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Drivers and organism groups: indication of different stressors in European rivers

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Some 230 rivers, sampled as part of the European funded STAR project, were used to evaluate the response of different organism groups to various types of degradation. For lowland, mountain, southern European and alpine streams PCA gradients on general degradation, pollution/eutrophication, catchment land use, hydromorphology and microhabitat composition were constructed. At each site periphytic diatoms, macrophytes, benthic macroinvertebrates, and fish were sampled. For each organism group, 30 metrics were calculated and correlated to the environmental gradients. Periphytic diatom metrics were generally strongly correlated to eutrophication, compared to the other organism groups. Periphytic diatoms and benthic invertebrates responded to changes in catchment land use in most stream types, while macrophytes and fish metrics were good indicators in lowland rivers. Hydromorphological degradation was best reflected by benthic invertebrates, general degradation gradients (composed of pollution-, land use-, and hydromorphological parameters) by invertebrate metrics and fish metrics (in lowland rivers). The results are discussed in the context of emerging drivers, such as Global Change