

Microplastiscs in the marine environment: some results from the MSFD



Identification of MPs
Microplastic identification is a complex task that requires a combination of techniques. The most common methods are Fourier Transform Infrared Spectroscopy (FTIR) and Raman Spectroscopy. Other methods include Scanning Electron Microscopy (SEM) and Atomic Force Microscopy (AFM).

Water
Many using nets (mainly but also other instrumentation like CPD).

Software/Database
A central repository is needed to store the data generated from the different studies. This will allow for a better understanding of the distribution and abundance of microplastics in the marine environment.

Water
The most common method for the detection of microplastics in water is the use of a plankton net. Other methods include the use of a centrifuge and a microscope.

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Microplastics also?
Microplastics are also found in the atmosphere, in the soil, and in the food chain. This highlights the widespread nature of these pollutants and the need for a holistic approach to their management.

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Introduction of plastic
Plastic is a synthetic material made from petroleum or natural gas. It is used in a wide range of products, from packaging to construction materials. Plastic is not biodegradable and can persist in the environment for hundreds of years.

Water
Marine littering not only affects the environment but also other humanization like CRP.

Collection/Analysis
A robust methodology is needed to identify MSPL in the marine environment. This requires the use of advanced analytical techniques.

Biota
The presence of plastic in the marine environment can have a negative impact on the health of marine organisms. Plastic can be ingested by animals, leading to physical damage and chemical contamination.

MSFD
The Marine Strategy Framework Directive (MSFD) is a European Union directive that aims to protect and improve the state of the marine environment. It includes provisions on marine litter and microplastics.

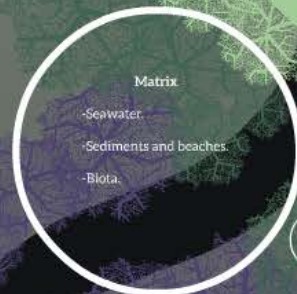
Microplastic data
The MSFD requires Member States to collect and report data on marine litter and microplastics. This data is used to assess the state of the marine environment and to develop measures to reduce litter and microplastic pollution.

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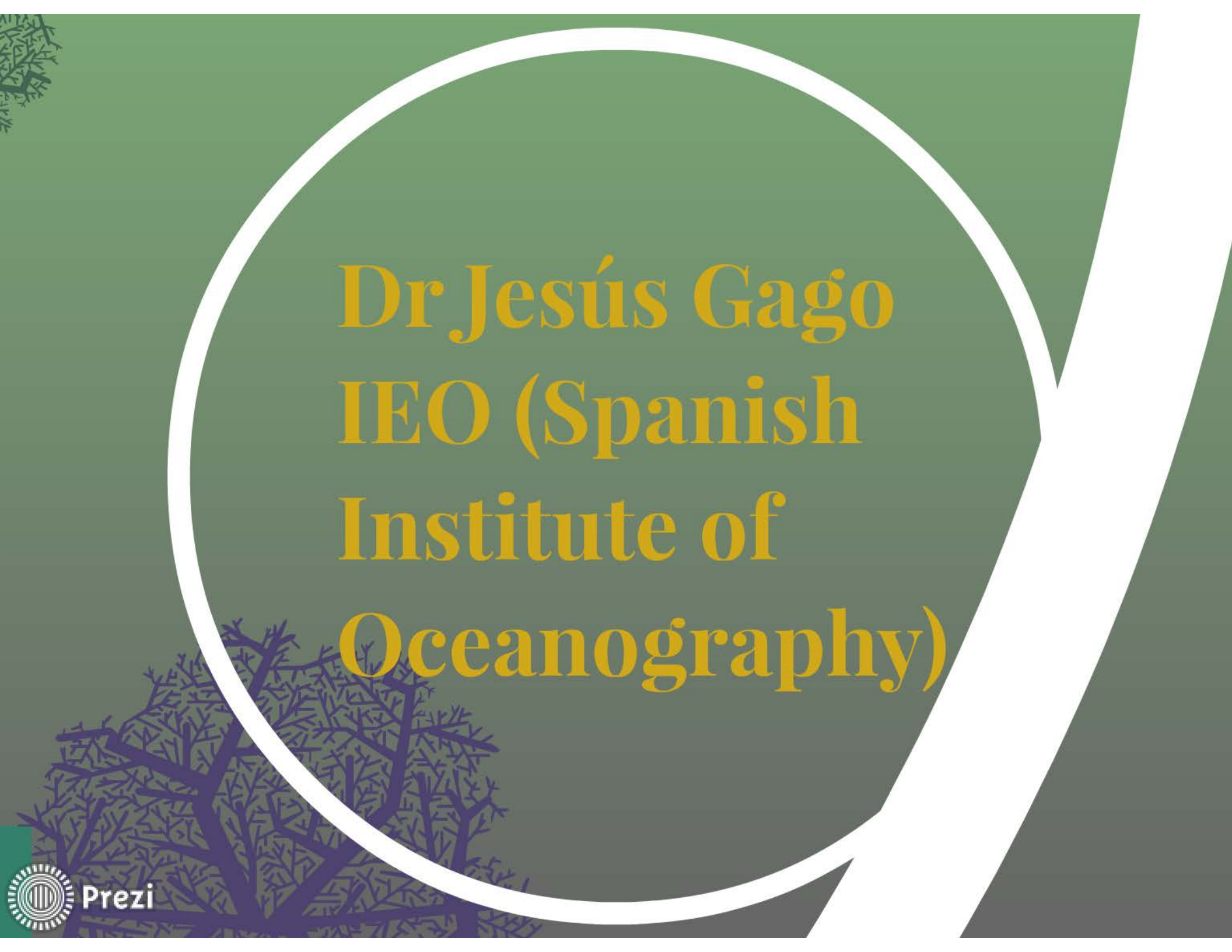
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JRC SCIENTIFIC AND POLICY REPORTS

Guidance on Monitoring of Marine Litter in European Seas

*A guidance document within
the Common Implementation
Strategy for the Marine
Strategy Framework Directive*

MSFD Technical Subgroup on
Marine Litter

2013



Joint
Research
Centre

Microplastics size?

