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Marine pollutants of emerging concern

Parliamentary and Scientific Committee Event
Tackling Contaminants of Emerging Concern (CECs) in
Water Dec 3rd 2024

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Ecotoxicology research group

- How does pollution damage living things?
- What makes some species more vulnerable?
- How can we use this knowledge to protect the environment and human health?



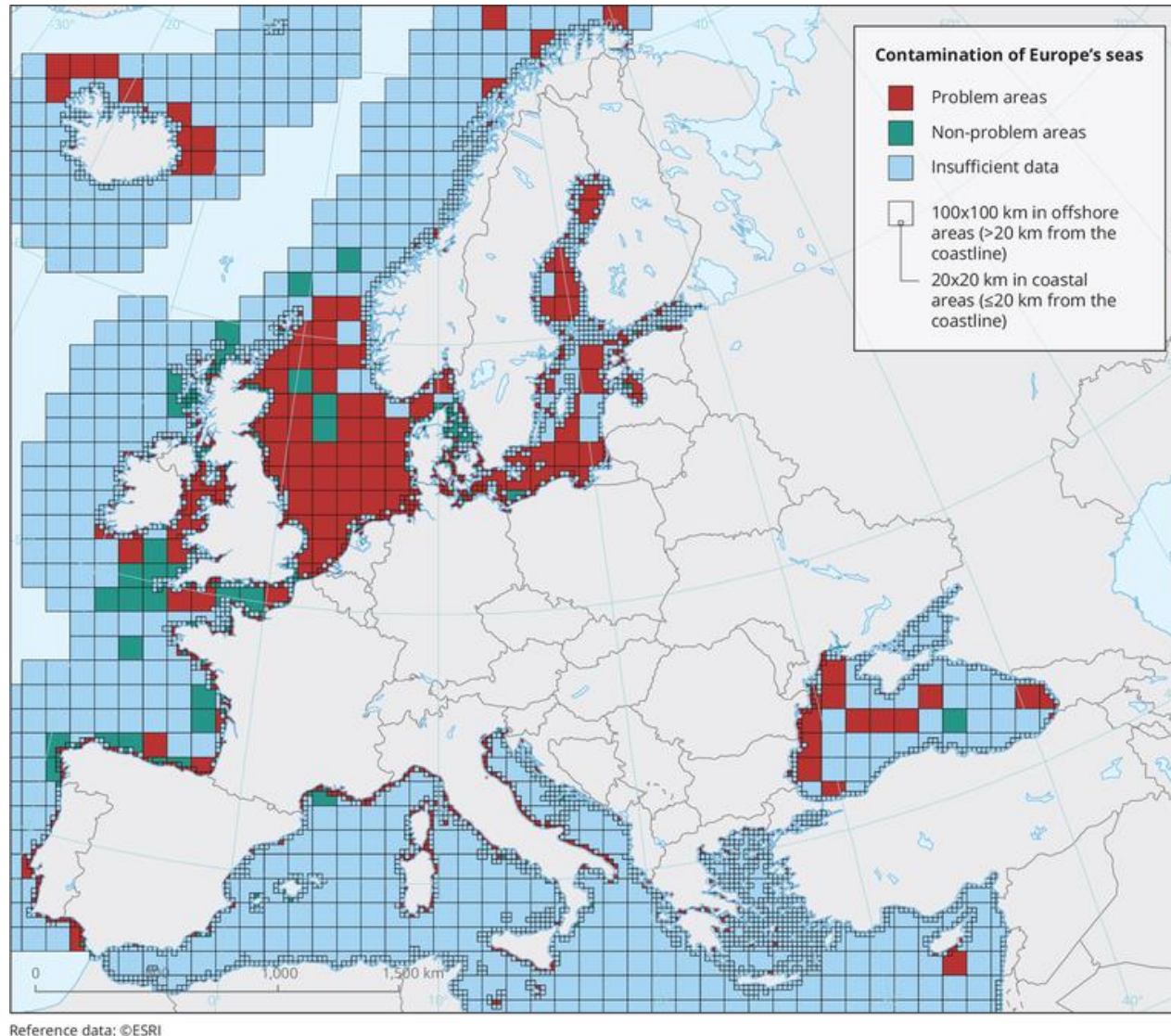


