

Very high genetic fragmentation in a large marine fish, the meagre



The meagre *Argyrosomus regius* is a large Sciaenid fish known to reproduce in the eastern Atlantic and Mediterranean Sea in just five distinct and restricted geographic areas: along the Mauritanian coast and at estuary openings (Gironde, Tagus, Guadalquivir and Nile). The biological traits of *A. regius* (high dispersal capabilities, high fecundity, long larval phase, overlapping generations, reproduction until 40 years of age) are, in principle, favourable to high gene flow, which should lead to genetic homogeneity over large geographic scales. Nevertheless, the high geographic distances between the few reproductive areas leads one to ask whether there is genetic differentiation in this species. In the present study, the genetic differentiation of the wild *A. regius* was investigated across most of its natural range from the Atlantic Ocean (France, Portugal, Spain, Mauritania) to the Mediterranean Sea (Egypt, Turkey), using 11 microsatellite markers previously identified in another Sciaenid, the red drum *Sciaenops ocellatus*. At least two very distinct groups could be identified, separated by the Gibraltar Strait. Genetic divergences (F_{ST} values) were intermediate between the Atlantic samples (0.012–0.041), high between Egypt and the Atlantic (0.06–0.107) or Aegean Sea (0.081) and extremely high between the Aegean Sea and the Atlantic (0.098–0.168). *A. regius* exhibited a very high level of genetic differentiation rarely reported in marine fishes. These results also demonstrate the existence of a sixth independent spawning area in the Menderes delta (Turkey). Factors potentially involved in this very high genetic fragmentation are discussed, including physical barriers, glaciation pulses and biological traits.

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