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Abstract

How Many Native Brown Trout Species Are There Within the Iberian Peninsula? †

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Abstract

Introduction: Brown trout (*Salmo trutta* L.) is a salmonid fish considered a genetically and geographically highly structured species. The species is catalogued as vulnerable in the Spanish Red List since 1992. Based on morphological differentiation, some authors have proposed splitting *Salmo trutta* into many taxa and in recent years, several binomials involving morphologically differentiated Western Mediterranean brown trout morphs have regained relevance as distinct species and are now assessed in the IUCN Red List. However, Spanish legislation still considers a single species, *S. trutta*, inhabiting Atlantic and Mediterranean rivers. Analyses of mitochondrial DNA variation across the species' native range have revealed numerous matrilineal lineages and helped disentangle the phylogenetic relationships and biogeographic history of brown trout. Four largely distant evolutionary lineages defined by sequencing the mitochondrial control region (Adriatic, AD, Mediterranean, ME, Atlantic, AT and Duero, DU) are native among the Iberian brown trout populations. Stocking activities have resulted in introgressive hybridization of these native populations with non-native northern Atlantic stocks throughout the Iberian rivers and compromise the evolutionary singularities of brown trout in the Iberian Peninsula. **Methodology**: In this study, we compare complete mitogenomes from Iberian brown trout specimens with those from other regions, using both newly sequenced samples and whole mitogenomes from the GenBank database and estimate their divergence times relative to those observed among species of other Salmoninae genera, such as *Oncorhynchus* and *Salvelinus*, to assess patterns of species-specific divergence among Iberian brown trout populations. **Results**: The evolutionary relationships of the specimens using their mitogenomes fitted with previous analyses using partial mitochondrial sequences and confirmed the strong differentiation among the Iberian lineages. All the branches involving distant Iberian mitogenomes are sister branches with taxa historically described under different binomials (such as *Salmo macrostigma*, *S. multipunctatus*, *S. pallaryi*). **Conclusions**: The results provide evidence supporting the existence of potentially distinct and undescribed native *Salmo* species in the Iberian rivers.

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