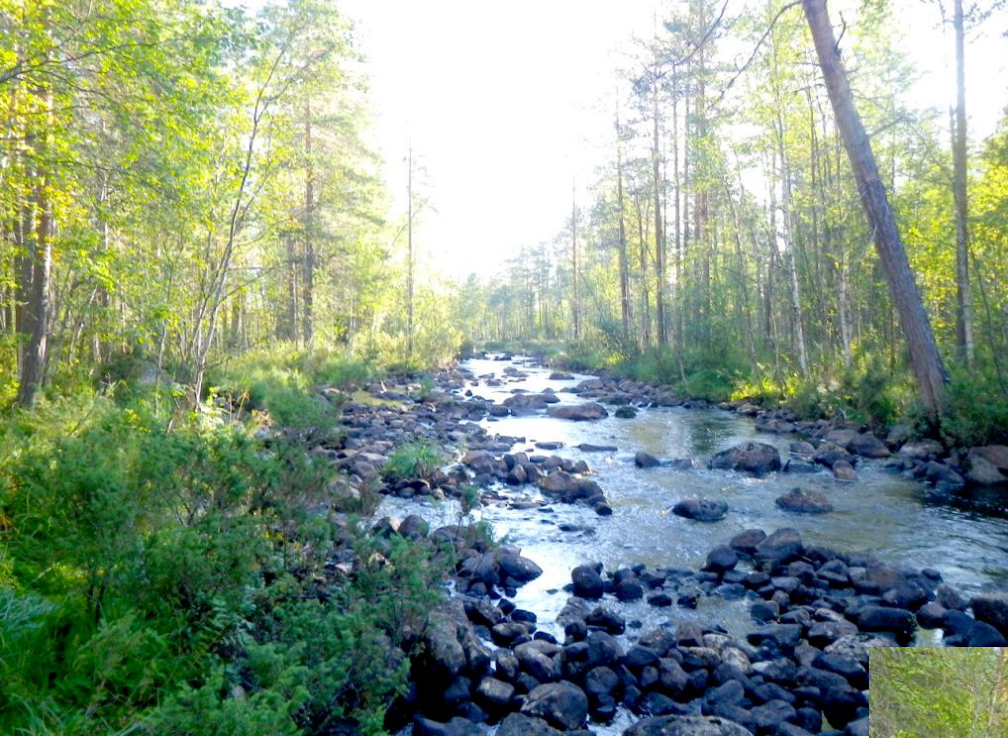
Gargån





Abmobäcken





Beukabäcken



The Vindel River LIFE's project has...

