

## UNDERSTANDING MICROPLASTICS DISTRIBUTION IN THE CANARY ISLANDS FROM A GLOBAL PERSPECTIVE

C. Villanova-Solano<sup>1,2</sup>, R. Pérez-Reverón<sup>1</sup>, M. Sevillano-González<sup>1</sup>, C. Hernández-Sánchez<sup>2,3</sup>, F.J. Díaz-Peña<sup>4</sup>, J. González-Sálamo<sup>1,2,5</sup>, M. González-Pleiter<sup>6</sup>, D. Vega-Moreno<sup>7</sup>, E. Fraile-Nuez<sup>8</sup>, F. Machín<sup>9</sup> and J. Hernández-Borges<sup>\*1,2</sup>

<sup>1</sup> Departamento de Química, Universidad de La Laguna (ULL), San Cristóbal de La Laguna, SPAIN.

*cvillano@ull.edu.es, alu0100948400@ull.edu.es, jgsalamo@ull.edu.es, jhborges@ull.edu.es*

<sup>2</sup> Instituto Universitario de Enfermedades Tropicales y Salud Pública de Canarias, Universidad de La Laguna (ULL), San Cristóbal de La Laguna, SPAIN.

*cvillano@ull.edu.es, chernans@ull.edu.es, jgsalamo@ull.edu.es, jhborges@ull.edu.es*

<sup>3</sup> Departamento de Obstetricia y Ginecología, Pediatría, Medicina Preventiva y Salud Pública, Toxicología, Medicina Forense y Legal y Parasitología, Universidad de La Laguna (ULL), San Cristóbal de La Laguna, SPAIN.

*chernans@ull.edu.es*

<sup>4</sup> Departamento de Biología Animal, Edafología y Geología, Universidad de La Laguna (ULL), San Cristóbal de La Laguna, SPAIN.

*fdiazpe@ull.edu.es*

<sup>5</sup> Department of Chemistry, Sapienza University, Rome, ITALY.

*jgsalamo@ull.edu.es*

<sup>6</sup> Departamento de Biología, Universidad Autónoma de Madrid (UAM), Madrid, SPAIN.

*mig.gonzalez@uam.es*

<sup>7</sup> Departamento de Química, Universidad de Las Palmas de Gran Canaria (ULPGC), Las Palmas de Gran Canaria, SPAIN.

*daura.vega@ulpgc.es*

<sup>8</sup> Centro Oceanográfico de Canarias, Instituto Español de Oceanografía (IEO), Consejo Superior de Investigaciones Científicas (CSIC), Santa Cruz de Tenerife, SPAIN.

*eugenio.fraile@ieo.es*

<sup>9</sup> Departamento de Física, Universidad de Las Palmas de Gran Canaria (ULPGC), Las Palmas de Gran Canaria, SPAIN.

*francisco.machin@ulpgc.es*

### Abstract:

Microplastics (MPs) pollution is undoubtedly one of the most important environmental problems that human beings have to face, from the marine environment to the air and soil, as well as its presence in the biota. Understanding the distribution of MPs in a certain region requires the study of their occurrence in the different environmental compartments and their migration between them to achieve a global vision of the way they are transported and their final fate.

In this work, the results of MPs monitoring in complex environmental samples of the Canary Islands in relatively close periods (i.e. seabed sediments, sea urchins, fish stomachs, soils, recycled wastewater and desalinated brackish water) are presented, providing an overview of the current degree of MPs contamination; furthermore, the similarity between the distribution pattern found (sizes, shapes, colours and composition) shows the connection

between such compartments and, in particular, the need to develop interdisciplinary and long-term studies to fully evaluate this issue in sufficient detail (Pérez-Reverón et al., 2022, Sevillano-González et al., 2022, Villanova-Solano et al., 2022).

**Key words:** Microplastics, sediments, living organisms, Canary Islands, Fourier Transform Infrared microscopy, Raman microscopy

**Acknowledgments:** J.G.S. would like to thank ACIISI (Canary Agency of Research, Innovation and Society Information) for the Catalina Ruiz contract at the Universidad de La Laguna. Authors acknowledge financial support from “Fundación Diario de Avisos” (MICROSED project), Government of the Canary Islands (DeepPLAS project, ProID2020010030), Spanish Ministry of Science and Innovation (projects PID2020-113769RB-C21/22 and PID2020-112867GB-I00), the Transnational Cooperation Program Azores-Madeira-Canary Islands for the “IMPLAMAC” project (reference number MAC2/1.1a/265) financed with FEDER funds and VULCANA project funded by the Spanish Institute of Oceanography (IEO-CSIC)

### References:

- C. Villanova-Solano, F.J. Díaz-Peña, C. Hernández-Sánchez, J. González-Sálamo, M. González-Pleiter, D. Vega-Moreno, F. Fernández-Piñas, E. Fraile-Nuez, F. Machín, J. Hernández-Borges, (2022). Microplastic pollution in sublittoral coastal sediments of a North Atlantic island: The case of La Palma (Canary Islands, Spain). *Chemosphere*, 288, 132530.
- M. Sevillano-González, J. González-Sálamo, F.J. Díaz-Peña, C. Hernández-Sánchez, S. Catalán Torralbo, A. Ródenas Seguí, J. Hernández-Borges, (2022). Assessment of microplastic content in *Diadema africanum* sea urchin from Tenerife (Canary Islands, Spain). *Marine Pollution Bulletin*, 175, 113174.
- R. Pérez-Reverón, J. González-Sálamo, C. Hernández-Sánchez, M. González-Pleiter, J. Hernández-Borges, F.J. Díaz-Peña, (2022). Recycled wastewater as a potential source of microplastics in irrigated soils from an arid-insular territory (Fuerteventura, Spain). *Science of the Total Environment*, 817, 152830.