PLASTIC POLLUTION: Science and solutions?

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(MICRO)PLASTIC POLLUTION – BIODEGRADABLE & CONVENTIONAL

Environmental prevalence
soils -> deep sea

Environmental Fate and **behavior**

Impacts on organisms/ ecosystem functions (marine & terrestrial)

Inform on the environmental risk and effective interventions.

Scientists' Coalition for an Effective Plastics Treaty

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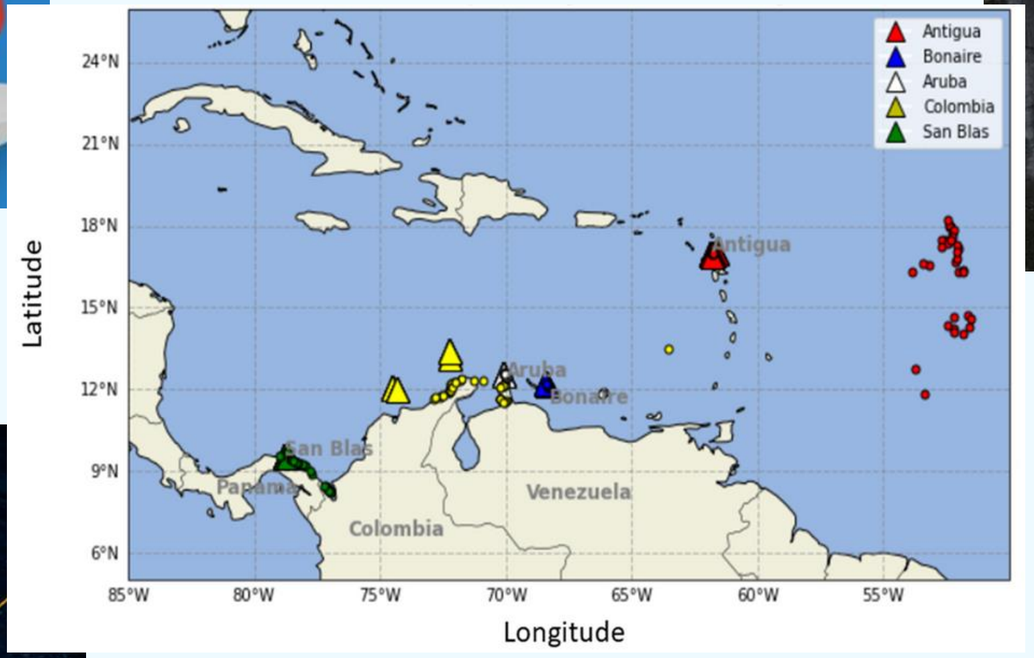
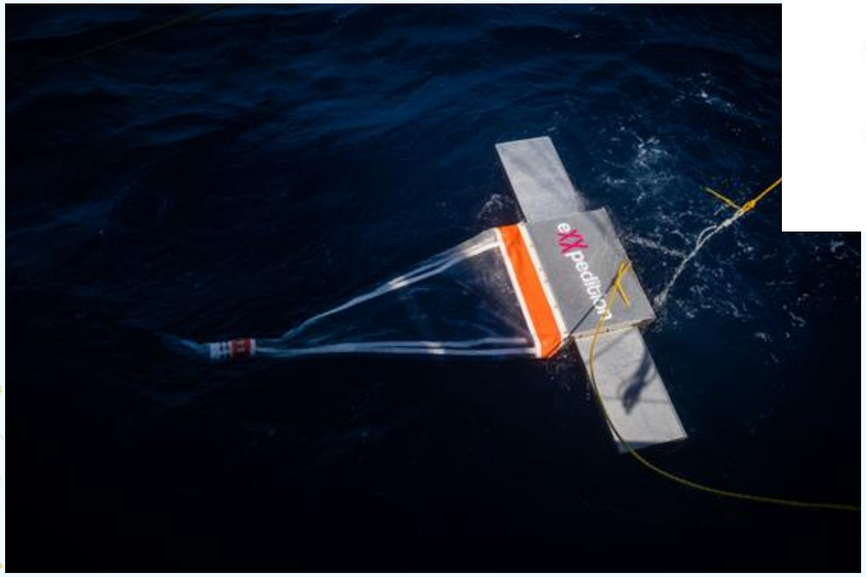
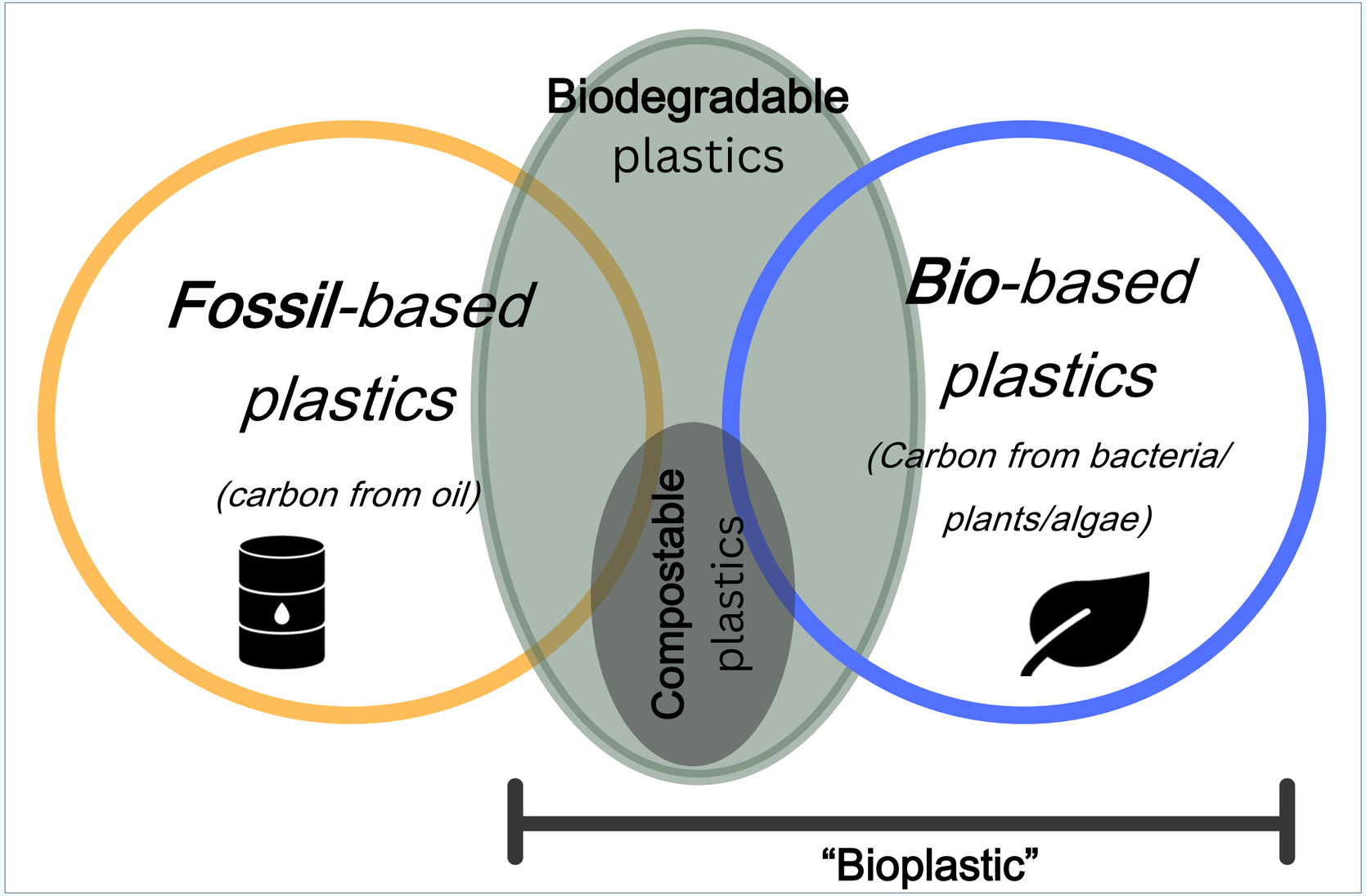
Courtene-Jones *et al.* (2021) **Source, sea and sink: A holistic approach to understanding plastic pollution in the Southern Caribbean**, Science of the Total Environment, 797

