

Natural fluvial processes as a tool of river restoration example of Polish Surface Waters Restoration Programme




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THE NATIONAL PROGRAMME OF SURFACE WATER RESTORATION

2020

NATURAL SELF-REGENERATION

ASSISTED REGENERATION

RECONSTRUCTION OF THE ECOSYSTEM

Ability to self-regeneration

Spontaneous ecosystem regeneration as a consequence of natural ecological processes

Near-natural status of the ecosystem

Migration as the only facilitator of self-regenerating biodiversity

Indirect restoration

Removal of drivers of degradation

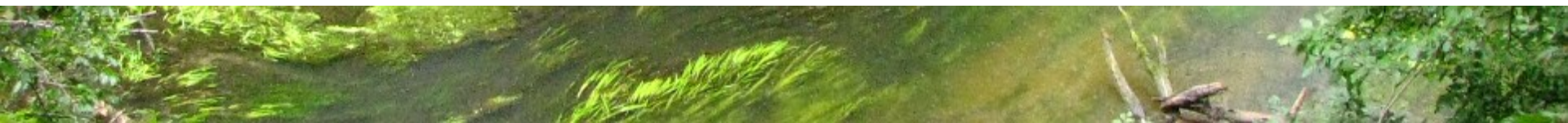
Indispensable ingerention into the ecosystem, e.g., for restoration of specific flow regime and riverbed topography.

Vast degradation of the ecosystem

Removal of ecosystem malfunctions, large-scale actions, stakeholder involvement

Reintroduction of species

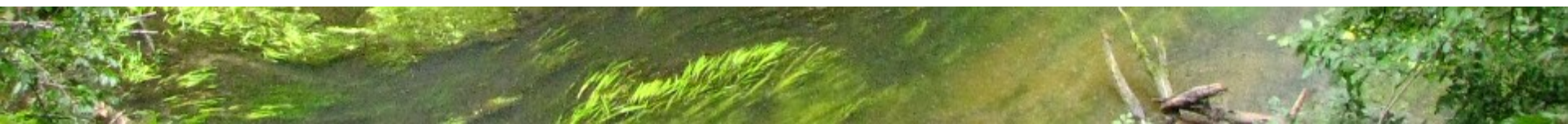
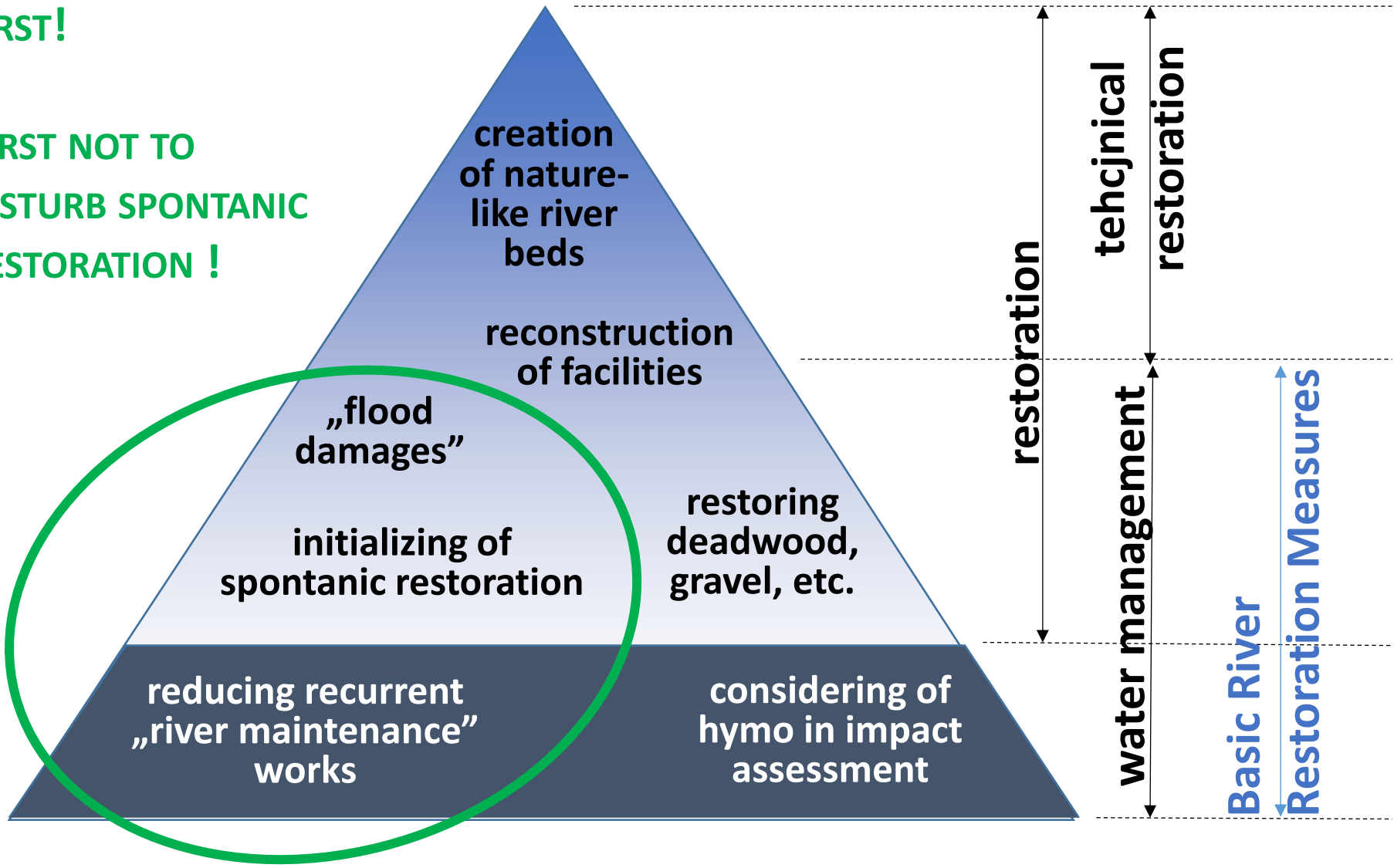
Degree of ecosystem degradation



