BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS
Faculty of Civil Engineering - Since 1782
DEPARTMENT OF HYDRAULIC AND WATER RESOURCES ENGINEERING

MŰEGYETEM 1782

Methodological development of riverine habitat assessment tools on an interdisciplinary basis

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Future Research Challenges

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River Engineering

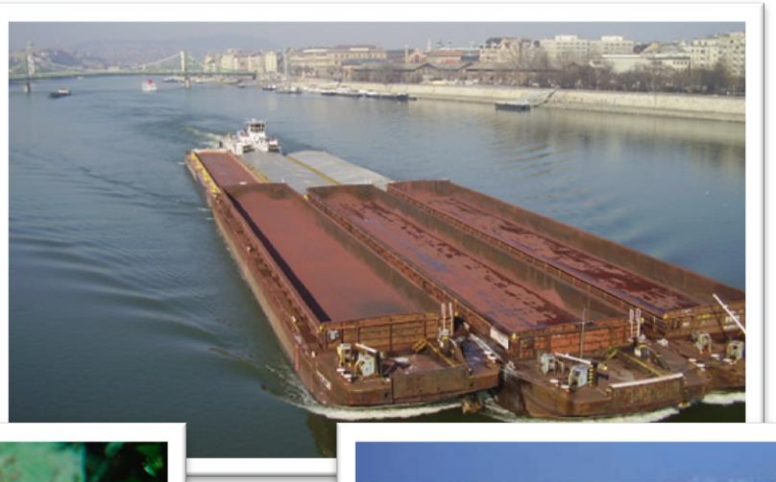
Engineering tasks to optimize the utilization of rivers, e.g.:

- Flood risk management
- Water supply
- Navigation
- Hydropower
- Ecosystem functioning

→ **Society**

→ **Economy**

→ **Environment**



Habitat assessment in rivers

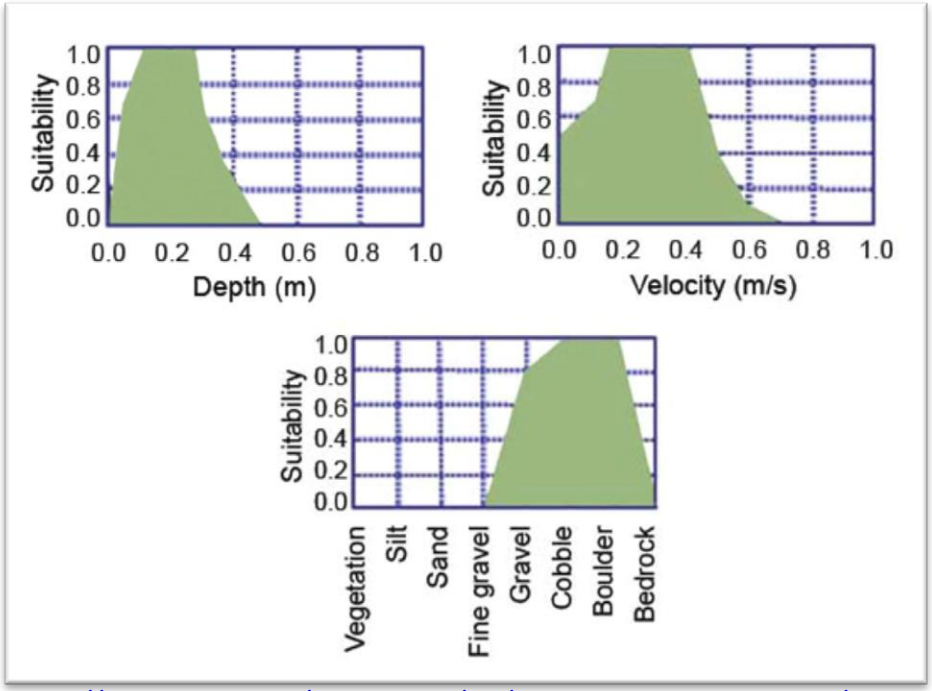
Abiotic parameters vs. behavior of animals

- Flow depth
- Flow velocity
- Sediment characteristics
- Water temperature
- Oxygen
- pH
- Light

Hydromorphological parameters

Habitat suitability index

This is the key!



