

EGU21-16042

<https://doi.org/10.5194/egusphere-egu21-16042>

EGU General Assembly 2021

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## Effects of riparian woody vegetation on EPT functional connectivity in Western Germany

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In the degraded European landscapes riparian corridors had have become key features to maintain connectivity between habitat patches for multitude of organisms. This role of riparian forests has been assessed from the purely structural point of view, to complex models specific for particular species or groups of species, from mammals to plants, from endangered to invasive species.

Dispersion is a key part of the lifecycle of EPTs (Ephemeroptera, Plecoptera and Trichoptera) as they live most of their lives as aquatic juveniles, being drifted downstream, and disperse back upstream when they become short-lived winged adults. These three families of aquatic macroinvertebrates are widely used as bioindicators because of their sensitivity to water pollution and habitat degradation, but little is known about how the riparian vegetation impacts their ability to disperse and recolonize. For example, riparian vegetation could help EPTs dispersion by protecting them from harsh weather conditions, or by helping them to orientate themselves by changing how the reflexion of the light on the water polarises.

Nevertheless, connectivity is not the only driver of the EPT community as other parameters can have a direct effect on the community composition. For example, water pollution is an important driver of the freshwater macroinvertebrate community and in locations where pollution is high is not expected to find almost any EPTs individual regardless of the landscape connectivity. Furthermore, other landscape features can hinder the role of riparian forests as corridors for being a barrier to EPT dispersion, like dams or coniferous forests.

In this study we compare the EPT communities on 120 pairs of sites, each pair located in the same river at 1 to 5 km distance, with different riparian vegetation conditions in Western Germany. The communities are characterised by their overall dispersion capacity using the Species Flying Propensity index (Sarremejane et al. 2017). The riparian vegetation is identified using areal images in the 10 meters and 30 meters buffer from the river.

We expect that riparian forest fragmentation will directly impact functional connectivity, and therefore, in locations with less fragmented riparian forests the EPT community will be mainly composed by weak dispersers (and *vice versa*). Nevertheless, covariates that can impact or mask

this effect were taken into account: catchment land use, saprobic pollution, naturalness, hydromorphological hydromorphological degradation and also other features as coniferous forests or dams.