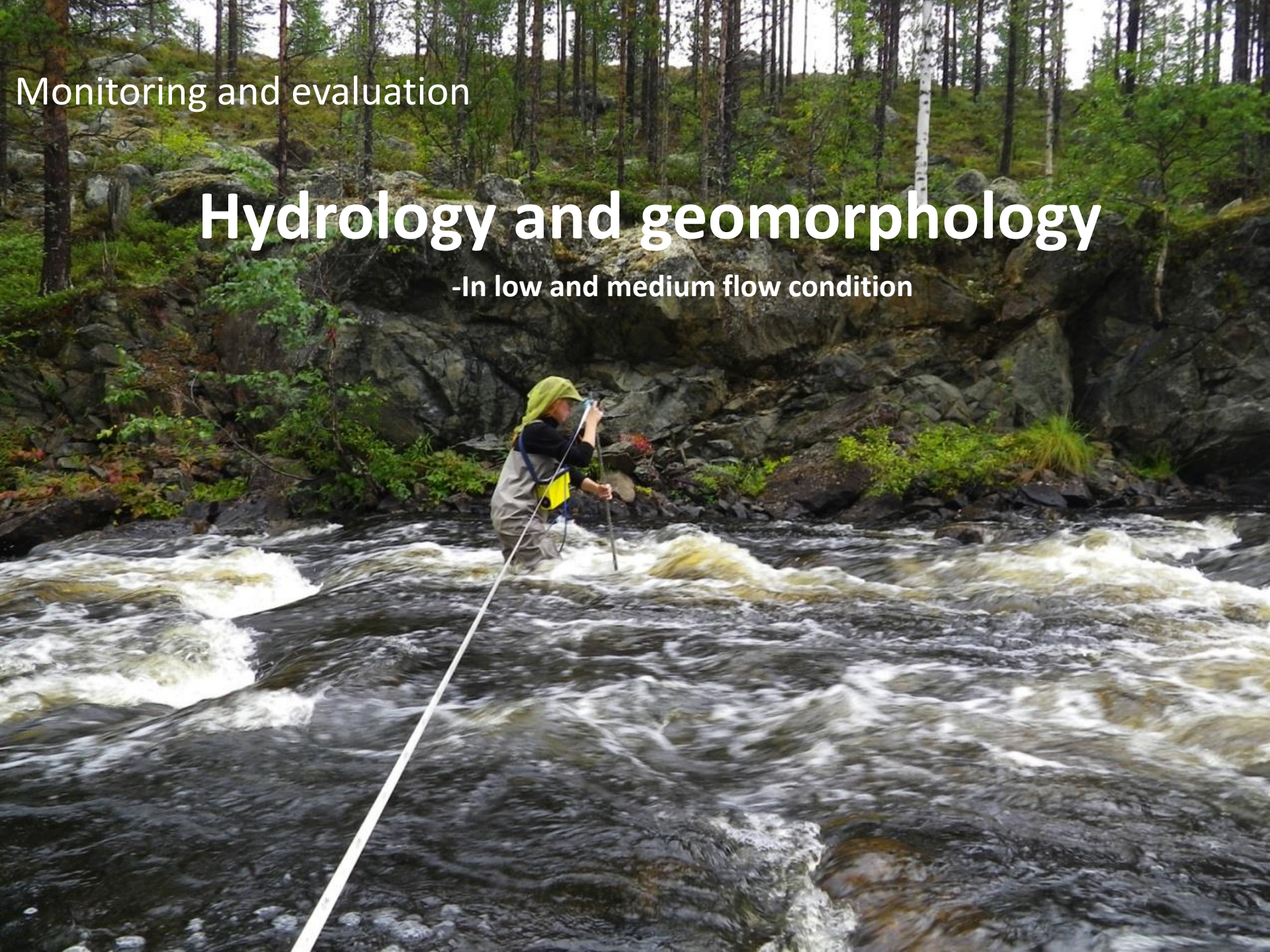
- Opened 18 dams: 226 km stream and 3700 ha lake area have become accessible
- Constructed ~1000 spawning grounds
- Restored 42 ha river stretch...

