

## MIGRATORY MOVEMENTS OF CATADROMOUS THIN-LIPPED GREY MULLET (*Chelon ramada* Risso, 1827) THROUGH A VERTICAL SLOT FISH PASS

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Loss of longitudinal connectivity in rivers due to impoundment has limited the extension of available habitat for diadromous fish species. Those impacts and the assessment of fish pass adequacy have focused, particularly, on the upstream migration of species with high economic value, such as sea lamprey (*Petromyzon marinus* L.), allis (*Alosa alosa* L.), twaite shad (*Alosa fallax* Lacepède, 1803) or the European eel (*Anguilla anguilla* L.). However, thin-lipped grey mullet (*Chelon ramada* Risso, 1827) is also known to perform extensive migrations during their freshwater trophic period. Video monitoring of the vertical slot fish pass, installed at the Coimbra dam, has revealed that in two consecutive years (2013 and 2014), near 2 million and 1 million mullets, have used this fish pass during their upstream- and downstream migrations, respectively, corresponding to more than 90% of total fish movements recorded. Based on these data, it was possible to determine the timing of migratory activity in the fish pass and using the fish pass counts as a proxy for species migration, statistical modelling with Boosted Regression Trees analysis (BRT) allowed to identify the environmental predictors that seem to trigger the upstream and downstream movements. Image analysis was used to obtain additional information on size structure of the migratory population. From the 2-year robust data set of mullet counts, it was identified a subsample method that was applied to estimate the number of mullets, that used the fish pass between 2015-2017.

This study provides novel insights into the catadromous migration of thin-lipped grey mullet, and the efficient use of a fish pass by a catadromous species on both directions, upstream- and downstream. It emphasises the importance of an adequate monitoring of fish pass devices and presents a subsampling method that can reduce the time-consuming task of video processing without losing relevant information.