

**Lanzarote Declaration**  
**21<sup>st</sup> June 2016**

**MICRO 2016**

**Fate and Impact of Microplastics in Marine Ecosystems: From the Coastline to the Open Sea**

# Lanzarote Declaration

## 21<sup>st</sup> June 2016

From May 25-27, the MICRO 2016 international conference on microplastics was held in the UNESCO Biosphere reserve of Lanzarote, Canary Islands, Spain. Rooted in the MICRO 2014 international workshop in Plouzané, France and the MICRO 2015 seminar in Piran, Slovenia, MICRO 2016 provided an opportunity to share available knowledge, fill in gaps, identify new questions and engage the scientific community through the work presented and the **Lanzarote Declaration**.



We recognize that the **Lanzarote Declaration** stems from previous regional, national, and international efforts such as: The London Convention (1972); the Barcelona Convention (1976); the MARPOL Convention (1978); the East Asian Seas Action Plan (1981); the Abidjan Convention (1984); the Cartagena Convention (1986); Bâle Convention (1989); the OSPAR Convention (1992/1998/2002/2005/2006/2007); the Northwest Pacific Action Plan (1994); the Nairobi Convention (1996); EU Water Framework Directive (2000); the Teheran Convention (2003); EU Marine Strategy Framework Directive (2008); the Honolulu Commitment (2011); the Manila Declaration (2012); the Mediterranean Regional Plan on Marine Litter (2014); and the G7 Leaders' Declaration (2015).

Nearly all aspects of our daily lives involve plastics. Plastics are versatile, light, durable, inexpensive and can be shaped to almost any form imaginable. While these are valuable traits, the “disposable” use of plastics in recent decades is now clearly visible in the majority of Earth's ecosystems. Plastics have been found in the atmosphere, soils, fresh water, oceans, seas, and polar regions. They are even recognized as new habitat for organisms, called the Plastisphere. As they become increasingly prevalent in ecosystems, concerns about plastics are mounting due to their unknown effects at the organismal level and potential consequences for ecosystem functioning. Most plastics are considered persistent material and accumulate in the environment since they cannot be mineralized. Over time we find increasing numbers of fragments of decreasing size.

Microplastics are generally defined as any plastic particles less than 5 mm and they come from two sources: (i) primary microplastics, which include industrial abrasives, exfoliants, cosmetics and pre-production plastic pellets; and (ii) secondary microplastics, which come from the degradation of larger processed plastic items.

While the presence of microplastics in ecosystems has been reported in the scientific literature since the 1970's, many pressing questions regarding their impacts remain unresolved.

We, the 46 members of the Scientific Committee, sign the **Lanzarote Declaration** on behalf of 632 researchers whose work comprised over 200 presentations at the MICRO 2016 conference. Drawing from the shared scientific and technical material, in this declaration we summarize the highlights from MICRO 2016 and mark the first milestone of the **Road to MICRO 2018** collaborative process.

# Lanzarote Declaration

## *21<sup>st</sup> June 2016*

### **Highlights from the MICRO 2016 conference:**

This declaration covers any type of microplastic.

There is a need to maintain and improve the link between ongoing research and policy efforts at national and international levels such as the EU Marine Strategy Framework Directive, OSPAR, NOWPAP, MEDPOL, etc.

Microplastics are found nearly everywhere that has been investigated in the world's oceans and coastal areas, including the most remote parts of the earth. Though less studied, they are also found in fresh water bodies and terrestrial environments.

The widespread occurrence of microplastics and their impacts have been demonstrated by more than 50 studies worldwide.

As demonstrated by several studies, microplastics may be ingested by many species, and the risk of transfer to humans has been shown for some commercial species such as fish, mollusks and crustaceans. Seaweed has also been shown as a vector for microplastics.

Studies show the overlap of aquatic biota feeding grounds and waters with high levels of microplastic pollution. This has particularly been demonstrated for: fin whales in the northwestern Mediterranean Sea, marine mammals stranded in Ireland, turtles in Northern Cyprus, turtles in the Canary Current, and seabirds.

Runoff has been robustly demonstrated as a significant microplastic vector, particularly road runoff in populated areas. Several studies confirm sewage sludge as a vector of microplastic pollution, highlighting the need for further studies and actions focused on sewage treatment plants and the urban water cycle.

From previous studies finding microbial communities on plastic surfaces, new results confirm plastisphere microbial communities and provide site-specific insight into these communities and their successional changes over time.

Modeling is clearly a fundamental and complementary tool for identifying microplastic sources, distribution paths and potential sinks.

Recent studies have confirmed that large plastic items and microplastics can be further degraded into nano-sized plastic particles, which may impact the biosphere. The largely unstudied field of nanoplastic pollution will potentially be of significant importance in years to come.

In order to integrate data across various studies and ongoing projects, we must: (i) standardize the identification and quantification of microplastics, and (ii) explicitly describe the techniques and methods currently used in ongoing, non-standardized studies. There is also a clear need to standardize and harmonize approaches for professional and citizen science efforts, keeping in mind the importance of documenting the co-benefits of citizen science and the need for standardized databases and interfaces to share the results of citizen science work.