.... re-opened side channels, which have made 22 ha wetted area accessible

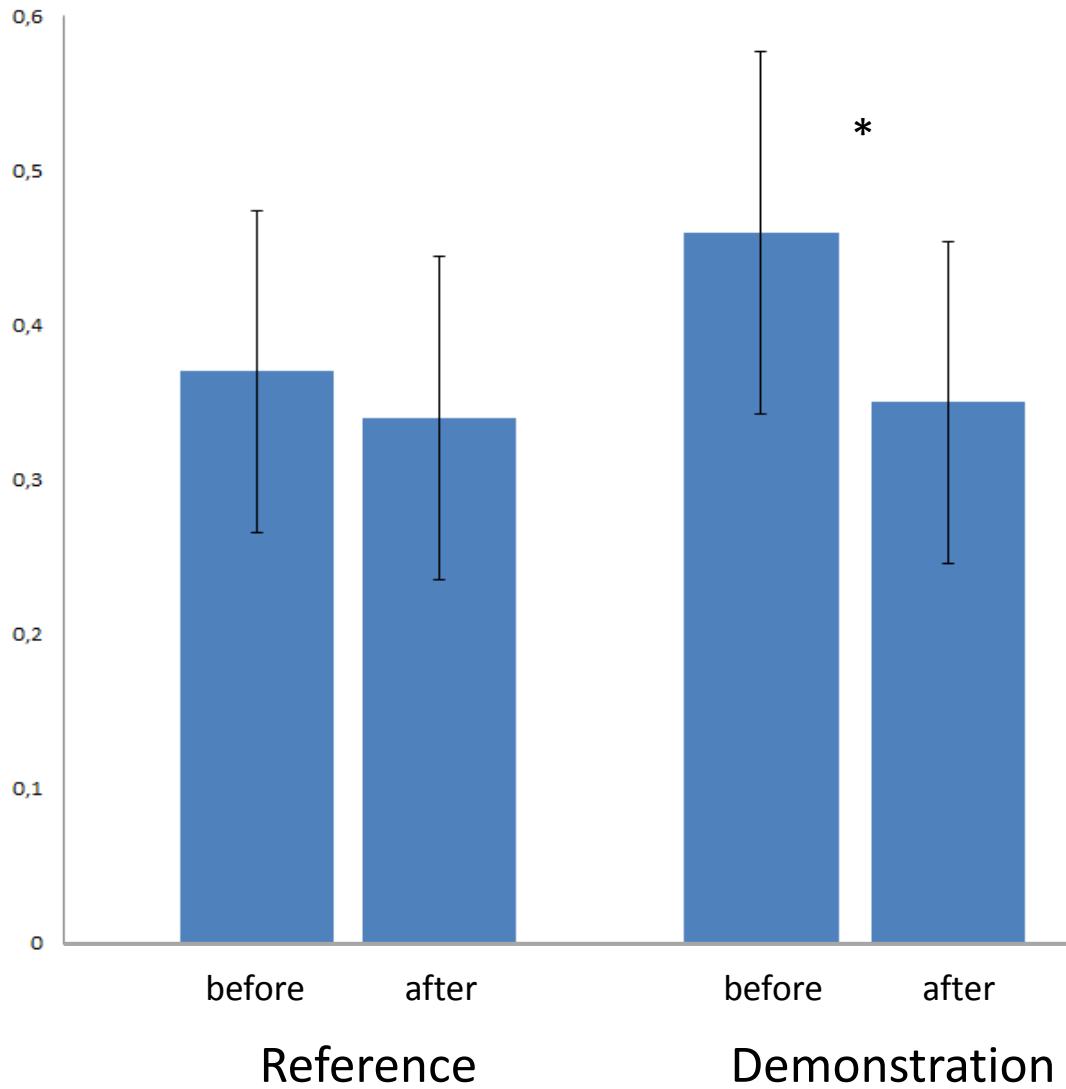
Monitoring and evaluation