Global-scale interventions are needed





The rise of alternative plastics: increased production & application of biodegradable & bio-based plastics



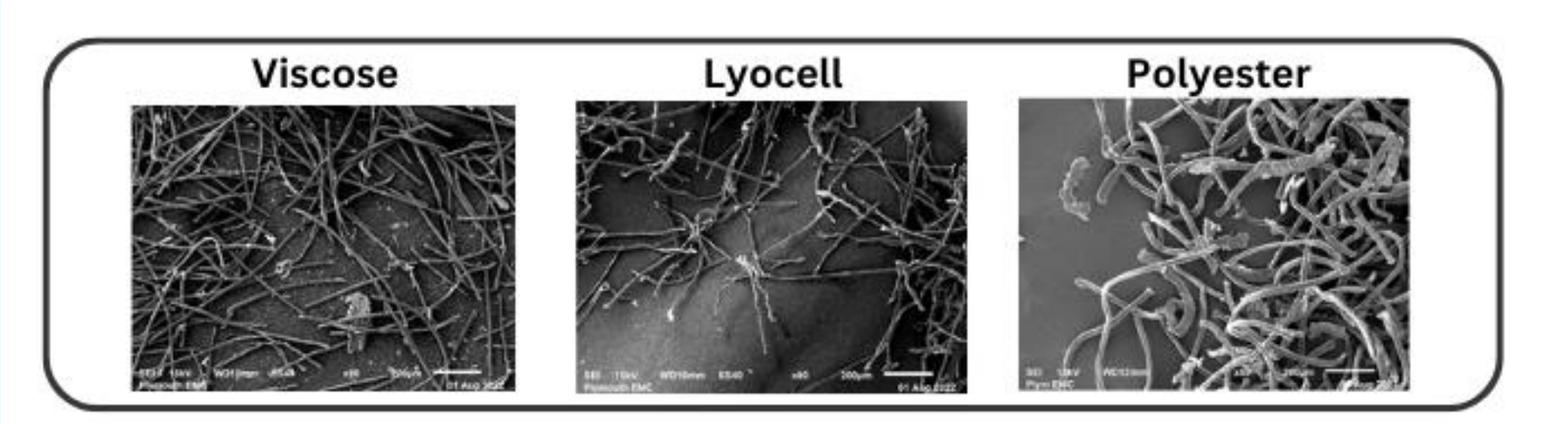
Plastic biodegradation rates vary

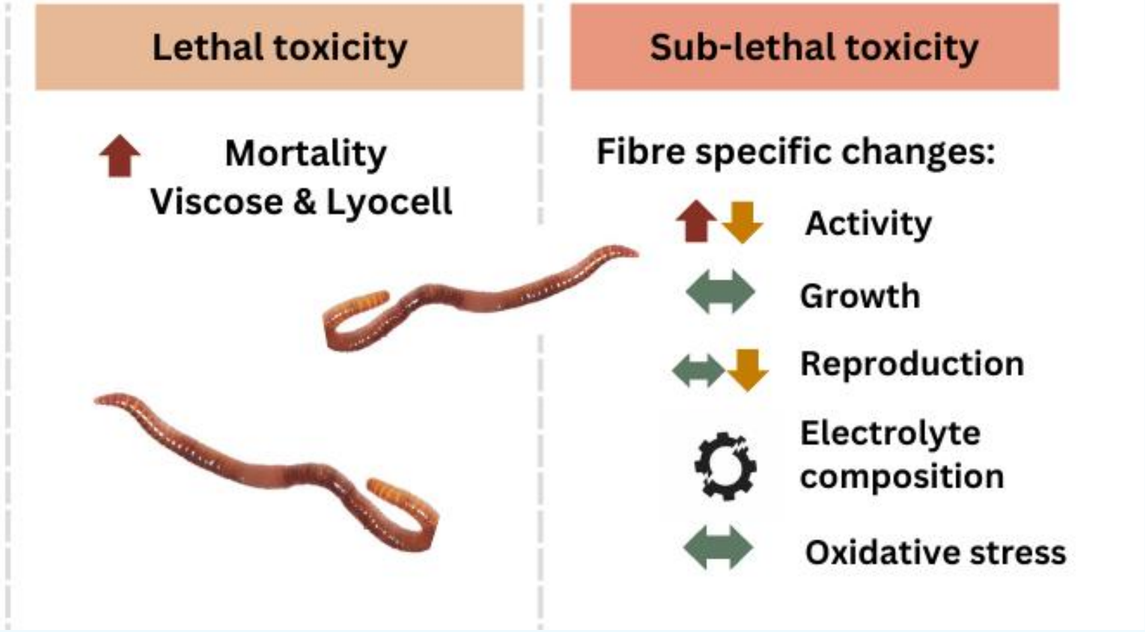
Plastic introduced to land

Globally, 13 million tons of plastics (biodegradable & non-biodegradable) are used directly in agriculture each year.

