Responses of fish and invertebrates to floods and droughts in Europe (Piniewski et al. 2016) [1]

Floods and droughts, two opposite natural components of streamflow regimes, are known to regulate population size and species diversity. Quantifiable measures of these disturbances and their subsequent ecological responses are needed to synthesize the knowledge on flow–ecosystem relationships. This study for the first time combines the systematic review approach used to collect evidence on the ecological responses to floods and droughts in Europe with the statistical methods used to quantify the extreme events severity.

Out of 854 publications identified in literature search, 54 papers were retained after screening and eligibility checks, providing in total 82 case studies with unique extreme event—ecological response associations for which data were extracted. In this way, a database with metadata of case studies that can be explored with respect to various factors was constructed. This study pinpointed the research gaps where little evidence could be synthesized, for example, drought event studies and fish studies. It was demonstrated that in many cases the studied metrics (abundance, density, richness, and diversity) showed statistically significant decreases after or during the event occurrence. The responses in invertebrate density and richness were in general more negative than the corresponding responses in fish. Biota resistance to floods was found to be lower than the resistance to droughts. The severity of extreme events was not found to be an important factor influencing ecological metrics, although this analysis was often hampered by insufficient number of case studies. Conceivably, other factors could mask any existing relationships between disturbance severity and biotic response.

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Piniewski, M., Prudhomme, C., Acreman, M. C., Tylec, L., Oględcki, P., and Okruszko, T. (2016) Responses of fish and invertebrates to floods and droughts in Europe. Ecohydrology

Link to DOI:

http://dx.doi.org/10.1002/eco.1793 [2]

Links
[1] https://reformrivers.eu/responses-fish-and-invertebrates-floods-and-droughts-europe-piniewski-et

-al-2016
[2] http://dx.doi.org/10.1002/eco.1793

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