

Image Credit: Chiara Gambardella (CNR-IAS)

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RESPONSE

Project Newsletter Issue No: 3

We are delighted to bring you our third and final RESPONSE project newsletter! This newsletter provides an overview of our research milestones and outputs in the project to date, but also highlights the range of activities that will take place into 2024!

In the following pages, you will find links to papers, presentations, and other activities of interest. You will also find information on the RESPONSE Weight-of-Evidence model tool developed during the project, the range of citizen science activities that our partners are collaborating on and our upcoming special journal issue!

The RESPONSE team!



The **RESPONSE** project is supported through the Joint Programming Initiative: Healthy and Productive Seas and Oceans (JPI Oceans).

OBJECTIVES

GAIN NEW KNOWLEDGE on the spatial and temporal distribution of microplastics and nanoplastics in marine ecosystems

CHARACTERISE ECOLOGICAL THRESHOLDS for specific features of microplastics that can affect their ingestion and toxicity in marine organisms

INVESTIGATE THE ECOTOXICOLOGICAL HAZARD of still unexplored particles such as nanoplastics and biodegradable polymers

PROVIDE A QUANTITATIVE MODEL for assessing the potential impact of MPs in the marine environment, considering the environmental impact of multiple stressors

SET UP AN ANALYTICAL SMART HUB that will share innovative technologies and application expertise for analytical needs, along with contributing to methodological improvement and training

INCREASE PUBLIC UNDERSTANDING of the ecological risk of microplastics and nanoplastics and increase public action

Image Credit: Chiara Gambardella (CNR-IAS)

About RESPONSE

The RESPONSE project brings together 14 partner institutions from across Europe with expertise in oceanography, environmental chemistry, ecotoxicology, experimental ecology and modelling to answer key research questions about the fate and biological effects of microplastics and nanoplastics in marine ecosystems.

We will be identifying possible accumulation zones in European coastal ecosystems by studying hydrological transport dynamics; analysing the abundance and type of micro- and nanoplastics found in marine species by sampling representative marine animals; identifying how plastic particles, along with other environmental stressors, affect the health of species and food webs; and synthesising this research into a Weight of Evidence model.



RESPONSE AT-A-GLANCE



**Funded
Through JPI
Oceans**



**12 National
Funding
Agencies**



**14 Research
Partners
Across
Europe**



**8
Interconnected
Work Packages**



**40 Published
Reports and
Papers**

RESPONSE WORK PACKAGES

1. Monitoring Microplastics in European Coastal Areas
2. Biological Fate of Microplastics and Nanoplastics
3. Biomarkers in Ecological Risk of Microplastics
4. Bioassays in the Ecological Risk of Microplastics & Nanoplastics
5. Effects of Microplastics on Ecological Functioning
6. Weight of Evidence (WOE) Model for Microplastics
7. Smart Hub of Analytical Facilities
8. Communication and Dissemination

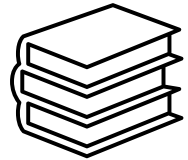


RESPONSE Project Milestones

Milestone 1

Publications

The RESPONSE project produced 40 peer-reviewed articles, reports and book chapters to date.



Milestone 2

Posters

The RESPONSE project delivered 35 poster presentations across 8 international conferences and workshops.



Milestone 3

Presentations

The RESPONSE project has delivered 50 oral presentations across 15 international conferences and workshops.



Milestone 4

Awards

3 awards received by RESPONSE project researchers for their conference poster contributions.



PROJECT ACTIVITIES

+ Communicating Microplastics: Identifying Inaccuracies, Barriers and Best Practice – Science Communication Workshops and Report


University College Cork

The science communication and dissemination of the RESPONSE project's activities and results are coordinated and managed by the Coastal & Marine Science Communication, Stakeholder Engagement and Societal Impact (SCEI) research group at [MaREI, the SFI Centre for Energy, Climate, and Marine](#) at University College Cork, Ireland.

As part of the communications work undertaken by the SCEI research group, two online workshops were designed and implemented to assess public perceptions relating to the communication of marine microplastic pollution. The objective of these workshops was to gain insight into the experiences of scientists, and policy and decision makers in order to co-develop recommendations on navigating science communication challenges and misinformation.

Workshop 1 was held with microplastic experts from within the RESPONSE consortium to ascertain their experiences in communicating research about microplastic pollution and make recommendations on how policy and decision makers and funding bodies can best support researchers and scientists in their ongoing communication efforts.

