

Jun 23rd, 2:45 PM - 3:00 PM

Session A5: Dam Removal: Enhancing or Degrading Ecological Integrity?

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Dam removal: enhancing or degrading ecological integrity?



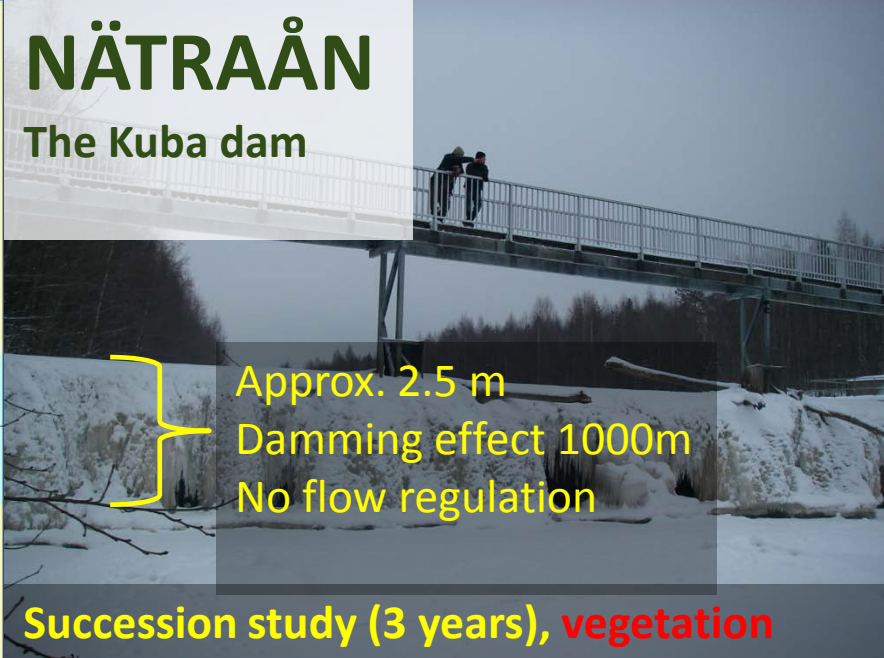
Birgitta Malm Renöfält, Anna Lejon, Christer Nilsson, Micael Jonsson

KARTA ÖVER SVERIGE



NÄTRAÅN

The Kuba dam



Approx. 2.5 m
Damming effect 1000m
No flow regulation

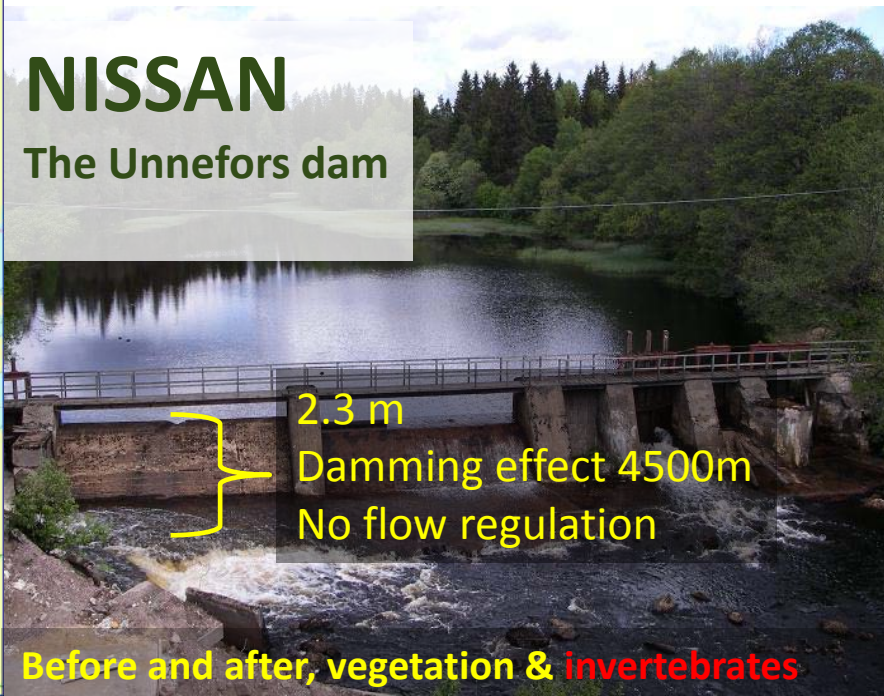
Succession study (3 years), **vegetation**

