

Ecotoxicological effects of Microplastics in Marine Ecosystems



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RESULTS



Standard protocol for extraction and characterisation of microplastics from biota and extensive field work validates that plastics of different sizes are everywhere in the marine environment.



New, promising models, endpoints, and methods for ecotoxicological characterisation of microplastics beyond the state of current standard approaches.



Chemical additives and associated pollutants are potentially more toxic than the polymer itself. The current composition of additives of any plastic object remains unknown.

IMPACT



416 Facebook Likes, 130 Twitter followers



IMPACT 2017 EPHEMARE International Microplastics Photo Competition: 43 Submissions. Selected entries used in exhibitions including national science festivals and the Ocean Plastics Lab (<http://oceanplasticslab.net/>)



The Race for Water Campaign (www.raceforwater.com), EPHEMARE fieldwork in Bermuda and Guadeloupe. 14 Facebook posts, 8 Tweets, 4 blog posts, 1 workshop (Bermuda), 1 Conference—University of Antilles (Guadeloupe)

Project Duration	36 months	Lead Partner	University of Vigo, Spain
Start	January 2016	Total Partners	16
End	December 2018	Project Cost	€3,154,000

Universidade de Vigo



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EPHEMARE Aims and Objectives

EPHEMARE aims to investigate the uptake, tissue distribution, final fate and effects of microplastics in organisms representative of pelagic and benthic ecosystems by achieving the following objectives:

- To examine the potential role of microplastics as vectors of model Persistent Pollutants that readily adsorb to their surfaces.
- To assess by means of internationally recognised standards and methods whether microplastic accumulation leads to detrimental effects at molecular, cellular, physiological and organism levels.
- To test the suitability of exposure and effect biochemical, cellular and physiological biomarkers and cutting edge methods to trace microplastics exposure.
- To assist public and private stakeholders with the scientific basis for the development and compliance with general environmental regulations concerning chemicals used in plastic production.
- To raise public awareness on the risks that the less visible plastics pose to marine ecosystems and, eventually, human health.

Who is involved?

EPHEMARE is conducted by a multidisciplinary consortium of 14 partner institutes from Belgium, France, Germany, Ireland, Italy, Norway, Portugal, Spain, Sweden and microplastics experts from the UK. EPHEMARE is one of four approved projects following the 2014 JPI Oceans Pilot Call on ecological effects of microplastics.

Project Structure

EPHEMARE is structured into 7 tightly interconnected WPs that aim to investigate adsorption of chemicals on microplastics (WP1), their ingestion, trophic transfer and chemical release (WP2 and WP5), and a wide array of ecotoxicological effects (from transcriptomic to cell damage and organism responses), using several invertebrate and vertebrate models.

Different typologies of polymers both virgin and previously contaminated and exposure conditions will be tested (WP3 and WP4) in order to highlight and validate mechanistic relationships and mode of action of microplastics and associated chemical compounds, while field validation studies (WP6) will allow to link the ecotoxicological findings from laboratory studies to the environmental scale.

WP7 is communicating and disseminating project information and results through effective social media promotion, web content management, production of informational and educational materials, and stakeholder engagement.