Workshop 2 was undertaken with policy and decision makers and representatives of RESPONSE's funding bodies. Participants of Workshop 2 were presented with the recommendations from Workshop 1, which gave participants the opportunity to reflect on the perspectives shared by scientists, and to develop additional recommendations (p.7) from the perspectives of policy and decision makers.



'Plastic Bombing'
- Simone Bava,
EPHEMARE Photo
Competition 2017



Image Credit: Beatriz Noya-Mariño

+ Communicating Microplastics: Identifying Inaccuracies, Barriers and Best Practice – Science Communication Workshops and Report

...continued from page 5

These consecutive workshops:

- facilitated discussion around the experiences of expert scientists, and decision and policymakers regarding the inaccuracies relating to microplastics in the public domain;
- identified challenges and barriers that hinder effective science communication about marine microplastics;
- and encouraged participants to make targeted recommendations on how effective science communication about microplastics can be supported.

The findings and recommendations from these workshop discussions along with a comprehensive literature review and methodological statement, can be accessed in our recently published report '*Science Communication and Marine Plastic: Perspectives on the (Mis) Communication of Microplastics*' (Agnew et al., 2023). A summary document of the report has been prepared by partners at UCC that is available at the following [link](#)



Agnew, S., Kopke, K., Dozier, A., Power, O-P., Fitzgerald, E., Mateos-Cárdenas, A., Regoli, F. (2023) *Science Communication of Marine Plastic Pollution*. JPI Oceans-funded RESPONSE project.

Read the Report [here!](#)


PROJECT ACTIVITIES

+ Communicating Microplastics: Identifying Inaccuracies, Barriers and Best Practice – Six Key Recommendations

University College Cork

The six key recommendations from this report are presented below:

- I. Increased awareness raising about existing and potential miscommunication and misperception concerning microplastic pollution to support mitigation efforts across the communicator-science-policy-society interface.
- II. Clear communication of uncertainties to foster critical thinking and informed decision making.
- III. A global entity that provides scientific-based information to support the informed development of international agreements that address microplastic pollution.
- IV. Consideration to the geographical and socio-economic settings to effectively address misperceptions and miscommunications about microplastic pollution.
- V. Direct collaboration and workshops between stakeholders to address miscommunication around plastic pollution and microplastics in the public domain
- VI. The establishment of networks between funding bodies, decision and policymakers, microplastic research experts, and science communicators to support the development of effective and adequately resourced science communication about microplastic pollution.



'Plastic Bombing'
- Simone Bava,
EPHEMARE Photo
Competition 2017



Image Credit: Rodrigo Almeda

PROJECT ACTIVITIES

+ Are Biodegradable Plastics Environmentally Safer Than Conventional Plastics? A Mesocosm Approach.

National Institute of Aquatic Resources, Section for Ocean and Arctic

The RESPONSE consortium in collaboration with scientists from the Spanish national project MICROPLEACH conducted mesocosm experiments to investigate the ecological effects of commercial biodegradable plastics compared to conventional plastics using a community level approach (WP5-RESPONSE).

The consortium obtained a grant, “AQUACOSM-plus-BIOPLAST”, funded by the European Commission EU H2020-INFRAIA to support this joint research. The study, coordinated by Dr. Rodrigo Almeda (ULPGC, DTU), was conducted in the Mesocosm Facility at Umeå Marine Sciences Centre (Sweden) in May-june 2023 and involved 21 scientists from 9 different EU research institutions.

Preliminary results show that the studied commercial biopolymers (PLA,

PHBv) were significantly more toxic than the conventional plastics (polypropylene, PP) to plankton communities from Baltic waters. The team is working on chemical analyses and biomarkers on fish and bivalves to evaluate the potential ecological impact of “bioplastics” on aquatic ecosystems.



Image Credit: Rodrigo Almeda

PROJECT ACTIVITIES

+ Weight-Of-Evidence Model (WOE)

Department of Life and Environmental Sciences, Polytechnic University of Marche (UPM)

