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PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

MICROPLASTICS IN THE SPANISH MARINE STRATEGIES

Marta Martínez-Gil Pardo de Vera

*Ministry for the Ecological Transition
and the Demographic Challenge*

SPAIN





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01

MICROPLASTICS. SETTING THE SCENE



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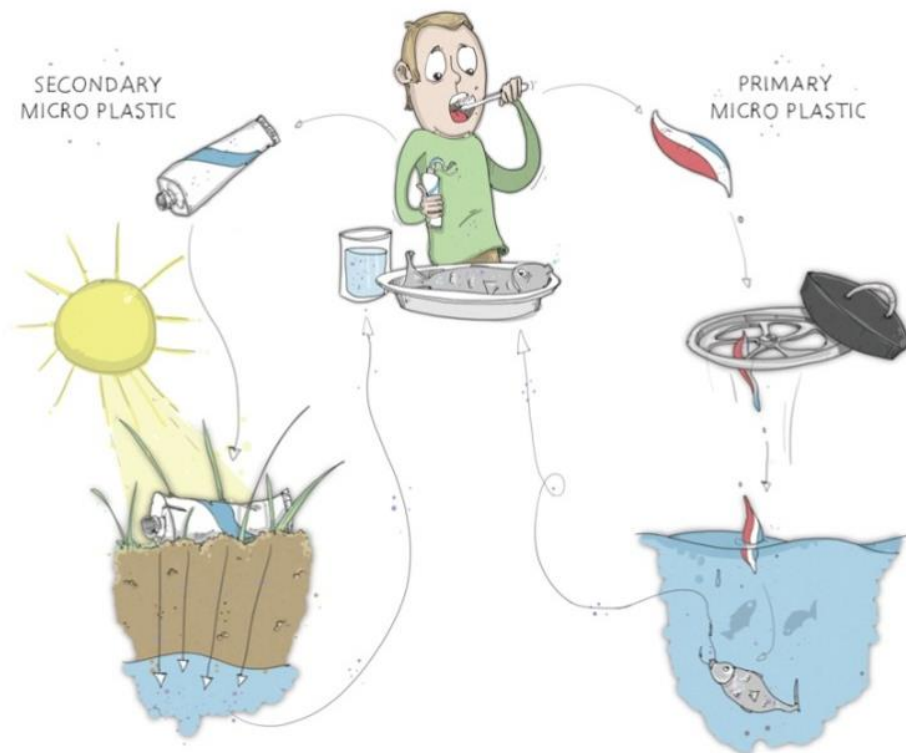
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Microplastics are a group of synthetic materials made from petroleum derivatives or bio-based polymers. They are solid particles, sized below 5 mm, not soluble in water and with a low degradability.



PRIMARY: intentionally produced and introduced into products, as for example: industrial abrasives, cosmetics, pre-production plastic pellets, etc.

SECONDARY: resulting from the degradation of larger plastic fragments.





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MICROPLASTICS HAVE BEEN DETECTED IN 88% OF THE OCEANIC SURFACE AND ARE PERSISTENT IN THE ENVIRONMENT

Large quantities of microplastics are entering the marine food chain and accumulating on the sea-floor.

They are increasingly present in all the oceans and in the most remote places of the earth (including the polar ice cap), continental waters and the terrestrial environment.

They are ingested by numerous species of marine biota.

Areas of high concentration of microplastics = feeding areas of aquatic organisms

