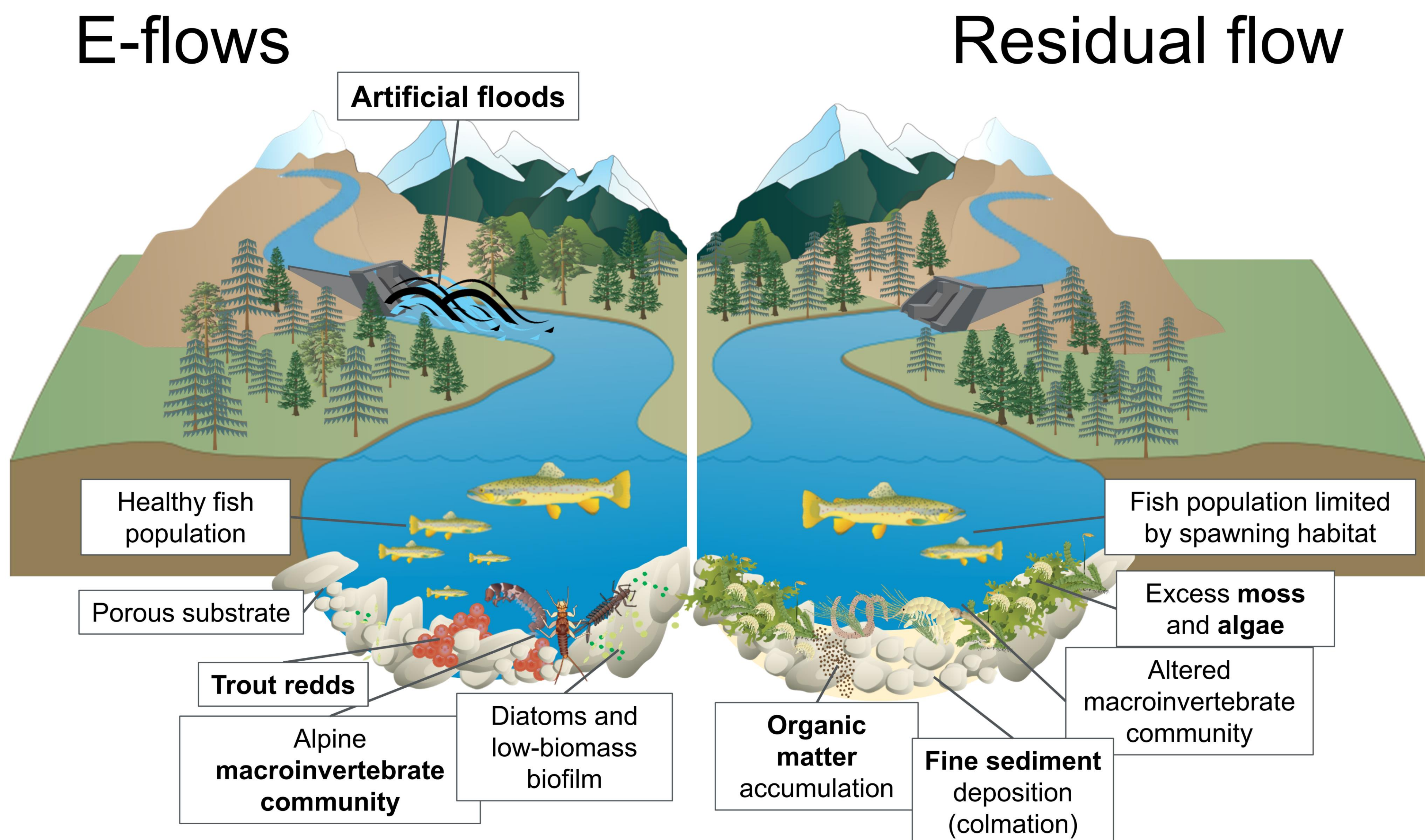


Ecological flow restoration

Insights from an experimental flood program on the Spöl River Swiss National Park

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THE EXPERIMENTAL FLOODS

The construction of two dams on the River Spöl led to a dramatic alteration of environmental conditions in the stream. Stable residual flows released from the dams resulted in severe habitat degradation and consequent ecosystem shift. The Swiss National Park, EKW and cantonal authorities implemented a 20-yrs experimental floods programme to reintroduce seasonal disturbance, and partially restore the ecological integrity of the river.

LONG-TERM RESULTS (Robinson et al. 2023)

- Enhanced brown trout spawning habitat
- Remove fine sediments deposited on the streambed
- Limit algal and moss growth
- Shift towards a more alpine-like ecosystem



“Importance of artificial high flows in maintaining the ecological integrity of a regulated river”

THE SPÖL AS A FIELD LABORATORY

The long-standing experimental floods program on the river Spöl is unique in the world, offering the opportunity to carry out a wide range of field experiments under controlled flow conditions

- For example, we confirmed that tributaries restore ecological properties in regulated rivers. We found that sediments supplied by Ova da Cluoza, in combination with floods, promote geomorphological processes and sustain the dynamic habitat template of the river. *(Consoli et al., 2022)*
- Or we found that the slow recovery of mosses contributes to explain the lag in return patterns shown by macroinvertebrates after the 2016 PCB-related flood discontinuation from Punt dal Gall. *(Consoli et al., in press)*



“Tributary effects on the ecological responses of a regulated river to experimental floods”