NATURAL PROCESSES

FIRST!

**FIRST NOT TO
DISTURB SPONTANIC
RESTORATION !**



Leaving for natural processes – can be a restoration measure

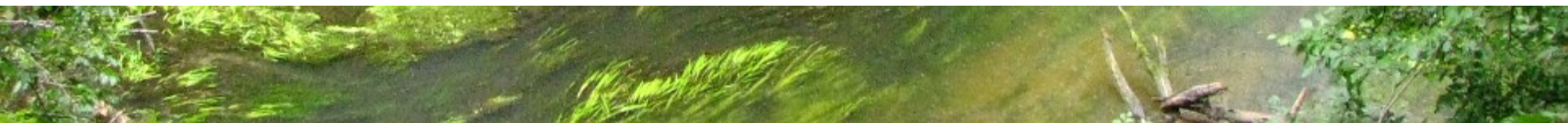


Brdà in nature reserve Przytoń

Natural hydro processes would usually lead to spontaneous restoration, but the process speed may be various...



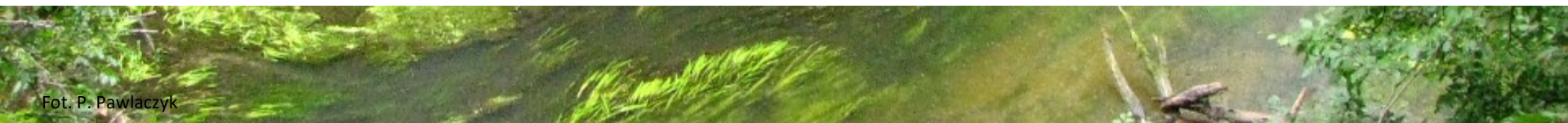
Stobber river, Brandenburg



Spontanic development of riparian zone...