Purpose of removal

- Freshwater pearl mussel
- Improve fish migration
- Regain spawning areas
- Removed early spring 2007

NISSAN

The Unnefors dam



2.3 m
Damming effect 4500m
No flow regulation

Before and after, **vegetation & invertebrates**

Purpose of removal

- Avoid maintenance
- Improve fish migration
- Regain spawning areas
- Removed late autumn 2007

Project design

Riparian vegetation
Invertebrates

Reference

**New rapid
(Nätraån)**

Impoundment

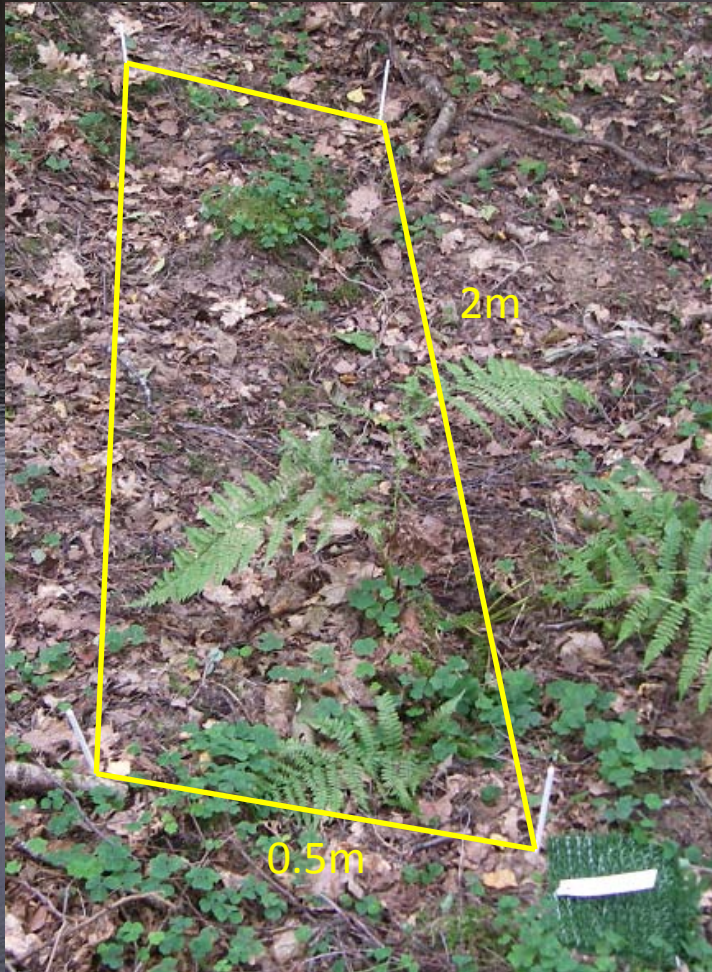
Riparian vegetation

Downstream

Riparian vegetation
Invertebrates



Sampling design vegetation



30 plots on each reach type

- Vascular plant species
 - Presence
 - % cover
- Total Veg. Cover (%-classes)
- Substrate composition
- Bare soil (%cover)
- Soil moisture (%)
- Over story cover (none, low, medium, high)
- Elevation

