



Take-home message in a bottle

We, participants in Zero Plastic Working Group recognise the observation of the increasing impact of the production of plastic and the massive pollution it generates in the oceans. The consequences for biodiversity and human health are important and extremely worrying.

The bottle we attach to this letter contains microplastic collected on the beaches of Lanzarote, Spain, where plastic accumulates from around the world. This bottle is a key representation that demonstrates the concerns of coastal countries related to plastic production and consumption. Indeed, ocean currents move this waste in massive quantities. Our global actions show us that a large majority of manufactured plastic products end up in the oceans despite recycling and other management efforts.

With this letter, we ask you to initiate a fair dialogue between producers (from the exploitation of oil to its transformation), policy makers, the scientific community and citizens in order to put in place concrete actions for a significant reduction of this pollution.

Excerpt from the Artists' Letter to the MICRO 2018 participants (micro2018.sciencesconf.org).

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Weaving nets from Biosphere Reserves · Dancing with systems
EuroMAB 2019 Dublin

In the same moment that Greta Thunberg inspires student protests for action against climate change in Europe and around the world, the “yellow vest” protests have arisen in opposition to an environmental tax on transport fuel for the general public, and science supports the idea that intestinal microbiota influence our mood and psychological balance. We are part of complex dynamic systems and ultimately, individuality is defined in relation to all other elements. What role should each person play today? And each Biosphere Reserve?

We are here to raise questions about what is happening with plastic in the planet's complex systems.

As it happens, plastic's apparent perfection positions it on the margin of the planet's vital processes: it interrupts, it suffocates, it poisons. Why? It doesn't rot, it doesn't serve as nourishment for anyone, anything. Its durability doesn't fit with nature's accumulated wisdom for survival and evolution. Its ancient organic molecules are transformed into diverse plastic polymers whose monomers are recognized as hormones for some living creatures, including humans.

Before her untimely death in 2001, Donella Meadows wrote a book on complex dynamic systems, defining their principal characteristics by stating: “... self-organizing, nonlinear, feedback systems are inherently unpredictable. They are not controllable”. Today's dominant society has yet to understand this, and through human arrogance we make the error of believing we have more control than what reality clearly demonstrates.

Science has already generated a great deal of knowledge about plastics and plastic pollution, as shown through the MICRO international conference series on microplastics, for example, and there is still much to learn. However, it is clear to us that responsibility does not only lie with consumers. It is necessary to turn to the industrial roots, to change product design and commercial strategies.

How can we influence this?

For the past ten years in Lanzarote, we have been using a collaborative research process, including citizen science and other methods of data collection, education, and awareness-raising, to face the challenge of plastic pollution. Since last fall, Menorca and Jeju, the two official seats of the World Network of Island and Coastal BR, and 14 others joined our Zero Plastic campaign as we launched the Zero Plastic Working Group of Biosphere Reserves, co-coordinated by the WNICBR and the international research network Marine Sciences For Society. Plastic pollution impacts coastlines around the globe, freshwater and terrestrial systems, and has been found in table salt, potable water, and the atmosphere. It is a common challenge for Biosphere Reserves and the biosphere.

Biosphere Reserves are strongholds of nature in good condition, and as such we can signal a level of consciousness for humanity, launching a common message about the need to correct processes whose effects impact us as cumulatively harmful and structurally perverse, since we are living laboratories and sensors of Global Change.

While climate change is more widely known, the dispersion of plastic pollution is recognized socially as another grave global problem. And perhaps it is its spatial ubiquity and the growing concern in the collective social consciousness that presents us with the possibility of raising our voice as a global network of Biosphere Reserves to share this emerging consciousness and engage the question: **How Much Is Enough?**

We invite you and the EuroMAB network to join the Zero Plastic Working Group.