Hydrology and geomorphology

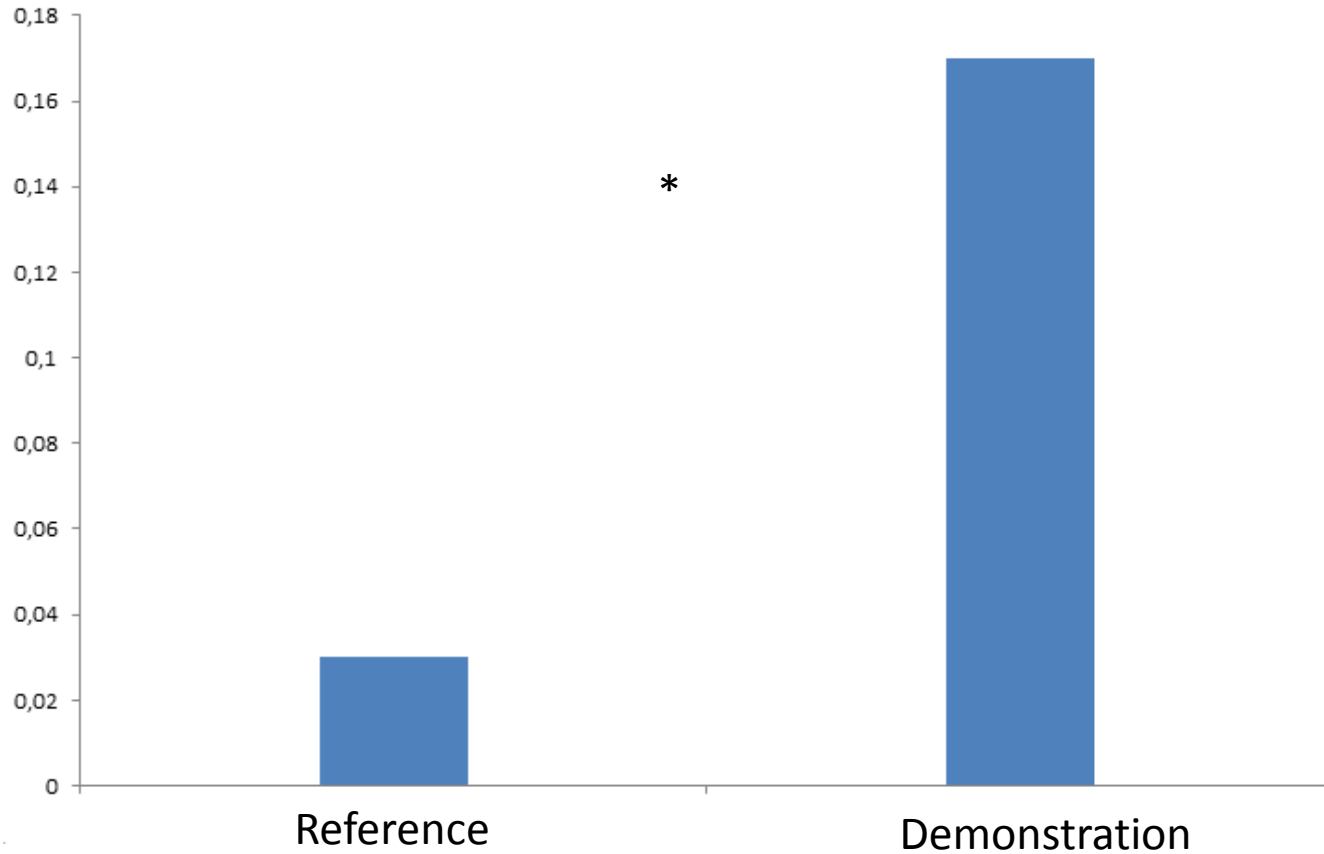
-In low and medium flow condition



Current velocity (m/s)