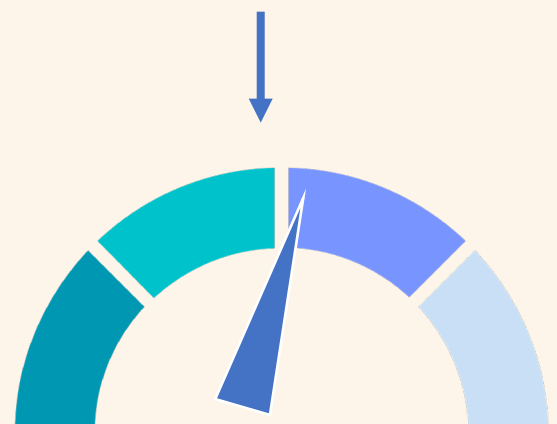
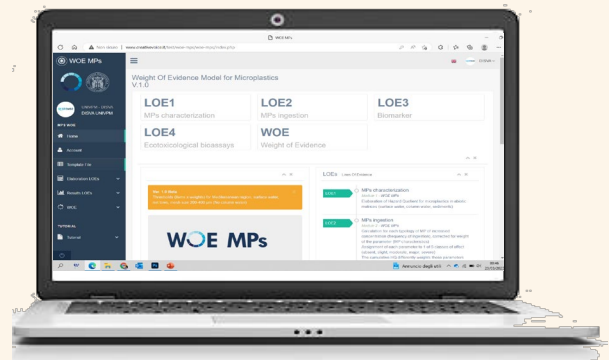
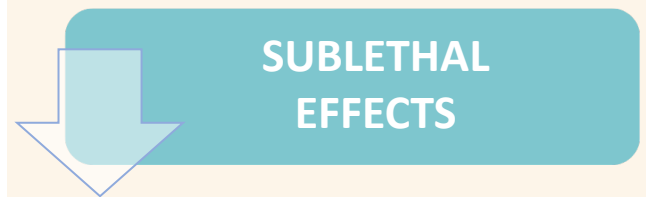
One of the ambitions of the RESPONSE project was the development of a Weight-of-Evidence (WOE) model as a practical tool allowing researchers to synthesize and integrate huge amounts of heterogeneous results typically obtained when we investigating different aspects of microplastics in the marine environment.

Using mathematical algorithms similar to those originally developed for chemical pollutants, our partners at UPM have created a new WOE model and dedicated software which will provide individual hazard indices for each typology of data submitted before their final integration in a WOE risk index.

This tool boasts an accessible user interface designed for non-specialist stakeholders, and an intuitive working environment in which it is possible to select the typology of data and Lines-of-Evidence (LOEs) to elaborate. It also allows users to import results from conventional excel files in which we typically store data related to microplastic monitoring.

This tool can be used on any device and will be released as an open access piece of software with personalised login page shortly.

LINES OF EVIDENCE



Microplastics Hazard Index



Image Credit: PtJ_Christin Lambertz

PROJECT ACTIVITIES

+ JPI Oceans End-Term Meeting

JPI Oceans, All Partners

RESPONSE partners delivered a number of presentations across five sessions during this event across XX sessions with XX presentations. Our project coordinator Francesco Regoli also was present on the last day as a chair of the final research session.

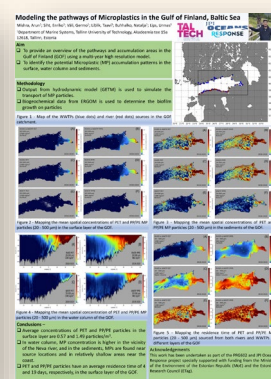
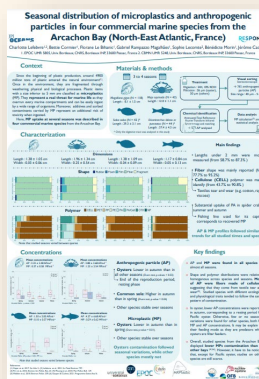
Six research posters were also submitted by research partners from TalTEch, the University of Bordeaux, and the Polytechnic University of Marche. These posters highlighted the range of activities that were carried out across the consortium and showcased the communication and dissemination, and outreach events and activities organised by our partners.

As the closing of this event, our REPSONSE coordinator Francesco Regoli had the opportunity to present the results of the work conducted on developing our Weight-of-Evidence (WOE) model tool and the opportunities it presents to researchers working with different aspects

Of microplastics in the marine environment. This WOE model tool is due to be launched in the coming months by our partners at the Polytechnic University of Marche.

We would like to take this opportunity to thank Jella Kandziora and Willem De Moor from JPI Oceans, and Veronika Cunningham from the Marine Institute for all their support in developing and implementing this event and for their ongoing support in the delivery of our project.

