

# EPHEMARE

## Ecotoxicological effects of microplastics in marine ecosystems

### Project Description

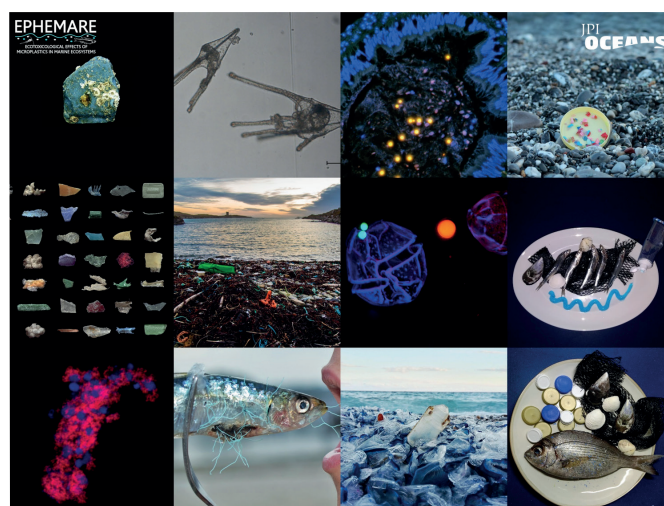
**Project Coordinator:** Prof. Ricardo Beiras, University of Vigo, Vigo, Spain

**Project Period:** January 1, 2016 - December 31, 2018

Plastics, synthetic polymers virtually unknown prior to their broad commercialization in the 1950s, are nowadays ubiquitous in the environment, and their global production continues to rise. They are not biodegradable, but undergo weathering that produce increasingly small particles termed microplastics, within the micron to mm range. Microplastics can be taken up by suspension and sediment feeders, and incorporated into the trophic webs. Microplastics also can be toxic per se due to additives used by industry as colorants, plasticizers, flame retardants, etc. In addition, they concentrate hydrophobic chemicals, persistent pollutants (PPs), found in extremely low concentrations in seawater. EPHEMARE, targets (1) the uptake, tissue distribution, final fate and effects of microplastics in organisms representative of pelagic and benthic ecosystems, and (2) the potential role of microplastics as vectors of model PPs that readily adsorb to their surfaces. EPHEMARE is constituted by a European Consortium that includes experts in diverse areas of biology, chemistry, marine sciences and science communication.

Within the first half of the project model contaminants were adsorbed in different types of microplastics at different concentrations. Subsequently, contaminated microplastics were used to feed specific marine species to measure their uptake, elimination and accumulation rates. The project studied biological effects of marine pollutants at molecular, cellular, physiological and organismic levels through the implementation of several experiments in partner laboratories, to allow for detection of effects of microplastics across the main phyla of marine organisms from bacteria to fish covering most of the trophic levels. EPHEMARE's field validation studies commenced with several sampling campaigns organised in different areas of the Mediterranean, the Adriatic and in the

Bermuda island territories, where the proximity of the oceanic gyre is causing the accumulation of marine debris. Initial results of these campaigns showed that microplastics are present almost in every fish specimen and further studies are on their way to link ecotoxicological findings from laboratory studies to environmental scale.



**COLLAGE OF SELECTED SUBMISSIONS TO THE EPHEMARE PHOTO – COMPETITION 'IMPACT 2017'**

EPHEMARE activities and findings have been documented via the projects social media outlets and through the project website to communicate to diverse audiences and project partners took part in several thematic outreach events to engage the public. To raise the profile of the project and general awareness about microplastics in our oceans, EPHEMARE produces targeted factsheets, a yearly newsletter and implements awareness raising campaigns such as the IMPACT 2017, an EPHEMARE photo competition, which invited international participants to use the medium of photography to express their views about microplastics in our oceans.

# Consortium

Name	Organisation	Country
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## Associated partners

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