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► To cite this version:

Mathieu Tocaben, Johan Pansu, Fanny Colas, David Eme, Jean-Michel Olivier, et al.. RhônEco : A long term ecological observatory for monitoring the restoration of the Rhône river in a global change context. International congress of the Ecology and Evolution French Society, Oct 2024, Lyon, France. hal-04869907

HAL Id: hal-04869907

<https://hal.science/hal-04869907v1>

Submitted on 7 Jan 2025

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RhônEco : A long term ecological observatory for monitoring the restoration of the Rhône river in a global change context

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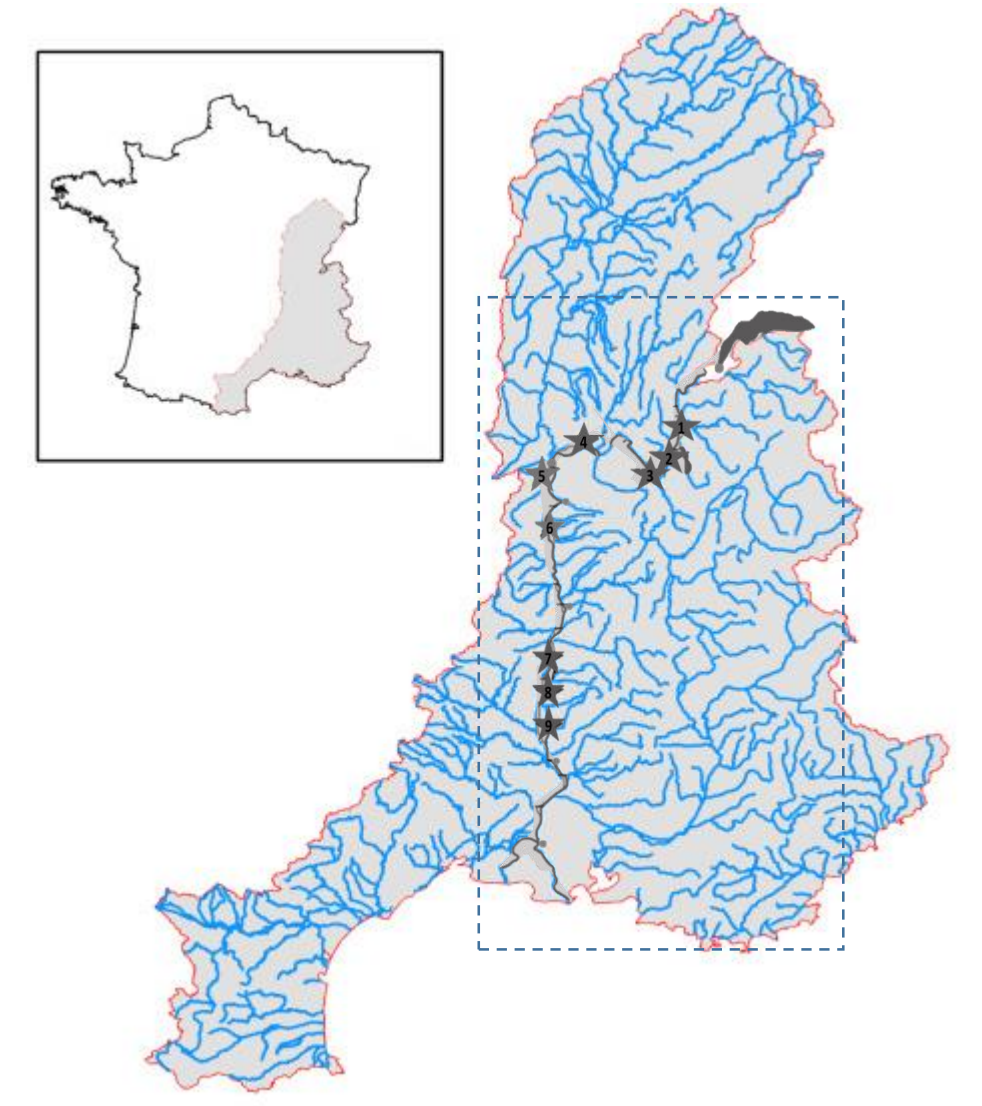


Fig. 1 : Rhône drainage basin and the Rhône river (black line). Nine sectors (stars) are monitored from Léman lake to the Mediterranean sea.