Citizen science contributes to microplastics sampling and monitoring. Outreach and education efforts to raise awareness about microplastics in marine environments and increase ocean and plastic literacy help connect the general public with the issue of microplastics. Perceptions and representations can be changed through science communication.

# Lanzarote Declaration

## 21<sup>st</sup> June 2016

Working to prevent and mitigate microplastic pollution provides co-benefits beyond pollution reduction and environmental integrity, such as improving human health and well being.

Technological solutions such as improving recycling processes and developing non-harmful material degradability are needed, along with replacement by natural biodegradable materials.

With growing evidence of environmental consequences and potential threats to human health, we must consider industry's level of responsibility for the impacts of plastics.

Immediate actions are needed and possible.

Given these findings and the material shared at MICRO 2016 (see Appendix I for full programme), we declare:

There is profound concern on the part of the scientific community about microplastics, which are clearly impacting the biosphere.

In recognition of the fact that microplastics continue accumulating and increasing, we must address the questions raised through the research presented here and continue expanding our knowledge horizons. This requires collaboration and cooperation, at all scales, from local to global, spanning sectors and disciplines, to improve knowledge, education and outreach efforts. This should not delay action.

With this declaration, we recognize our responsibility as individuals to change our behaviors related to plastic production and consumption, and to inform others of the social, economic and environmental implications highlighted by the research shared at MICRO 2016.

As representatives of the scientific community, we urgently call upon society, the private sector and policymakers to move from knowledge to action.



This declaration marks the first milestone of the **Road to MICRO 2018** collaborative process.

# **Appendix I**

*full programme*

25TH, 26TH AND 27TH MAY 2016 **MICRO2016** INTERNATIONAL CONFERENCE  
LANZAROTE



## Conference Programme

MICRO 2016 is an initiative of the Lanzarote Biosphere Reserve within the UNESCO MAB programme and the network of scientists Marine Sciences For Society.

Lanzarote, May 2016

## **Word of Welcome**

We are pleased to welcome the scientific community and stakeholders to MICRO 2016, a three-day international conference, hosted in Lanzarote, Canary Islands, Spain 25 - 27 May 2016:

### **Fate and Impact of Microplastics in Marine Ecosystems: From the Coastline to the Open Sea**

Nearly all aspects of daily life involve plastics, and the production of plastics has increased significantly in recent decades. Plastic is widely used since it is versatile, light, durable and “cheap”. These same qualities allow it to travel over long distances across oceans and seas if we do not manage it carefully. Consequently, plastic is becoming an ever-increasing problem due to its low production cost, potential toxicity and universal presence. Plastics are persistent materials, which tend to accumulate in the marine environment from coasts to the open sea.

Microplastics (MPs) are defined as all plastic particles less than 5 mm and come from two sources: (i) primary MPs, which include industrial abrasives, exfoliants, cosmetics and pre-production plastic pellets; (ii) secondary MPs, which come from the fragmentation of plastics.

MPs can contain additives such as UV-stabilizers, colourings, flame retardants and plasticizers, which are transported by the plastic pieces and are susceptible to being taken up by living organisms. These plastics can accumulate persistent organic pollutants (POPs) from the environment and facilitate their transfer into marine food webs. They can also be a vector for invasive species and harmful pathogens.

Although impacts of MPs in marine ecosystems have been reported in the literature since the 70's, many questions still remain open.

MICRO 2016 provides an opportunity to share available knowledge, fill in gaps, identify new questions and research needs, and develop commitments to operationalize solutions.

**Thanks to everyone who submitted abstracts.**

**The high quality of the scientific material and the engagement of the Organizing Board and Scientific Committee allow us to Welcome You to MICRO 2016.**



## **The members of the Organizing Board and Scientific Committee:**

Reserva de la Biosfera de Lanzarote, Cabildo de Lanzarote: **Ana Carrasco and Aquilino Miguelez.**

Observatoire de Versailles SQY: **Juan Baztan, Mateo Cordier and Jean-Paul Vanderlinden.**

Plymouth University: **Sabine Pahl and Richard Thompson.**

CNRS: **Thierry Huck, Ika Paul Pont and Philippe Soudant.**

Universitat Politècnica de Catalunya: **Agustín Sánchez-Arcilla.**

Instituto Español de Oceanografía: **Jesús Gago and Luis Valdés.**

ULPGC: **Ana Liria, May Gomez, Alicia Herrera and Ted Packard.**

CSIC: **Elisabetta Broglio and Joaquim Garrabou.**

UNAM: **Ana Carolina Ruiz.**

IFREMER: **François Galgani and Arnaud Huvet.**

Université de Moncton: **Omer Chouinard and Céline Surette.**

Universidad de Cádiz: **Andrés Cozar and Abelardo Gómez Parra.**

Instituut voor Landbouw-en Visserijonderzoek: **Lisa Devrieses and Johan Robbens.**

National Institute of Chemistry: **Andrej Kržan.**

Cornell University: **Bethany Jorgensen.**

Université Libre de Bruxelles: **Didier Peeters.**

Alfred Wegener Institute: **Melanie Bergmann, Gunnar Gerdt and Lars Gutow.**

The University of Maine: **Jeffrey Runge.**

NUI Galway: **Amy Lusher.**

Université du Maine: **Fabienne Lagarde.**

Universidade Federal de Pernambuco: **Monica Ferreira da Costa and Juliana A. Ivar do Sul.**