Torrey Canyon 1987 image Safety4Seas

The state of UK seas



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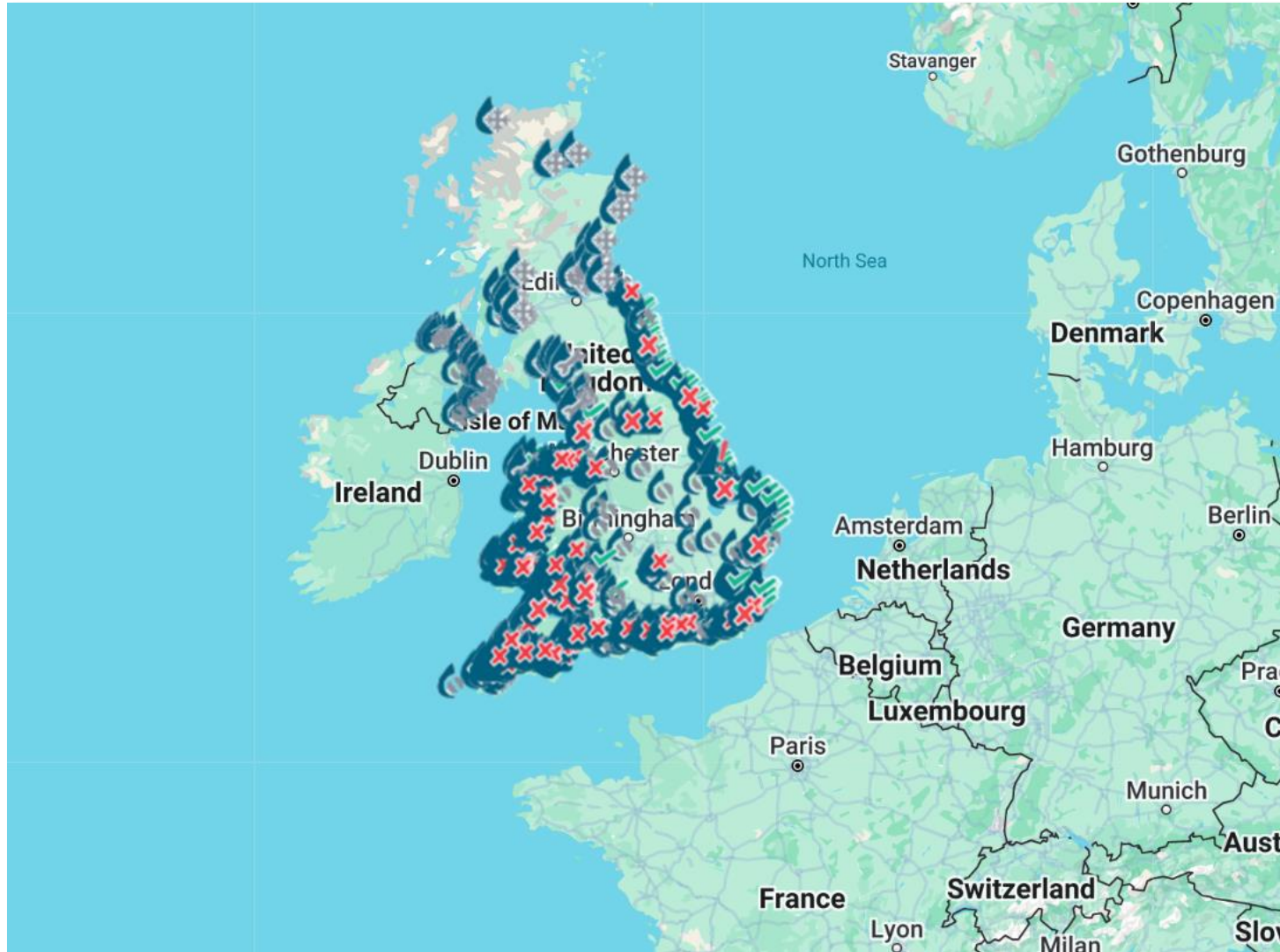
According to CHASE
tool and Water
Framework Directive
Feb 2023

<https://www.eea.europa.eu/en/analysis/maps-and-charts/mapping-of-contamination-problem-and-1>

UK sewage pollution alerts



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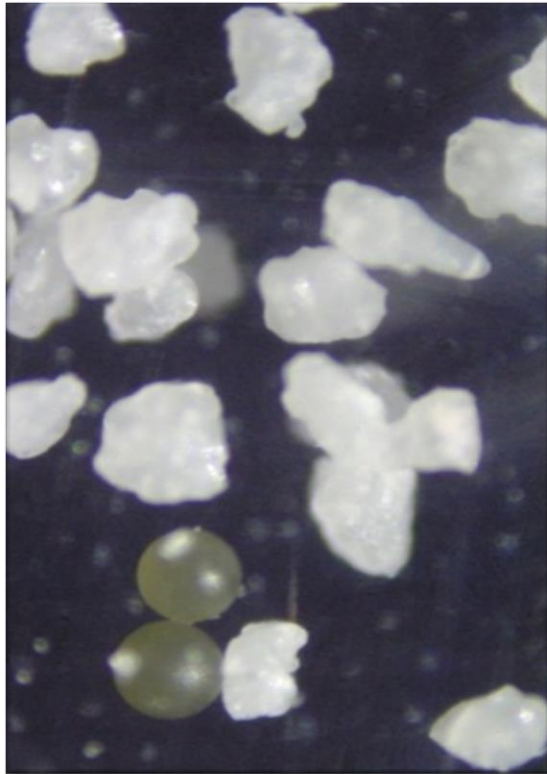
<https://www.sas.org.uk/water-quality/sewage-pollution-alerts/>



