

## - Genetics and Evolution

### **Fine scale population genomics of the bottlenose dolphin off Western Iberia (northeast Atlantic)**

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Bottlenose dolphin (*Tursiops truncatus*) populations sampled across various geographic regions show fine-scale patterns of genetic structure, likely associated with local habitat preferences. Several population genetic studies have focused on populations from the northeast Atlantic Ocean (NEA), very few including the Portuguese coast. This study investigated the population structure and demographic history of the bottlenose dolphin in this region using double digest restriction site associated DNA sequencing (ddRAD-seq). Samples were collected from the Iberian Peninsula including SW Spain, the Portuguese coast (including Sado estuary), NW Spain and from two Portuguese Macaronesian archipelagos, Madeira and Azores (N=110 samples). We genotyped thousands of single nucleotide polymorphisms markers to study the fine-scale population structure, inbreeding levels and demographic history. Bayesian clustering and Principal Component Analyses showed three major genetic clusters: Pelagic (incl. Madeira and Azores; North Galicia, Portugal coast), Southern/Mediterranean (incl. Gibraltar/Cadiz, previously identified as of Mediterranean origin, and Portugal coast), and Resident (Sado and south Galicia). These clusters differ from each other in terms of genetic diversity and inbreeding levels. While the Pelagic and Southern/Med clusters shows high genetic diversity and a wide geographic distribution, the Resident populations show the opposite. The Resident cluster can be subdivided in Galicia and Sado populations, the latter revealing concerning levels of inbreeding. Preliminary demographic analyses suggest that the Resident populations diverged from the others prior to the Southern/Med-Pelagic divergence, although further analyses are needed. Our results suggest that i) the Resident populations of the Iberian Peninsula should be considered as different management units; ii) bottlenose dolphins sampled along the Portuguese coast are highly genetically diverse, including individuals from the three different clusters; and iii) the Sado population faces a critical situation. Within the framework of the recently proposed SACs for bottlenose dolphins in Portugal, these results highlight the importance of discussions on conservation and management policies.