Don't forget you can access all our RESPONSE project posters including the ones from this event at the following [link!](#)



MOBY LITTER-IV
MOBY LITTER 2023
 RIFIUTI PORTO A PORTO

ANCONA 25 LUGLIO
FANO 26 LUGLIO
SAN BENEDETTO DEL TRONTO 27 LUGLIO

PRESENTAZIONE DEL GREENPLASMA
 ENERGIA PULITA DAI RIFIUTI DEL MARE

Logos: Università Politecnica delle Marche, IRIS, Fondazione Cariverona.

CITIZEN SCIENCE CAMPAIGNS

+ Moby Litter 2023

National Research Council Institute for the Study of Anthropic Impacts and Sustainability in the Marine Environment (CNR-IAS)

Our research partners at CNR-IAS participated in the Moby Litter project workshop that was held from the 25th – 27th of July this year, that was organised by Polytechnic University of Marche.

This workshop focuses on the issue of marine plastic pollution and presented perspectives from scientists, civil society, industry, control bodies, and schools. As part of the event, the

This workshop is in its fourth year, and took place across three seaside towns: Ancona, Fano, and San Benedetto del Tronto. You can follow the day's proceedings in the YouTube video that is linked below!

MOBY LITTER-IV
ANCONA 25 LUGLIO 2023 ORE 9.00
 Dipartimento di Scienze della Vita e dell'Ambiente DISVA - Aula Azzurra Mario Giordano

RIFIUTI PORTO A PORTO GREEN PLASMA ENERGIA PULITA DAI RIFIUTI DEL MARE

Saluti 9.00
 Gian Luca Gregori Rettore Università Politecnica delle Marche, Daniele Silveti Sindaco di Ancona, Vincenzo Garofalo Autorità di Sistema Portuale del Mare Adriatico Centrale, C.F. (CP) Luca Provenzano Capitaneria di porto di Ancona, Angelo Recchi Regione Marche Settore Fonti energetiche, rifiuti, cave e miniere, Rossana Cintoli e Giorgio Catenacci Direttore generale e Direttore Tecnico Scientifico ARPA Marche, Marco Ciarulli Presidente Legambiente Marche, Gian Marco Luna Direttore CNR-IRBIM, Francesco Regoli Direttore Dipartimento di Scienze della Vita e dell'Ambiente, UNIVPM

Interventi
 Stefania Gorbi Dipartimento di Scienze della Vita e dell'Ambiente, UNIVPM
Plastica da rifiuto a risorsa, l'opportunità per uno sviluppo sostenibile
 Matteo Giantomassi ATA Rifiuti
Pianificazione, progetti e risultati per un territorio sostenibile e circolare
 Raffaella Giugni Marevivo
La nuova Campagna di Marevivo "Only One: One Planet, One Ocean, One Health"
 Manuel Lai IRIS srl
Green Plasma: una tecnologia innovativa per contrastare l'inquinamento da plastiche in mare

11.00 Presentazione Green Plasma
 Energia pulita dai rifiuti del mare

11.30
 Francesca Garaventa CNR-IAS
Citizen Science e Sport al servizio del mare: il progetto MicroPlastic Hunters
 Paolo Baldoni Garbage Group
PELIKAN RIVER - L'esperienza sul fiume Aniene con la Regione Lazio
 Sofia Foschi, Tommaso Mosca 2Hands Ancona
2hands Ancona: un anno di attività
 Fabio Sturani Esercycling
Un progetto di economia circolare: dalla gomma esausta ai parchi gioco e piste di atletica

Logos: IRIS, RESPONSE SOLVING, NATIONAL BIODIVERSITY FUTURE CENTER, CNR, MAREVIVO, Garbage Group, 2hands, FONDAZIONE CARIVERONA.

MOBY LITTER-IV
ANCONA 25 LUGLIO 2023 ORE 9.00
 Dipartimento di Scienze della Vita e dell'Ambiente DISVA - Aula Azzurra Mario Giordano

RIFIUTI PORTO A PORTO GREEN PLASMA ENERGIA PULITA DAI RIFIUTI DEL MARE

11.00 Presentazione Green Plasma
 Energia pulita dai rifiuti del mare

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2hands Ancona: un anno di attività
 Fabio Sturani Esercycling
Un progetto di economia circolare: dalla gomma esausta ai parchi gioco e piste di atletica

Logos: IRIS, RESPONSE SOLVING, NATIONAL BIODIVERSITY FUTURE CENTER, CNR, MAREVIVO, Garbage Group, 2hands, FONDAZIONE CARIVERONA.