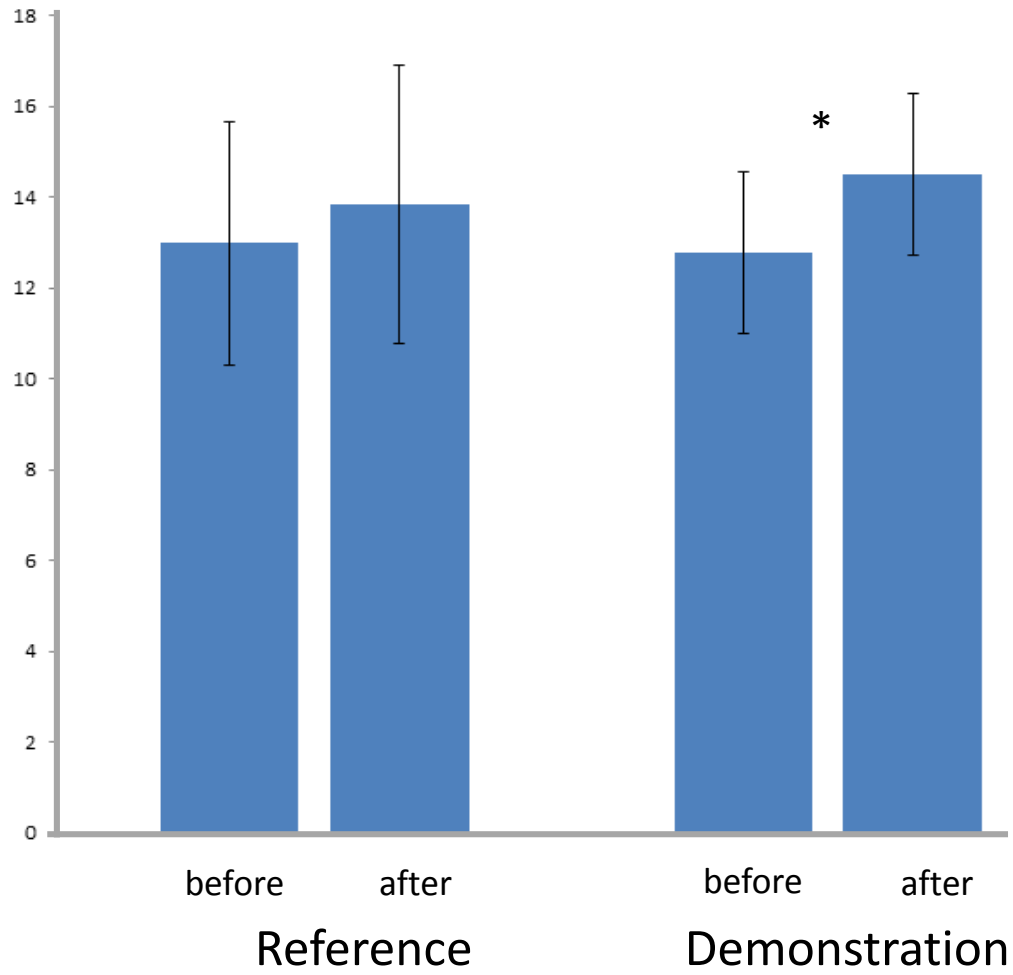
Mean difference in coefficient of variation for velocity before and after restoration