Università degli Studi di Siena: **Maria Cristina Fossi.**

SINTEF: **Andy Booth.**

Latvijas Universitate: **Raimonds Ernsteins.**

National Oceanic and Atmospheric Administration: **Carlie Herring and Nancy Wallace.**

UNESCO Intergovernmental Oceanographic Commission: **Henrik Enevoldsen.**

UNESCO MaB: **Miguel Clüsener-Godt.**

**Are glad to Welcome you and wish you a great conference.**

## MICRO 2016 Programme

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### May 25th 2016

8h30-9h30 **Registration**

9h30-10h **Welcome and Official Opening**

10h-11h20 Session I. **Chair persons:** Arnaud Huvet and Mateo Cordier.

*Coffee break 20'*

11h40'-13h Session II. **Chair persons:** Miguel Clüsener-Godt and Jesús Gago.

*13h-15h Lunch break, please see the map for options or ask the Organizing Team*

15h-16h10 Session III. **Chair persons:** May Gomez and Alicia Herrera.

*Coffee break 20'*

16h30-17h30 Session IV. **Chair persons:** Maria Cristina Fossi and Ana Liria.

**17h30-19h Posters and side event "Education"**

19h-20h30 Session V. **Chair persons:** Sabine Pahl and Jean-Paul Vanderlinden.

**Discussion and conclusions**

21h Social event: **Theater performance "Tortuga y el mar"** at the Teatro Insular, Rambla Medular 65, Arrecife

### May 26th 2016

9h-10h30 Session VI. **Chair persons:** Lars Gutow and Fabienne Lagarde.

*Coffee break 30'*

11h-13h Session VII. **Chair persons:** Gunnar Gerdt and Johan Robbens.

*13h-15h Lunch break, please see the map for options or ask the Organizing Team*

15h-16h10 Session VIII. **Chair persons:** Melanie Bergmann and Juan Baztan.

*Coffee break 20'*

16h30-17h30 Session IX. **Chair persons:** Elisabetta Broglio and Ted Packard.

**17h30-19h Posters**

19h-20h30 **Public keynote:** "Dialogue between natural and social sciences"

*By François Galgani and Jean-Paul Vanderlinden.*

**20h30 Informal dinner for registered participants**

### May 27th 2016

9h-10h30 Session X. **Chair persons:** Céline Surette and Quino Miguelez.

*Coffee break 30'*

11h-13h Session XI. **Chair persons:** Andrej Kržan and Bethany Jorgensen.

*13h-15h Lunch break, please see the map for options or ask the Organizing Team*

15h-16h10 Session XII. **Chair persons:** Andy Booth and Raimonds Ernsteins.

*Coffee break 20'*

16h30-17h30 Session XIII. **Chair persons:** Amy Lusher and Omer Chouinard.

**17h30-19h Posters and side event "Sharing Responsibilities"**

**19h Conclusions: Lanzarote's Declaration**

MICRO 2016 Detailed Programme,

**May 25th 2016**

**8h30-9h30 Registration**

**9h30-10h Welcome and Official Opening**

**10h-11h20 Session I - Chair persons: Arnaud Huvet and Mateo Cordier.**

**Ia**

Microplastics as Vectors of Polycyclic Aromatic Hydrocarbons (PAHs) via Chemical Adsorption and Desorption. *C. Blair Crawford et al.*

**Ib**

Plastic and restricted heavy metals. *A. van Oyen et al.*

**Ic**

Citizen Research for Ocean Conservation. *M. Boertien et al.*

**Id**

All is not lost: Fragmentation of Plastic at Sea. *A. Koelmans et al.*

**Ie**

Microplastics in Sewage Sludge: Effects of Treatment. *A-M. Mahon.*

**If**

Sources and fate of microplastics in Swiss surface waters. *F. Faure et al.*

**Ig**

Microplastics in a UK sewage treatment plant. *T. Maes et al.*

*Coffee break 20'*

**11h40-13h Session II - Chair persons: Miguel Clüsener-Godt and Jesús Gago.**

**IIa**

Fates of plastic pollution in a major urban river: persistence and bacterial colonisation of oil-based plastics and bioplastics in the Yarra River, Melbourne, Australia. *T. Gundry et al.*

**IIb**

Presence and abundance of microplastics in sediments of tributaries of the River Thames, UK. *A. Horton et al.*

**IIc**

Microplastics in different compartments of the urban water cycle: from the sources to the rivers. *R. Dris et al.*

**IId**

Validation of a density separation technique for the recovery of microplastics and its use on marine & freshwater sediments. *B. Quinn et al.*

**IIe**

The North Pacific accumulation zone: ocean plastic concentrations and impacts. *J. Reisser et al.*

## MICRO 2016 Programme

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### **II f**

Microplastics in Singapore's coastal mangrove ecosystems. *N-H-M. Nor et al.*

### **II g**

A quantitative analysis of microplastic pollution along the south-eastern coastline of South Africa. *H. Nel et al.*