Development of natural vegetation on river banks create efficient biogeochemical barrier preventing excessive input of sediments and nutrients



Accepting erosive undercuts

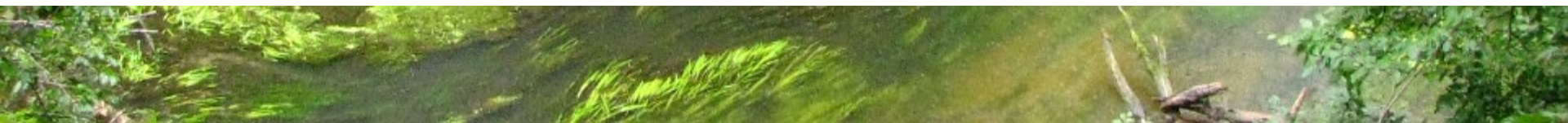
San. Phot. T. Folta



Korytnica river.



Biodiversity hotspots
Hydromorphological diversity
Source of sediments





wikimedia Commons, MSha

„Flood damages” = spontanik river restoration

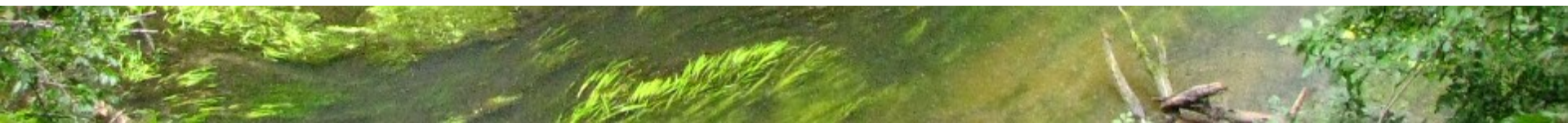
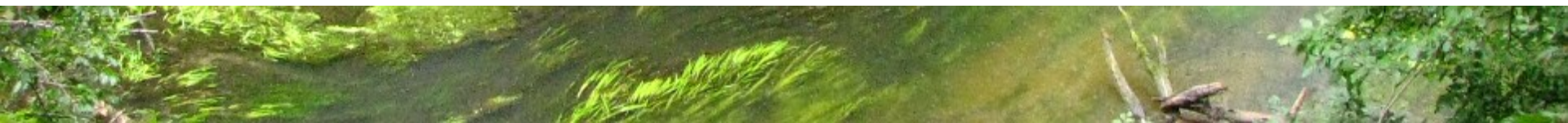


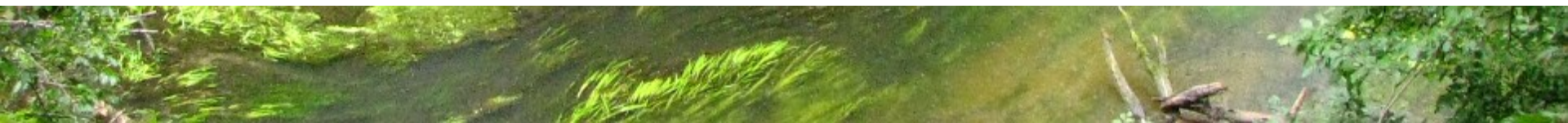
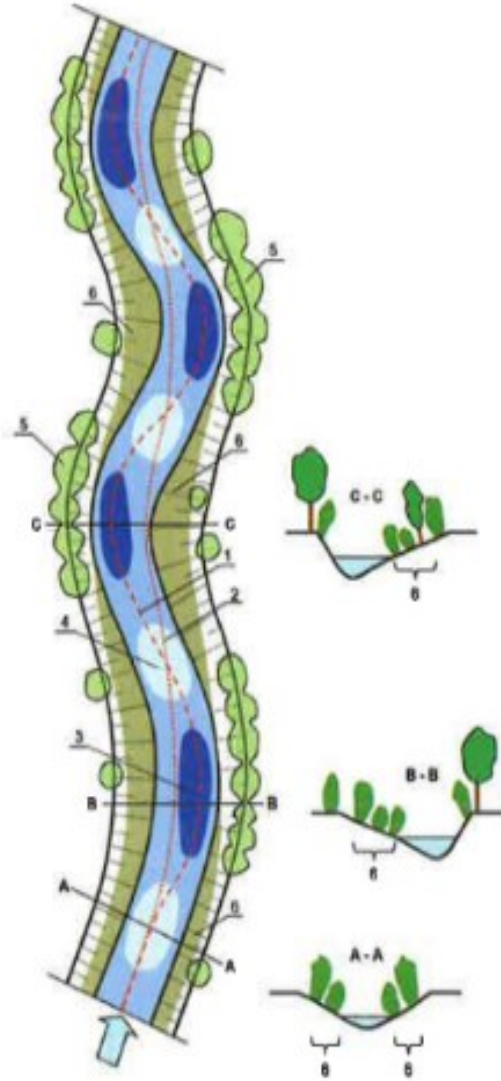


