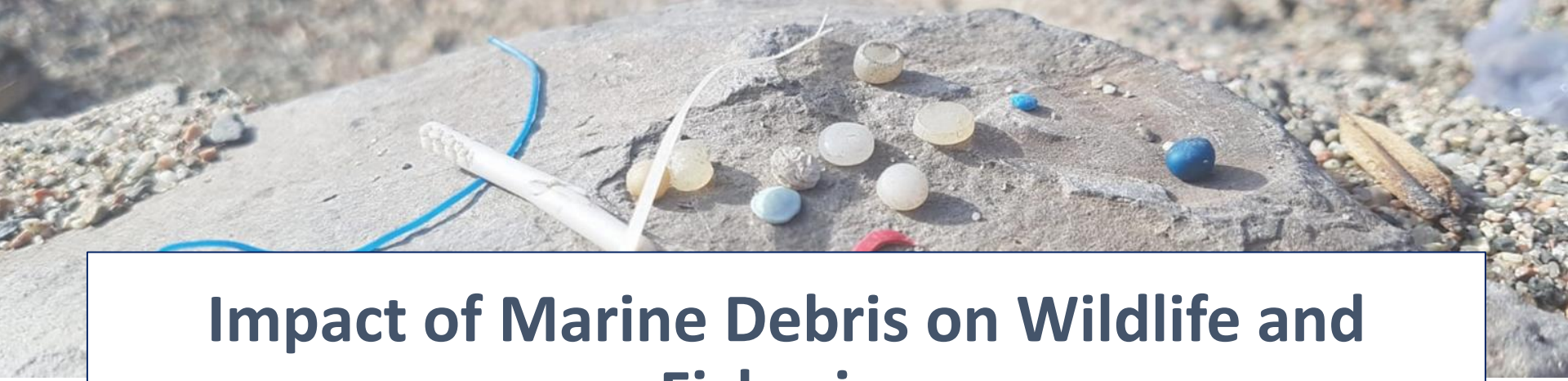

Impact of Marine Debris on Wildlife and Fisheries

Current Knowledge and Data Gaps

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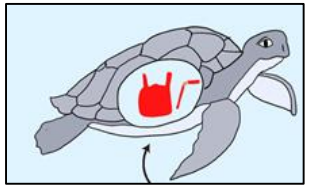
Marine debris impact on wildlife

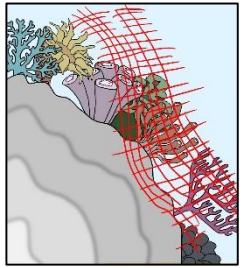
Litter and macroplastics

- **Ingestion –** animals mistakenly eat plastic or other debris



- **Entanglement** – animals get caught up or and killed in marine debris or other derelict fishing gear

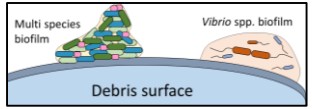
- **Habitat Damage** – marine debris can crush sensitive habitats like coral reefs and sea grass



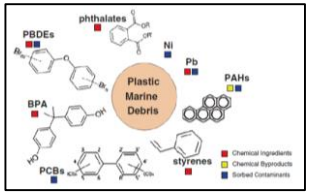
- **Transport for non-indigenous species** – from one region to another

Image: Plastic Oceans

- **Vector for pathogens –** debris and plastics can carry bacteria

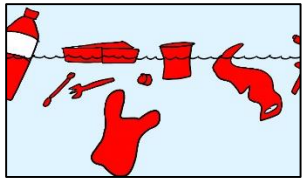


- **Harmful toxic effects –** chemical additives associated with plastic production or sorbed from the environment