### **II h**

Modelling the global distribution and risk of small floating plastic debris. *E. van Sebille et al.*

*13h-15h Lunch break, please see the map for options or ask the Organizing Team*

## **15h-16h10 Session III - Chair persons: May Gomez and Alicia Herrera.**

### **III a**

Plastic pollutants within the marine environment of Durban, KwaZulu-Natal, South Africa. *T. Naidoo et al.*

### **III b**

Reading between the grains – Microplastics in intertidal beach sediments of a World Heritage Area: Cleveland Bay (QLD), Australia. *R. Schoeneich-Argent et al.*

### **III c**

Patterns of plastic pollution in offshore, nearshore and estuarine waters of Perth, Western Australia. *S. Hajbane et al.*

### **III d**

Microplastic Distribution and Composition in the Israeli Mediterranean Coastal Waters. *N. van der Hal et al.*

### **III e**

Occurrence of microplastics in the South Eastern Black Sea. *U. Aytan et al.*

### **III f**

Microplastics migrations in sea coastal zone: Baltic amber as an example. *I. Chubarenko.*

### **III g**

Simultaneous trace analysis of nine common plastics in environmental samples via pyrolysis gas chromatography mass spectrometry (Py-GCMS). *M. Fischer et al.*

*Coffee break 20'*

## **16h30-17h30 Session IV - Chair persons: Maria Cristina Fossi and Ana Liria.**

### **IV a**

Presence of microplastics and nanoplastics in food, with particular focus on seafood. *A. Maggiore et al.*

### **IV b**

The human plastic print in Mediterranean deep submarine canyons. *M. Canals et al.*

## MICRO 2016 Programme

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### IVc

State of knowledge on human health implications on consumption of aquatic organisms containing microplastics. *E. Garrido Gamarro et al.*

### IVd

Uptake and Ecotoxicity of microplastic particles (polystyrene) by *Daphnia magna*. *R. Aljaibachi et al.*

### IVe

Effects of PVC and Nylon microplastics on survival and reproduction of the small terrestrial earthworm *Enchytreus crypticus*. *A. Walton.*

### IVf

Microplastics: who is at risk? *R. Saborowski et al.*

### IVg

Engagement options for the implementation of the European Atlantic Plan. *F. Cardona.*

### 17h30-19h Posters and side event “Education”

## 19h-20h30 Session V - Chair persons: Sabine Pahl and Jean-Paul Vanderlinden.

### Va

Understanding Microplastic Distribution: A Global Citizen Monitoring Effort. *A. Barrows.*

### Vb

Monitoring of plastic pollution in the North Sea. *E. Leemans.*

### Vc

Voluntary beach cleanups at Famara Beach, Lanzarote. *N. Ruckstuhl et al.*

### Ve

The Wider Benefits of Cleaning Up Marine Plastic: Two Psychological Studies Examining the Direct Impacts of Beach Cleans and Fishing for Litter on the Volunteers. *K. Wyles et al.*

### Vf

Agüita con el Plástico: Society as part of the solution of plastic pollution. *J-C Jiménez et al.*

### Vg

No Plastic campaign makes a difference in Island of Principe Biosphere Reserve. *M. Clüsener-Godt et al.*

### Vh

Logistics of Coastline Plastic Cleanup and Recycling: A survey and framework. *N. Brahimi et al.*

### Vi

Tackling microplastics on land: citizen observatories of anthropogenic litter dynamics within the MSCA POSEIDOMM project. *L. Galgani et al.*

### Vj

Environmental Science Education - Methodologies to promote Ocean Literacy. *F. Silva et al.*

### Discussion and conclusions

## May 26th 2016

### 9h-10h30 Session VI - Chair persons: Lars Gutow and Fabienne Lagarde.

#### VIa

Microplastics, convergence areas and fin whales in the northwestern Mediterranean Sea. *M-C. Fossi et al.*

#### VIb

Microplastics in marine meso-herbivores. *L. Gutow et al.*

#### VIc

Investigating the Presence and Effects of Microplastics in Sea Turtles. *E. Duncan et al.*

#### VI d

Microplastics presence on sea turtles. *P. Ostiategui-Francia et al.*

#### VIe

Factors determining the composition of plastics from the South Pacific Ocean - Are seabirds playing a selective role? *V. Hidalgo-Ruz et al.*

#### VI f

Micro- and macro-plastics associated with marine mammals stranded in Ireland: Recent findings and a review of historical knowledge. *A. Lusher et al.*

#### VIg

Primary (ingestion) and secondary (inhalation) uptake of microplastic in the crab *Carcinus maenas*, and its biological effects. *A. Watts et al.*

#### VIh

Plastic in Atlantic cod (*Gadus morhua*) from the Norwegian coast. *D. Pettersen Eidsvoll et al.*

#### VIi

Extraction and characterization of microplastics in marine organisms sampled at Giglio Island after the removal of the Costa Concordia wreck. *C. Giacomo Avio et al.*

*Coffee break 30'*

### 11h-13h Session VII - Chair persons: Gunnar Gerdtts and Johan Robbens.

#### VIIa

Marine litter on British beaches: an assessment using citizen-science data. *S. Nelms.*

#### VIIb

Floating plastic marine debris in the Balearic Islands: Ibiza case study. *M. Compa et al.*

#### VIIc

Enzymes – essential catalysts in biodegradation of plastics. *G. Guebitz et al.*

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### VIIId

Studies of microplastics from the Irish marine environment. *A. Lusher*.