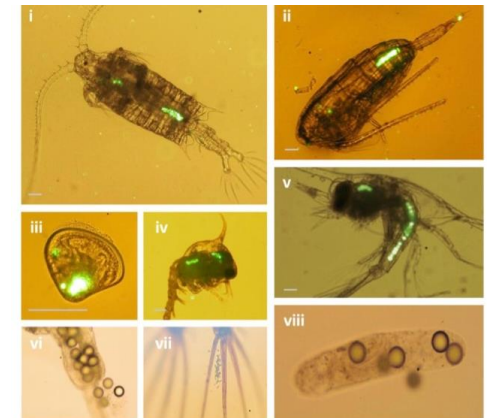
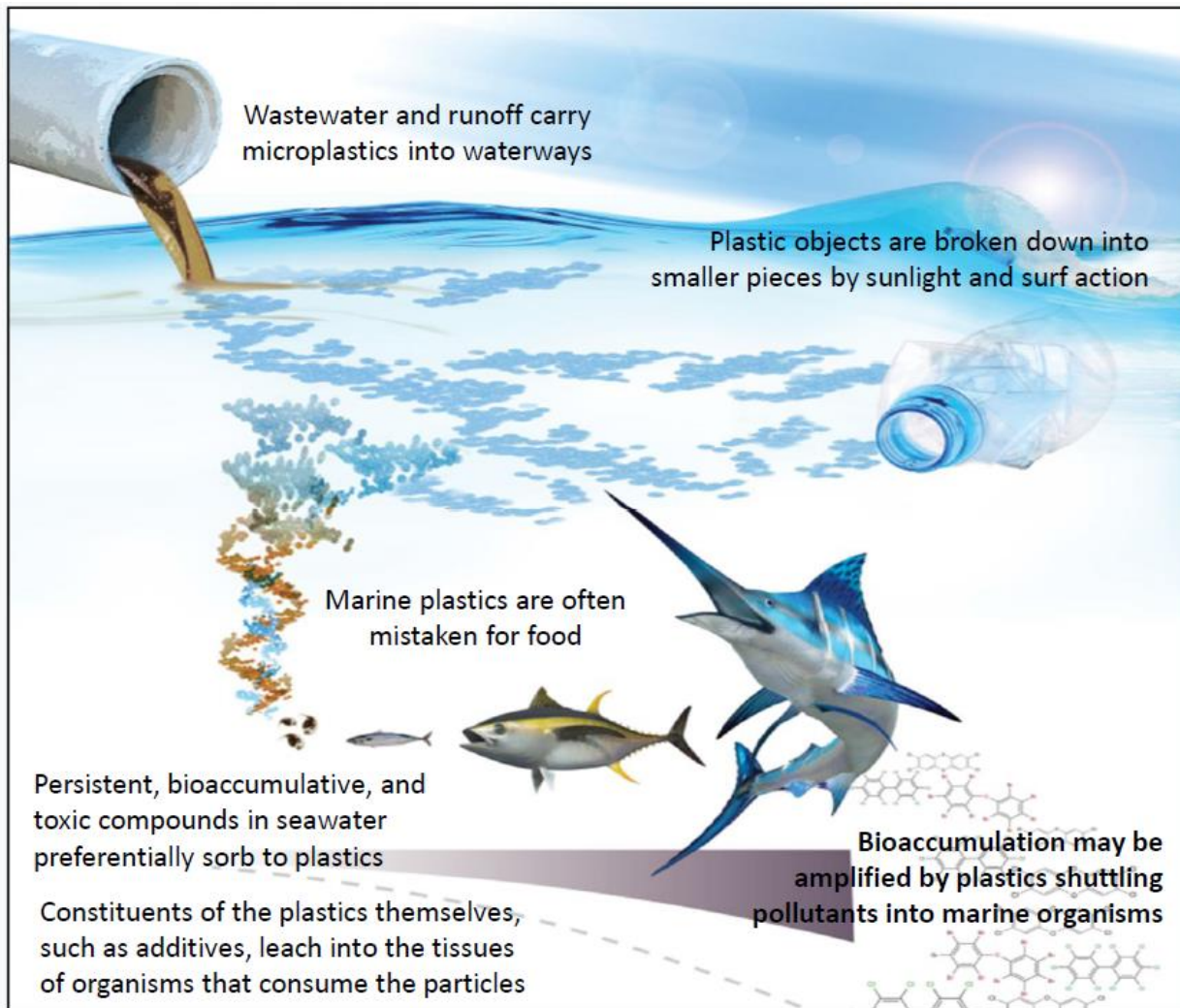
Existence of microbial communities that develop on the surface of any piece of plastic in aquatic environments ("Plastisphere").

Identification and quantification of microplastics require standardized techniques and methodologies.

Modelling: tool to identify sources, pathways and potential sinks for microplastics.

Además...

...At least 50 trillions in the oceans



Publicado en Cole et al. (2013)

They are consumed by a wide range of marine species with impacts at the level of individuals (reduction of fertility, increasing of mortality) and at the level of ecosystems (in study). Risk of transfer into humans through commercial species.