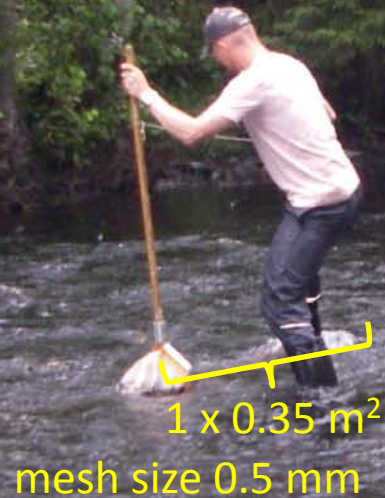
Polystyrene cubes
(disturbance)

Astroturf mats
(sediment traps)

Temperature logger



Sampling design invertebrates



60 sec

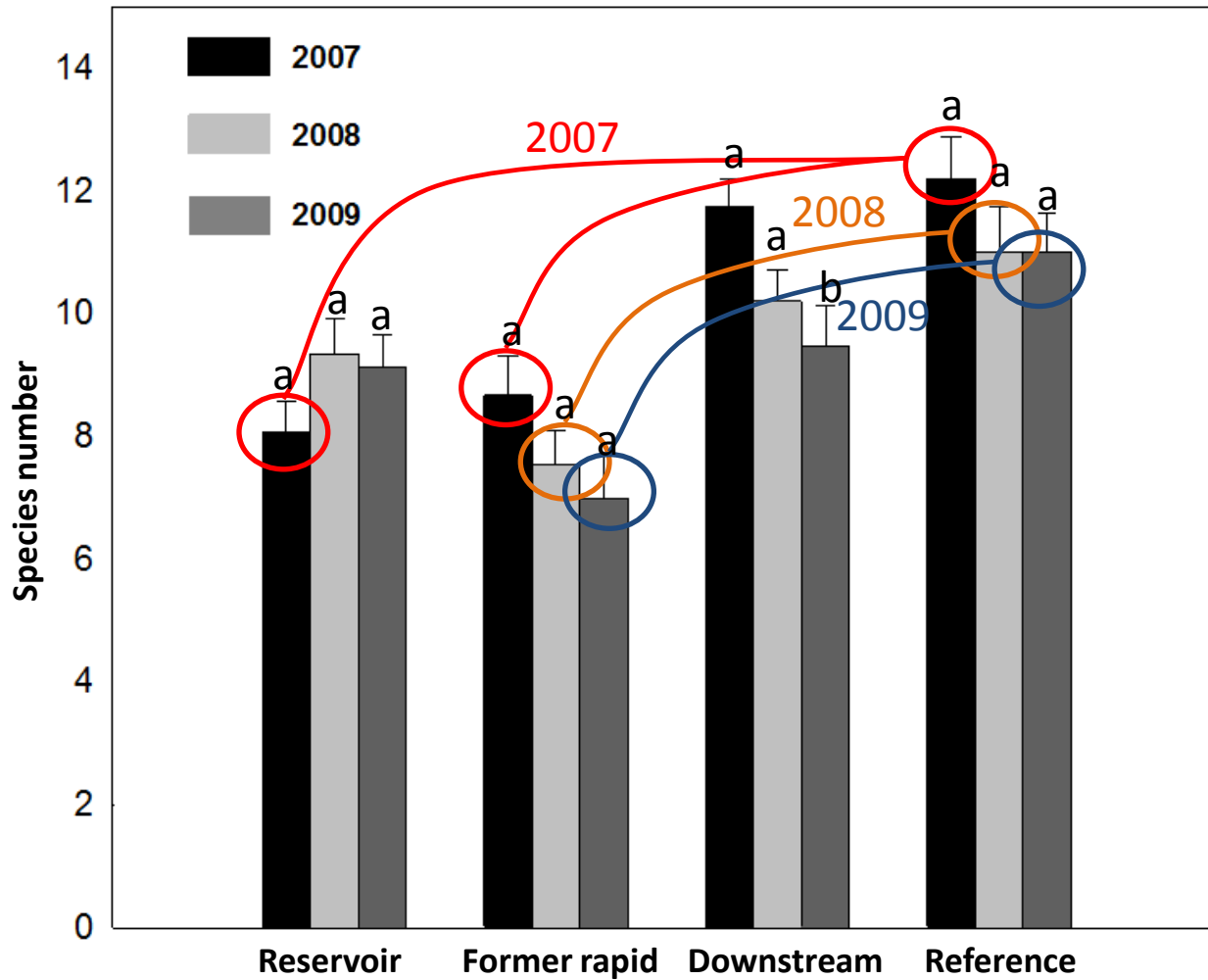


Reference reach 550 m , six replicates
Downstream reach 1400 m 12 replicates

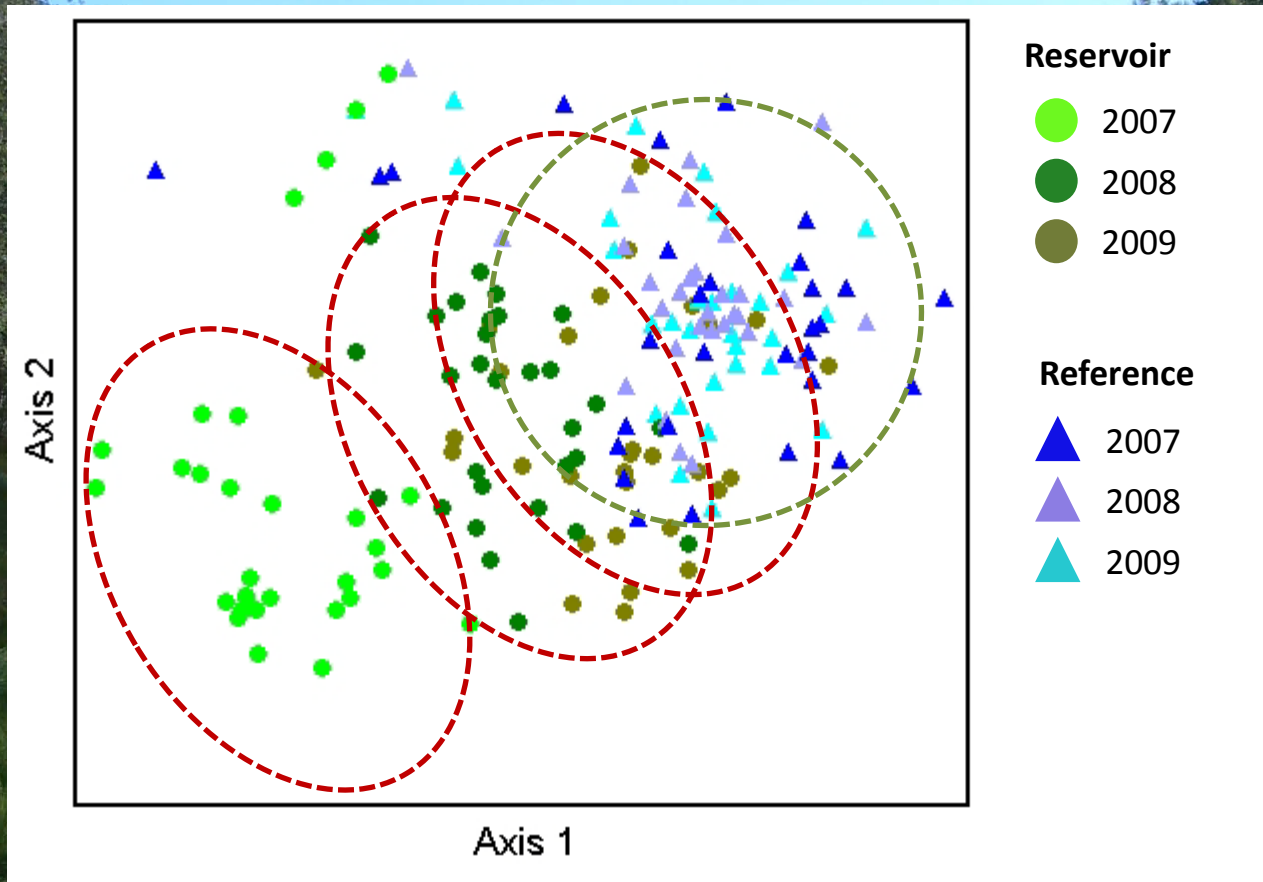
Sampled 2007 (before)
2008 (after)
2011 (after)