Rochman 2015

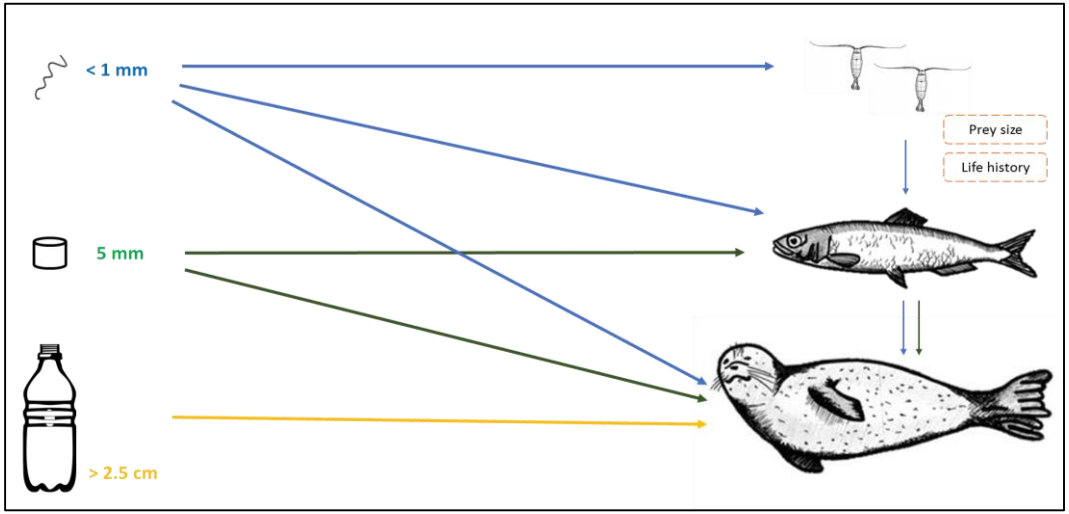
- **Smothering –** prevent oxygen and nutrient flow, blocking light, compromising ecosystem services



Marine debris impact on wildlife

Microlitter and microplastics

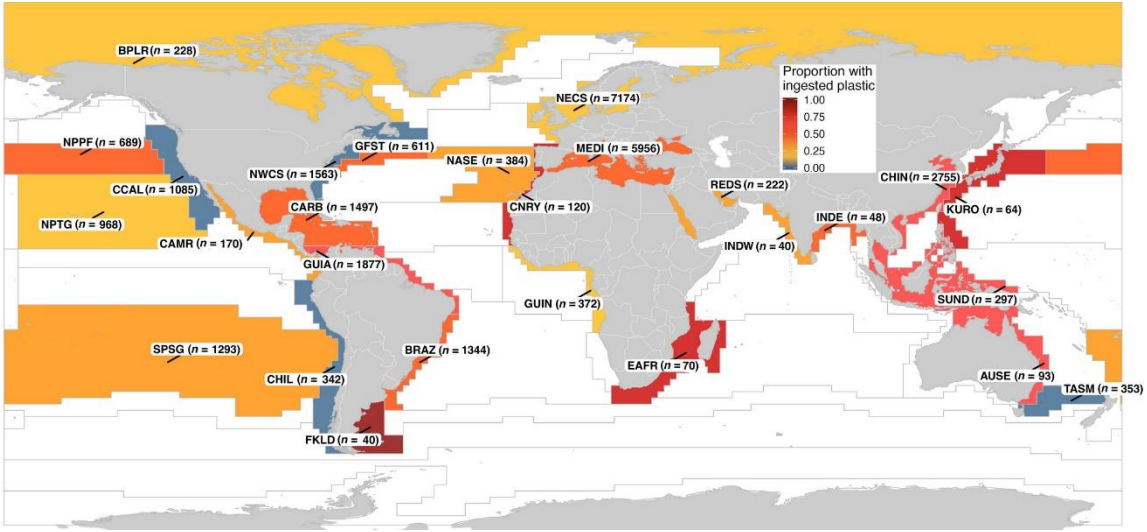
- **Ingestion –** animals mistakenly eat plastic or other debris



Physical characteristics
(e.g., shape, size, surface area etc.)