Photo: Ewa Leś

Woody debris dynamic => impact on hydromorphology & biodiversity

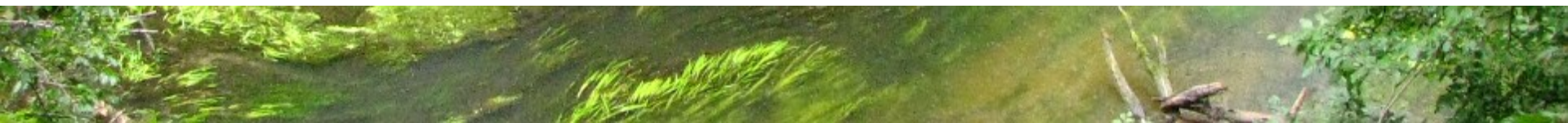


Sediments accumulation



Example: Drawa & Płociczna Rivers in Drawa National Park:

- North-western Poland
- medium-size rivers: 21,5 m³/s and 4,5 m³/s respectively
- Forested, outwarsh-plain sandy Landscape
- Ca 50 years under nature protection = **mostly non-intervention approach, no „river maintenance works”**



Not primeval...



History: used as rivers used usually (local river regulation, waterway, timber rafting, water abstraction for meadows irrigation)

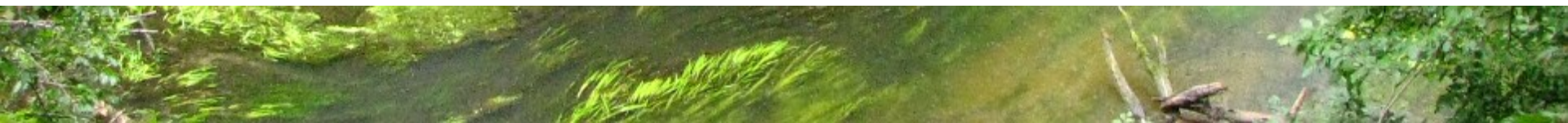


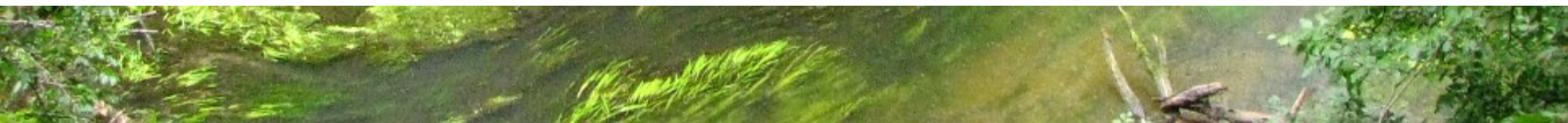
Photo: Ewa Leś



**High/good status of
hydromorphology**



**Natural flood regime,
alluvial alder forests**



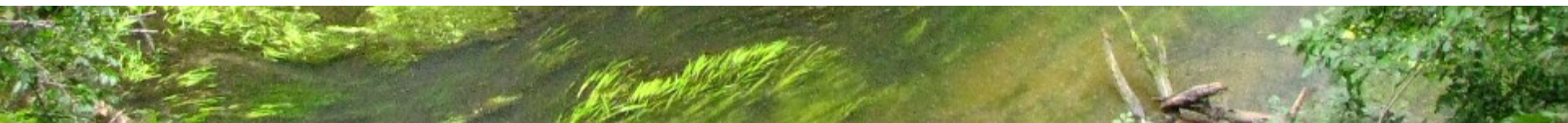
Natural wody debris resources and dynamic

