

Session: A1



Implementing European Biodiversity Targets and EU policies for free-flowing rivers

Moderator: Claire Baffert



Is my river free-flowing?

Towards a common European method showing the benefits of barrier removal for river connectivity

Wouter van de Bund

European Commission Joint Research Centre

Biodiversity strategy for 2030 targets for freshwater ecosystems

- Increased efforts to **restore freshwater ecosystems and the natural functions of rivers** – WFD objectives to be met by 2027
- **Restore at least 25,000km free flowing rivers**
 - Removal of primarily obsolete barriers
 - Restoration of floodplains and wetlands

Guidance document on
barrier removal (2021)





Biodiversity Strategy 2030
Barrier Removal for River Restoration

Environment



An Straitéis Bhitheagsúlachta 2030
Bacainní a Bhaint chun Aibhneacha a Athchóiriú



Vuoteen 2030 ulottuva biodiversiteettistrategia
Esteiden poistaminen jokien ennallistamiseksi



Stratégie en faveur de la biodiversité à l'horizon 2030
Élimination des obstacles pour la restauration des cours d'eau

Published 2021 - Available in all EU languages

Four dimensions of connectivity

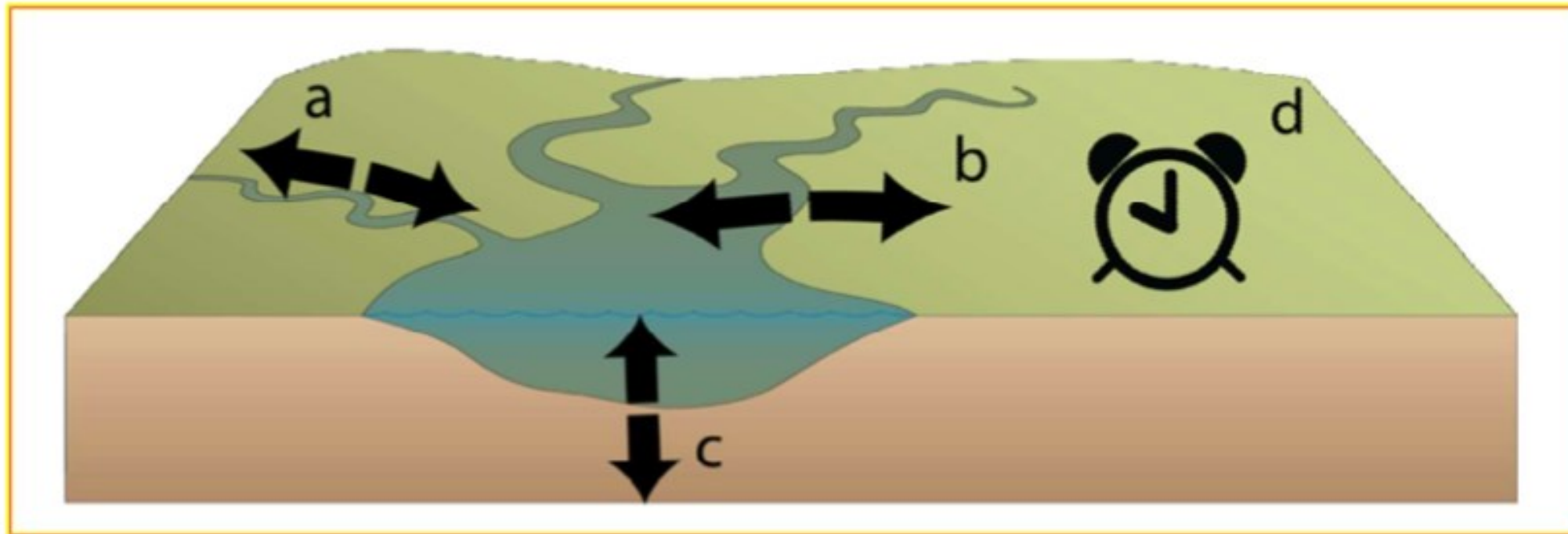


Figure 1 Four dimensions of connectivity within lotic ecosystems (after Ward 1989): a) longitudinal connectivity (channel \leftrightarrow channel); b) lateral connectivity (channel \leftrightarrow floodplain); c) vertical connectivity (channel \leftrightarrow groundwater); and d) temporal connectivity (across time) (from MacDonough et al., 2011). [Modified from symbols courtesy of the Integration and Application Network (ian.umces.edu/symbols/), University of Maryland Center for Environmental Science]

Definition free-flowing rivers

25 000 km of free-flowing rivers - intuitively easy BUT

- what criteria would define a free-flowing river?
- how to measure a free-flowing rivers?

