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Abstract

Migration Patterns and Behaviour of Trout (*Salmo trutta* L.) in the Southern Limit of the Species Distribution †

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Abstract: The trout *Salmo trutta* L. is an iconic fish species very well studied across most of its range. However, there is a lack of information about the biology and ecology of *S. trutta* populations from southern European rivers, which coincide with the southern limit of its global distribution. This study aims to analyse the movement patterns and habitat use of *S. trutta* in the Mondego River basin, Central Portugal, and relate them with the environmental factors to which the species is exposed. Biotelemetry represents an important tool to obtain temporal and spatial specific details about the behaviour of target species and, in this work, we used a set of complementary techniques, namely acoustics, radio and PIT telemetry. A total of 114 trout specimens were tagged with PIT-tags, to be identified in future recaptures or detected at an antenna installed at Coimbra dam fish pass. From these, 18 were also tagged with Dual Mode transmitters, that include radio and acoustic telemetry signals, allowing to track the species' movements from the estuary to the upstream freshwater sections. Results show the existence of a migratory peak between November and January that coincides with the reproduction season, while reinforcing the importance of Alva River to spawning *S. trutta*, one of the main tributaries in the study area. River fragmentation in the study area, particularly in the tributaries, is still limiting the vital area of the tracked individuals, although recent restoration actions provided easier access to some important areas in this river for distinct trout life-stages. This study aims to improve the knowledge of southern European trout populations, contributing to enhancing efforts for restoring and managing these populations inhabiting areas under severe climate change effects.

Keywords: *Salmo trutta*; Mediterranean rivers; biotelemetry; fisheries management

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