Response of fish communities in rivers subjected to a high sediment load (Valero et al. 2016) [1]

Erosion and sediment yield are a significant problem in the Guadalquivir River basin. Such phenomena are largely driven by a land use devoted to intensive cultivation of olive trees, with a large socioeconomic influence in Andalusia. This sediment overload in rivers causes serious impacts on all fluvial ecosystem components. In this study we assess the chronic effect of sediment yield on fish communities at 104 river sites located in two different sub-catchments – the Bembézar and Guadajoz rivers – both with different lithological composition and erosion rates. Sediment yield was estimated using a semi-quantitative Factorial Score Model (FSM), developed specifically for Spanish rivers. The fish populations of both basins were evaluated in composition and abundances by the study of Fernández-Delgado et al., 2014 [2]. The influence of sediment yield on the fish community was analyzed using General Additive Models.

The sediment yield was higher in the Guadajoz basin (921 T/Km2 per year) than in Bembézar (701 T/Km2 per year). In the former, fish communities were poorer in both fish density and diversity, with *Luciobarbus sclateri* as the only substantially present species and a significant relationship between sediment yield and load, and fish density. In contrast, in the Bembézar basin, sediment yield was correlated with total fish density, including *Luciobarbus sclateri, Pseudochondrostoma willkommii, Cobitis paludica, Iberochondrostoma lemmingii, Anaecypris hispanica*, and *Cyprinus carpio*. Intermediate values of sediment yield led to maximum densities, while those higher decreased the density of these species.

Keywords:

Fish species; Olive grove; Sediment impacts; Sediment yield; Soil erosion

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Links
[1] https://reformrivers.eu/response-fish-communities-rivers-subjected-high-sediment-load-valero-et-al-2016
[2] http://www.sciencedirect.com.ezproxy.library.wur.nl/science/article/pii/S0075951116301773?np=y&npKey=f54fbe492720904dd9a921883759239fe57f37720fd3057d1913027ef2b90395#bib0045

[3] http://dx.doi.org.ezproxy.library.wur.nl/10.1016/j.limno.2016.04.002

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