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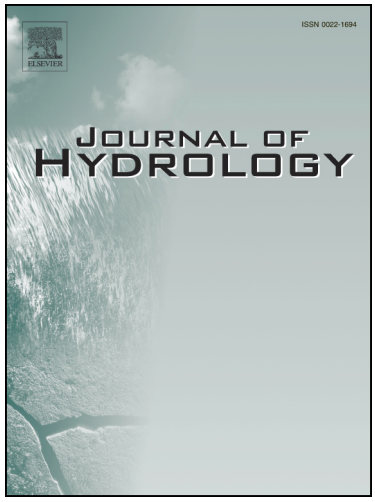

Research papers

A conceptual framework towards more holistic freshwater conservation planning through incorporation of stream connectivity and thermal vulnerability

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A conceptual framework towards more holistic freshwater conservation planning through incorporation of stream connectivity and thermal vulnerability

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Abstract

The thermal regime of rivers plays an important role in the overall health and composition of aquatic ecosystems, and together with flow, is recognised as one of the most influential abiotic drivers of aquatic ecosystem processes affecting species distribution. Changes in thermal conditions in aquatic systems are driven by on-going human-induced climate change, hydrological, regional and structural factors. Here, we quantified the impact of instream impoundments on the natural longitudinal connectivity and estimated thermal vulnerability of catchments based on the functional relationship between changing temperature and the profile gradient of rivers in the eastern portion of South Africa. We identified catchments that are most vulnerable to thermal stress based on cold-water adapted species' tolerance to thermal changes. More than half of all

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