



Short introduction



Seppo Hellsten
Finnish Environment Institute SYKE
Freshwater Centre
Restoration and assessment

Background

- PhD in plant ecology

ENVIRONMENTAL FACTORS AND AQUATIC MACROPHYTES IN THE LITTORAL ZONE OF REGULATED LAKES

Causes, consequences and possibilities to alleviate harmful effects

**SEPPO
HELLSTEN**

Finnish Environment Institute, Hydrology
and Water Management Division, Water
Engineering and Ecotechnology Research
Group, Oulu, and Department of Biology,
University of Oulu

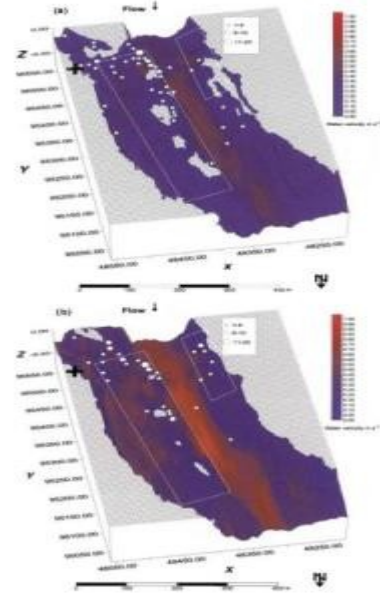
- Currently heading unit of Restoration and assessment (15-20 researchers) in Freshwater Centre of SYKE
- Biowater – Centre of excellence in Nordic countries
- Freshabit – largest LIFE IP project in Finland
- What I can do for WP2?

***Subgroup 2: Identifying management practices
and tools used to reduce degradation of
riparian vegetation.***



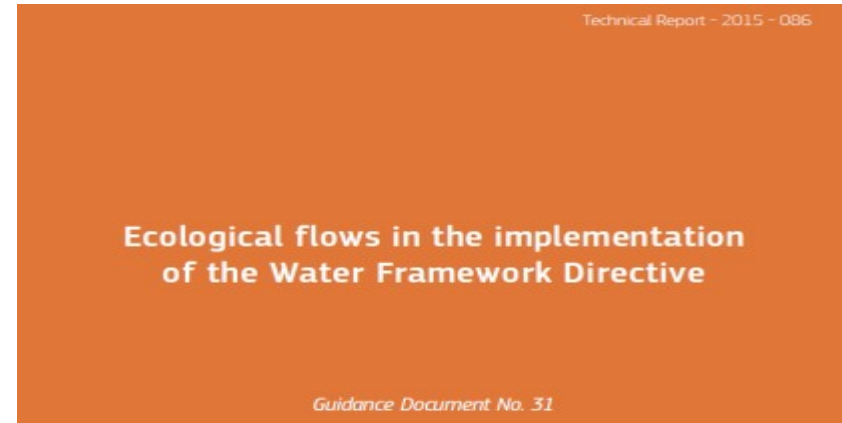
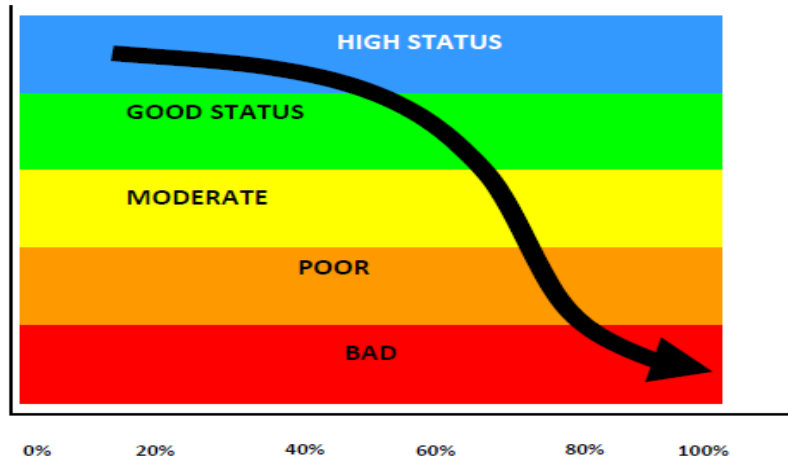
Environmental flow concept