### VIIe

Deposition of microplastics in marine sediments from the Irish continental shelf. *J. Martin et al.*

### VIIIf

Where do the plastics go? And whence do they come?

From diagnosis to participatory community-based observatory network. *J. Baztan et al.*

### VIIg

Distribution and composition of microplastics in Scotland's seas. *M. Russell et al.*

### VIIh

Marine litter accumulation in the Azorean Archipelago: Azorlit preliminary data. *J. Frias et al.*

### VIIi

Microplastics in the Adriatic - Results from the DeFishGear project. *A. Palatinus et al.*

### VIIj

Floating microplastics in Mediterranean surface waters. *G. Suaria et al.*

### VIIk

Implementation of the Spanish Monitoring Program of Microplastics on Beaches within the Marine Strategy Framework Directive. First phase. *J. Buceta et al.*

### VIII

Operational forecasting as a tool for managing pollutant dispersion and recovery. *A. Sánchez-Arcilla et al.*

*13h-15h Lunch break, please see the map for options or ask the Organizing Team*

## 15h-16h10 Session VIII - Chair persons: Melanie Bergmann and Juan Baztan.

### VIIIa

What do we know about the ecological impacts of microplastic debris? *C. Rochman et al.*

### VIIIb

Qualitative and quantitative investigations of microplastics in pelagic and demersal fish species of North and Baltic Seas using pyrolysis-GCMS. *B. Scholz-Böttcher et al.*

### VIIIc

Microplastics extraction method from small fishes, on the road to the standard monitoring approach. *S. Budimir et al.*

### VIIIId

Microplastic effects in *Mullus surmuletus*: Ingestion and induction of detoxification systems. *C. Alomar et al.*

### VIIIe

VIIIe1 Assessment of microplastics present in mussels collected from the Scottish coast. *A. I Catarino et al.*; VIIIe2

Bioavailability of co-contaminants sorbed to microplastics in the blue mussel *Mytilus edulis*. *A. I Catarino et al.*

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### VIII f

Exploring the effects of microplastics on the hepatopancreas transcriptome of *Mytilus galloprovincialis*. *M. Milan et al.*

### VIII g

Plastic bottom: Microplastics in the benthic zone. *R. Coppock et al.*

*Coffee break 20'*

## 16h30-17h30 Session IX - Chair persons: Elisabetta Broglio and Ted Packard.

### IX a

The Characterisation, Quantity and Sorptive Properties of Microplastics from Cosmetics. *I. Napper et al.*

### IX b

Beach sweep initiatives on the Acadian Coastline in Atlantic Canada. *O. Chouinard et al.*

### IX c

A social-ecological approach to the problem of floating plastics in the Mediterranean Sea. *L. Ruiz Orejon et al.*

### IX d

News splash? A preliminary review of microplastics in the news. *B. Jorgensen et al.*

### IX e

Informing policy makers about state of knowledge and gaps on microplastics in the marine environment. *T. Bahri.*

### IX f

Microplastics in cosmetics: Exploring perceptions of environmentalists, beauticians and students. *S. Pahl et al.*

## 17h30-19h Posters

### 19h-20h30 Public Keynote: "Dialogue between natural and social sciences"

*By François Galgani and Jean-Paul Vanderlinden.*

**The Poster Awards will be announced at 20h27...**

**20h30 Informal dinner for registered participants**



## May 27th 2016

### 9h-10h30 Session X - Chair persons: Céline Surette and Quino Miguelez.

**Xa**

Plastics and Zooplankton: What do we know? *P. Lindeque et al.*

**Xb**

Microtrophic Project. *A. Herrera et al.*

**Xc**

Biofouling of microplastics promotes their ingestion by marine zooplankton: implications for food web magnification and experimental design. *R. Vroom et al.*

**Xd**

Source to sink: Microplastics in benthic fauna in a gradient from discharge points to deep basins in an urban model fjord. *M. Haave et al.*

**Xe**

Uptake and toxicity of methylmethacrylate-based nanoplastic particles in aquatic organisms. *A. Booth et al.*

**Xf**

On the potential role of phytoplankton aggregates in microplastic sedimentation. *M. Long et al.*

**Xg**

Hitchhiking microorganisms on microplastics in the Baltic Sea. *S. Oberbeckmann et al.*

**Xh**

Microplastic Prey? – An assay to investigate microplastic uptake by heterotrophic nanoflagellates. *A. Madita Wieczorek et al.*

**Xi**

Microplastics in seafood: identifying a protocol for their extraction and characterization. *G. Duflos*

*Coffee break 30'*

### 11h-13h Session XI - Chair persons: Andrej Kržan and Bethany Jorgensen.

**XIa**

Vast quantities of microplastics in Arctic sea ice – a prime temporary sink for plastic litter and a medium of transport. *M. Bergmann et al.*

**XIb**

Modelling the effect of biofouling on the vertical distribution of microplastic in the oceans. *M. Kooi et al.*