< 1mm or < 5 mm

upper limit both limits are valid but we should encourage to use definitions that can help in the knowledge like a puzzle.

lower limit Mainly dependent on the separation process from the matrix.



Matrix

-Seawater.

-Sediments and beaches.

-Biota.

the operator.
FTIR methodology is the most common tool used.
In our guidelines we recommend to identify a polymer if 60% of their spectra are similar.

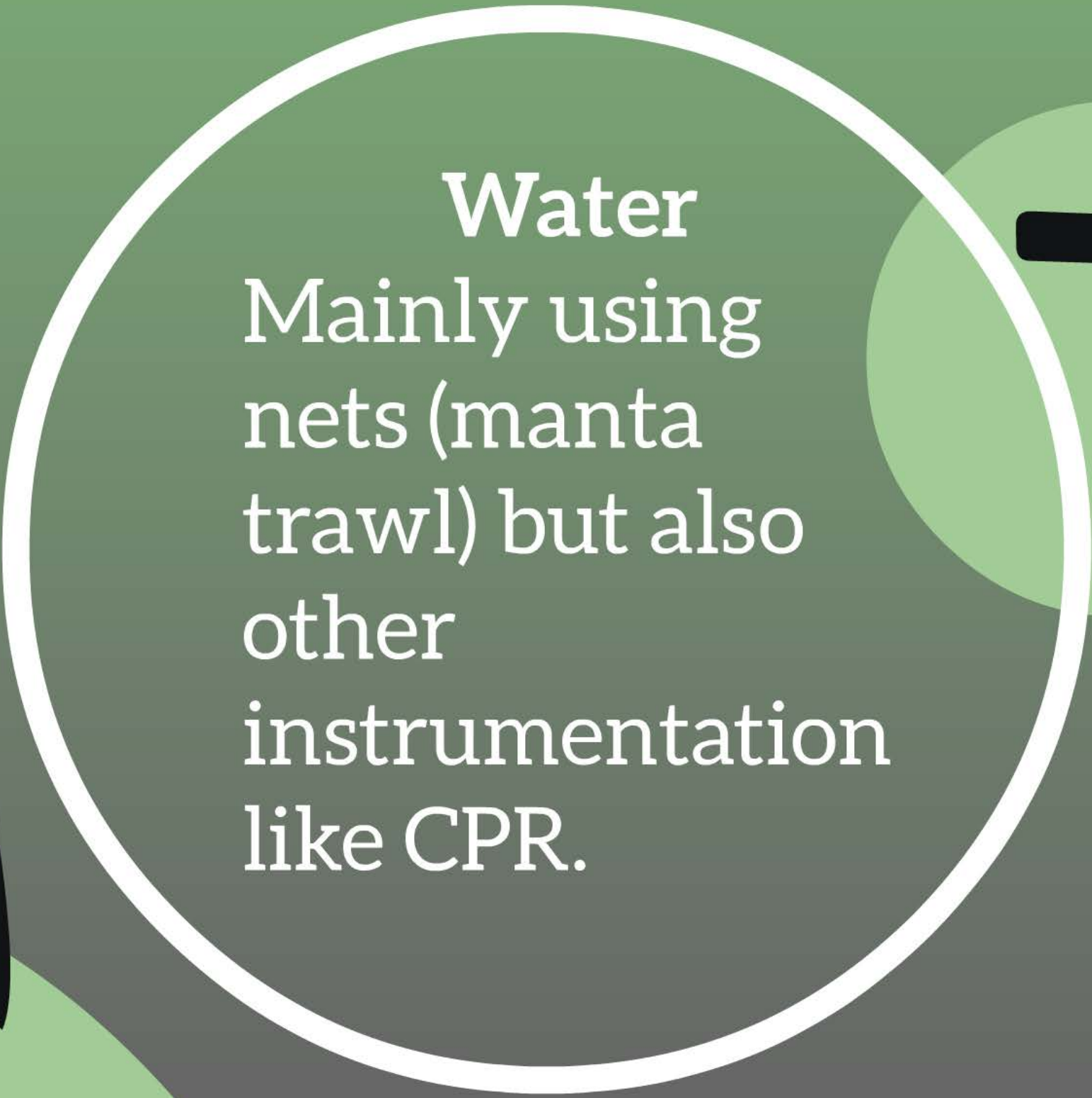
Water
Mainly using nets (manta trawl) but also other instrumentation like CPR.

Sediments/beaches

A robust methodology is needed to identify MPs but at the moment is very dependent on the matrix characteristics.

Biota

Despite the success of *Fulmar fulmaris* as indicator of plastics. From the European experience is not clear which species monitor to evaluate MPs impact



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Identification of MPs

Separation of MPs with microscope is very dependent on the abilities of the operator.

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Emerging issues.