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02

INTRODUCTION TO THE SPANISH MARINE STRATEGIES



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DESCRIPTORS THAT DEFINE GES



To achieve GES, based on the 11 descriptors, the **ecosystem approach** will be applied to obtain a balance between the pressure of human activities and the conservation of the marine environment, as well as the sustainable use of goods and ecosystem services by current and future generations.

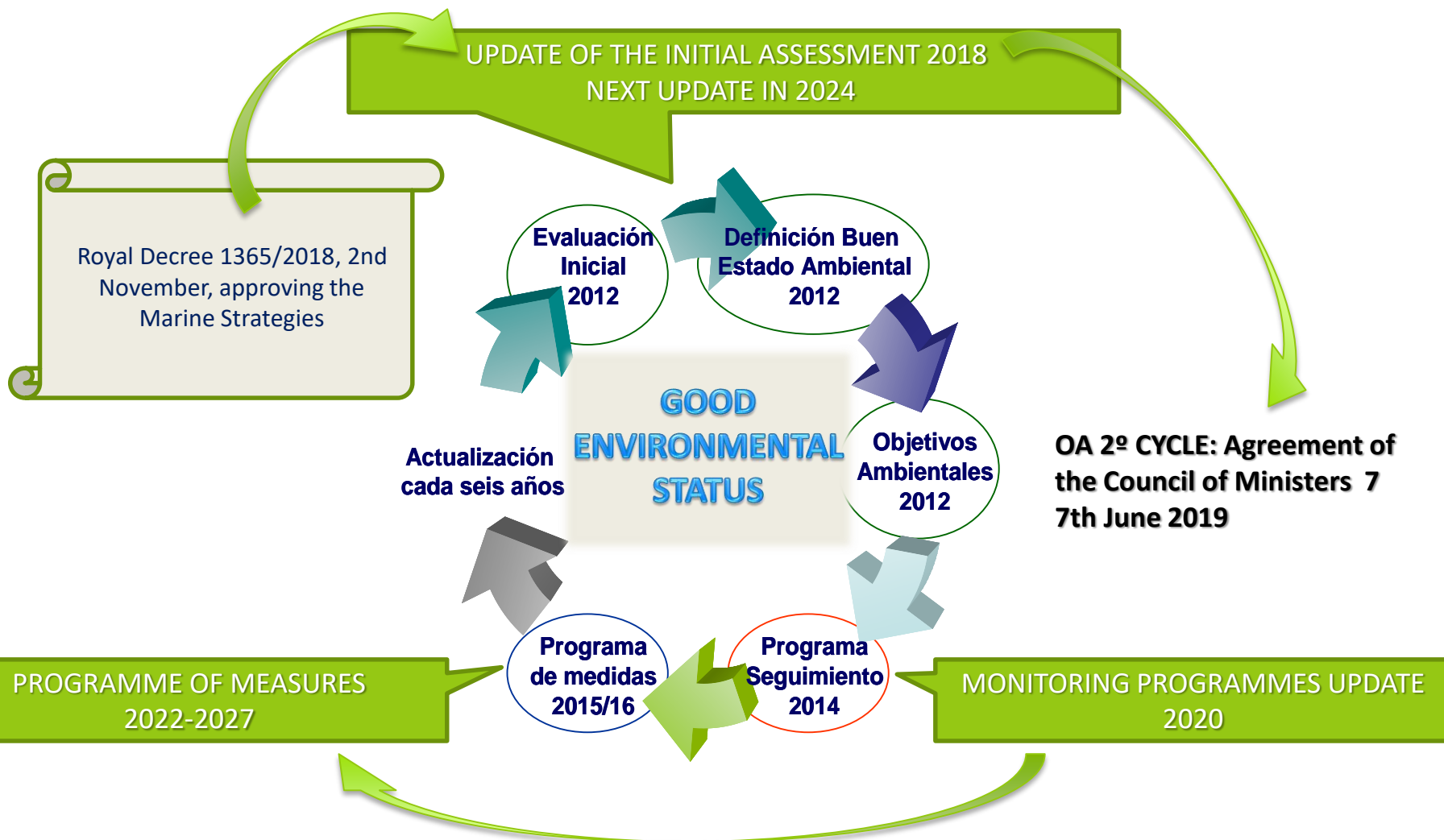
Photographies authors: Bioimaxe, Jorge Cáceres, Julio Valeiras, Oscar Monterroso, Oscar Ocaña and Tragsatec.



