
Hydrological alteration and invasibility in Mediterranean streams

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Abstract

Freshwater ecosystems are very rich in biodiversity and among the most threatened worldwide. This is well exemplified by the Iberian Peninsula, where most freshwater native fish being endemics that are declining due to multiple severe environmental pressures. One of these pressures are invasive alien species, which are thought to benefit from hydrological alteration (e.g. dam construction or water abstraction) and other anthropogenic perturbations, although the evidence for this is limited. I will revise the evidence on the relationship between hydrologic alteration and invasibility in Mediterranean streams, using fish as a model. Using species distribution models, we have investigated the role of hydrological alteration in explaining invasiveness of two North American fish species that are among the most introduced worldwide: the eastern mosquitofish (*Gambusia holbrooki*) and the largemouth bass (*Micropterus salmoides*). We found that natural abiotic factors such as temperature, elevation or precipitation are more important than hydrological alteration in explaining the distribution of these two species in the Iberian Peninsula. However, hydrological alteration also seems to play a role particularly for largemouth bass. These species were more frequent in the mainstem of heavily regulated large rivers. Although introduced many decades ago, both species might expand their distribution in the future, particularly with climate change and ongoing hydrological alteration. Preserving and restoring the natural flow regime of Mediterranean rivers might help to reduce the spread and abundance of these and other aquatic invasive species.

Keywords: freshwater fish, rivers, anthropogenic perturbation, *Gambusia holbrooki*, *Micropterus salmoides*

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