**XIc**

Microplastics in the Bay of Brest (Brittany, France): composition, abundance and spatial distribution. *L. Frère et al.*

**XId**

Modelling the movement, fate and impact of microplastic debris in UK coastal waters. *J. Clark et al.*

## MICRO 2016 Programme

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### **XIe**

Plastic litters: a new habitat for marine microbial communities. *C. Dussud et al.*

### **XIf**

The effects of microplastic on freshwater *Hydra attenuata* morphology & feeding. *F. Murphy.*

### **XIg**

Evidence of microplastic ingestion in elasmobranchs in the western Mediterranean Sea. *S. Deudero et al.*

### **XIh**

Do microplastic particles impair the performance of marine deposit and filter feeding invertebrates? Results from a globally replicated study. *M. Lenz et al.*

### **XIi**

Marine snows act as a vector of transport of microplastic to the benthos and change the uptake of plastics to the Blue Mussel (*Mytilus edulis*). *A. Porter et al.*

### **XIj**

Occurrence of potential microplastics in commercial fish from an estuarine environment: Preliminary results. *F. Bessa et al.*

### **XIk**

Microscopical investigation of polystyrene microparticles colonisation by *Vibrio crassostreae*. *V. Foulon et al.*

### **XII**

Improvements and needs of microplastics analytical control at open sea – opportunities for monitoring at Canary Islands. *D. Vega-Moreno et al.*

*13h-15h Lunch break, please see the map for options or ask the Organizing Team*

## **15h-16h10 Session XII - Chair persons: Andy Booth and Raimonds Ernsteins.**

### **XIIa**

A novel method for preparing microplastic fibers. *M. Cole.*

### **XIIb**

A new approach in processing freshwater suspended particulate matter for separating microplastics. *S. Hatzky.*

### **XIIc**

Microplastics - microalgae: an interaction dependent on polymer type. *F. Lagarde et al.*

### **XIId**

Characterization of the level and composition of floating microplastic particles in the Stockholm Archipelago. *B. Gewert et al.*

### **XIIe**

Quantifying the impact of microscopic plastic debris on antibiotic resistance evolution. *T. Galloway.*

### **XIIf**

Nearshore circulation in the Confital Bay: Implications on marine debris transport and deposition at Las Canteras Beach. *L. Mcknight Morales et al.*

## MICRO 2016 Programme

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### **XIIg**

New approaches of the extraction and identification of microplastics from marine sediment. *M. Kedzierski et al.*

*Coffee break 20'*

## **16h30-17h30 Session XIII - Chair persons: Amy Lusher and Omer Chouinard.**

### **XIIIa**

Using physical and chemical characteristics of floating microplastics to investigate their weathering history. *K. Law et al.*

### **XIIIb**

The size spectrum as tool for analyzing marine plastic pollution. *E. Marti et al.*

### **XIIIc**

Automated analysis of  $\mu$ FTIR imaging data for microplastic samples. *S. Primpke et al.*

### **XIII d**

Combined Effects of UV Exposure Duration and Mechanical Abrasion on Fragmentation and Particle Size Distribution of Polyethylene, Polypropylene and Expanded Polystyrene. *W. J. Shim et al.*

### **XIII e**

Solar radiation induced degradation of common plastics under marine exposure conditions. *A. Andrady et al.*

### **XIII f**

Using the FlowCam to validate an enzymatic digestion protocol applied to assess the occurrence of microplastics in the Southern North Sea. *C. Lorenz et al.*

### **XIII g**

DNA from the 'Plastisphere': an extraction protocol for ocean microplastics. *P. Debeljak et al.*

### **XIII h**

Quality assurance in microplastic detection. *C. Wesch et al.*

## **17h30-19h Posters and side event "Sharing Responsibilities"**

## **19h Conclusions: Lanzarote's Declaration**

## Posters

Dear participants, All posters can be hung up starting the morning of May 25th at 9h after registration.

They must be removed by 19h on Friday the 27th.

-Note: Posters are listed in alphabetical order of 1st author,  
please keep the poster number in mind for the posters contest-.

**The Poster Awards will be announced on the 26th at 20h27'**

during the Public Keynote: "Dialogue between natural and social sciences".

**Are the densities of microplastics altered following interactions with *Elminius modestus* and sediment particles?** R. Adams *et al.*, poster number **102175**

**Macro- and micro-plastic in seafloor habitats around Mallorca.** C. Alomar *et al.*, poster number **102179**

**Evaluation of microplastics in Jurujuba Cove, Niterói.** F. Araujo *et al.*, poster number **94158**

**Presence, distribution and characterization of microplastics in commercial organisms from Adriatic Sea.** C-G Avio *et al.*, poster number **101916**

**The origin and fate of microplastics in saltmarshes.** H. Ball *et al.*, poster number **101818**

**Effects of microplastics and mercury, alone and in mixture, on the European sea bass (*Dicentrarchus labrax*): swimming performance and sub-individual biomarkers.** L-G Barboza *et al.*, poster number **101915**