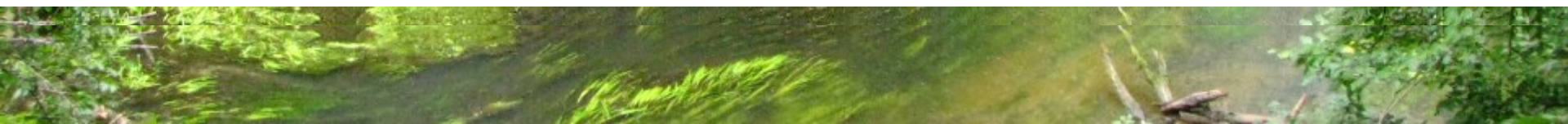
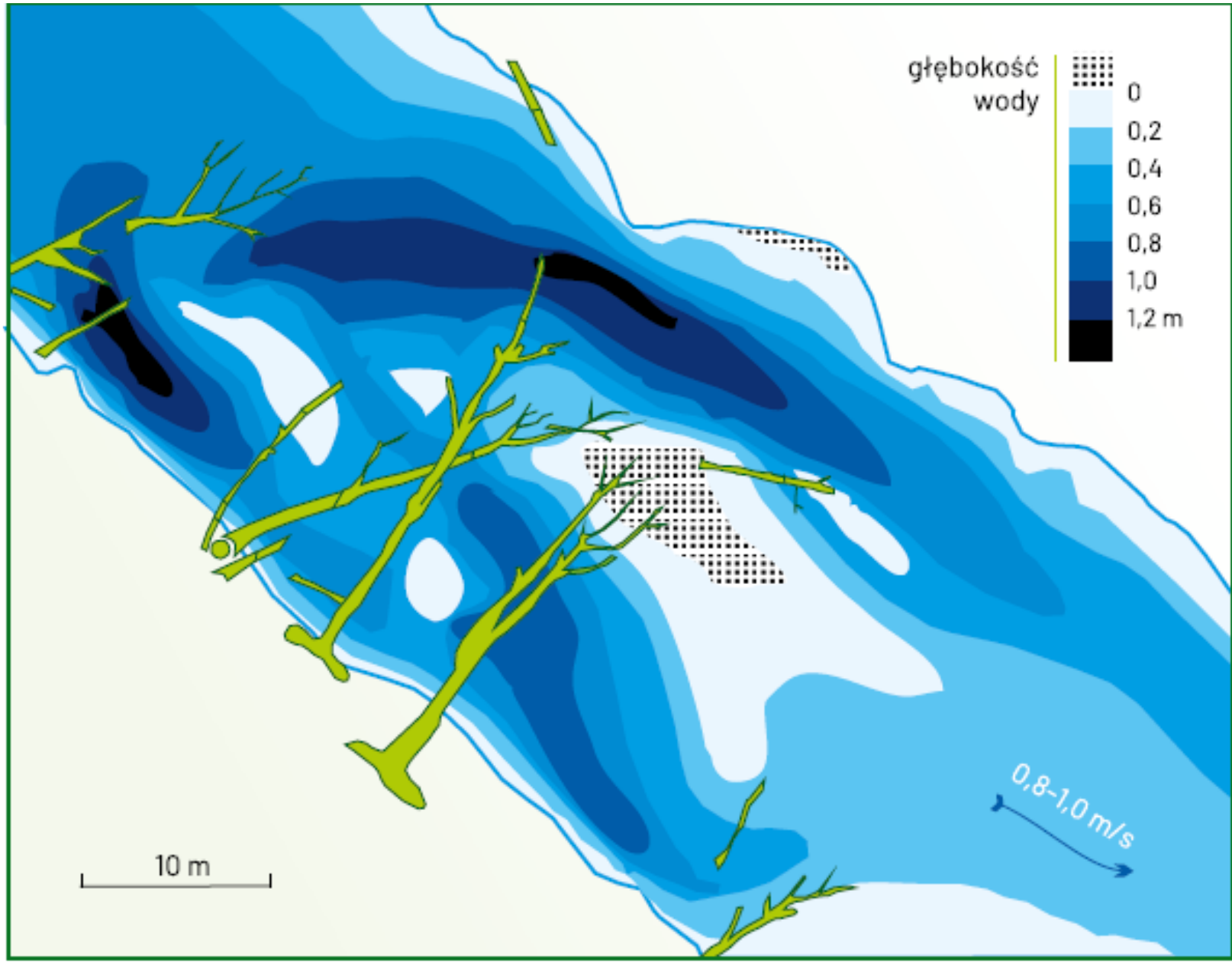