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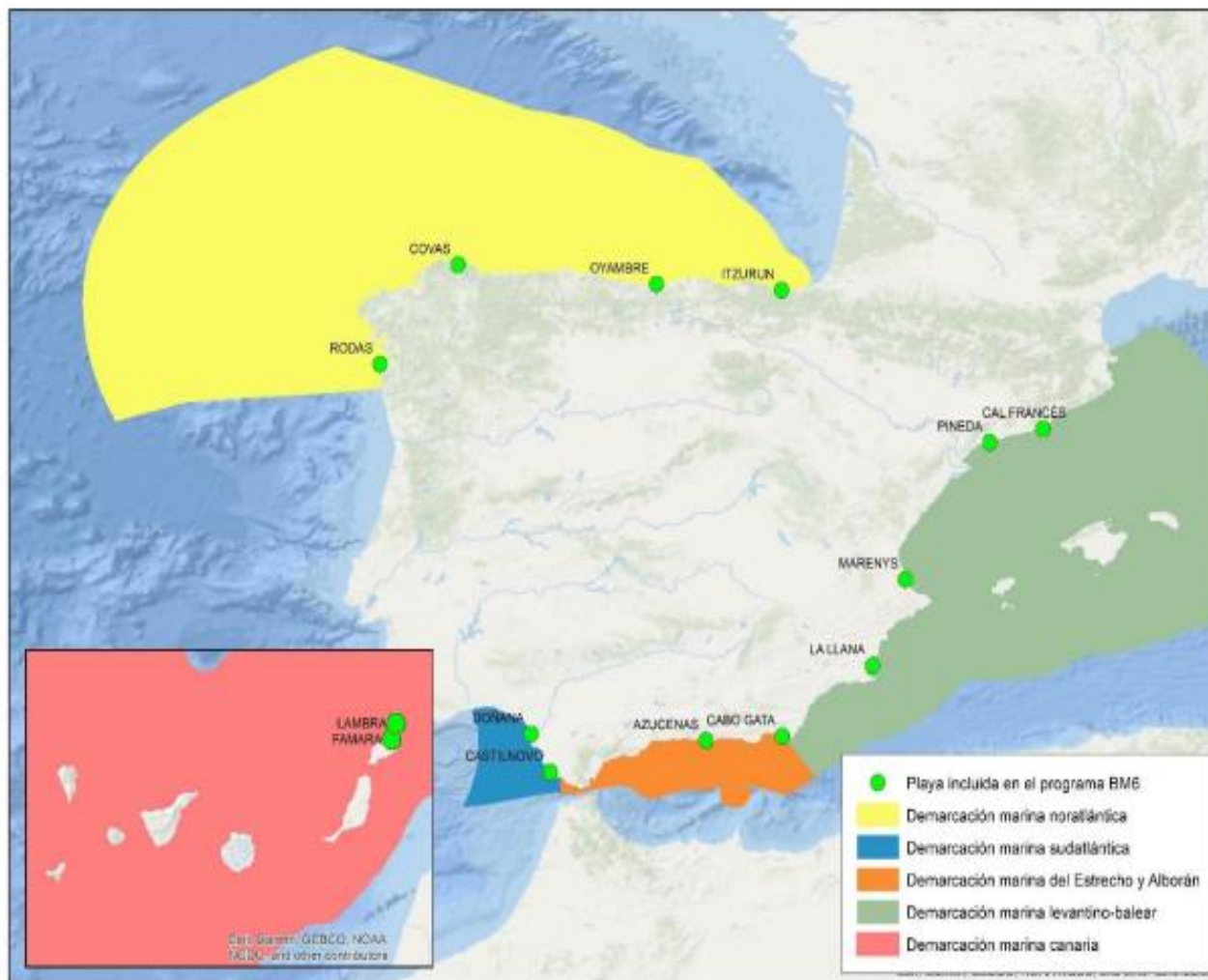
03 MICROPLASTICS ON BEACHES MONITORING PROGRAMME



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The monitoring programme started in Autumn 2016. It includes that are to be monitorized twice per year (spring and autumn). The program is developped by CEDEX including the surveys and laboratory analysis.



