proceedings

Abstract

Movement Patterns of the Iberian Barbel (*Luciobarbus bocagei* Steindachner, 1864) in a Recently Impounded River †

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Abstract

The Iberian barbel (*Luciobarbus bocagei* Steindachner, 1864) is a potamodromous species that displays migratory movements, with adults moving upstream during spring to spawn, followed by downstream migration in autumn by both adults and juveniles to feed and inhabit more productive river stretches. Increasing river fragmentation due to dam construction and operation causes a loss of connectivity and suitable habitat, which can affect this natural behaviour. In a tributary of River Douro, River Tua, a 108 m high dam, was recently built (i.e., Foz Tua dam in 2017) at only 1.1 km from the river mouth, leaving the upstream spawning area inaccessible. To evaluate the species behavioural response to this impact, a passive acoustic telemetry array was deployed in the study area, and between 2018 and 2023, 120 tagged fish had their movements tracked. The results showed two different behavioural profiles in the same population with migratory (42.5%) and resident (54.0%) individuals. During this period, a specific experimental study was developed to evaluate the response of a subset of 90 fish, captured upstream of the Foz Tua dam and translocated to an alternative downstream Douro tributary (River Pinhão, ~20 km downstream from River Tua). From these, 66.7% remained at the release site, whilst 23.3% returned to the river of origin, i.e., River Tua. From the returned fraction, 28.6% of the tagged fish maintained this migratory behaviour between both rivers in the following years. Generalized Additive Models were used for each of the two behavioural profiles observed in this study, to identify which environmental variables were associated with the presence of the tagged barbels downstream the Foz Tua dam. Ecological flow, temperature and day-period were some of the predictors explaining the use of this river stretch downstream of Foz Tua dam. This study substantially updates the available information regarding this species' movement patterns at large spatial and temporal scales, contributing to enhancement of management and conservation programs for potamodromous species, in highly impounded and fragmented rivers.

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