

[Response of fish assemblages to hydromorphological restoration in central and northern European rivers \(Schmutz et al. 2015\) \[1\]](#)

European rivers are highly degraded and restoration efforts are becoming more frequent. However, only few restoration projects have been rigorously evaluated so far. We investigated the response of fish assemblages to hydromorphological restoration measures including river widening, creation of instream structures, flow enhancement, remeandering and side-channel reconnection. We sampled 15 rivers with pairs of degraded and restored sites and calculated the effect sizes (i.e., restored-degraded) for species richness, species diversity, fish density and habitat traits.

We analysed the following factors potentially affecting restoration success: (1) length of the restored river stretch, (2) time after restoration and (3) hydromorphological quality of restoration. While species diversity and density did not respond to restoration, proportion of small rheophilic fish increased and eurytopic decreased. Short-term (<3 years) and long-term effects (>12 years) of restoration measures have a stronger effect on fish assemblages than mid-term effects. Furthermore, the hydromorphological quality and the length of the restored section are relevant for the restoration effects on the fish community. Future restoration projects should focus on more dynamic, self-sustaining habitat improvements extending over several kilometres and should be coupled with other measures such as restoring the river continuity and species reintroductions.

Keywords: Restoration success, Effect size, Rheophilic fish, Restoration monitoring, Hydromorphological quality, Restored section length

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