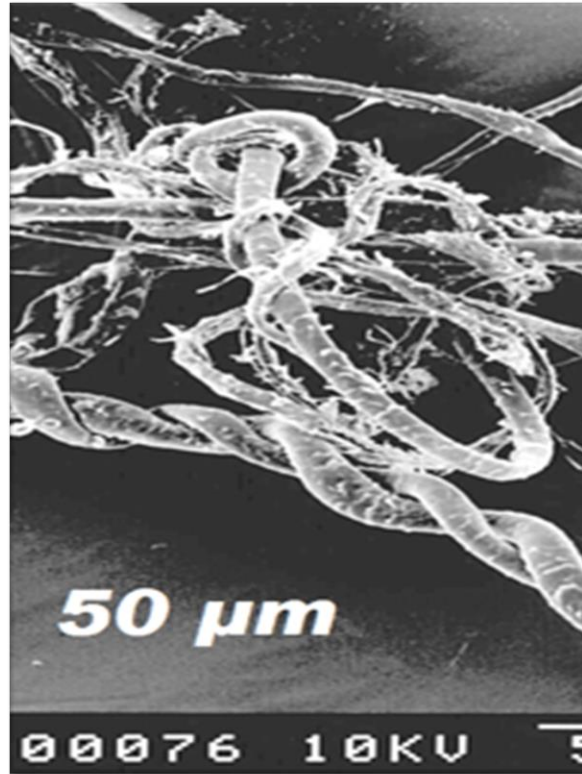
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Micro and nanoplastics

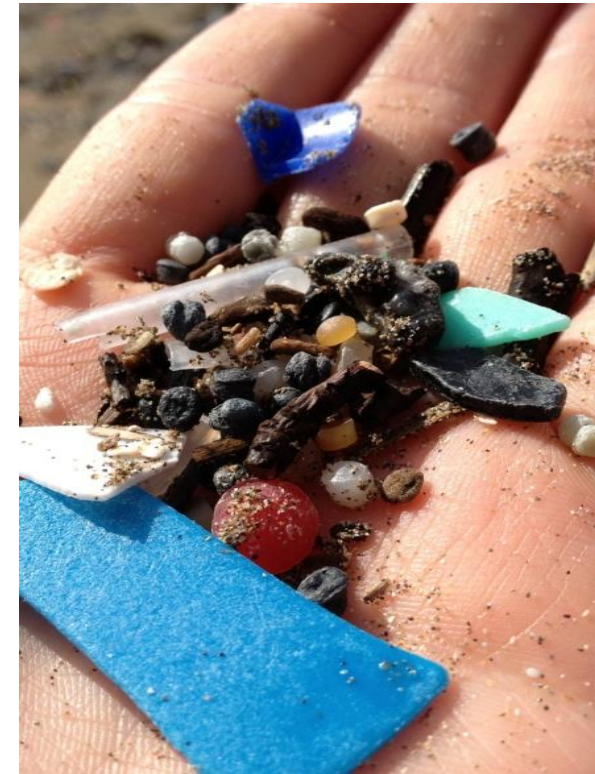
Microscopic plastic fragments, fibres and beads <5 mm in diameter