Definition

- *a **free-flowing river** is one that supports **connectivity of water, sediment, nutrients, matter and organisms** within the river system and with surrounding landscapes, **in all dimensions**, and is not impaired by anthropogenic barriers and is not disconnected from its floodplain when a floodplain is present*
- natural impediments (e.g. woody debris, waterfalls, beaver dams) – not considered barriers that would need to be removed

Proposed actions to achieve 25.000 km FFR

- undertake or maintain efforts to remove artificial barriers, **both transversal and lateral**, where such opportunities exist
- **develop, in parallel, a set of harmonised criteria, under which river stretches could be defined as free-flowing and thus be counted towards the 2030 goal.**

ECOSTAT core group working on criteria for free-flowing rivers

(Free Flow Conference participants in red)

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BDS2030: Criteria for identifying free-flowing river stretches for the EU Biodiversity Strategy

Version 1.0 - 9 November 2023

This document was drafted by the ECOSTAT core group on Free-Flowing Rivers, the criteria, set out in a methodology for identifying free-flowing river stretches according to the EU Biodiversity Strategy. The aim is to achieve broad consensus on a tool that can be used by authorities to calculate the length of free-flowing rivers resulting from restoration projects and that can be counted against the EU target of 25,000 km of free-flowing rivers.

This document will be presented and discussed at an ECOSTAT webinar on 30 November and 1 December 2023. Following the webinar, there will be the possibility to provide written comments (deadline 5 January 2024). Member States and stakeholder groups are requested to coordinate their input through their ECOSTAT representatives. Depending on the feedback the aim is then to finalise the document early 2024.



Target audience

- MS authorities
- River basin managers
- NGOs and other organisations, projects supporting river restoration

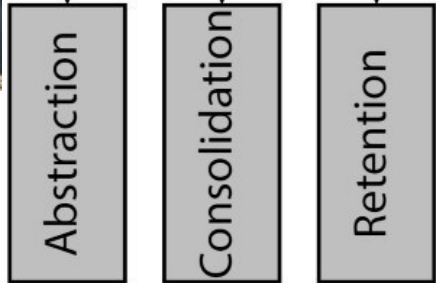
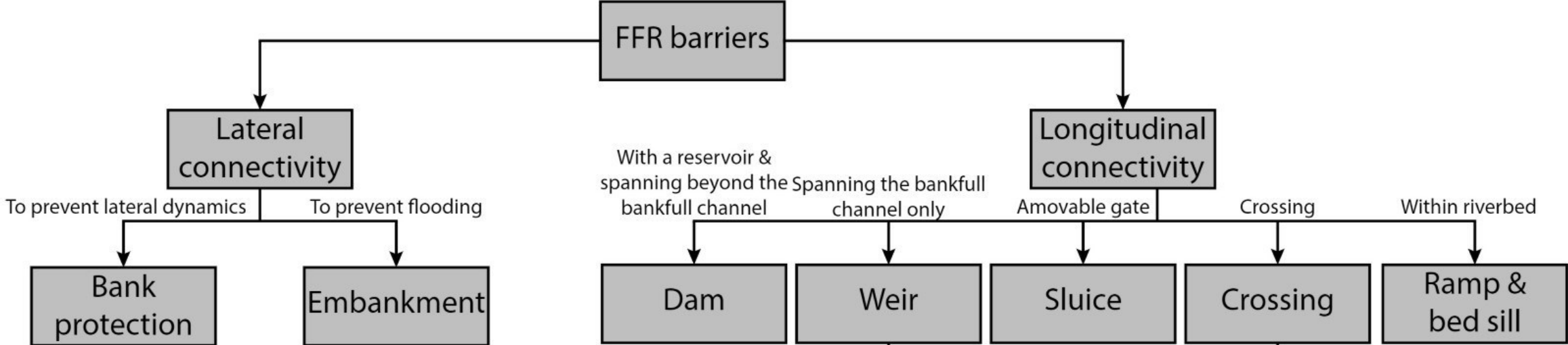


Scope of the methodological approach

- Is my river stretch free-flowing?
- If not, why not?
 - Presence of barriers within the stretch (longitudinal but also lateral)
 - Presence of barriers to sediment connectivity upstream
 - Presence of barriers to fish migration downstream
- What do I need to do to increase FFR and contribute to the 25.000 km target