**DNA damage evaluation of Polyethylene microspheres in *Daphnia magna*.** A. Berber *et al.*, poster number **102315**

**LITTERBASE - An online portal for marine litter and microplastics and their implications for marine life.** M. Bergmann *et al.*, poster number **102482**

**PLASTOX: Direct and indirect ecotoxicological impacts of microplastics on marine organisms.** A. Booth *et al.*, poster number **95410**

**Community-based Observatories tackling MICROPLASTIC: Spanish schools pilot project based on seawatchers.org.** E. Broglio *et al.*, poster number **101794**

**Tackling marine litter: Awareness and outreach in the Azores.** R. Carriço *et al.*, poster number **103441**

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**Prevalence of microplastics in the marine waters of Qatar's Exclusive Economic Zone (EEZ).** *A. Castillo et al.*, poster number **100223**

**Microplastics contamination in three planktivorous and commercial fish species.** *F. Collard et al.*, poster number **100959**

**Spatial variation of microplastic ingestion in *Boops boops* in the Western Mediterranean Sea.** *M. Compa et al.*, poster number **102142**

**Source, transfer and fate of microplastics in the northwestern Mediterranean Sea: a holistic approach.** *M. Constant et al.*, poster number **102220**

**Microplastics in the final ocean frontier.** *W. Courtene-Jones et al.*, poster number **99166**

**Exposure @ Sea: the dynamic bacterial colonization of plastic.** *C. De Tender et al.*, poster number **111705**

**Microplastic abundance and distribution in the intertidal and subtidal marine environment around a major urban park in Vancouver, Canada.** *A. Diaz et al.*, poster number **102008**

**Microplastic ingestion by decapod larvae.** *E. Fileman et al.*, poster number **101119**

**May polystyrene microparticles affect mortality and swimming behaviour of marine planktonic invertebrates?** *Ch. Gambardella et al.*, poster number **101801**

**Improvement of microplastic extraction method in organic material rich samples.** *P. Garrido Amador et al.*, poster number **102239**

**PCB depuration via MP? A feeding experiment with *Daphnia magna*.** *Z. Gerdes et al.*, poster number **102358**

**Defining the Baselines and standards for Microplastics Analyses in European Waters (JPI-O BASEMAN).** *G. Gerds*, poster number **100987**

**Effects of long term exposure with contaminated and clean micro plastics on *Mytilus edulis*.** *T. Hamm*, poster number **102416**

**The City of Kuopio and Lake Kallavesi in the Finnish Lake District a 'living laboratory' for the microplastic pollution research in freshwater lakes.** *S. Hartikainen et al.*, poster number **102292**

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**Analysis and quantification of microplastics in the stomachs of common dolphin (*Delphinus delphis*) stranded on the Galician coasts (NW Spain).** *A. Hernandez-Gonzalez et al.*, poster number **99376 and 101623**

**First report of microplastics in bycaught pinnipeds.** *G. Hernandez-Milian et al.*, poster number **102200**

**Preliminary results of Microtrophic Project.** *A. Herrera et al.*, poster number **101570**

**The Contribution of Citizen Scientists to the Monitoring of Marine Litter.** *V. Hidalgo-Ruz et al.*, poster number **103474**

**Non-target screening of organic substances in plastic marine debris and its new products.** *S. H. Hong et al.*, poster number **102062**

**Experimenting on settling velocity of cylindrical microplastic particles.** *I. Isachenko et al.*, poster number **101528**

**WEATHER-MIC - How microplastic weathering changes its transport, fate and toxicity in the marine environment.** *A. Jahnke et al.*, poster number **91388**

**Expanded polystyrene debris as a source of hazardous additives for their inhabiting organisms.** *M. Jang et al.*, poster number **102242**

**Formation of microplastics by lugworm inhabiting in expanded polystyrene marine debris.** *M. Jang et al.*, poster number **102245**

**Uptake of textile polyethylene terephthalate microplastic fibres by freshwater crustacean *Daphnia magna*.** *A. Jemec et al.*, poster number **103222**

**Assessment of microplastics toxicity from the acute and chronic exposure to *Cyprinodon variegatus*.** *Y-J Jung et al.*, poster number **102096**

**Microplastic distribution on two northwestern Mediterranean beaches.** *P. Kerhervé et al.*, poster number **102341**

**The depth profile of buoyant microplastics: How much does sea surface sampling overlook?** *M. Kooi et al.*, poster number **102324**

**Effects of microplastics on digestive enzymes in the marine isopod *Idotea emarginata*.** *Š. Korez et al.*, poster number **102408**

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**Sinking behaviour of microplastics.** *N. Kowalski et al.*, poster number **100878**

**Characteristics of Plastic in stomachs of Northern Fulmars (*Fulmarus glacialis*).** *S. Kühn et al.*, poster number **100942**

**Microplastic sampling in the Mediterranean Sea.** *J. Larsen et al.*, poster number **101871**

**Pilot study on microlitter in the surface waters of the Gulf of Finland, Baltic Sea.** *K. Lind et al.*, poster number **101411**

**Persistent Organic Pollutants adsorbed on microplastics from the North Atlantic gyre.** *M. Martignac et al.*, poster number **102442**

**First evidence of microplastics in the ballast water of commercial ships.** *M. Matiddi et al.*, poster number **101548**