Species richness

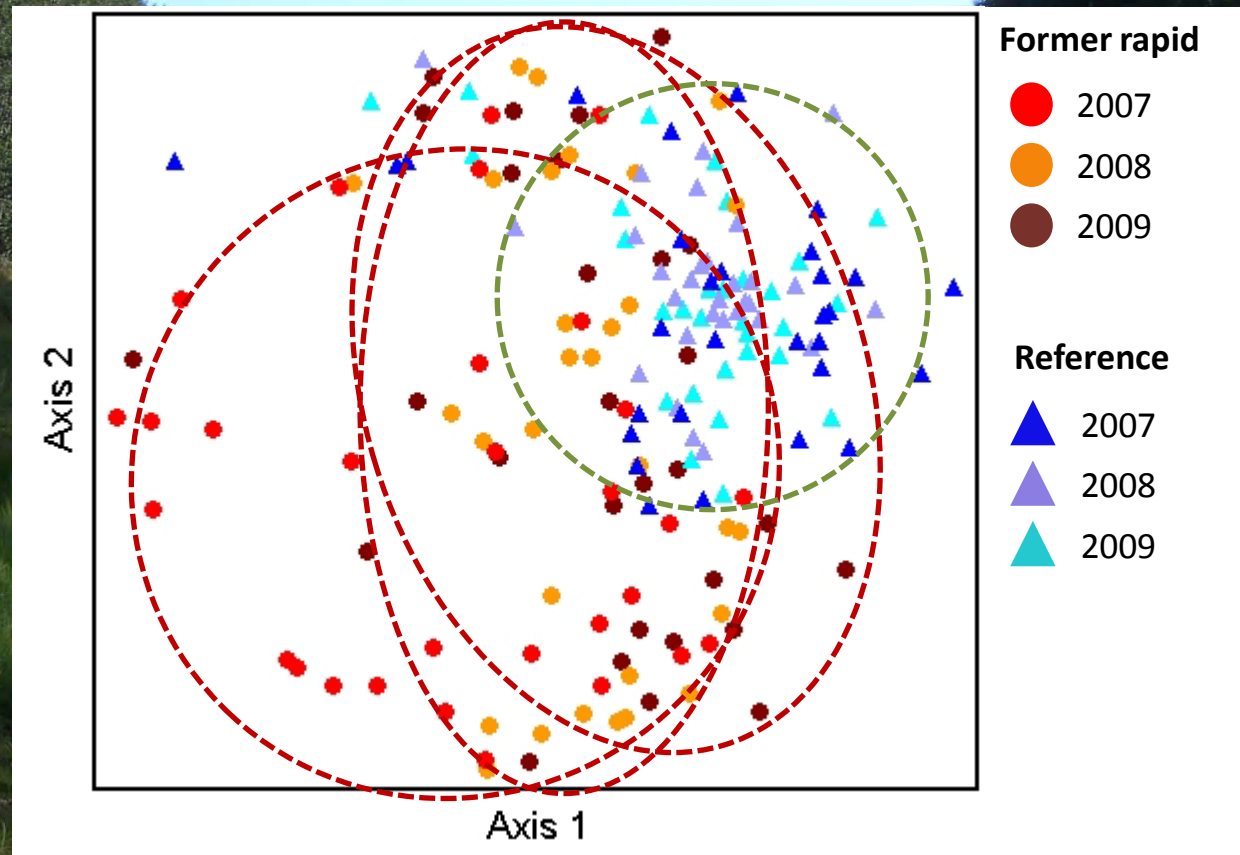
Species richness Nätraån 2007, 2008 and 2009



