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Abstract

Migratory Patterns of Two Potamodromous Fish Species Assessed through Fish-Pass Monitoring in Mondego River, Portugal †

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Abstract: The Iberian barbel (*Luciobarbus bocagei* Steindachner, 1864) and the Iberian nase (*Pseudochondrostoma polylepis* Steindachner, 1864) are two potamodromous species that migrate upstream in freshwater environments to reproduce. Thus, river fragmentation is a major threat to these species, and fish passes are one of the most-used mitigation measures to restore the longitudinal connectivity of impounded rivers, enabling these species to reach upstream spawning sites. Since 2013, the fish pass installed in the Coimbra dam (Mondego River) has been equipped with a video-recording system to continuously monitor fish passage. Based on visual count data between 2013 to 2015, a total of 61,965 movements of Iberian barbel (up- and downstream) and a total of 138,207 movements of Iberian nase (up- and downstream) were registered, with the migratory upstream movements of nase occurring over a wider period (i.e., January to December) relative to what is described in the literature. The analysis conducted to evaluate the temporal variability in the size of fish using the fish pass showed significant differences between the studied months for both species in both migratory directions; upstream-moving barbel showed a bigger body length in May, and nase showed bigger body lengths in the months of May, June and November. Boosted Regression Trees were used to identify the environmental variables that triggered these movements, with water temperature and flow being, overall, two of the most important variables for both species in both migratory directions. This study updates the relatively scarce available information concerning these species migrations, including movement activity and the associated peaks, size-structure characterization during the migratory periods, and the identification of environmental variables that seem to trigger Iberian barbel and nase movements.

Keywords: potamodromy; migratory peak; Iberian barbel; Iberian nase

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