- More diverse water flow after restoration in the Demonstration sites



Stream width (m)



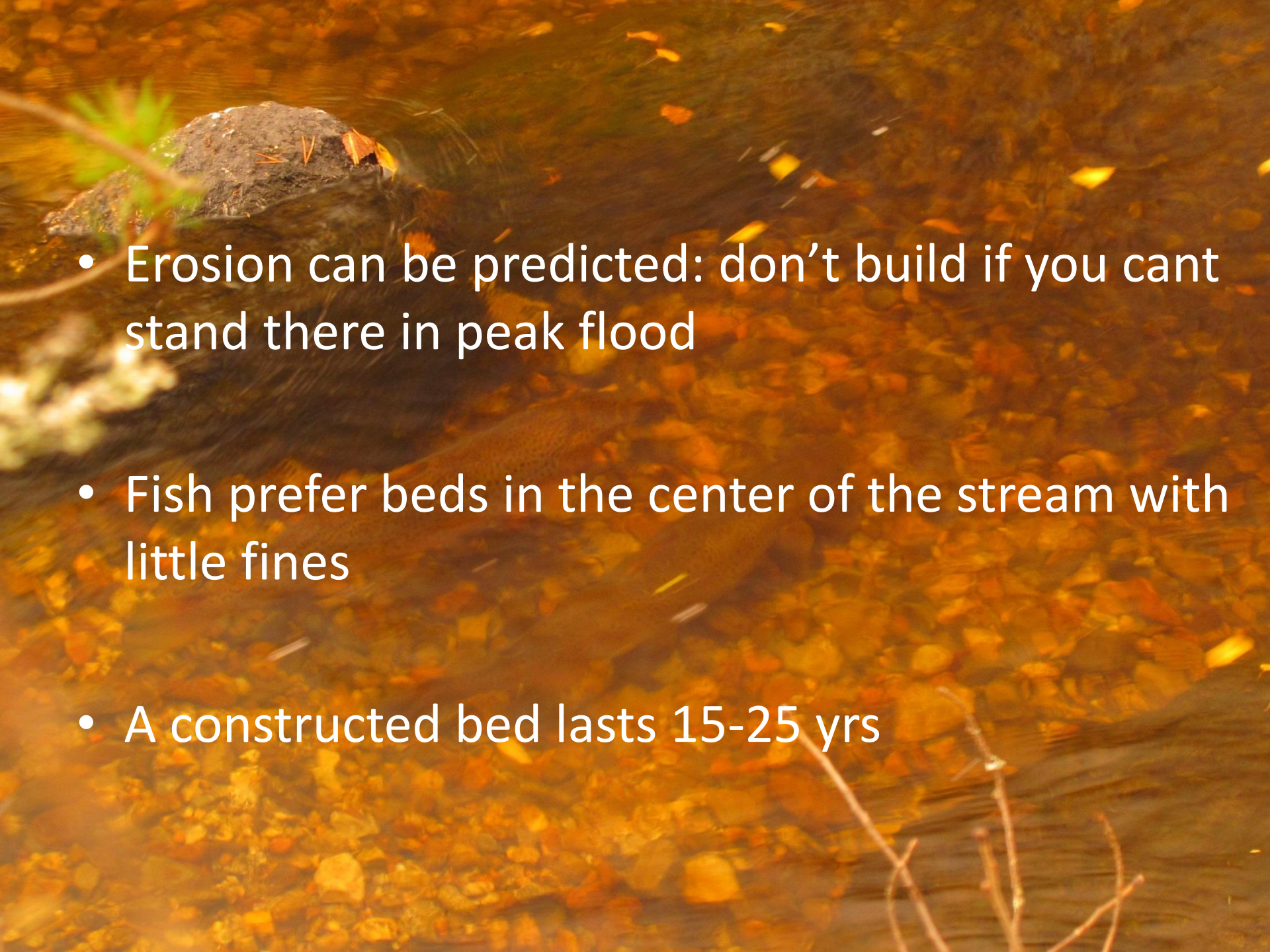
Monitoring and evaluation

Fish habitat

-constructed spawning beds

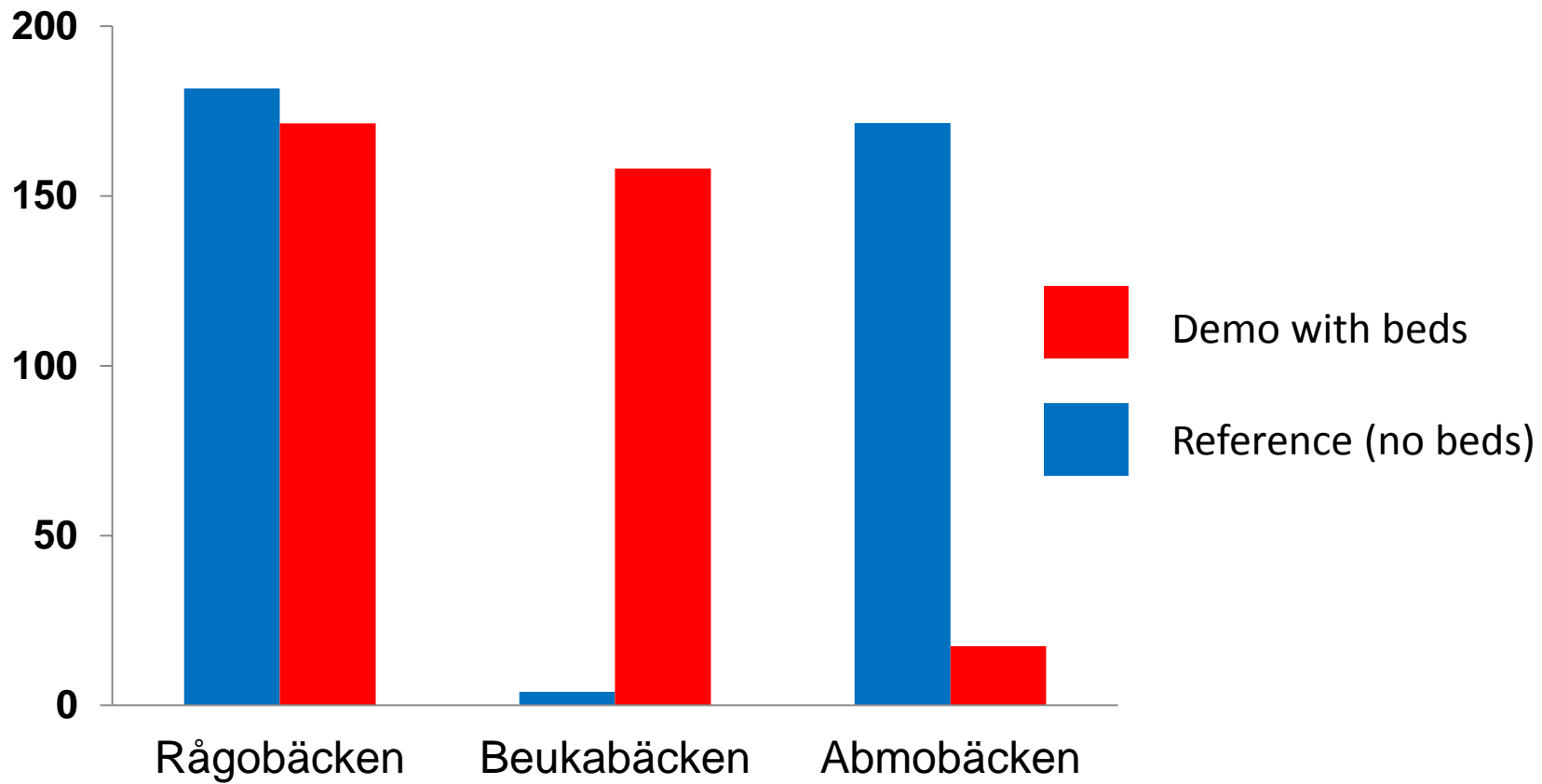
-fish abundance

Daniel Palm & Hans Lundqvist, Swedish University of Agricultural Sciences, Umeå, Sweden

- 
- A photograph of a stream with a large rock and a log in the center. The water is clear, and the stream bed is covered with fallen leaves and small stones. The background is a dense forest with trees and foliage.
- Erosion can be predicted: don't build if you can't stand there in peak flood
 - Fish prefer beds in the center of the stream with little fines
 - A constructed bed lasts 15-25 yrs



% increase in brown trout 2010-2014



Monitoring and evaluation

- Clear hydrological response
- Some positive biological results already after 5 years
- Recovery takes time!
- Instead of a channel focus we should have a **catchment focus**



Pite River, Sweden

Photo: Janne Isaksson



PAGES

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About

Vindel River LIFE – Restoration of tributaries of the Vindel river combined with monitoring and evaluation of ecological responses of species and habitats (LIFE08 NAT/S/000266)

Vindel River LIFE is a collaborative project between **Umeå University**, **Vindel River Fishery Advisory Board**, and the **Swedish University of Agricultural Sciences**. The project aims at reducing the effects of fragmentation and channelization in the Vindel River catchment by removing former timber-floating installations. To achieve this 22 tributaries along a total river stretch of 44 km will be restored between 2010-2015. When completed, 73 % of the former installations will be removed. The objective is to achieve a good water status in the river and an increased conservation status for the species in the area. Habitats for riparian species and water species are targeted, as are six species (otter, brown trout, Atlantic salmon, bullhead, European brook lamprey, and freshwater pearl mussel). To reach the goals a number of specific actions will be performed

Demonstration

One stretch of rapids will be selected in each of 10 tributaries where traditional restoration works previously have been performed, i.e., formerly removed stones have been replaced into the channel. These rapids will be subjected to advanced restoration in which large boulders, large wood and sediment from uplands will be placed in the channels. Pre-action modeling will ensure that placement of structures is made as efficient as possible. The action is called "demonstration" since the methods that will be used previously only have been tested in pilot studies. These methods will now be demonstrated on a larger scale. In total, 3.7 km of rapids will be targets for this action.



English



ANNOUNCEMENTS

Select Month

Ladda ner en folder om projektet här!

Download a folder about the project here!



A scenic view of a river flowing through a forest. In the foreground, two bright yellow flowers are in focus. The river is surrounded by lush green trees and rocks. The sky is clear and blue.

Thanks for your attention!

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www.vindelriverlife.se