Image Credit: Elisa Costa

CITIZEN SCIENCE CAMPAIGNS

+ Plastic Pirates Project

National Research Council Institute for the Study of Anthropic Impacts and Sustainability in the Marine Environment (CNR-IAS)

‘Plastic Pirates – Go Europe!’ is a European citizen science campaign, in which school classes and youth groups collect plastic samples from streams and rivers and document their findings.

The collected data from these sampling events is then analysed by scientists and researchers. In this way, young European citizens are making an important contribution to what extent pollution is caused by plastic waste.

Our research partners at CNR are undertaking sampling activities as part of this citizen science campaign and attended the initiatives general assembly this June which took place in Rome.

You can learn more about the Plastic Pirates project by clicking the below image!



CITIZEN SCIENCE CAMPAIGNS

+ The Water Code (TWC) Education Project

National Research Council
Institute for the Study of
Anthropic Impacts and
Sustainability in the Marine
Environment (CNR-IAS)

The Water Code, is a global citizenship and sustainability education project that aims to spread knowledge, skills, attitudes, and behaviours for the promotion of sustainable development, environmental protection, and mitigation of anthropogenic impact on the world's rivers, lakes, and seas.

This project will mobilise student from elementary, middle, and high schools, along with broader school communities, local administrators and citizens across 9 Italian regions and autonomous provinces.

As part of this project, our partners at CNR-IAS will participate in editorial board activities to develop a Digital Teaching Kit to promote sustainable development. They will also participate in the organization of outdoor educational activities designed to engage both students and citizens. This will be achieved through microplastics sampling activities and the monitoring of coastal surface waters.

You can read more
about the project [here!](#)

THE
WATER
CODE



La formula per una gestione sostenibile
delle risorse idriche del mondo.
(AID 012618/02/1)

Regional Distribution:



1. Liguria
2. Piemonte
3. Umbria
4. Toscana
5. Lazio
6. Calabria
7. Sicilia
8. Prov Autonoma
Trento
9. Lombardia
10. Puglia

Expected Results:

- ▶ Increase teachers' capacity to educate students on sustainable development & active global citizenship.
- ▶ Increase student knowledge of causes & effects of water pollution, & their skills to promote sustainable development.
- ▶ Increase citizen awareness of the negative consequences of anthropogenic impacts on the natural environment.
- ▶ Increase knowledge of the correct behaviours to reduce the negative impact on rivers, lakes, & seas of the world.

COLLABORATIVE RESEARCH SPOTLIGHT

+ Special Issue: Environmental Pollution

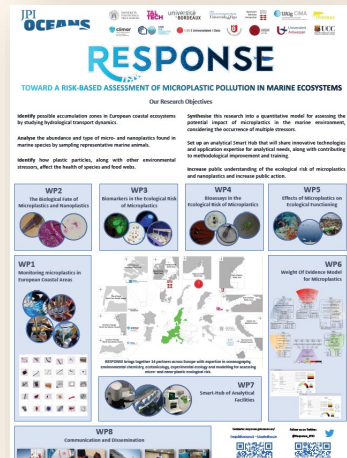
Jella (JPI Oceans Secretariat), and JPI-Oceans funded projects: ANDROMEDA, RESPONSE, FACTS, Microplastix, Hotmic, and i-plastic,

This JPI Oceans special issue forms part of the ongoing collaborative communication and dissemination strategies developed throughout 2023 with the JPI Oceans secretariate, to maximise on the impact of project activities from all six sister projects funded under the joint action 'Ecological Aspects of Microplastics'.

This special issue will contain a total of 30 publications (five from each sister project) that highlight new and innovative research in the field of microplastics and nanoplastics research.

This special issue will be open access and will be made available in early 2024 so don't forget to follow our social media and website to keep up to date with its release!

Don't forget, you can get complete access to our publications, posters, and multimedia from our project website at the following [link!](#)