Cosmetic microbeads



Clothing, rope, smoked
cigarette butts



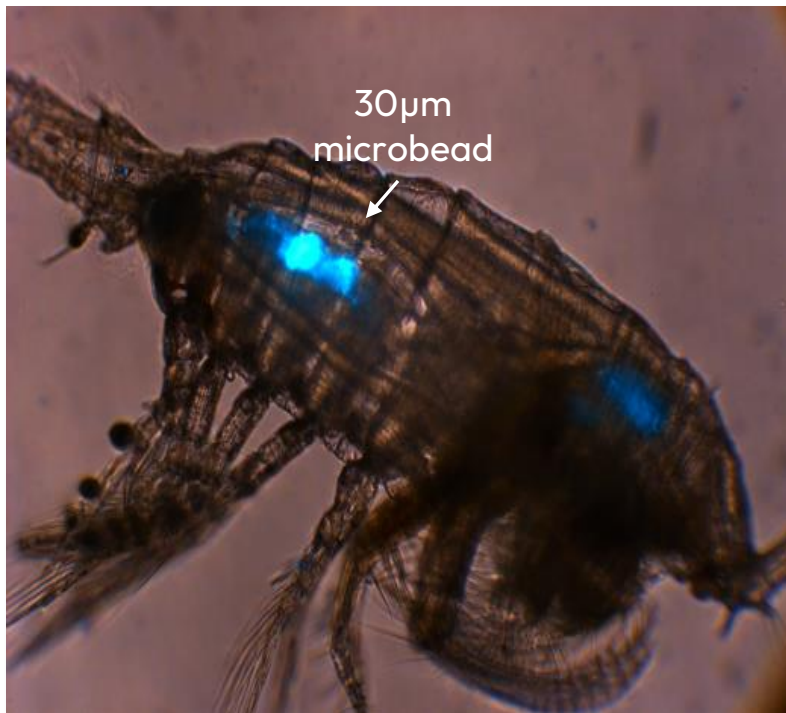
Fragments, films

Cole et al 2011

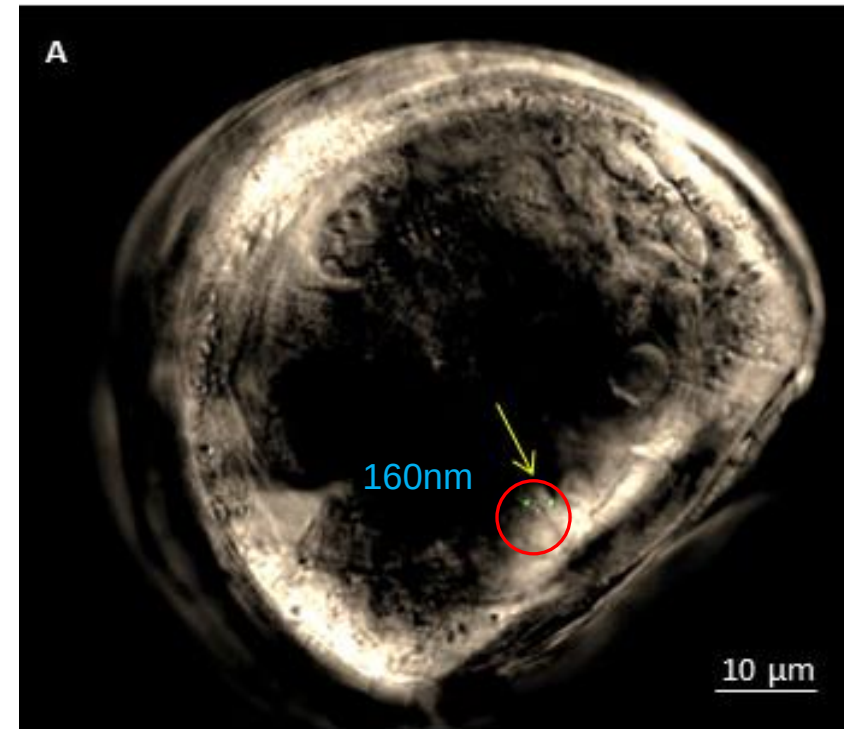


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Microplastics enter the food web

