

IMPACTS OF MICROPLASTICS ON MARINE FOOD WEBS: A REVIEW

K. Ugwu*¹, A. Herrera¹, R. Almeda¹, M. Gómez¹

¹ Marine Ecophysiology Group (EOMAR), IU- ECOAQUA. Universidad de Las Palmas de Gran Canaria, Canary Islands, SPAIN.

kevin.ugwu@ulpgc.es; alicia.herrera@ulpgc.es; may.gomez@ulpgc.es; rodrigo.almeda@ulpgc.es

Abstract: Plastics are the most abundant component in marine debris. In turn, microplastics (<5 mm) are those most found to be ingested by marine biota. This review will show the current state of studies of effects of microplastics on marine biota, specifically what groups of vertebrates most affected by ingestion of microplastics, and the type and predominant colour of ingested microplastics. Additionally, we evaluate how plastic additives and leachates can affect marine organisms, particularly plankton. With respect to vertebrates, we review a total of 180 articles published from January 2010 to April of 2022. Our results show that the group most affected are turtles with 88% of the specimens contaminated by microplastics and median of 122 particles per individual. The predominant type was fibers (67.3%), the dominant polymer was polyethylene (27.3%), the size was less than 2 mm (73.6%), and colour was blue (32.9%). Regarding plastic additives, we found that plastic leachates are toxic to marine planktonic organism, from bacteria to copepods, causing lethal and sublethal effect (decreased growth and development, malformations, etc). Therefore, microplastics and their associated chemical additives are a serious threat for marine food webs, particularly in coastal areas and hotspots of plastic debris such as the Canary Islands.

Key words: Microplastics; Marine vertebrates; Plankton; Marine food webs; Additives.

Acknowledgments: MICROPLEACH PROJECT (PID2020-120479GA-I00) financed with I+D+i 2020 funds of the Spanish Ministry of Science and Innovation, IMPLAMAC (MAC2/1.1a/265) Interreg MAC (European Fund to Regional Development, Macaronesian Cooperation) and INDICIT II (European Commission, MSFD-SECOND CYCLE: IMPLEMENTATION OF THE NEW GES DECISION AND PROGRAMMES OF MEASURES).