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Over the last two centuries, many hydraulic infrastructures have been built along the Rhône river for navigation, irrigation, flood management and electricity production purposes. These installations have profoundly altered the river flow, the morphology and the connectivity within the floodplains, with dramatic consequences on habitats and biodiversity. At the end of 90's, a unique initiative from local authorities has emerged : a hydraulic and ecological restoration program supported by the government, and a scientific program for monitoring and assessing these restoration actions.

1998 **Start of the restoration program by stakeholders**
« for a lively and flowing river »

Start of RhônEco
A multidisciplinary scientific program to monitor the effects of the restoration

Restoration actions

- 1 Increasing the minimum flow in the main channel
- 2 Restoring the hydrological connectivity of totally or partially disconnected side arms

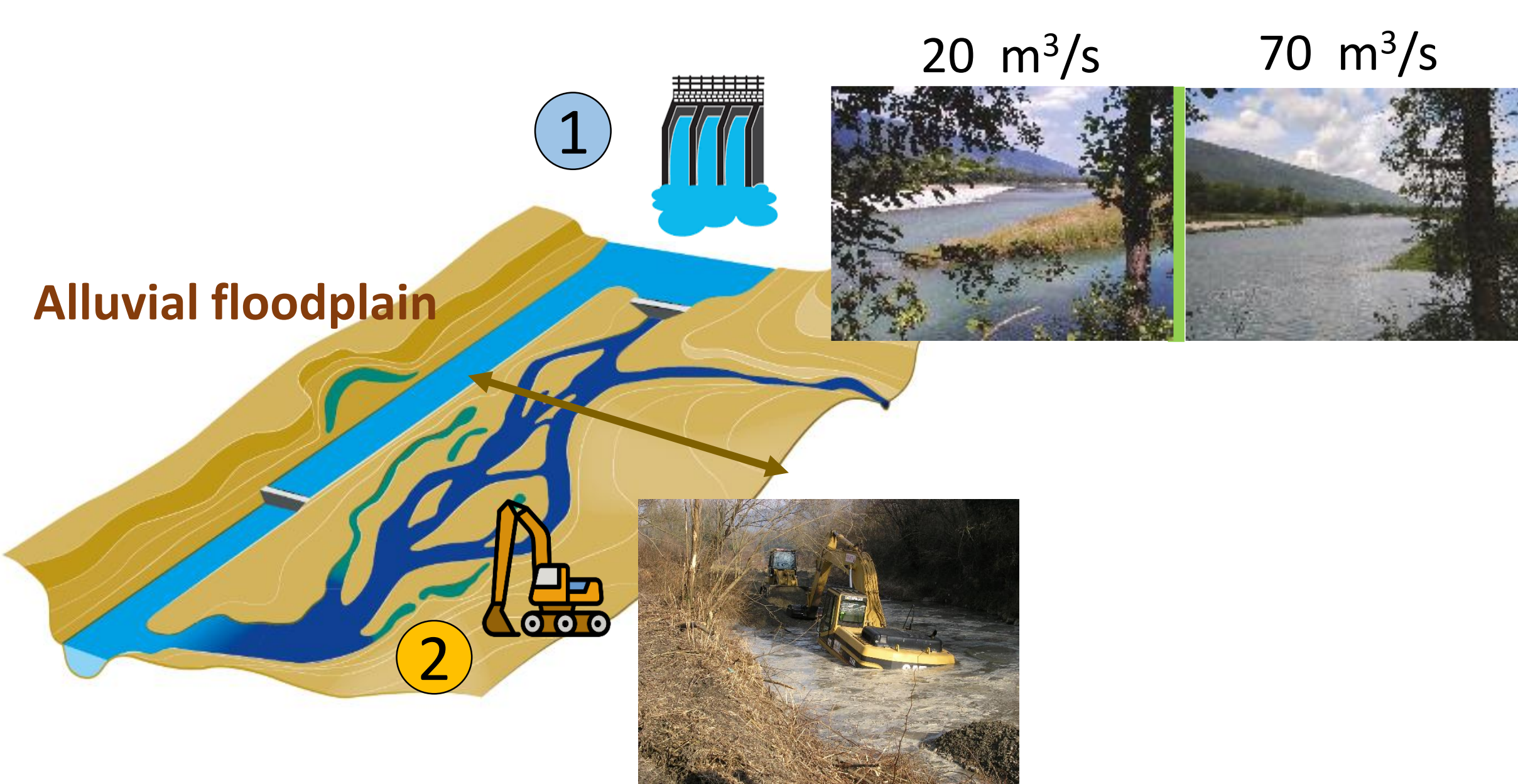
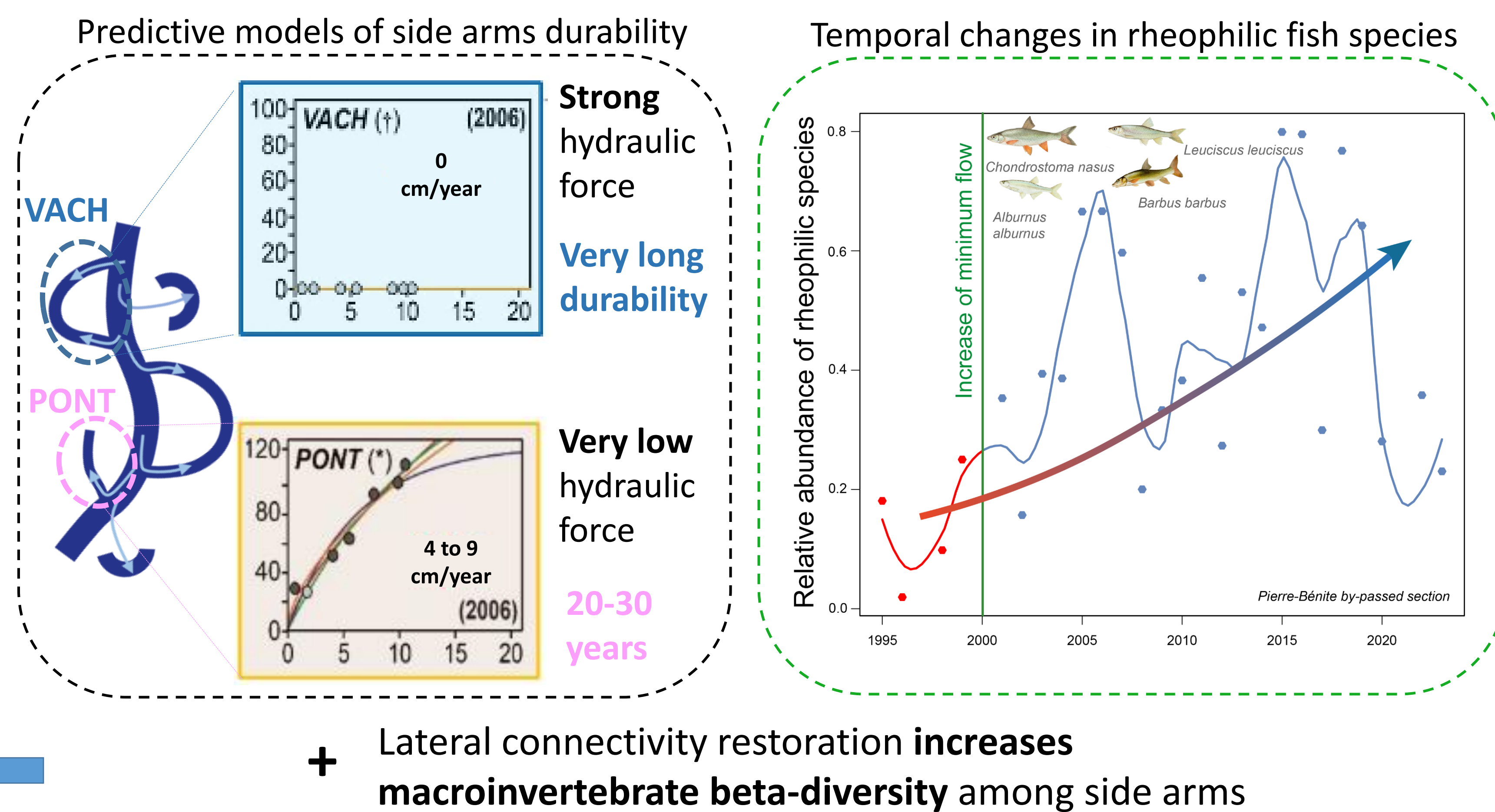


Fig 2. Sector of the Rhône river altered by a dam that deviates the water flow from the main channel towards a hydropower plant, reducing the flow in the main channel and leading to a disconnection of side arms. Pictures illustrate restoration actions implemented.