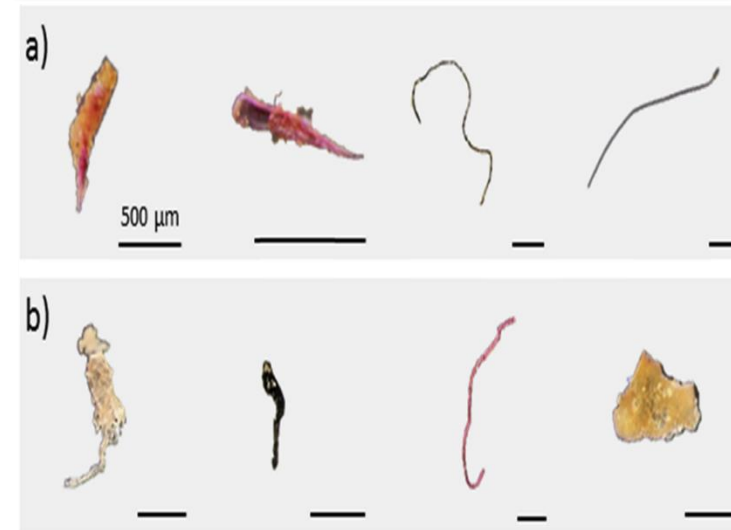


Centropages typicus:
marine copepod,



Crassostrea gigas:
edible oyster

And reach higher trophic levels

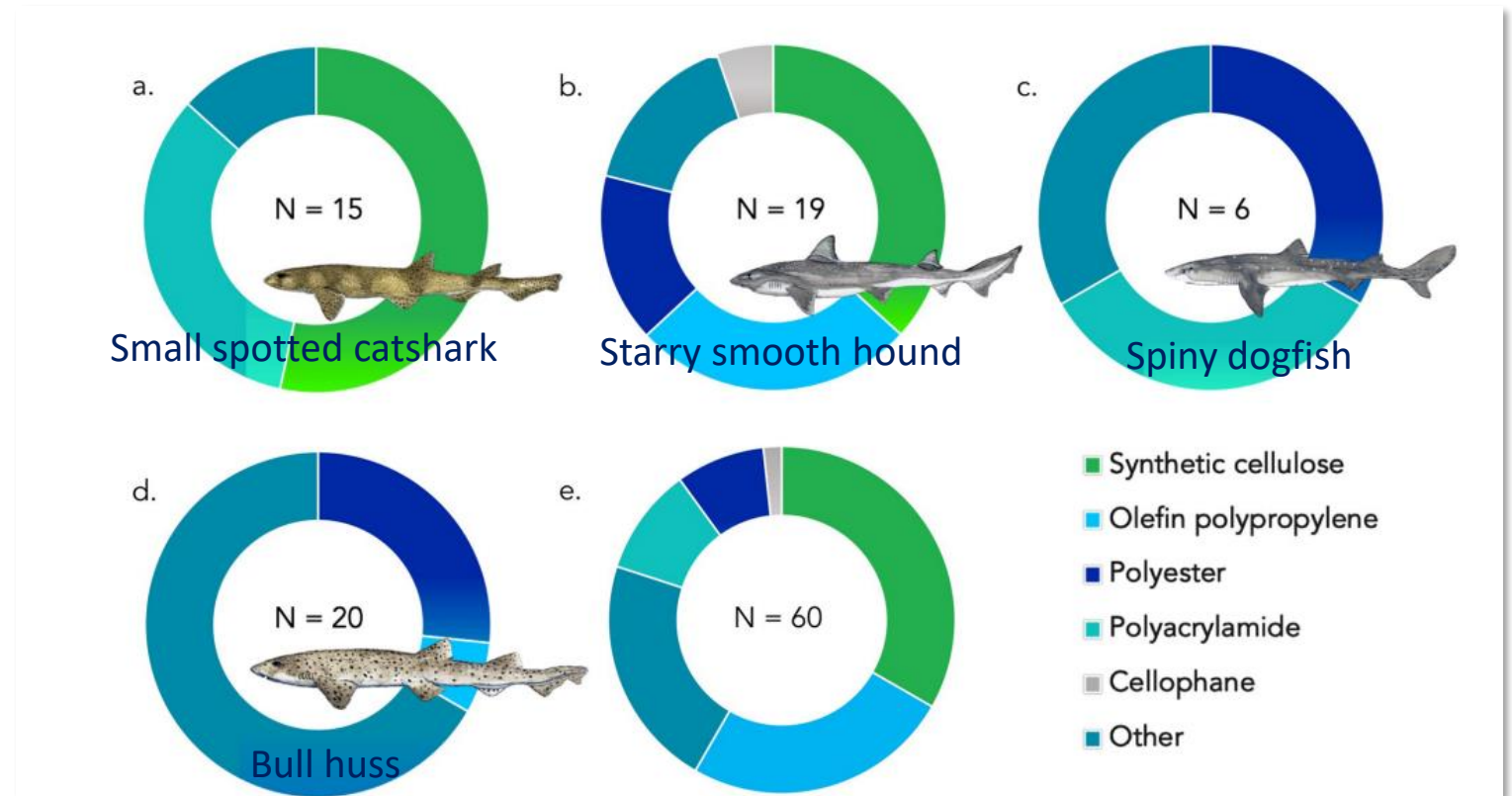
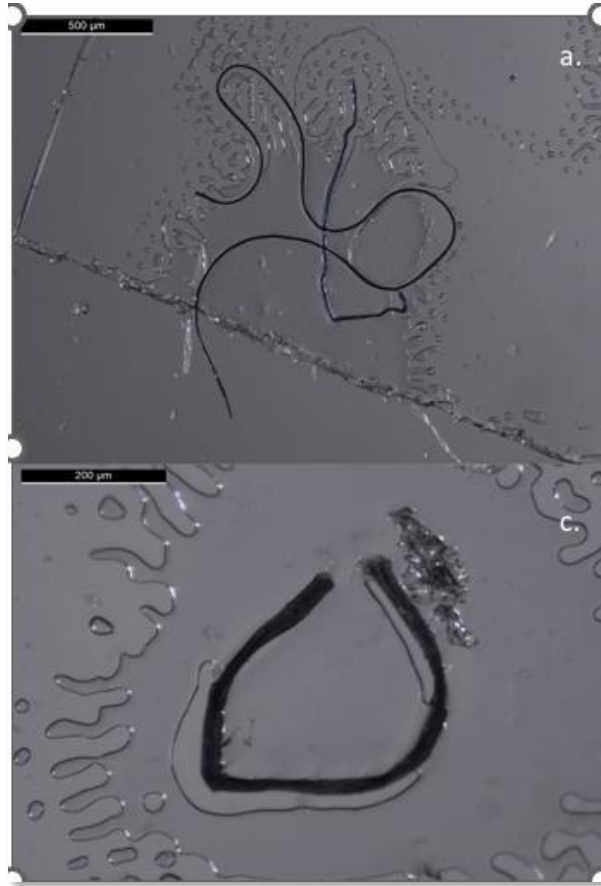


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Textile fibres ingested by UK sharks



