

# **Bluefin tuna populations in the Mediterranean and the Gulf of Mexico are connected**

- According to a genetic study in larvae directed by the IEO

**An international team of scientists, led by the Spanish Institute of Oceanography (IEO-CSIC), together with researchers from the NOAA Southeast Fisheries Science Center, the universities of Miami and Malaga, and the International Commission for the Conservation of Atlantic Tuna (ICCAT), has genetically characterized the populations of Atlantic bluefin tuna on both sides of the Atlantic Ocean, demonstrating their connectivity, an important advance that will contribute to the sustainable exploitation and conservation of this species.**

**Málaga, 29 June 2021.** Atlantic bluefin tuna (*Thunnus thynnus*) has a prominent ecological role as a top marine predator, with juveniles and adults being capable of performing large transatlantic migrations to feed. However, in the breeding season, Atlantic bluefin tuna exhibit fidelity to the spawning area.

Currently, the International Commission for the Conservation of Atlantic Tuna (ICCAT) manages Atlantic bluefin tuna populations as two stocks: the Eastern stock with the main spawning area in the Mediterranean Sea, and the Western stock with an important spawning area in the Gulf of Mexico. Overexploitation of this valuable fishery resource in recent decades has led to the implementation of strict management measures.

Increasing our understanding through multiple disciplines of the level of connectivity and mixing between bluefin tuna populations is very important to contribute to the sustainable exploitation and conservation of this species. Genetics allows us to observe differences in DNA regions between different individuals of the same species to study their population structure. The analysis of genetic markers in larvae collected in these two spawning areas has enabled us to take a snapshot of the breeding populations. The advantage of exclusively analyzing larvae is that they remain in the spawning area, unlike juveniles and adults that move constantly over long distances.

The results of this study confirm that the populations of bluefin tuna that breed on both sides of the Atlantic Ocean are different, with a high degree of mixing or connectivity between them. "Thus, populations of Atlantic bluefin tuna are mixed in a complex way, and it is necessary to continue to study their populations from multiple approaches and to intensify oceanographic surveys in spawning areas," explains Carolina Johnstone, scientist at the Oceanographic Center of Malaga (IEO, CSIC) and lead author of the article.

This article is part of the “Comparative trophic ECOlogy of Larvae of Atlantic bluefinTUNa from NW-MED and GOM (ECOLATUN)” project financed by the Spanish “Plan Nacional de I+D+I” (CTM2015-68473-R, (MINECO / FEDER), with the main aim of investigating, under a comparative perspective using diverse methodological approaches, how differences in feeding strategies can explain the daily variability in the growth of bluefin tuna larvae and, consequently, in their survival and recruitment. This project has allowed us to improve the characterization of the populations of Atlantic bluefin tuna, and to define with greater precision the most suitable habitats for the survival of larvae, which will positively impact the development of predictive models of larval survival, which are of great relevance for the management of the fishery.

**Reference:** Johnstone C, Pérez M, Malca E, Quintanilla JM, Gerard T, Lozano-Peral D, Alemany F, Lamkin J, García A, Laiz-Carrión R. 2021. Genetic connectivity between Atlantic bluefin tuna larvae spawned in the Gulf of Mexico and in the Mediterranean Sea. PeerJ 9:e11568 <https://doi.org/10.7717/peerj.11568>

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**Más información:** 913 421 100 prensa@ieo.es @IEOceanografia @IEOceanografia www.ieo.es