

Abstract

Into the Wild: A New Approach to the Aquaculture Production of Brown Trout (*Salmo trutta* L.) to Enhance Restocking Success[†]

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Abstract: The brown trout (*Salmo trutta* L.) is one of the most iconic native species from European river ecosystems and is also one of the main species of interest for recreational fishing activities (e.g., fly fishing). This species has a significant potential to attract anglers and related investment to the main fishing grounds, which are usually located in poorly developed areas and away from main city centers. Due to its environmental and socioeconomic value, this species is often targeted by management programs directed to the protection and sustainable exploitation of this valuable natural resource. One of the most common actions to enhance the abundance and condition of trout populations is the restocking of wild populations with fish from aquaculture facilities. However, most fish come from fishfarms using production methods such as high densities in the tanks, use of commercial food and standardized feeding methods, lack of environmental stimulus, and domestication of breeding stocks, which usually results in poor fitness and very low survival rates after release. This consequently leads to reduced success of these management actions. To contribute to solving these problems and enhancing the success of restocking actions for the recovery and sustainable enhancement of wild trout populations, we propose a novel approach to the production of this species, by testing and implementing a new protocol that aims to produce wild-reared trout. These fish come from wild breeders and will be produced with the least human contact in conditions that mimic their natural habitat. Taking advantage of a recently remodeled and re-equipped aquaculture facility, located in Central Portugal (Posto Aquícola de Campelo, Figueiró dos Vinhos), we are rearing trout in low densities (10–20 trout/m³), like the ones observed in natural habitats, using live food (larvae and insects), and subjected to environmental stimuli such as refuges, and water and flow variability, equivalent to those observed in local streams. Accompanied by a pre- and post-restocking monitoring program (e.g., evaluation of trout abundances and habitat in the target stream, dispersion and movement patterns and survival), this study will contribute to enhancing the success of future restocking actions, promoting the sustainable enhancement of wild trout populations, and, thus, increasing the interest of restocked fishing grounds for angling activities and associated incomes.

Keywords: *Salmo trutta*; wild-rearing; restocking and management; recreational fisheries



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