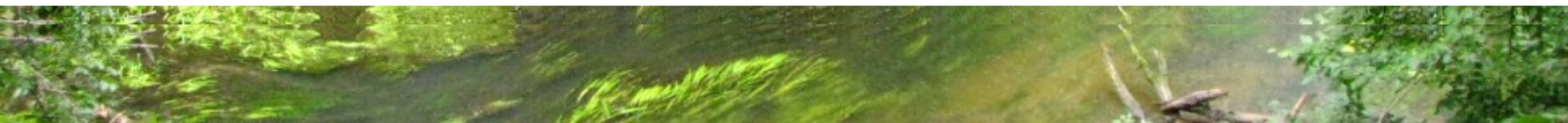
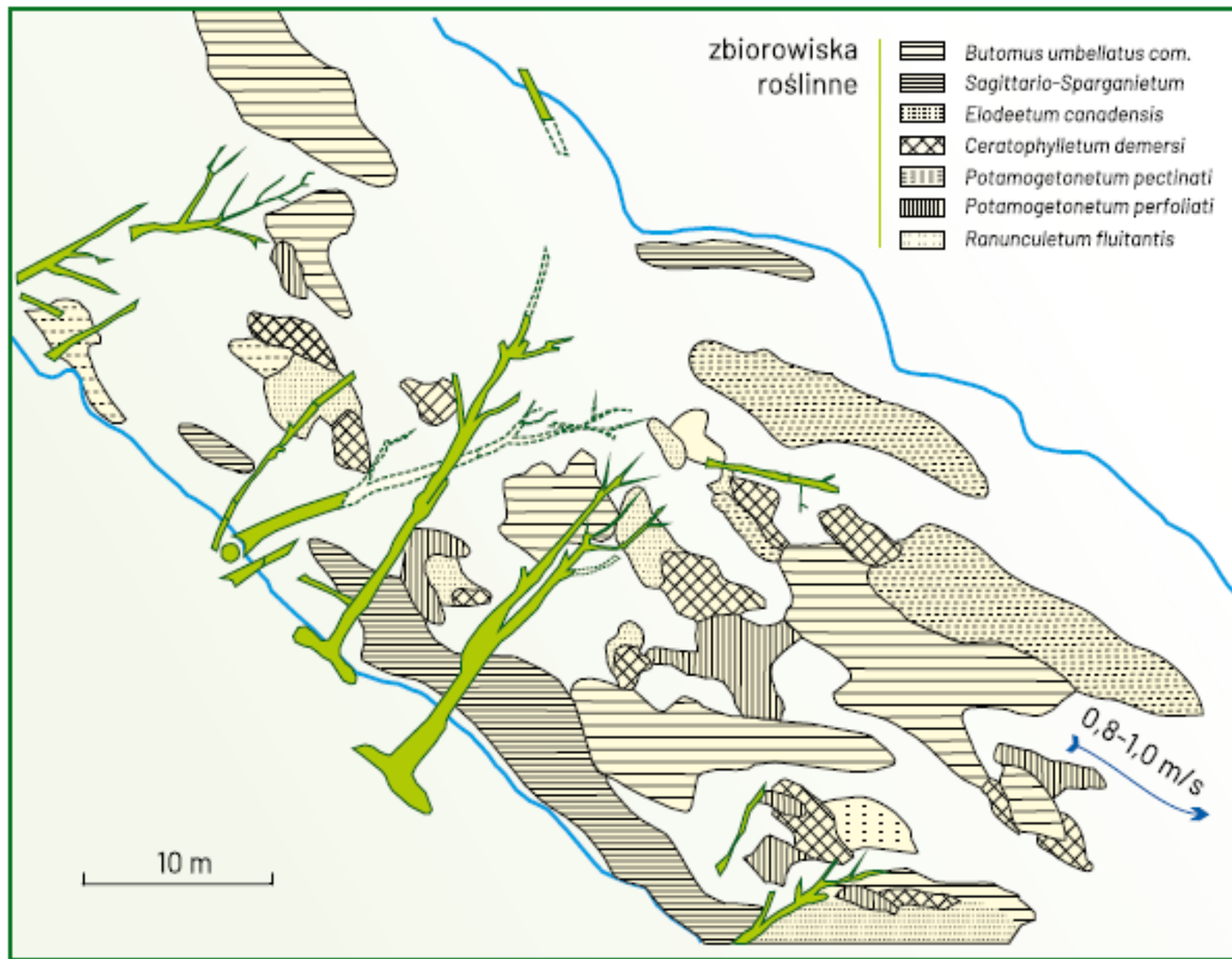
Photo: Ewa Leś