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Sampling at the beach



5 replicates per beach
(coincide with the 100 m stretch of the
beach macrolitter monitoring
programme)



Sample: top 1 cm layer within a
50 x 50 cm quadrat.
Any process or separation in the
field was discarded due to its
difficulties



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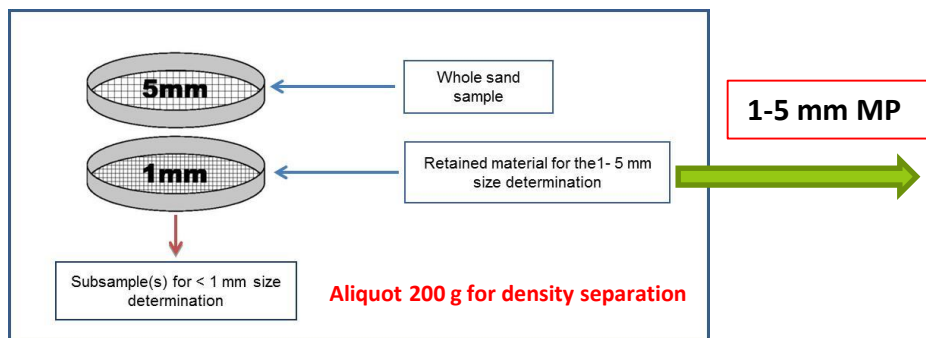
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Sample processing

1. Drying at 50 ° C, sample homogenization and weigh

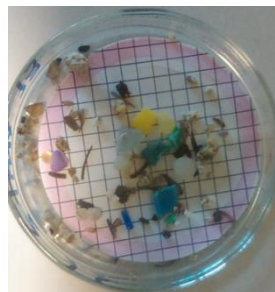
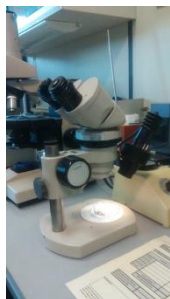


2. Sieving by 5 mm and 1 mm aperture size



<1 mm MP

3. Flotation separation process (saturated NaCl solution) **3 extractions** and filtration



3. Flotation separation process (saturated NaCl solution), **usually 1 only extraction** and filtration

4. Each membrane is transferred to a Petri dish, and dried at 50 ° C

5. Microscope inspection. Particles counting and classification by size, type, colour, etc



**1 ONLY SAMPLE
PER POINT**



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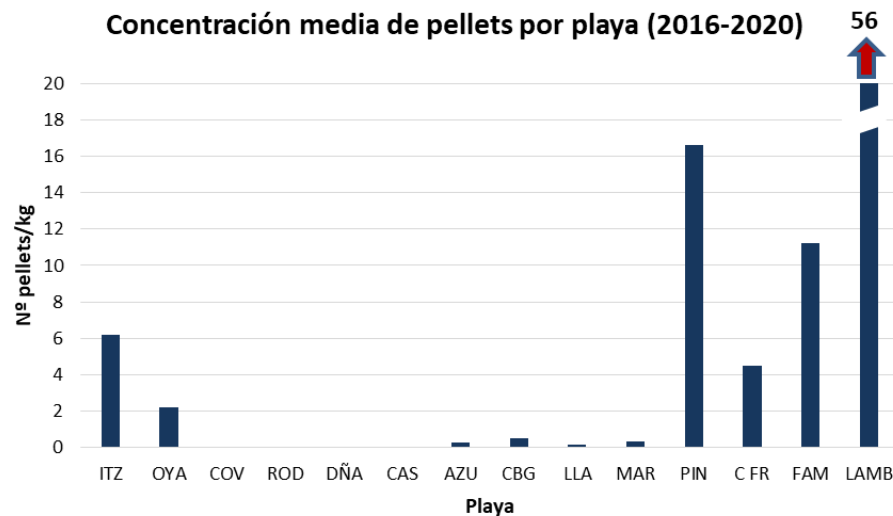
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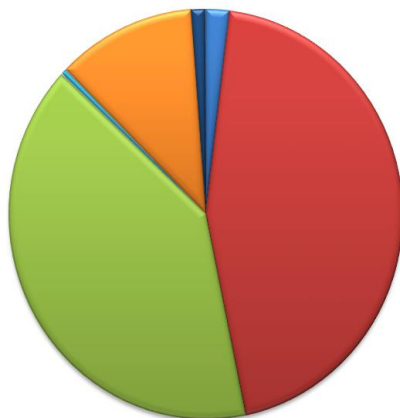
Results



