RS09 – Poster

Investigating the influence of multiple pressures on biomonitoring tools

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Freshwater ecosystems are among the most impacted ecosystems globally. In order to conserve and restore these environments, monitoring agencies need to be able to identify degraded rivers and streams, and diagnose the causes of degradation. Biomonitoring, defined as 'the use of biota to gauge and track changes in the environment', is one approach that is widely used throughout Europe, including for water management and legislative purposes, driving decisions on remediation methods. Despite the implications of an incorrect diagnosis, many biomonitoring tools lack thorough validation using independent data from sites that (i) cover the full range of environmental characteristics of the rivers and streams to which they will be applied, (ii) are subject to the full gradient of the pressure(s) of concern, and iii) are impacted by multiple pressures, reflecting a realistic assessment of the performance of the tool. We provide examples of a range of approaches for testing biomonitoring tools using long term monitoring data, investigating the influence of confounding factors and the presence of multiple anthropogenically derived pressures. This analysis includes the use of a novel method of interrupted time series analysis to determine the influence of invasions of non-native species on biomonitoring tool outputs. The various approaches are applied to the testing of a sediment-specific biotic index (the Empirically-weighted Proportion of Sediment-sensitive Invertebrates; E-PSI), highlighting the potential for opportunistic data analysis to enable ecologically relevant and hypothesis driven testing, over large spatial and temporal scales.

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