**Microlitter abundance in the Italian Minor Islands, Central Mediterranean Sea.** *M. Matiddi et al.*, poster number **101615**

**In search of the plastic accumulation regions: fine-tuning ocean surface transport models.** *R. McAdam et al.*, poster number **101799**

**Closing the gap between small and smaller: Towards an analytical protocol for the detection of Micro- and Nanoplastic in freshwater systems.** *S. Mintenig et al.*, poster number **102484**

**Preliminary assessment of the microplastic presence in the Gulf of Genoa (Italy, Ligurian Sea, Northwestern Mediterranean Sea).** *S. Morgana et al.*, poster number **101802**

**Toxicity assessment of pollutants sorbed on microplastics using various bioassays on two fish cell lines.** *B. Morin et al.*, poster number **102337**

**Fate of microplastics in soft marine sediments.** *P. Näkki et al.*, poster number **102107**

**Microplastic as a vector of chemicals to fin whale and basking shark in the Mediterranean Sea: A model-supported analysis of available data.** *C. Panti et al.*, poster number **101611**

**Methodological prerequisites for toxicity testing of microplastics using marine organisms.** *J-W Park et al.*, poster number **102067**

**POPs adsorbed on plastic pellets collected in the Adriatic region.** *M. Pflieger et al.*, poster number **102271**

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**Retrospective study [2000-2014] of the impact of foreign body in cetaceans stranded on the Canary Islands.** *R. P. Puig Lozano et al.*, poster number **81459**

**The EPHEMARE Project: Ecotoxicological Effects of Microplastics in Marine Ecosystems.** *F. Regoli*, poster number **101391**

**Suspended micro-sized PVC particles impair the performance and decrease survival in the Asian green mussel *Perna viridis*.** *S. Rist*, poster number **101884**

**Priority pollutants in microplastics from beaches in Gran Canaria Island.** *M. Rodrigo et al.*, poster number **88302**

**Plastic debris in Mediterranean seabirds.** *A. Rodríguez et al.*, poster number **110743**

**Monitoring plastic ingestion in selected Azorean marine fauna: Azorlit preliminary data.** *Y. Rodríguez et al.*, poster number **101934**

**Catching a glimpse of the lack of harmonization regarding techniques of extraction of microplastics in marine sediments.** *E. Rojo-Nieto et al.*, poster number **96241**

**Marine Litter Action Plan for Lanzarote: An exercise from the MOOC on marine litter offered by the open university of the Netherlands and the UNEP.** *N. Ruckstuhl et al.*, poster number **101822**

**Floating plastics in the sea: People's perception in the Majorca island (Spain).** *L. Ruiz Orejon et al.*, poster number **101076**

**Plastics in the Mediterranean Sea surface: From regional to local scale.** *L. Ruiz Orejon et al.*, poster number **101081**

**Analysis of organic pollutants in micro-plastics.** *S. Santana-Viera et al.*, poster number **101858**

**Sewage treatment plants as pathways for microlitter to the marine environment? A study from three Nordic countries.** *O. Setälä et al.*, poster number **102165**

**From the sea to the dining table and back to the environment: microlitter load of common salts.** *O. Setälä et al.*, poster number **102227**

**Sandy beaches microplastics of the Crimea Black Sea Coast.** *E. Sibirtsova et al.*, poster number **100994**



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**Plastic prey; are fish post-larval stages ingesting plastic in their natural environment?** *M. Steer et al.*, poster number **101113**

**Microplastic ingestion by planktivorous fishes in the Canary Current.** *A. Štindlová et al.*, poster number **102530**

**Effects of microplastics on benthic macroinvertebrates in freshwater ecosystems.** *L. Stuurman et al.*, poster number **102472**

**First quantification of microplastic in Norwegian fjords through non disruptive ad-hoc sampling.** *M. Svendsen Nerheim et al.*, poster number **103400**

**Abundance of microplastics and adhered contaminants in the North Atlantic Ocean.** *K. Syberg et al.*, poster number **101866**

**Bioplastic and microbes.** *V. Turk et al.*, poster number **102595**

**Marine litter monitoring for coastal management indicator system development: citizen science and collaboration communication approach.** *J. Ulme et al.*, poster number **110276**

**Types and concentration of microplastics found on remote island beaches during the Race for Water Odyssey.** *K. Van Arkel et al.*, poster number **99434**

**A throwaway society: Is science stuck with single use plastic? What can we do about it?** *A. Watts et al.*, poster number **100868**

**Linking education and science to increase awareness of marine plastic litter - Distribution of plastic waste on beaches of the German Bight.** *A. Wichels et al.*, poster number **98897**

**Are smaller microplastics underestimated? Comparing anthropogenic debris collected with different mesh sizes.** *A. Wilson Mc Neal et al.*, poster number **100984**

**Precipitation/Flotation Effect of Coagulant to microplastics in water.** *M. Yurtsever et al.*, poster number **105617**

**Personal care and cosmetics products (PCCPs): Is it cleaning or pollution?** *M. Yurtsever et al.*, poster number **105618**

**Detection of microplastics with stimulated Raman scattering (SRS) microscopy.** *L. Zada et al.*, poster number **102003**

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