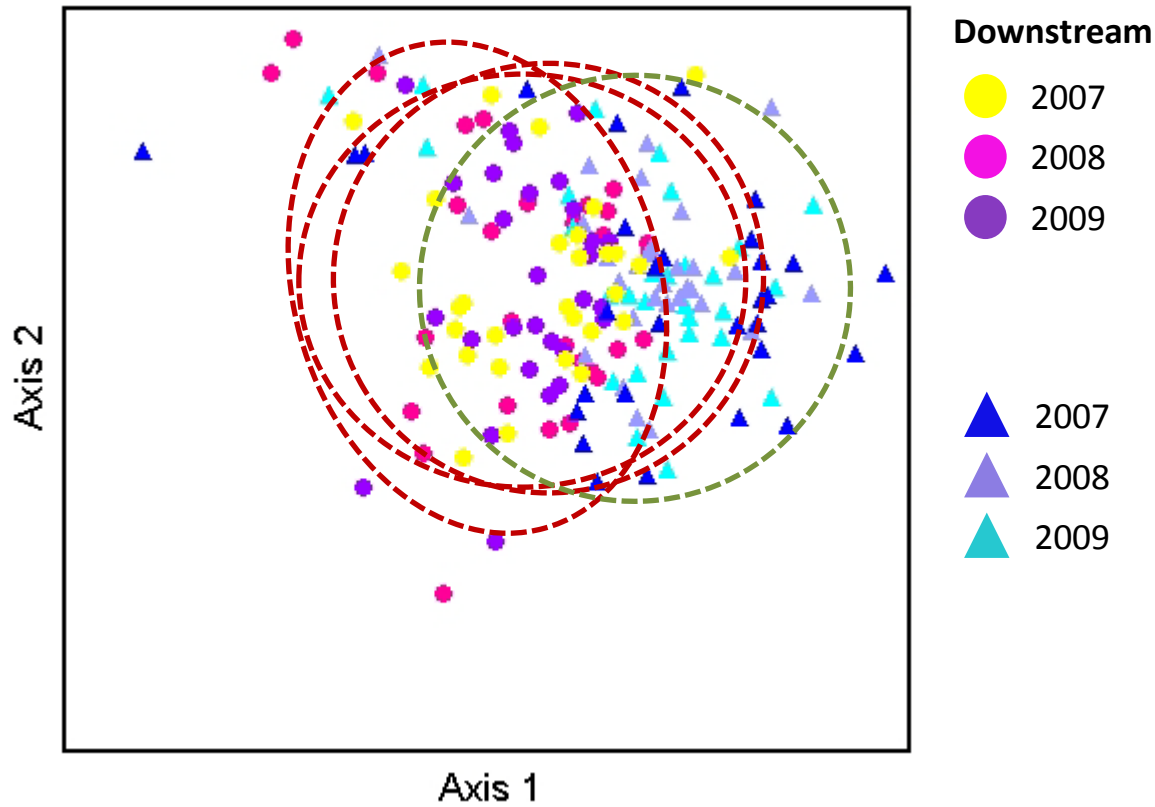
Species composition former reservoir



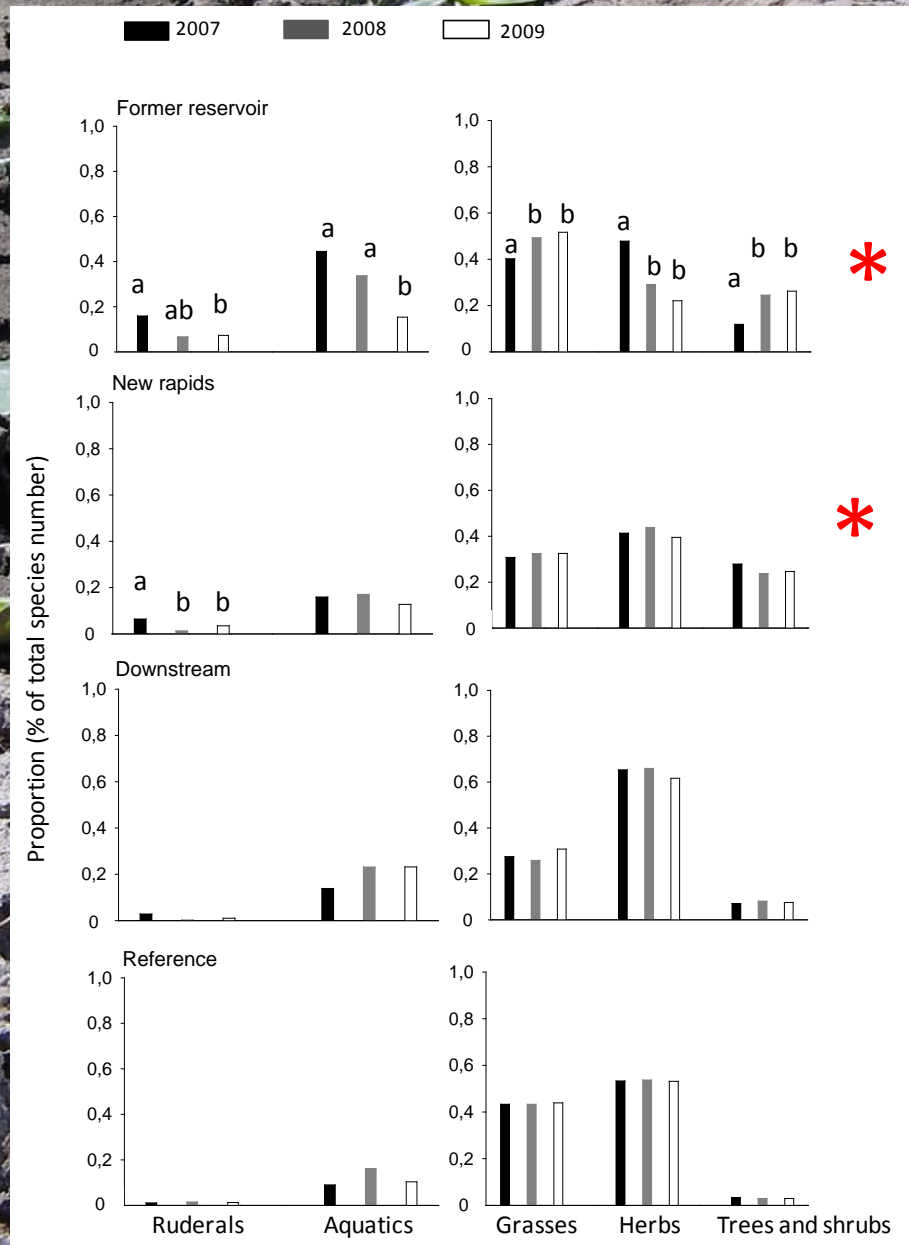
Species composition former rapid



Species composition downstream



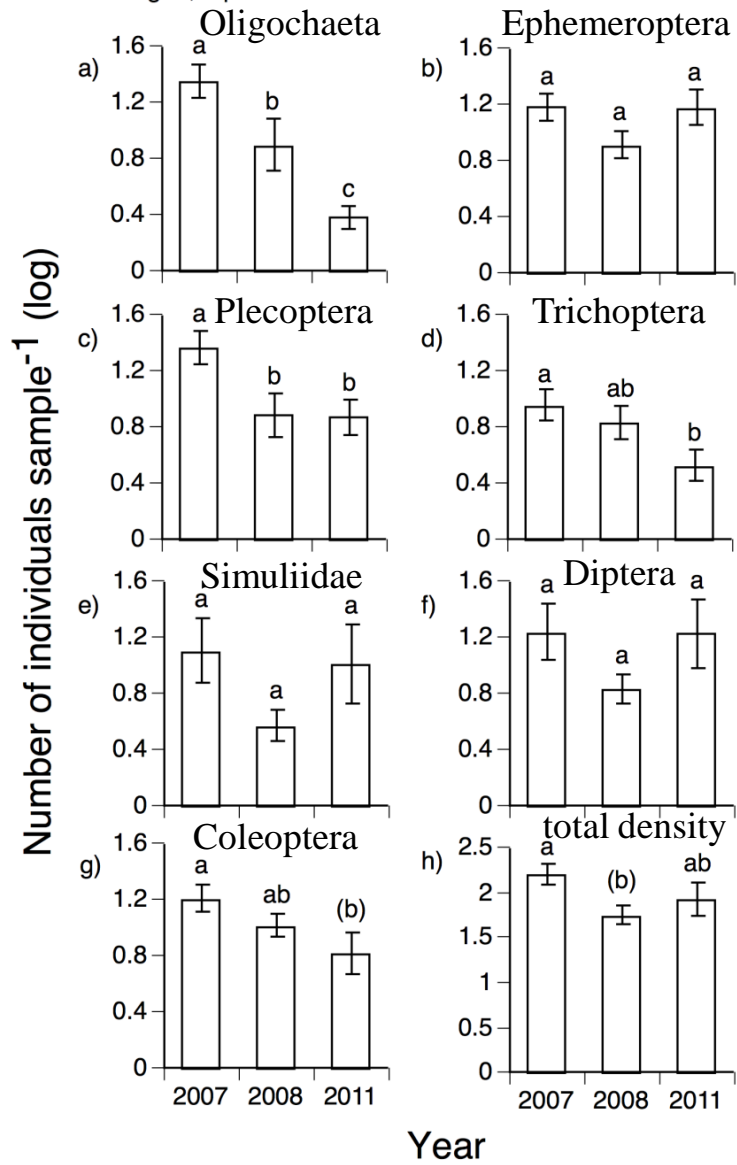
Proportion of functional groups



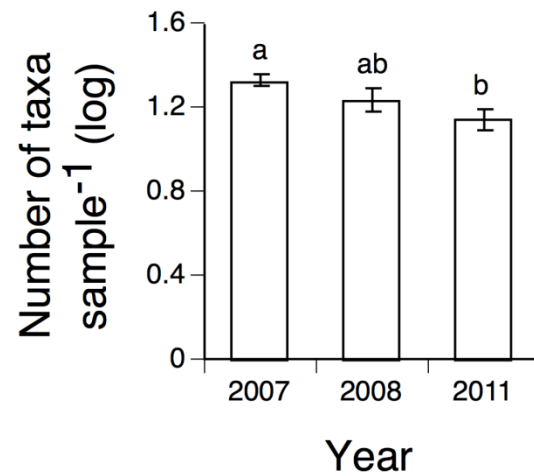
High proportion of trees and shrubs due to a high number of saplings

Taxon richness and density

Renofalt et al. Fig. 2, top.



Renofalt et al. Fig. 3, top.



Sediment deposition

Location	Mean before removal (g m ⁻²)	Mean after removal (g m ⁻²)	<i>p</i>
Reference	1395.5	1286.25	0.663
Downstream	1918.75	8280.5	0.021
Upstream	397.75	283.75	0.809

Dry weight of sediments deposited in the reference, downstream, and upstream (reservoir) stretch, before (2007) and after (2008) dam removal.



•Depends on what type of organism you look at

•Depends on whether you look at down stream effects or effects in the former reservoir



The Kuba reservoir May 2007



The Kuba reservoir late June 2007



The Kuba reservoir September 2007

Thank you!
Questions?