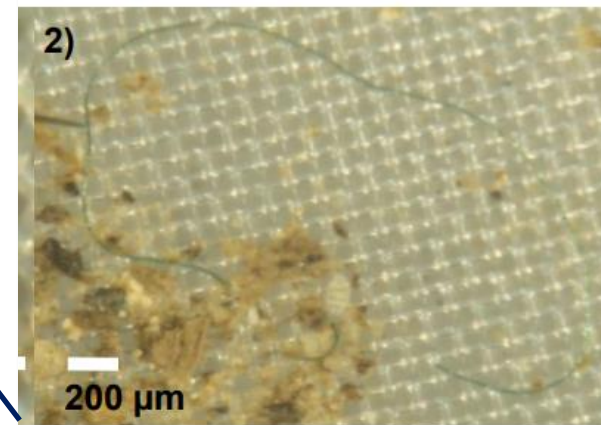
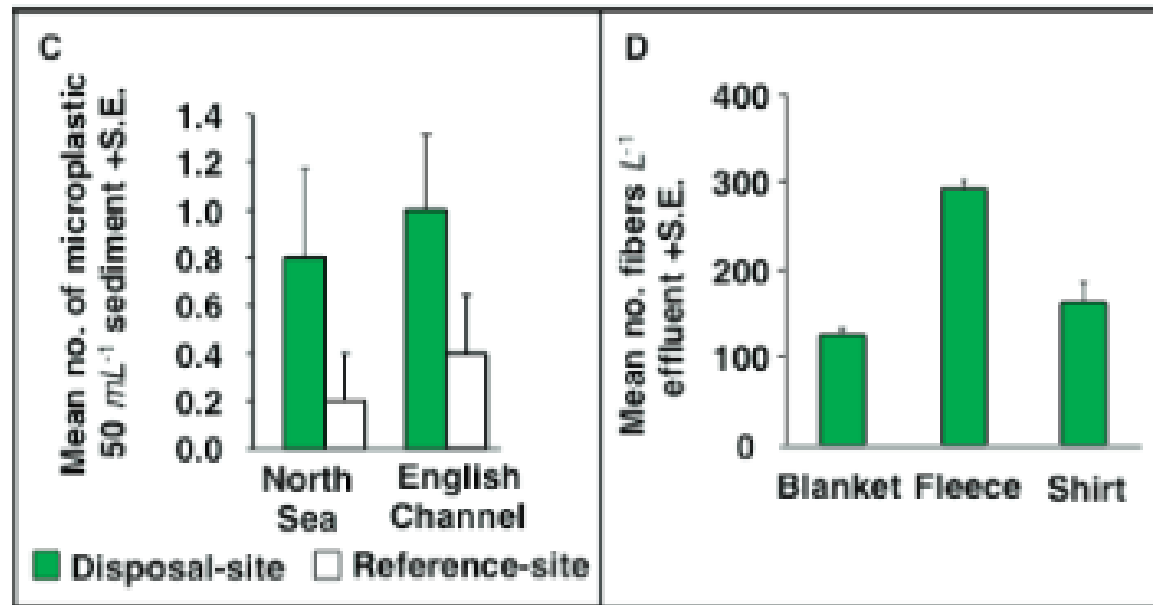
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Textile microfibres in sewage effluents

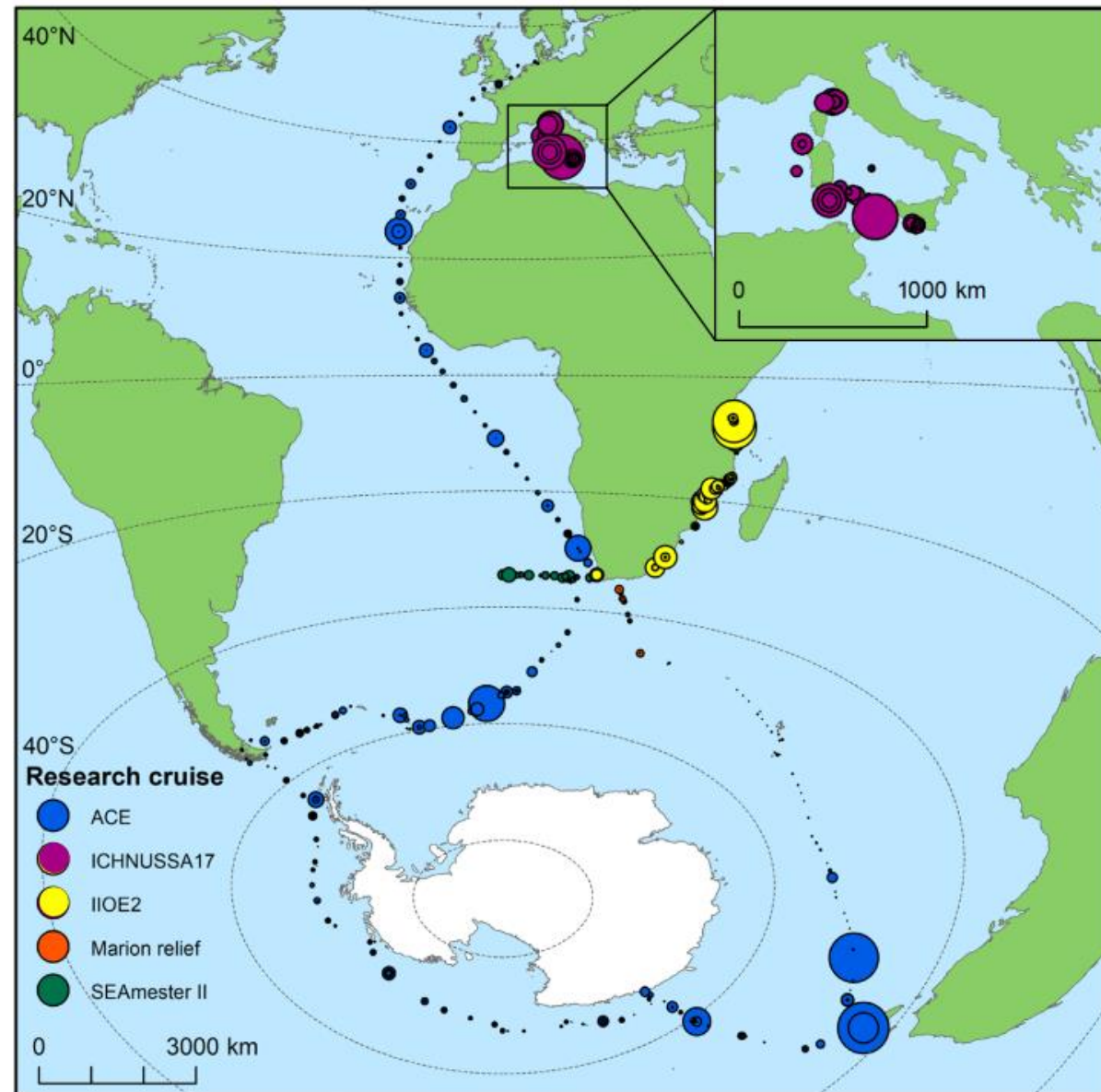


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Microfibres collected on the ocean surface...