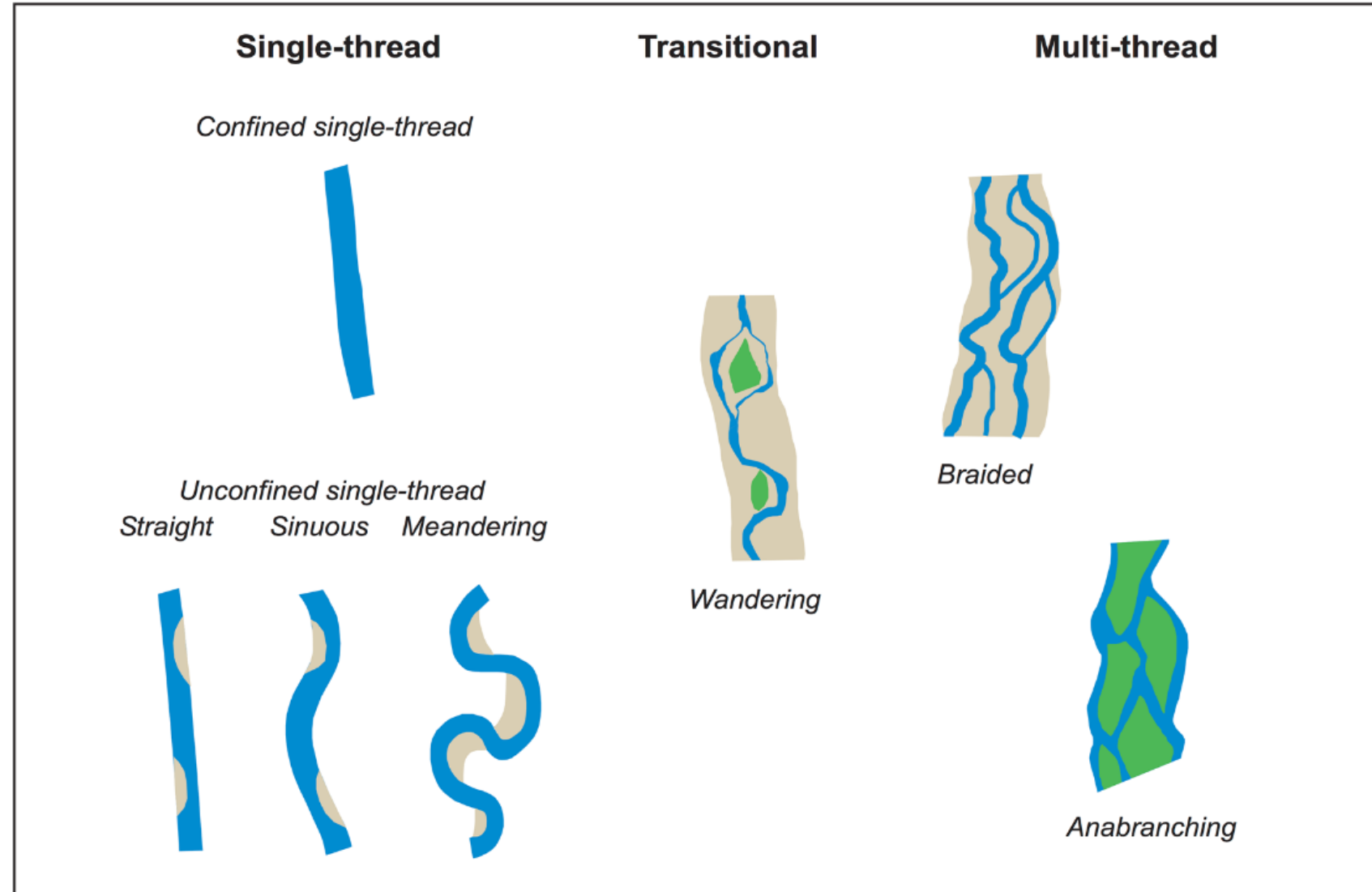
Barrier types



To be added: barriers to vertical connectivity (bed armouring)

River Types

- River size
- Elevation
- Channel type
- Confinement



Key elements of the procedure

Step 1:

Identify homogenous river reach/es within a river stretch

Step 2:

Homogenous reach assessment

2 a) longitudinal

2 b) lateral

2 c) vertical

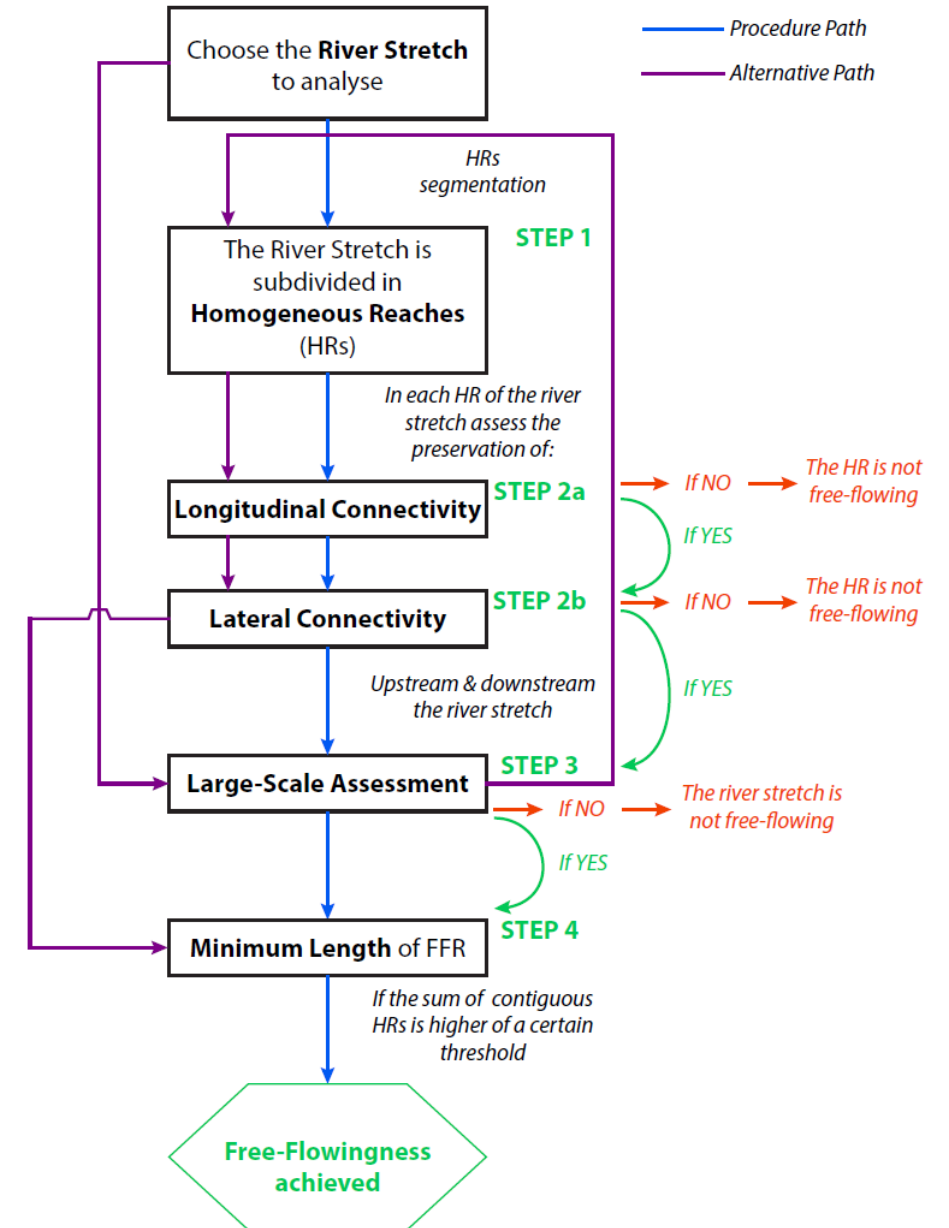
Step 3:

Large scale assessment

→ existing pressures up- / downstream the homogenous river reach

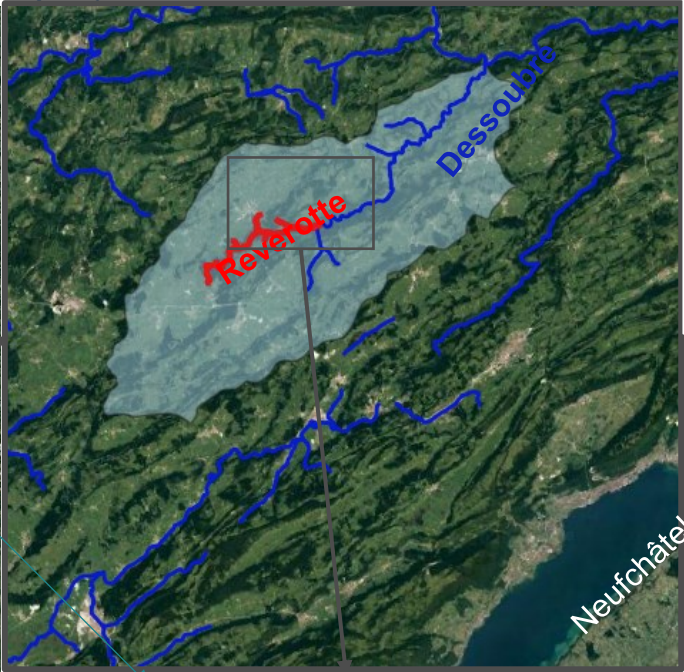
Step 4:

Minimum length assessment of ffr



Case study: Rêverotte, France

provided by Sophia Vauclin, Ministères Transition Écologique, Cohésion des Territoires, Transition Énergétique, France



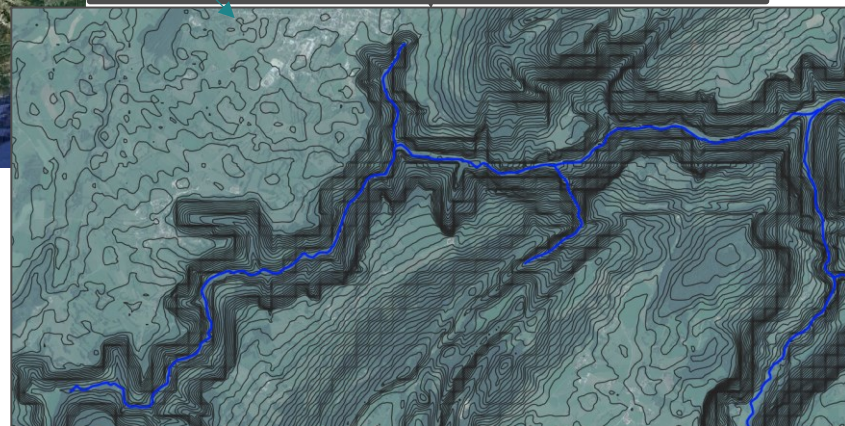
Picture © Syndicat mixte Doubs Dessou

Rêverotte river :

- Small upstream river in the Jura mountains
- Main stem is 12,4 km
- Single-thread, sinuous river
- Partly confined
- Karstic environment → part of the river is naturally temporary (no water in summer because it flows underground)
- Has the « Rivières sauvages » (« wild rivers ») label since January 2022



Picture © Syndicat mixte Doubs Dessou



Rêverotte – summary outcome

HR	Length (km)	Longitudinal connectivity	Lateral connectivity	Minimum length	Large-scale upstream	Large-scale downstream
1	1,4	✗	✓	✗	✓	✓
2	1,7	✗	✓	✗	✓	✓
3	2	✗	✓	✗	✓	✓
4	1,6	✓	✓	✗	✓	✓
5	3,8	✗	✓	✗	✓	✓
6	1,9	✓	✗	✗	✓	✓
TOTAL	12,4	✗	?	✓	✓	✓

The Rêverotte river is **not a free-flowing river** at the moment, because :

1. It has some **longitudinal barriers** in most of its homogeneous reaches.
2. The only HR that passes both longitudinal and lateral connectivity criteria is too short (1,6 km).

Case study: Wutach

Germany

- Low mountain range river in southern Germany (Baden-Württemberg)
- Unconfined single-thread, meandering
- Tributary of the Rhine river
- length: 91 km
- catchment: 1.139,6 km²
- MQ: 5,25 m³/s (gauge within the section)

Wutach - summary outcome

Length (km)	Longitudinal connectivity	Lateral connectivity	Minimum length	Large-scale upstream	Large-scale downstream
10	✓	✓	✓	✗	✗

The Wutach is **not a free-flowing river** at the moment.

Method for identifying free-flowing method

- Updated version will be completed and published spring 2024
- Next step: further testing and refinement
 - Involving EU countries (through WFD implementation community)
 - Involving key river restoration scientific projects (e.g. Danube4All, MERLIN)



Summary/Conclusions

- Free-flowing rivers: **an ambitious target to protect and restore our least impacted rivers**
- Removing barriers and restoring connectivity **can improve rivers everywhere**
- Restoring continuity has been a **legal requirement of the WFD** for more than 20 years



Summary/Conclusions

- Free-flowing rivers – dam removal is one of several key elements
- Need to consider longitudinal, lateral, vertical, temporal aspects
- Importance of large-scale assessment (sediment connectivity, mitigation of downstream fish migration barriers)
- **Proposed method takes into account all these aspects and shows what measures are needed to improve connectivity**



ECOSTAT FFR core group

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Thank you



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