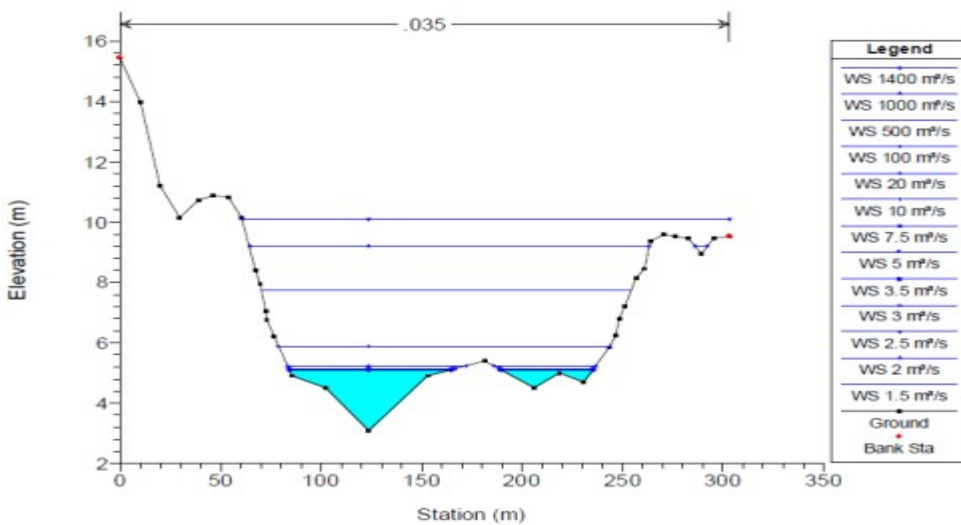
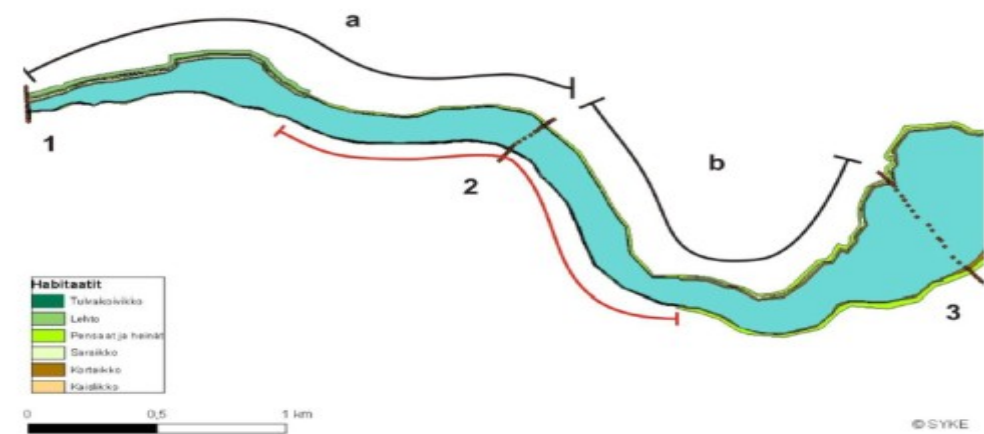
- The river flow can be altered by using dams and weirs to regulate the natural rhythm of flow
- The organisms living in rivers and riparian areas have adapted to natural dynamics of river
- Even small changes in natural flow can significantly undermine the river ecosystem due to sensitive balance between biota and environmental conditions in the river
- The basic idea of the environmental flow is to maintain the quantity, quality and duration of the flow sufficient to maintain the river and riparian ecosystem in a good state
- Environmental flow methods are used to protect vulnerable fish species, riparian vegetation, water quality and groundwater