Current state of knowledge: Fish

- Global data showing fish interact with plastics and marine debris



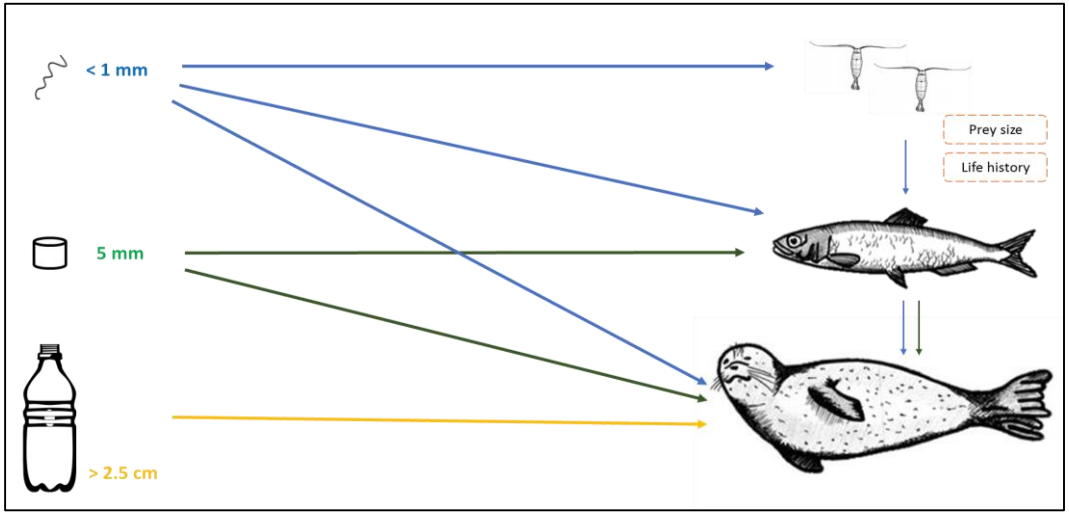
Savoca et al., 2021

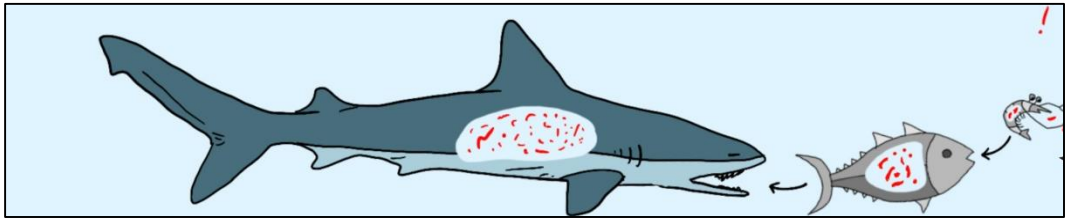
- Fewer studies have explored the consequences of interactions
- Sampling has primarily focused on digestive tract
- Even less have considered trophic transfer and bioaccumulation