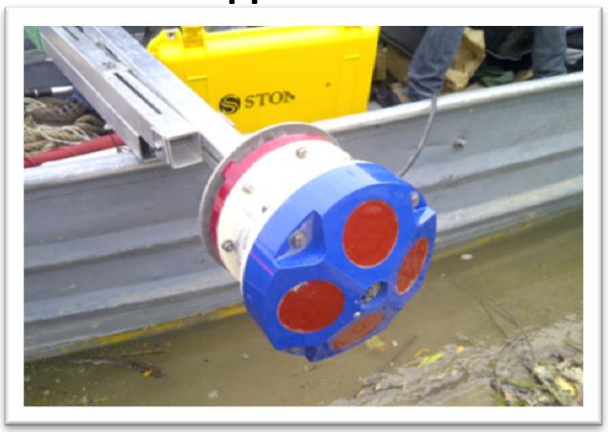
https://www.niwa.co.nz/publications/wa/vol16-no3-september-2008/where-do-fish-want-to-live

Hydromorphological parameters

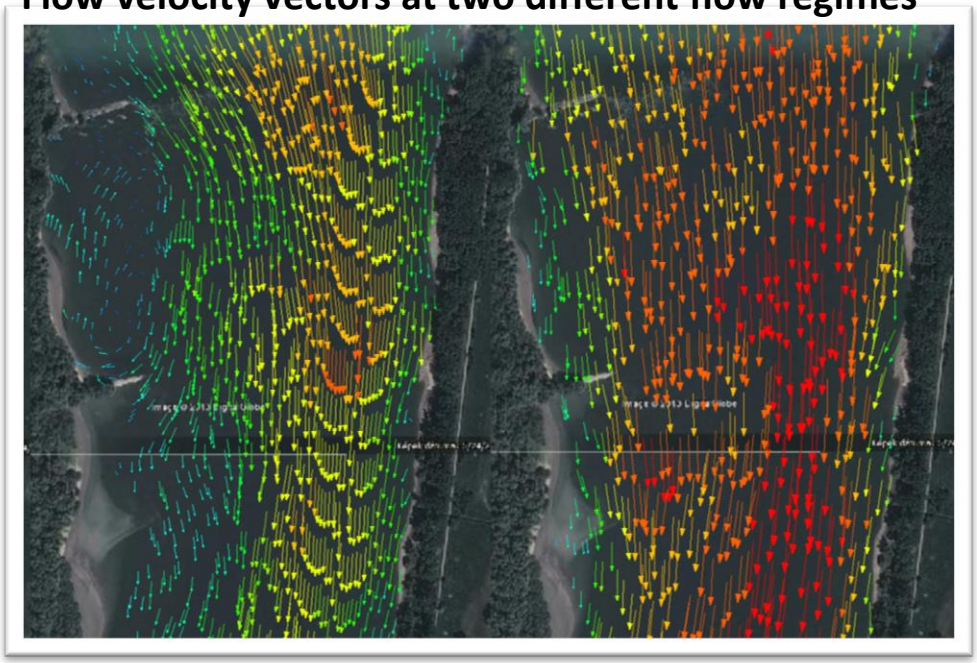
Flow velocity

- Acoustic and video based methods

Acoustic Doppler Current Profiler



Flow velocity vectors at two different flow regimes



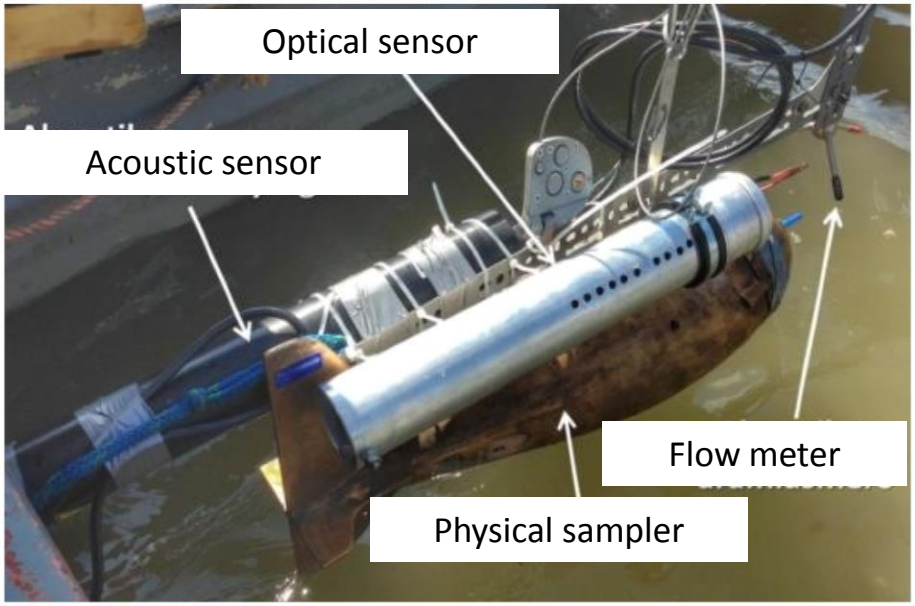
Flow measurement on a Norwegian river

Hydromorphological parameters