Objectives

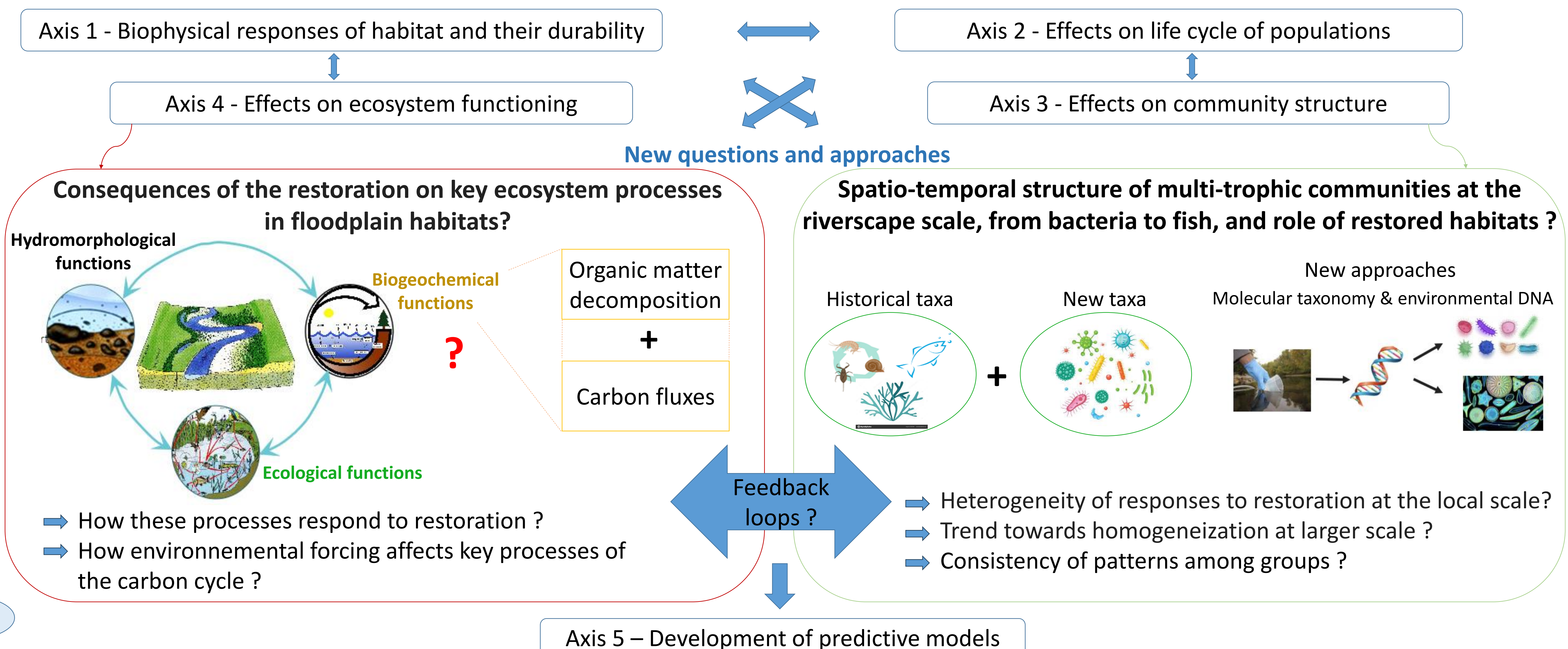
- i. Monitoring ecological and hydrological responses to restoration
- ii. Developing predictive models

Key results



2024 Toward an enlarged ecological observatory of the restoration in a global change context

25 years later, the Rhône faces additional pressures (e.g., climatic change, increased chemical pressure, new infrastructures...). New questions arised, especially in relation to **feedback loops between biodiversity and ecosystem processes**, to understand how ecological restoration can mitigate ecological effects of global change. The new RhônEco program is thus structured around **5 applied research axes**:



2028

(1) Lamouroux et al. The ecological restoration of large rivers needs science-based, predictive tools meeting public expectations: an overview of the Rhône project. *Freshwater Biology*, 2015, 60.1069-1084.
 (2) Olivier et al. (2023). Suivi scientifique du programme de restauration hydraulique et écologique du Rhône. Un observatoire dynamique de l'état écologique du fleuve. Rapport d'état d'avancement 2022. Programme RhônEco. 216 p.
 (3) Olivier et al. (2024). Rapport scientifique du programme RhônEco (1998 – 2023). 325 p.