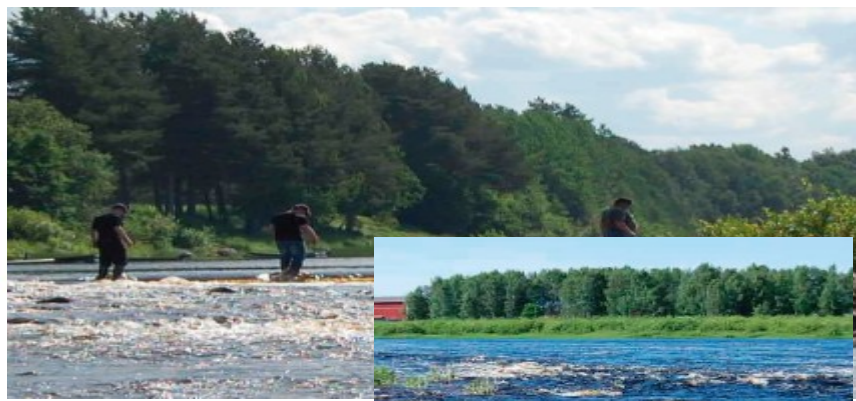
EU, WFD and Ecological flow

- Based on a Blueprint to Safeguard Europe's Water Resources
- Guidance published in 2015
 - Ecological flows are defined as “a flow regime consistent with the achievement of the environmental objectives of the WFD”
 - Practical examples how to apply





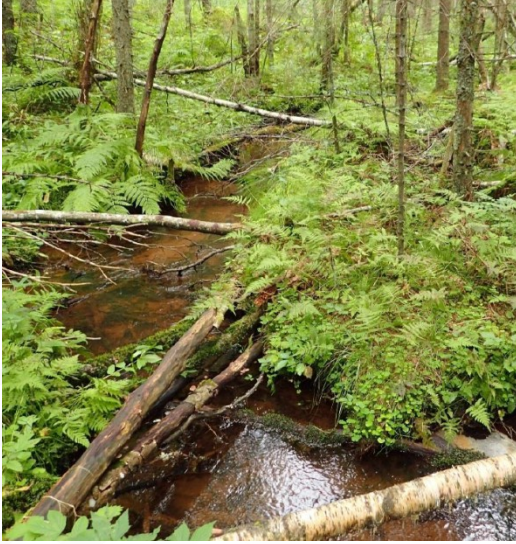
Kuva 26. Poikkileikkauksen 2 vedenkorkeudet virtaamaan kasvaessa $1,5 \text{ m}^3 \text{ s}^{-1}$:sta $1400 \text{ m}^3 \text{ s}^{-1}$:n. Sinisellä maalattu alue kuvastaa tilannetta $1,5 \text{ m}^3 \text{ s}^{-1}$ virtaamalla. Kuva: HEC-RAS-malliin tuloste.



Subgroup 3: Social responses to riparian vegetation degradation.



Legislation framework – Watercourse protection zones in Finland



- Increasing bioeconomical use of forest biomass
 - Increase of clear cutting
 - Increase of peat land forestry

Survey of water protection zones in forested areas

- WANBAF project test area in N-Finland
 - Legal minimum width 2 meters (all big trees removed)
 - PEFC certificate 5-10 meters
 - Swedish approach (6 meters with trees, 5 meters without removal of three stumps etc.)
 - Natur based clear cutting (18 meters with trees, 5 meters without removal of three stumps etc.)
 - Private forest (Tapio) (13 meters with trees, 5 meters only some trees removed)
 - Finnish FSC (15 meters with trees, 2-3 meters without removal of three stumps etc.)



Survey of European legislation

- Riparian vegetation as a part of directives
 - WFD Connectivity, environmental flow
 - Floods directive, nature based solutions
 - Natura 2000 directive, protected areas.