Marine Debris Impact on Wildlife

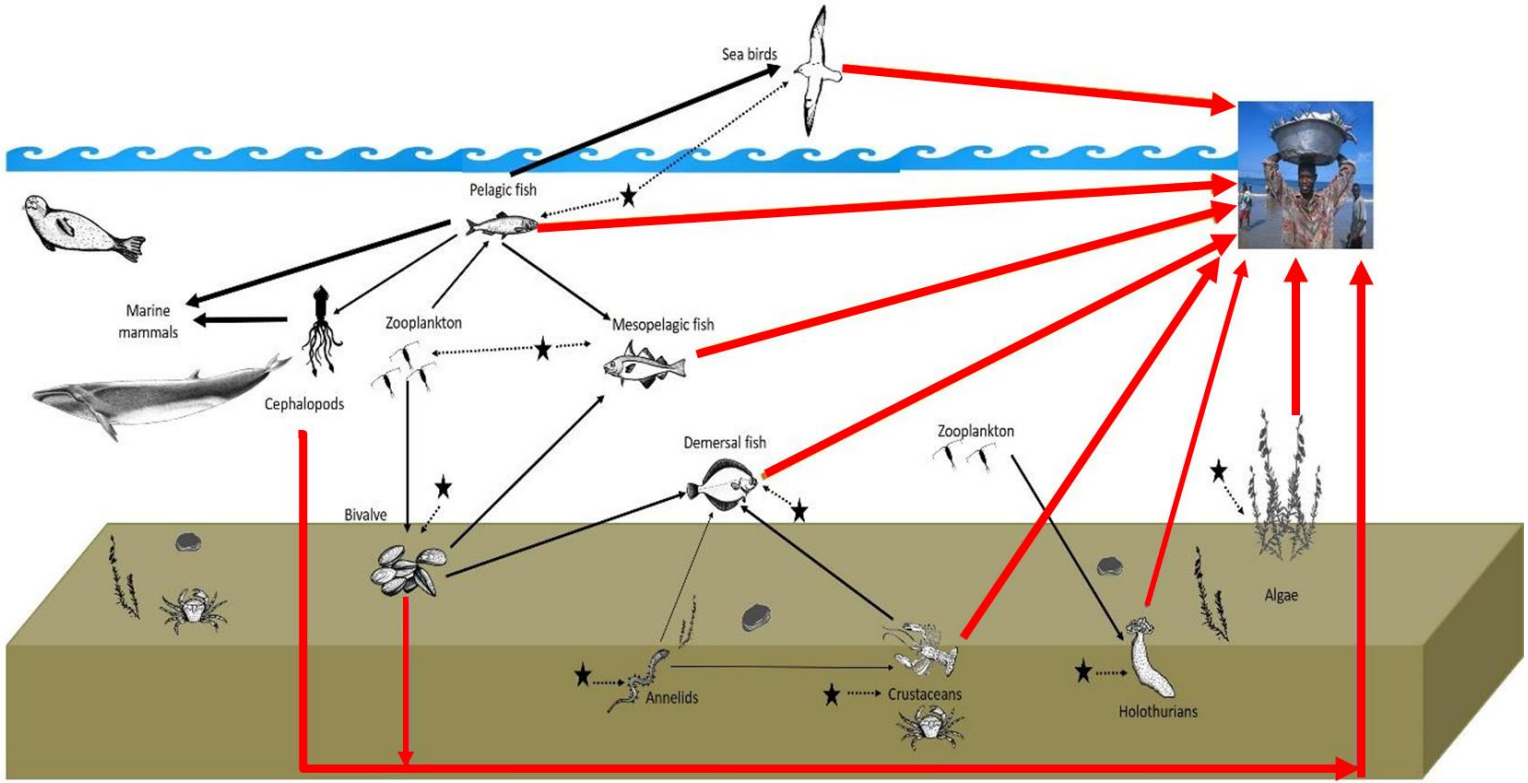
Microlitter and microplastics

- **Ingestion –** animals mistakenly eat plastic or other debris
- **Ecosystem disruption** – microplastics can disrupt biological processes within wildlife – including feeding, nutrition, growth, reproduction and survival
- **Trophic transfer** – microplastics move within food webs from prey to predator



