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Abstract

Movements and Dispersal of Wild and Stocked Brown Trout (*Salmo trutta* Linnaeus, 1758) in Mountain Rivers of NE Portugal †

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Abstract

Brown trout (*Salmo trutta* L.) is a bioindicator species of ecological integrity in mountain rivers of northern Portugal. Habitat loss and recreational fishing justify sustainable management to balance the conservation and exploitation of these fish populations. In fact, salmonid streams in NE Portugal are low productive watercourses and fish stocking has been continuously demanded by fishermen. However, this most common management action must be analyzed carefully and determined the effective increase for local fisheries, taking into consideration the potential dispersal of stocked fish. The objective of the present study, developed in River Sabor, was to determine short- and medium-term movement and dispersal patterns and habitat preferences of wild and stocked Brown trout, using radio telemetry, during a weekly monitoring 4-month period (October to February 2026; n = 18). Fish was sampled by electrofishing at beginning and the end of the experiment. Twenty-four adult Brown trout, equally distributed by two salmonid sections, and three groups, (1) wild resident (River Sabor) (213–270 mm TL); (2) wild non-resident (from contiguous basin, River Baceiro) (200–375 mm TL) and (3) rear-captivity (Castrelos Fishfarms, ICNF) (227–365 mm TL) fish, were surgically implanted with radio transmitters. Significant differences (KW-H (2;24) = 4.67; p = 0.09) were observed for the dispersal distances, considering fish detected at least in five sampling events, ranging from 120–1437 m for the wild resident stationary group to 192–14,150 m for the stocked mobile group. Moreover, wild non-resident fish displayed higher movement in the upstream direction, in opposition to the downstream movement of stocked individuals. Wild resident and non-resident trout tended to display increased movements during November and December, probably related to spawning activity, showing preferences by riffle and run habitats. Stocked fish were detected in pool habitats (mainly weir reservoirs), exhibiting significantly lower growth rates, and increased movement during January and February, particularly during flood events. These findings are valuable information for managers related to movement patterns, habitat use and stocking management.

Keywords: Brown trout; habitat use; movement; management; stocking

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