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## ABSTRACT

### ANALYSIS OF SURVEY DATA WITH QUANTILE REGRESSION: DISENTANGLING THE LIMITING EFFECT OF MULTIPLE STRESSORS ON MACROINVERTEBRATE DENSITIES

The individuation of the stressors limiting the development of river biological community development is of great interest for river management and restoration. The density of macroinvertebrate communities in survey data usually show high variations due to multiple causal gradients. In these conditions, classic statistical approaches (i.e. analyses of central relations) may become uninformative. Quantile regression can be used to consider the various stressors as constraints to the development of biological communities, testing hypotheses about which factors set maximum or minimum limits, thus considering the "margins" of a distribution. We analysed a large dataset (coming from a 4-years survey in 350 stream and river sites from Lombardy region, Italy) including macroinvertebrate data and environmental variables. Data concern sites ranging from pristine to heavily modified conditions. We used quantile regression to analyse the effects of alterations on several biological and ecological metrics, especially macroinvertebrate densities, presenting a scatter distribution along environmental gradients. The role of many alterations was defined as a constraint to the distribution of metrics, and threshold values could be defined in order to achieve the good ecological status.

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#### DETAILS

Oral presentation

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