

Introduction

Session 4

Water uses and environmental flows

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European Centre for River Restoration ECRR

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European River Restoration Conference

Featuring the IRF Riverprize

Celebrating Successes and Addressing Challenges

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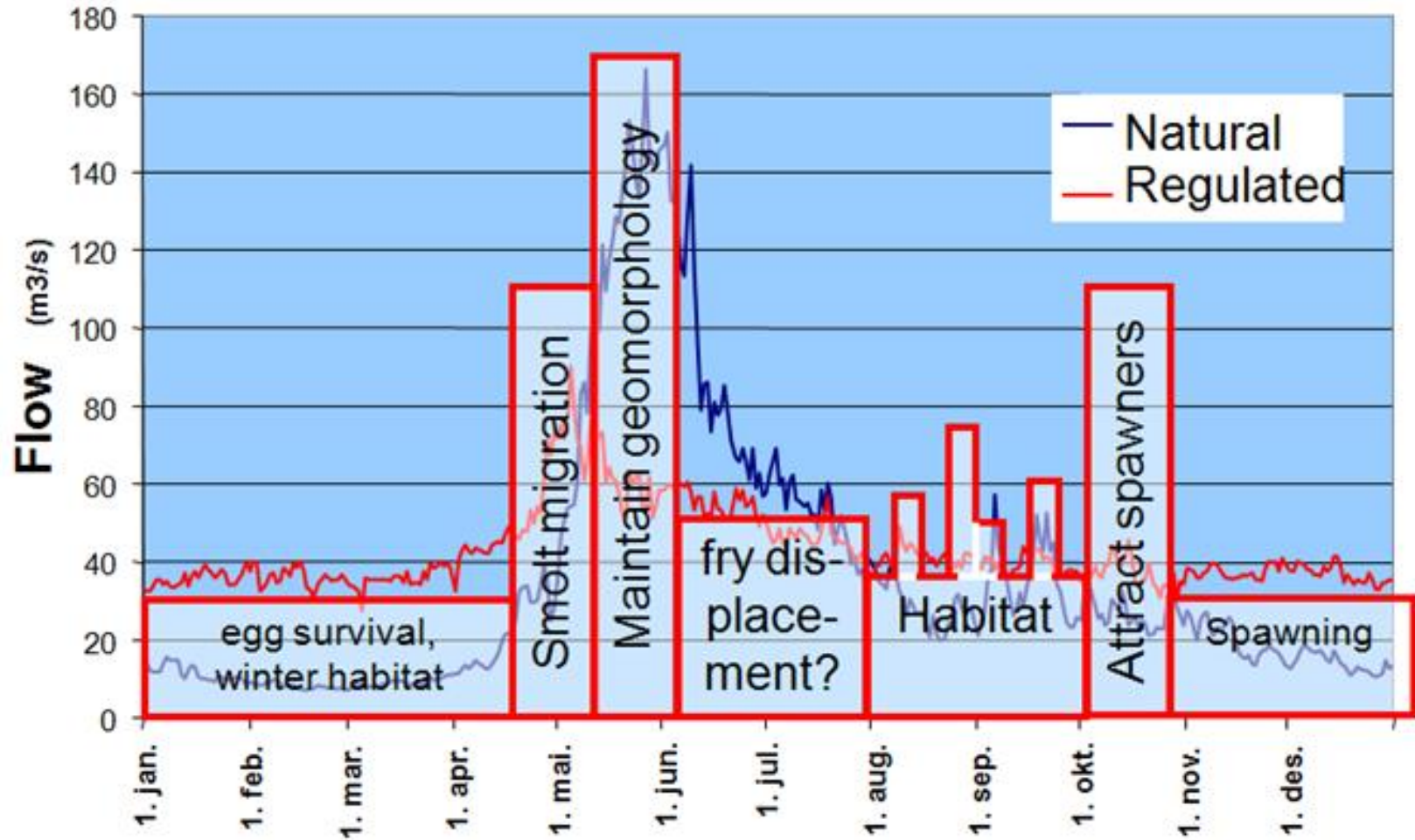


The RESTORE partnership is made possible with the contribution of the LIFE+ financial instrument of the European Community.