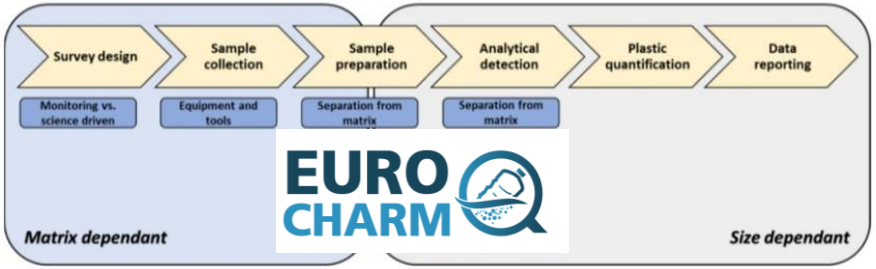


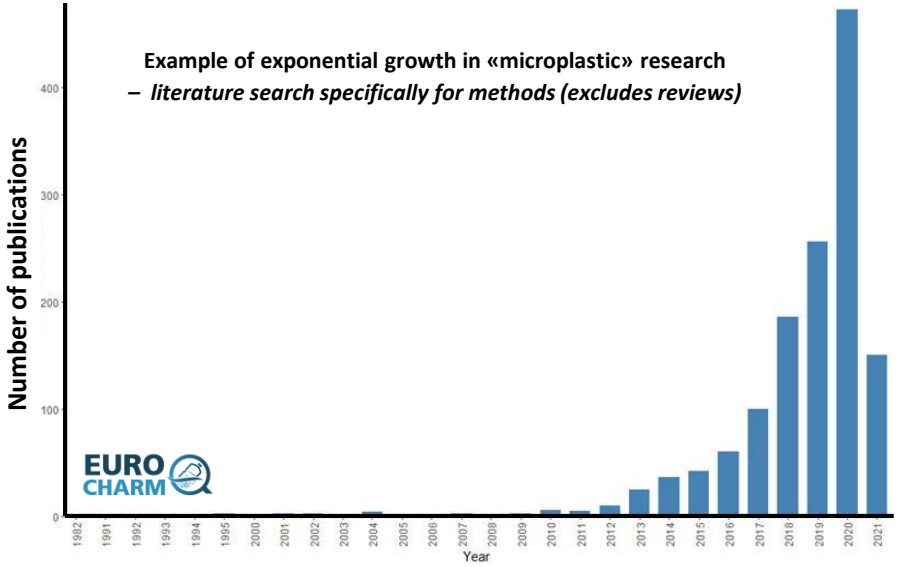
Marine Debris Impact on Wildlife



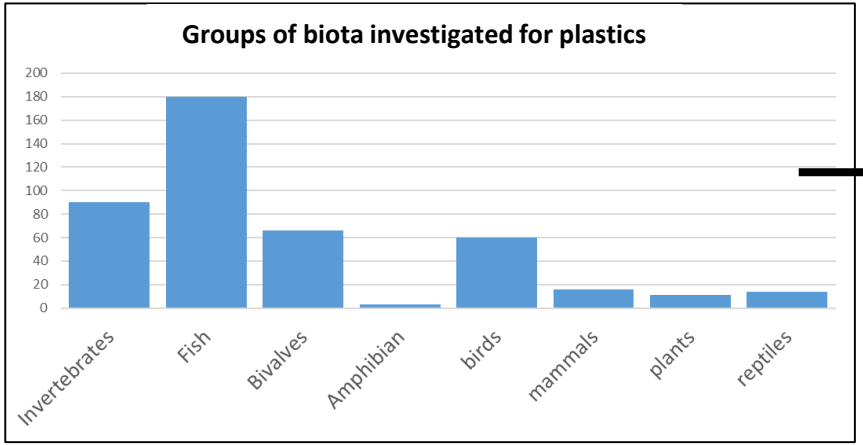
What does the data show?

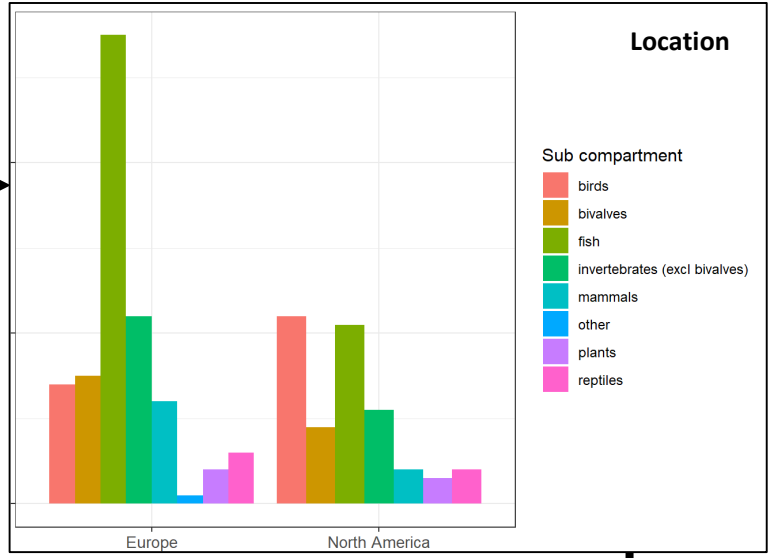
Growing field of research with a large number of new or improved analytical methods provided on a monthly basis

