
Study of the presence of macroplastics and microplastics in the stomach content of juvenile bluefin tunas and their diet in the Mediterranean Sea.

Júlia López Barrón^{*1,2}, Margarita Frau^{1,2}, Immaculada Bernal², Valentina Fagiano²,
Maria Valls Mir², Salud Deudero², and Carme Alomar²

¹Universitat de les Illes Balears = Universidad de las Islas Baleares = University of the Balearic Islands (UIB) – Cra. de Valldemossa, km 7.5. Palma Illes Balears, Spain

²Instituto Español de Oceanografía (IEO) – Muelle de Poniente, s/n, 07015 Palma, Balearic Islands, Spain

Abstract

The Mediterranean Sea has become one of the seas with one of the highest abundances of plastic pollution worldwide (2). Due to this increase, the study of micro and macroplastics have been carried out to see how the presence of plastics on the marine ecosystems and the different species that habit on them (1), (3),(4). This problem has also affected food chains due to the bioaccumulation of micro and macroplastics along trophic webs, affecting large predators and species of commercial interest. (1). The main objective of this work is to study for the first time microplastic ingestion and the relation with their diet in juveniles of one of the most important top predators of the Mediterranean Sea, the bluefin tuna (*Thunnus thynnus*). The study is mainly focused on individuals between 20 and 40 cm (juveniles) (300 in total), which were captured in recreational fishing contests, with different methodologies and in different parts of the Spanish Mediterranean coast (Tarragona, Mazarrón, Castellón and València) between 2016 and 2017. After the capture, analysis of the stomach contents was carried out both to identify and quantify prey and micro and macroplastics. The composition of microplastics and macroplastics were analysed with the Fourier Transform Infrared Spectroscopy. The results obtained showed a presence of plastics in approximately 30% of the individuals and a high number of anchovy and cephalopod preys. Therefore, this study helps us determine, in a little more depth, the presence of microplastics and macroplastics in one of the most relevant marine species in the Mediterranean both for marine ecosystems and for human use due to its commercialization, and therefore, a prediction of how this problem could evolve over time.

Keywords: Microplastics, macroplastics, bluefin tuna, *Thunnus thynnus*, Mediterranean Sea, stomach content, trophic chain.

*Speaker