Additionally, microplastics become introduced to land through the application of biosolid fertiliser and compost

Bio-based clothing fibres have greater adverse effects on earthworms than conventional polyester fibres





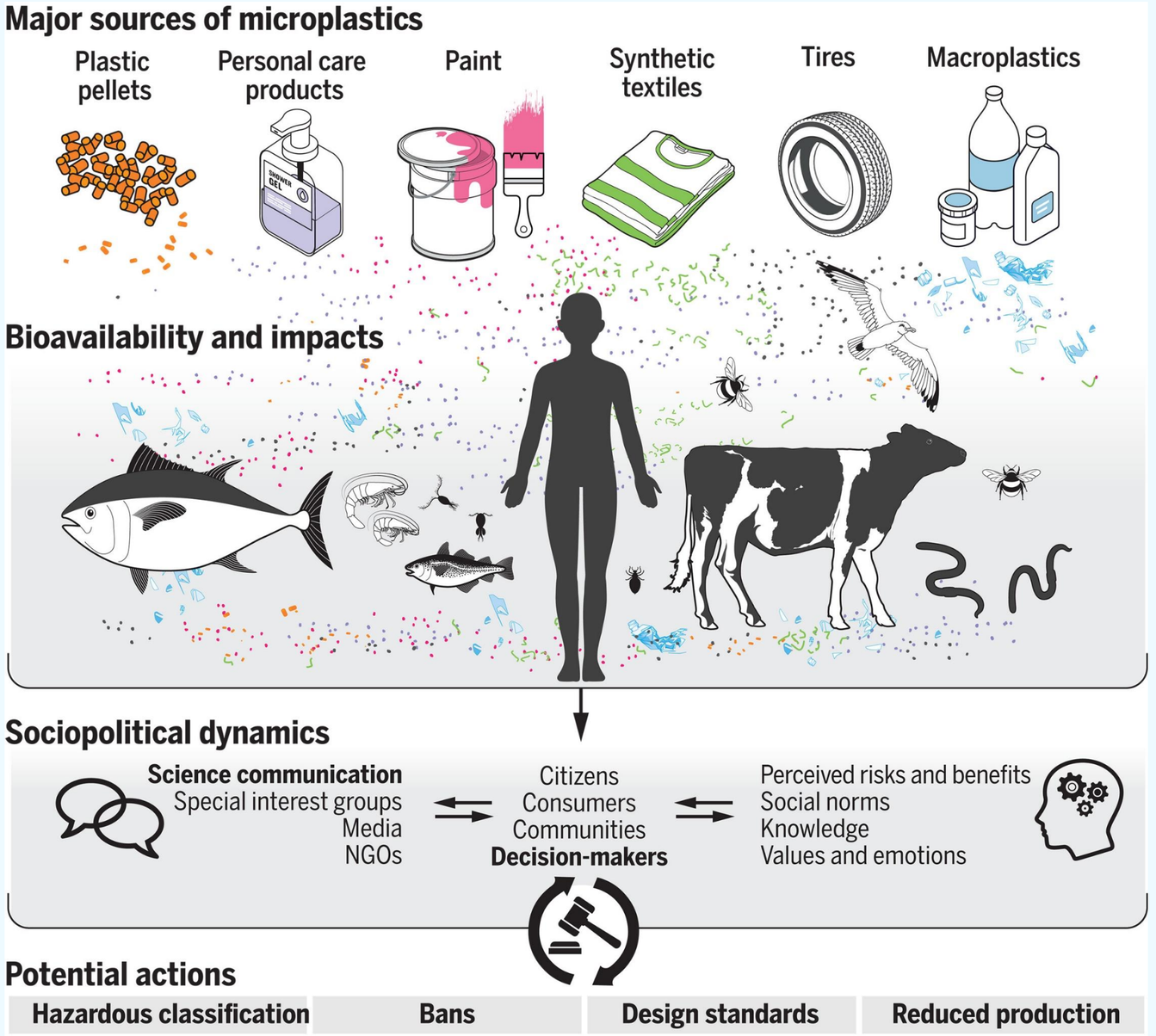
Courtene-Jones et al (2024) [*Are Biobased Microfibers Less Harmful than Conventional Plastic Microfibers: Evidence from Earthworms*]