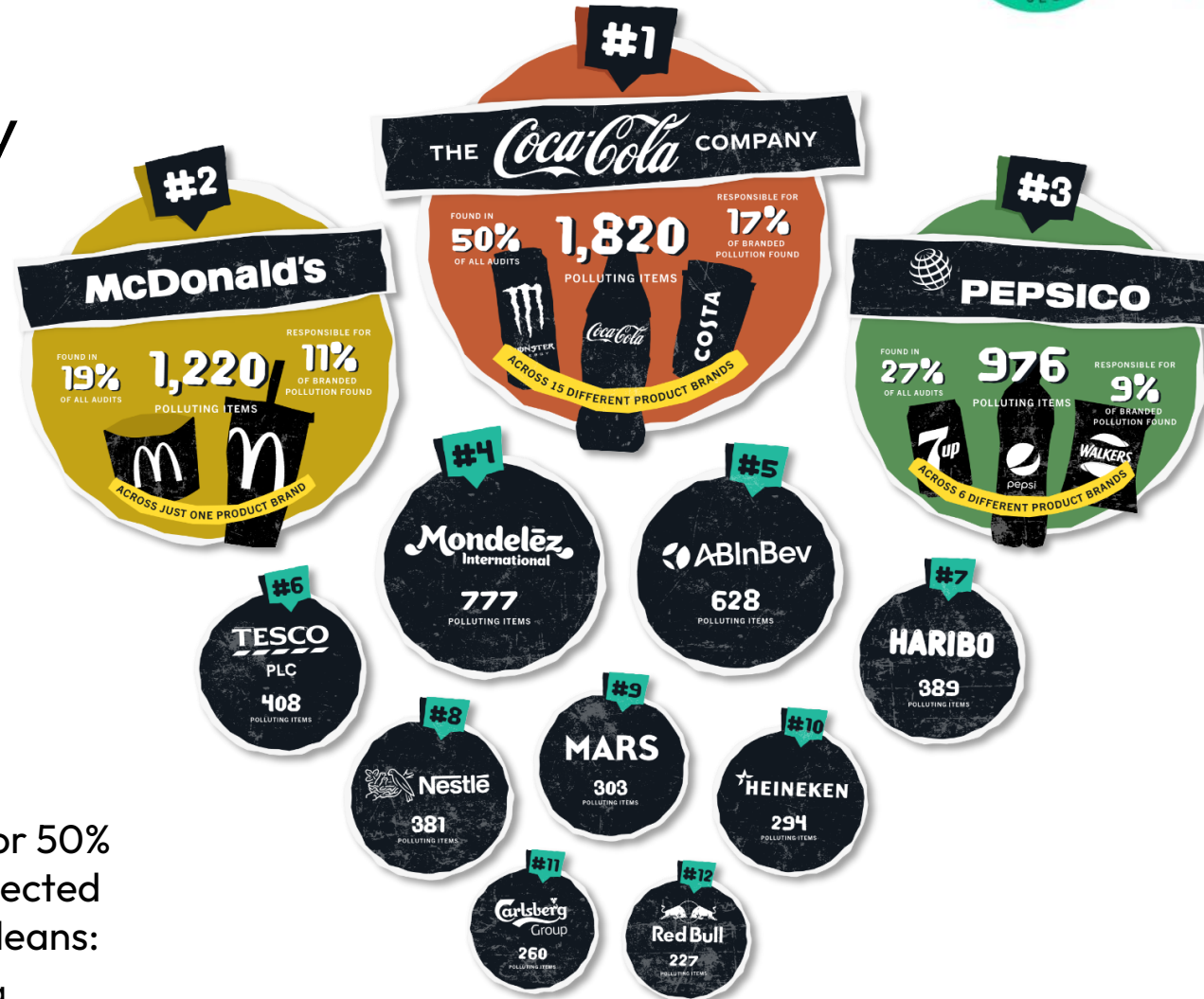
Synthetic clothing
makes up 14% of all
global plastic waste



Circle size scaled by fiber density: 0-25.8 fibers litre⁻¹

What can be done?

