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How to protect 1000+ species from 1000+ stressors: From scientific concepts to river management

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Human population density increases exponentially in the proximity of rivers and seas. As a consequence, anthropogenic pressures are intense and diverse. River managers face the challenge of protecting 1000+ of species (including man) from 1000+ stressors. How can we assess the relative and combined impact of these pressures, to allow for a proper priority setting? Such multifaceted issues are often analyzed by complex models.

Here, we discuss two straightforward alternatives that facilitate understanding, predicting and solving the problems as well.

The first concept discussed is size-scaling. Similarities between water and blood transport have provided us with fascinating insight in the dynamics of rivers and organisms. Variables as diverse as river flow and lake density as well plant abundance, metal turnover and animal geographic ranges fit into a coherent framework.

In a supplementary approach, we will address the issue of the sensitivity of species to stressors as diverse as chemicals, pH, temperature and the like. Examples of both concepts will be given, illustrating their application to river management.