

River restoration and the trophic structure of benthic invertebrate communities across 16 European restoration projects (Kupilas et al 2015) [1]

River restoration enhances not only habitat diversity in the stream channel and riparian zone, but also retention of organic matter, which together are expected to enhance aquatic-terrestrial linkages, and the range of autochthonous and allochthonous resources. Consequently, alterations of food-web structure and trophic relationships can be expected. We applied stable isotope analysis (\delta13C, \delta15N) to characterize changes in the trophic structure of benthic invertebrate communities between paired restored and unrestored river reaches across 16 European catchments.

We sampled dominant taxa of invertebrate assemblages belonging to different functional feeding groups and calculated 613C range to estimate the diversity of basal resources assimilated, 615N range as an indicator of the trophic length and standard ellipse area corrected for small samples as a measure of isotopic niche width. We analysed (1) if restoration influences the trophic structure of invertebrates, (2) if effects of restoration depend on the extent of restoration effort, and (3) if effects of restoration depend on restoration measures applied. Our European-scale comparison indicates that river habitat restoration effects trophic structure, primarily by increasing the breadth of resources assimilated by consumers; this effect increases with restoration effort and it depends on restoration measure type

Keywords: River restoration, Stable isotopes, Trophic structure, Food web, Freshwater, Functional feeding groups, Community metrics, Isotopic niche

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