

## JAEPRE23-22

**Project title** | Spatio-temporal dynamics of oceanic sharks and rays interacting with tropical tuna fisheries in the Atlantic Ocean and risk assessments for informing spatial management tools for bycatch reduction

**Summary** | The sustainability of tuna fisheries still faces many challenges protecting Endangered, Threatened and Protected (ETP) species that interact with their fishing operations. Understanding the species distributions and their environmental preferences is essential to identify bycatch hotspots of ETP species and minimize their interactions with tuna fisheries. This PhD project will (1) model the spatio-temporal patterns of bycatch and environmental preferences of oceanic sharks and rays as well as the fishing activity of major fleets in the tropical Atlantic in order to predict high bycatch risk areas, and (2) develop spatially-explicit ecological risk assessment to simulate current and future changes in vulnerability status of oceanic sharks and rays under the influence of current and future hypothetical conservation and management measures. Ultimately, this PhD project aims to improve our understanding and management of ocean biodiversity and fisheries in the high seas by increasing the capacity of international fisheries management organizations to integrate spatial ecology tools into ecosystem-based fisheries management, and ensure tuna and billfish fisheries continue providing food security, vital livelihoods and economic benefits around the world while safeguarding marine biodiversity.

**Location** | This PhD project will be developed at CN IEO-CSIC in Madrid. The IEO-CSIC national center is the leading agency dedicated to research, innovation, and training in marine sciences, especially in relation to scientific knowledge of the oceans, the sustainability of fishery resources and the marine environment. IEO-CSIC researchers provide scientific and technological advice to national (e.g. Ministry of Agriculture, Fisheries and Food), European (e.g. ICES, DG MARE) and international (e.g. Working Groups in RFMOs, FAO and IUCN) advisory and management organizations on matters related to achieve sustainable use and protection of the marine environment.

**Supervision** | This PhD project will be supervised by PI Dr. Maria José Juan Jordá (Científica Titular, IEO-CSIC, Madrid, main applicant for the JAE-PRE contract) and co-supervised by Dr. Maria Grazia Pennino (Científica Titular, IEO-CSIC, Madrid).

**Training activities program** | The core training program will ensure the PhD student will acquire all the skills necessary to carry-out the PhD project objectives successfully as well as to become an independent-scientist. These include:

- Analysis of fisheries and environmental datasets
- Habitat modelling with advance statistical techniques
- Ecological risk assessments
- Communication skills
- Scientific writing and development of research proposals
- Skills for collaborative science, networking and participating in relevant working groups