The role of biodegradable plastics?

How can we be sure that we are not just switching problems, and that these are ‘better’ alternatives than conventional plastics?

Studies highlight the necessity of thorough testing.

Twenty years of microplastic pollution research—what have we learned?



Science

Thompson, Courtene-Jones *et al (2024),* *Twenty years of microplastic pollution research—what have we learned?* *Science*

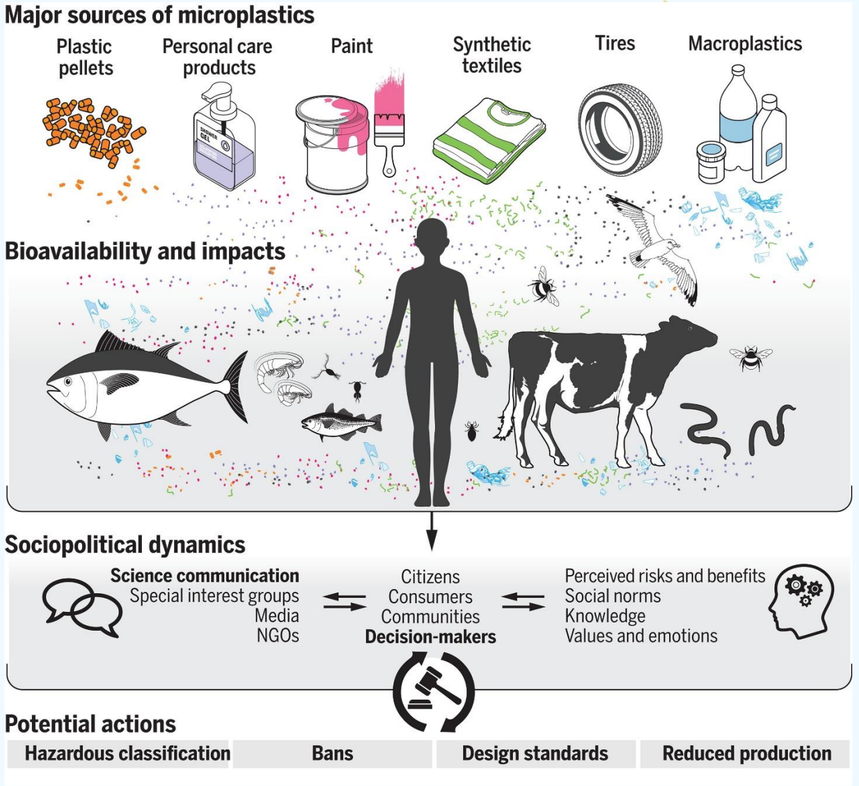
Looking ahead:

Multi-disciplinary science is required for guiding effective solutions

- **Multi-stressor studies** –interactions between pollution, climate change and biodiversity loss – *effects ecosystem services & resilience and human health*

- **Science-led evaluation of the efficacy of interventions** (proposed/implemented) to guide solutions.

- Ongoing **environmental monitoring** required



Thompson, Courtene-Jones *et al (2024),* *Twenty years of microplastic pollution research—what have we learned?* Science

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THANK YOU

Open for questions

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