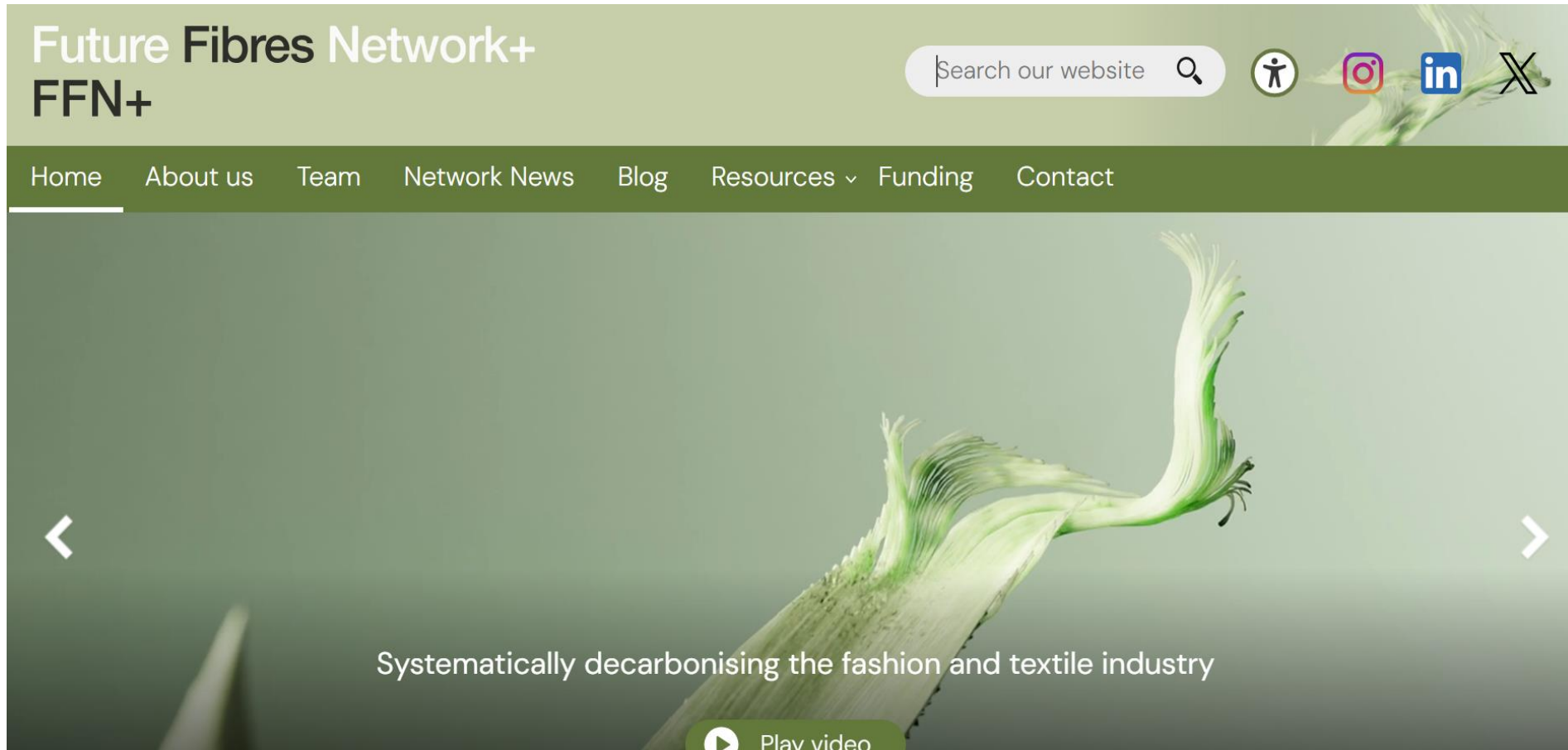
Global Plastics Treaty



Top 3 'dirty dozen' accounted for 50% of all pollution (>30K items) collected by volunteers from UK beach cleans:

Surfers Against Sewage data

Bringing environmental science into the UK fashion and textiles industry



..we are all ingesting microplastics and microfibres

ENVIRONMENTAL
Science & Technology

pubs.acs.org/est Article

Analysis of Microplastics in Human Feces Reveals a Correlation between Fecal Microplastics and Inflammatory Bowel Disease Status

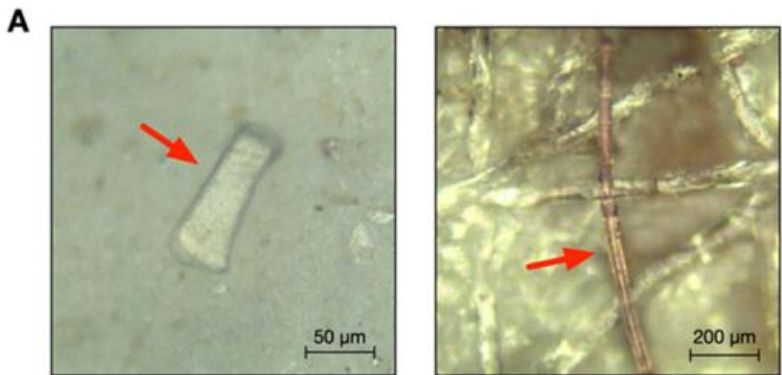
Zehua Yan, Yafei Liu, Ting Zhang, Faming Zhang,* Hongqiang Ren, and Yan Zhang*

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ABSTRACT: Human ingestion of microplastics (MPs) is inevitable due to the ubiquity of MPs in various foods and drinking water. Whether the ingestion of MPs poses a substantial risk to human health is far from

A



Sheet Fiber



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Thank you! Any questions?

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