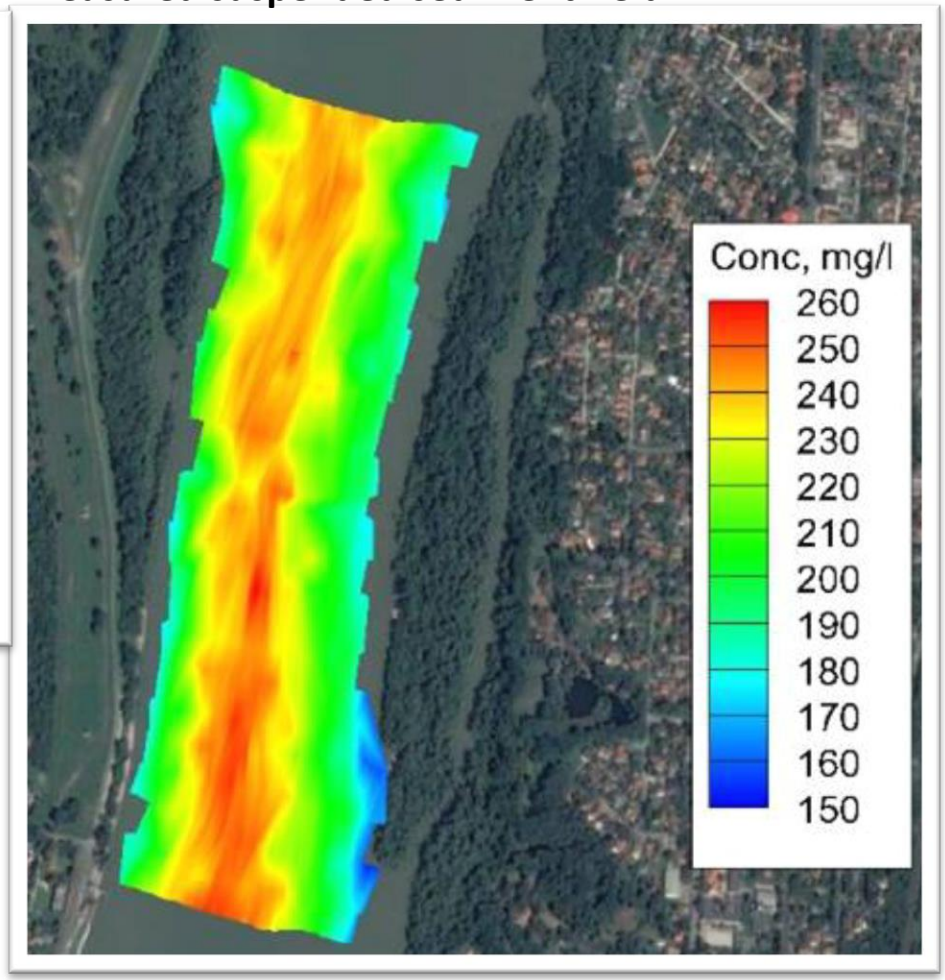
Sediments

- Direct, optical, video based methods

Suspended sediment measurements



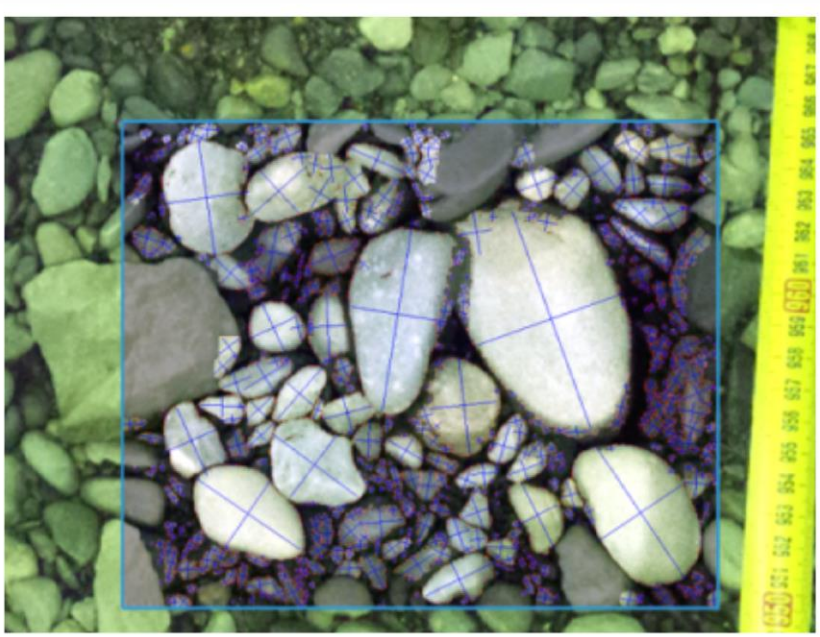
Measured suspended sediment field



Hydromorphological parameters

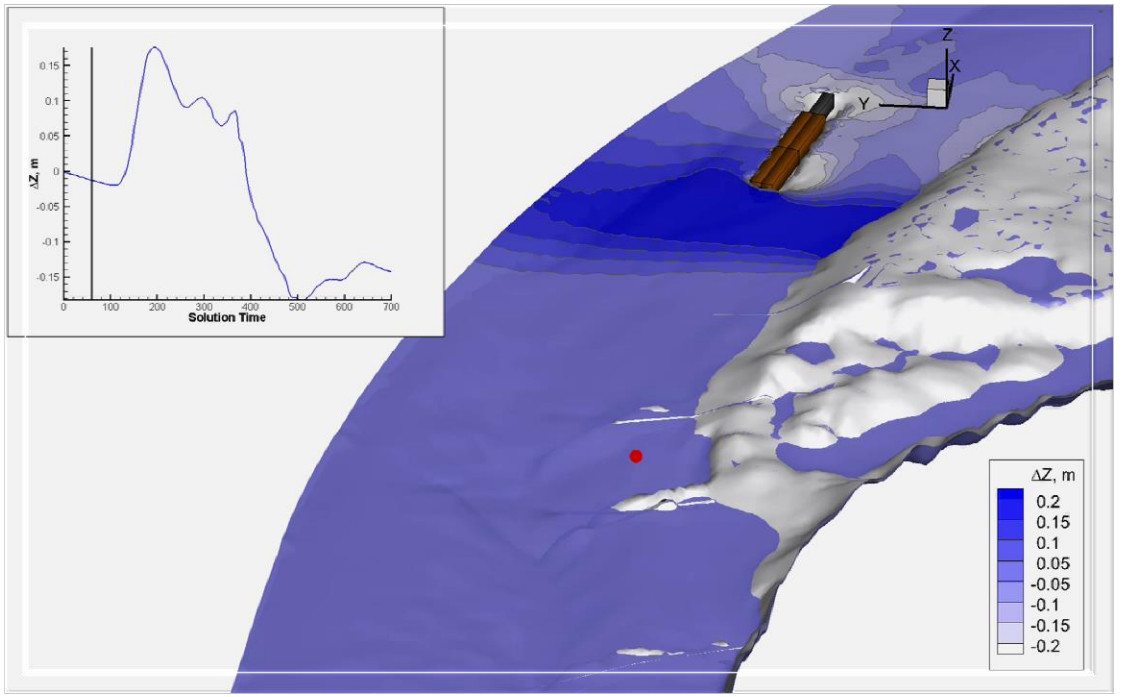
Bed material analysis

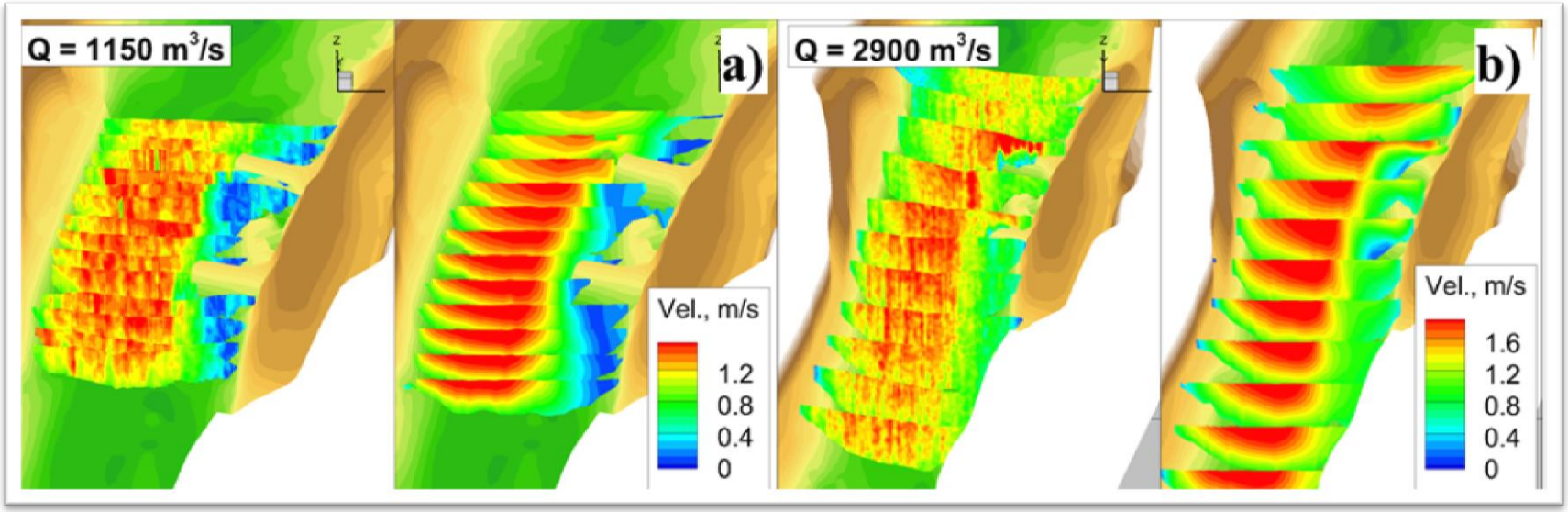
- Direct and image based methods



Hydromorphological parameters

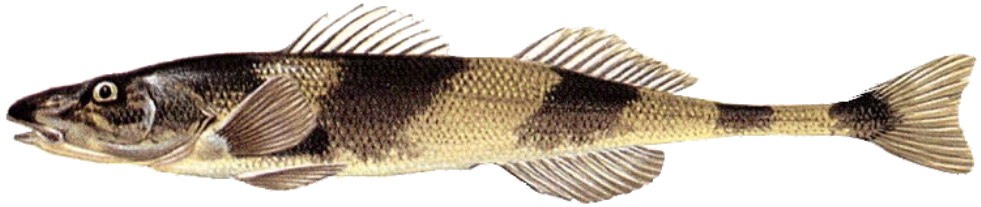
Simulation tools