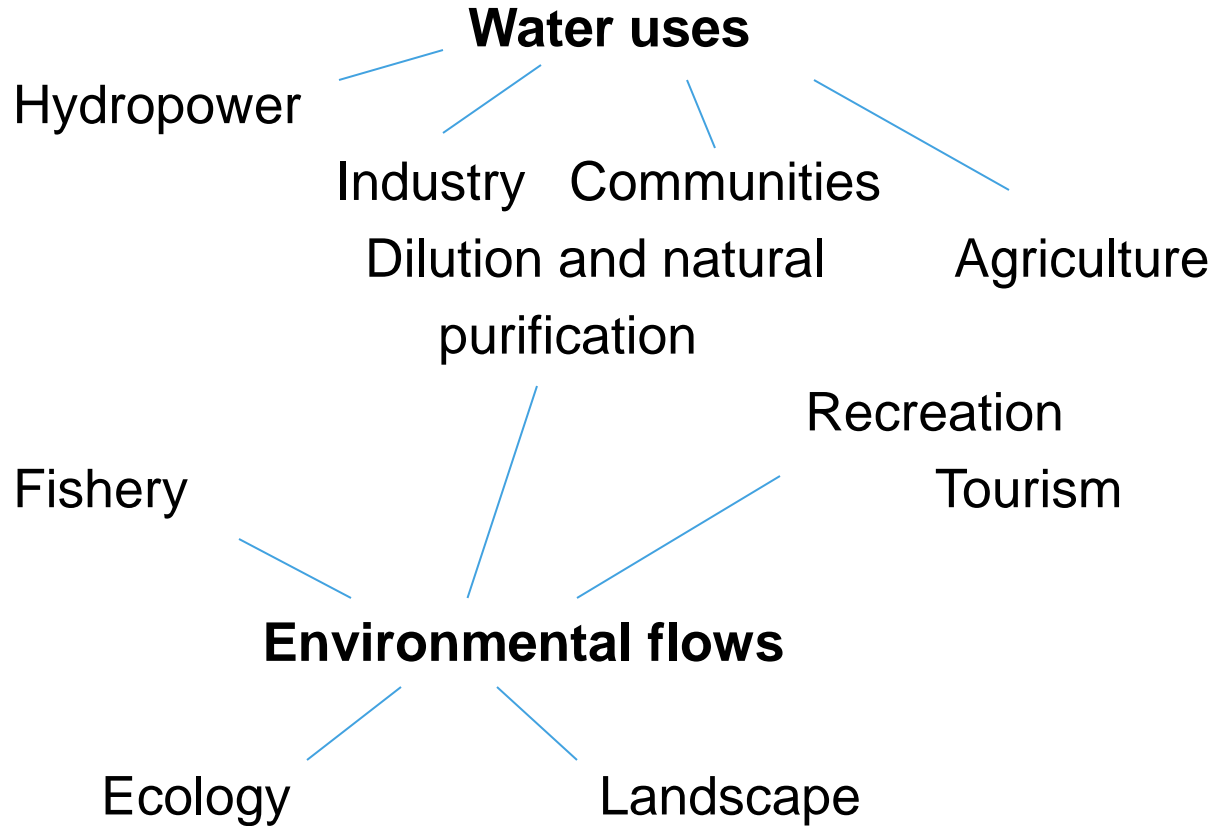
Background from the RESTORE project

- Open issues in determining environmental flows
- What is the role of environmental flows connected with other restoration measures in modified rivers?
- Good examples in Europe
- How can the use of environmental flows be promoted?

How to determine suitable flows to biota and sediments seasonally?



Water related ecosystem services



Linkages between restoration and discharges

Impact

- Loss of connectivity
 - fish, good/weak swimmers
 - Invertebrates, mammals
- Loss of reproduction habitats
 - damming rapids to stagnant condition
 - dredged and filled channels
- Discharge patterns
 - regulation
 - dry old channels
 - fish pass and bypass flow summer/winter

Mitigation or compensation

- Removing barriers
- Fish passes
- Nature-like bypass channels
- Constructing new compensative side channels
 - spawning channels
 - rearing channels
 - restoration of dredged rapids

Environmental flows

- Minimum flows in hydropower permits
- Requirements for migration and juvenile habitats
- Sediment balance

Isar, Mühlthal and Munich, Germany

- Restoration of floodplain, allowing natural development
- Minimum flow was increased from 5 to 15 m³/s but big floods affect more to the morphological processes
- Bypass with fluctuating discharges, natural modifications



Ruppoldingen, Aare, Switzerland

- Bypass channel 1, 2 km, 2-5 m³/s, connected with a fish pass
- Has the most demanding ecolable Naturemade Star



Rupperswil, Aare, Switzerland

- Discharges in the bypass channel follow the discharges in Aare river between 2 and 4 m³/s



Rheinfelden, Rhine, Germany/Switzerland

- Constructed spawning channel 10 m³/s, flushing with 25 m³/s
- Discharge for landscape, river rapid 10 m³/s
- Opening March 2012
- First salmon May 2012
- Largest facility in Europe

Badische  Zeitung

Sensation: Lachs wandert bis nach Rheinfelden



How to promote decisions about environmental flows?

- Monitoring and assessing existing environmental impacts
- Making conflict solving scenarios
- Making programs of measures
- Presenting convincing cases about usefulness

Possible approaches for permits and contracts for defining environmental flows

- Minimum flow requirements in permitting – difficulties in renewal of permits?
- Voluntary agreements and contracts - PR for companies
- Eco-labelling: for consumers who are willing to pay more for environmental measures and flow
- Trading: loss of energy is payed by a municipality, fish authority or others who gain advantage of environmental flow
 - not feasible as a general solution

Have an inspiring session!