Drawa: 23 - 267 logs/km = 18 - 312 m³/km

Płociczna: 3 - 240 logs/km = 1.5 - 220 m³/km

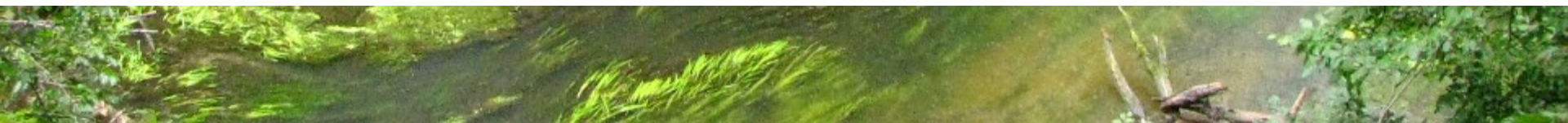






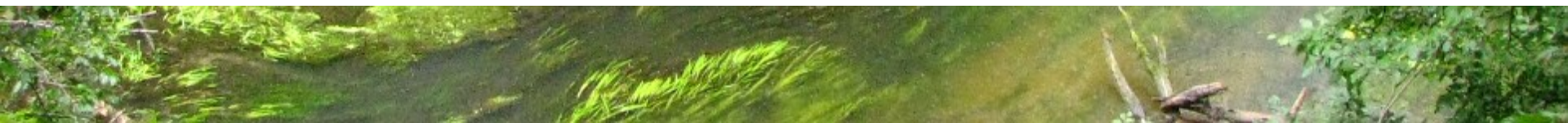
But, what cannot be achieved this way?

- Usually cannot restore removed gravel sediments
- Usually cannot restore artificial barriers and other technical alterations (as dams, embankments)
- Do not act well in low-energy rivers
- Do not act well in strongly degraded rivers



THE NATIONAL PROGRAMME OF SURFACE WATER RESTORATION

- 91% of Polish river water bodies need some hydromorphological improvements
- For at least 21% of them, it may be achieved by allowing natural processes !
- For ca next 31% of them, allowing natural processes would be good starting point for 2021-2017 period, likely to produce significant progres towards GES



TAKE HOME MESSAGE:

Well-planned river restoration is rather not artificial river-shaping in more natural way, but initializing fluvial processes which will restore and maintain better fluvial morphology of the river bed

In many cases, spontaneous fluvial processes, even in altered river, may bring significant progress towards restoration

Thank you for your attention