JPI OCEANS
Joint Action

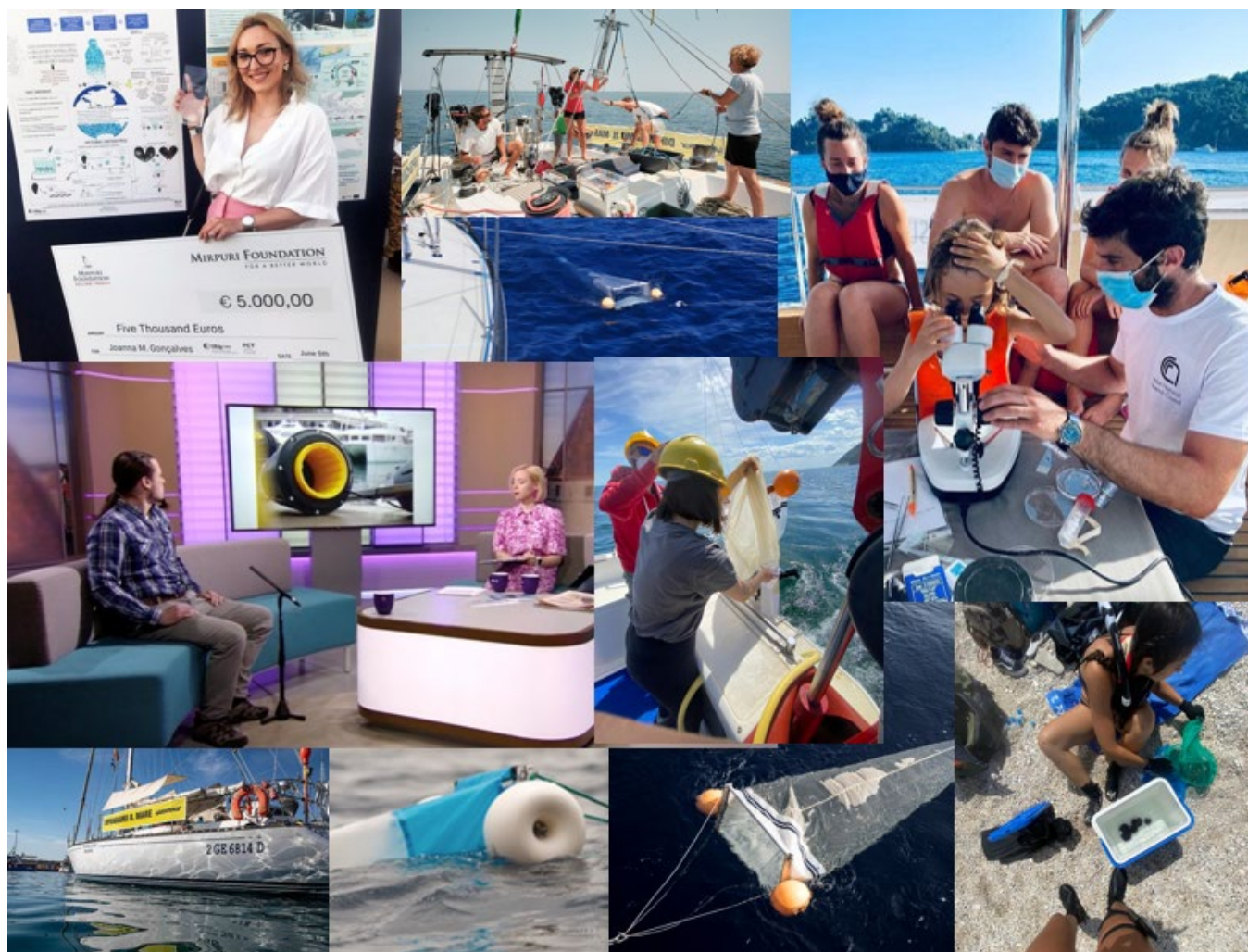
Ecological aspects of microplastics

Funded projects from 2nd call

- ANDROMEDA
- microplasticX
- HOTMIC
- i-plastic
- FACTS
- RESPONSE

© F. DeSa
<https://jpi.oceans.eu/en/ecological-aspects-microplastics>

From all of us here at RESPONSE, we would like to thank you for following us along on our research journey!!



www.response-jpioceans.eu



@Response_JPIO

Response is funded by the Joint Programming Initiative for Healthy Oceans and Seas (**JPI Oceans**) through support from the following national funding agencies: Belgium - The Belgian Science Policy Office (**BELSPO**); Denmark - The Innovation Fund Denmark (**IFD**); Estonia - The Ministry of the Environment of the Estonian Republic (**MoE**)' and the Estonian Research Council (**ETAgz**); Germany - The Federal Ministry of Education and Research (**BMBF**); Ireland - The Marine Institute (**MI**) and the Department of Housing, Planning and Local Government (**DHPLG**); Italy - The Ministry of Education, University and Research (**MIUR**); Norway - The Research Council of Norway (**RCN**); Portugal - The Science & Technology Foundation (**FCT**); Spain - The Spanish State Research Agency (**AEI**); Sweden - The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (**FORMAS**).