Concentración media de pellets por playa (2016-2020)



Distribución en porcentaje por tipo de forma para el total de las playas (2016-2020)



- Fibras/Filamentos
- Fragmentos
- Pellets
- Microesferas
- Film/Láminas
- Poliespán
- Gomaespumas
- Otra forma



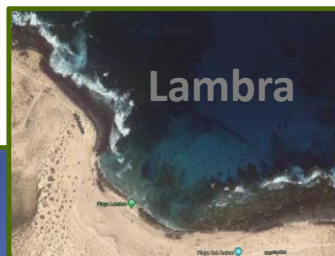
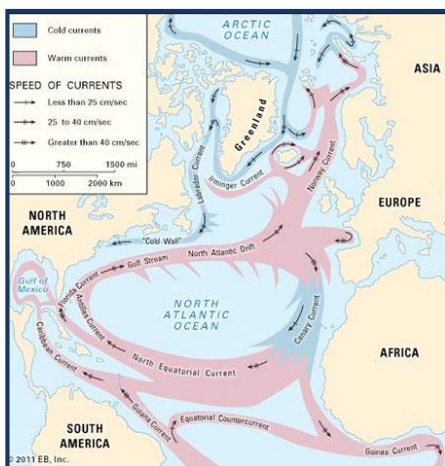


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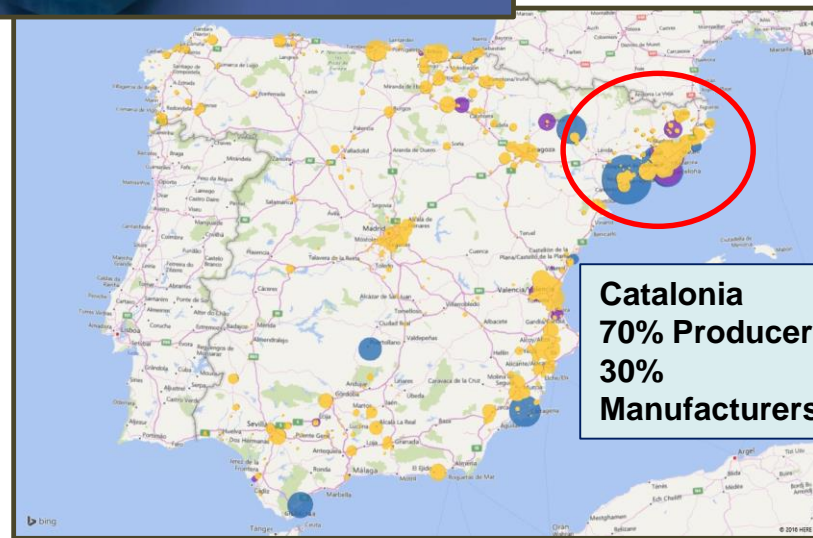
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Case study: Lambra Beach



Case study: La Pineda Beach





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04 PROGRAMME OF MEASURES 2022-2027



Agreement of the Council of Ministers 7th June 2019 approving the envitonmental targets for the 2nd cycle of the Spanish Marine Strategies

B.L.11. Reduce the ammount of microplastics reaching the marine environment

Indicators:

- Abundance of microplastics on beaches
- Nº of measures implemented by industrial sectors to reduce the impact of microplastics, as well as their efficiency.
- Nº of retention measures implemented.



Priority workstreams on microplastics:

- Identification of the source of pellets pollution in La Pineda beach and the river basin upstream – **case study**
- Identification of measures to address microplastics from **tyres abrasion**.
- Identification of measures to reduce microplastics from **textiles**.
- Actions in support of **Operation Clean Sweep** initiative:
 - Exhaustive follow up of its implementation in Spain and its effectiveness
 - Collaboration in actions promoted by plastic industry to accelerate OCS certification along the whole value chain
 - MITERD is member of the Supervisory Board of OCS certification scheme at the European level
 - **Improving knowledge**: through CSIC/UCA, incorporating scientific products into policy (strengthening policy-science interphase)
- New **REACH Regulation**



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¡THANK YOU!