Habitat assessment

Linking abiotic and biotic parameters



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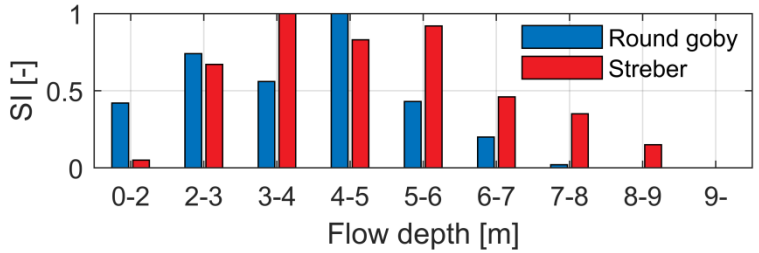
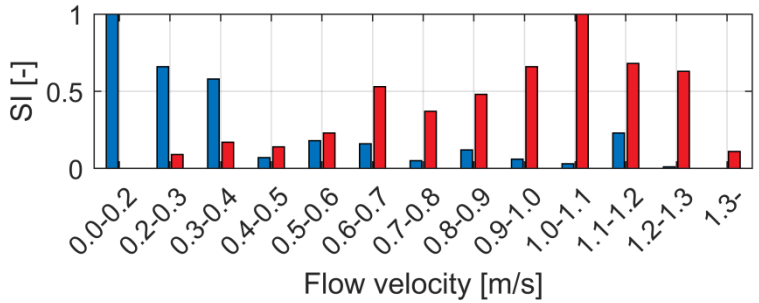
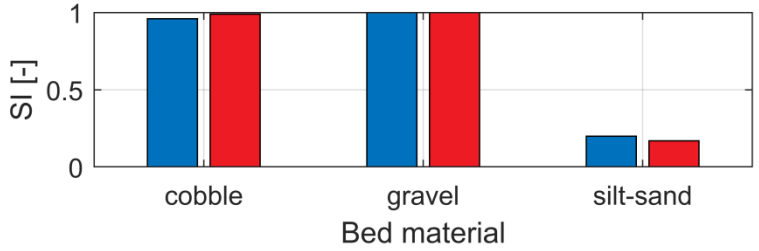
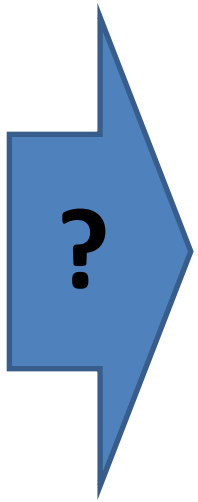
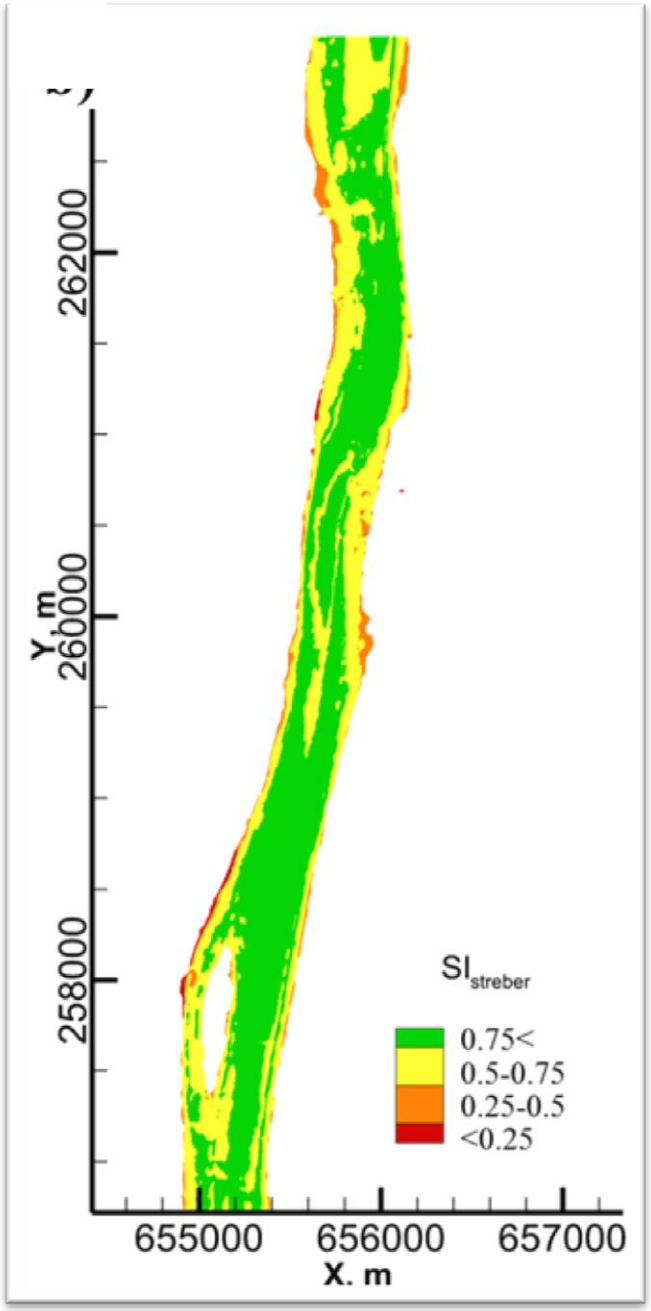








Habitat suitability map



What we have

- State-of-the-art tools for hydromorphological measurements
- Strong scientific background in river engineering research field
- Experience in national and international research projects
- Scientific relationship with NTNU

What we need

- Improved knowledge on the interconnection of abiotic-biotic indicators
- State-of-the-art methods for biological mapping (e.g. fish behavior)
- Joint research actions, e.g. field measurement campaigns
- Experiences in the field of riverine habitat assessment

Joint HU-NO research

- Strong, long-term scientific relationship with NTNU
- Recent, successfully implemented projects within EEA Grants Programme:
  - EEA Grants 2009-2014 HU08-0012-M4 Scholarship Program: Elaboration of MSc hydromorphology field course for hydraulic engineer and geophysicist students (EEA_HydroCourse) http://www.hydrocourse.bme.hu/
  - EEA Grants 2009-2014 HU08-0012-M2 Scholarship Program: Mobility Projects in Higher Education Action

Thank you for your attention!

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