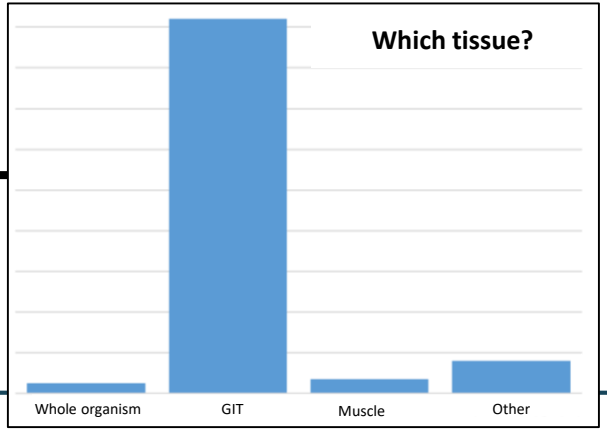


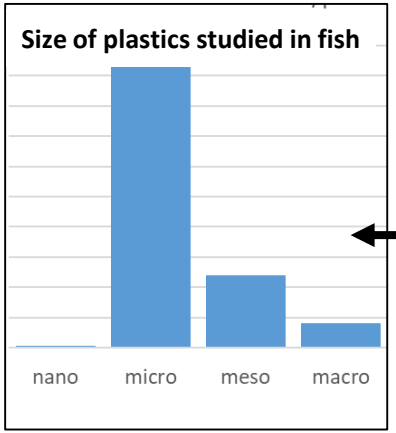


Various types of extraction and analytical methods applied to assessment of biota limits comparability







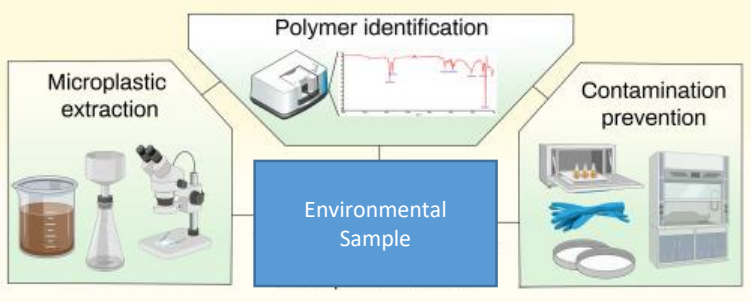


EURO CHARM

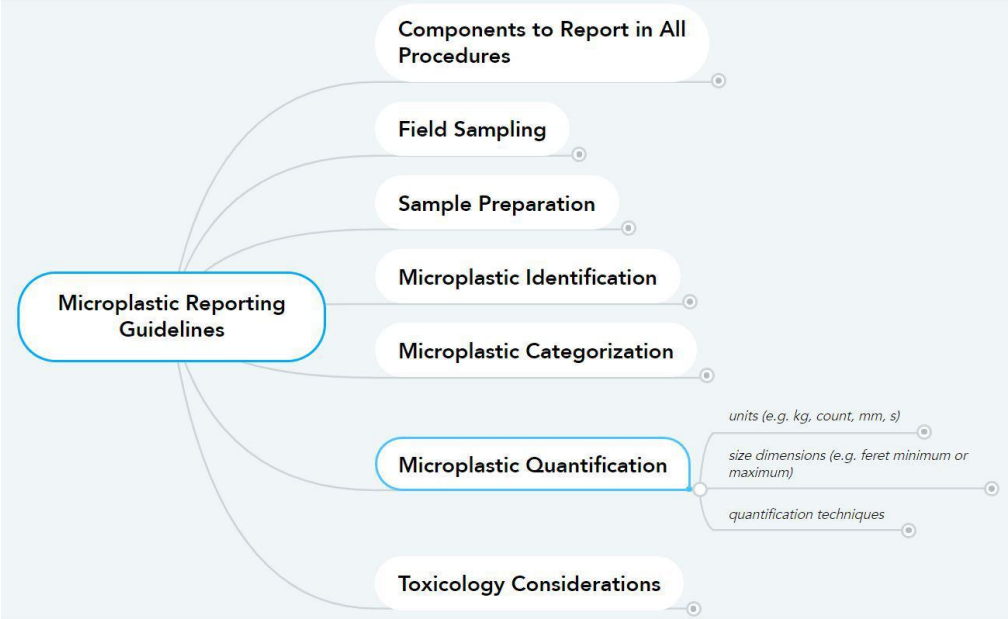
Preliminary data – analysis on going

Reporting is fundamental

- Size or mass of organism
- Abundance or mass of debris
- Size of debris: <5mm or >1mm?
- More standardised for macrolitter / debris



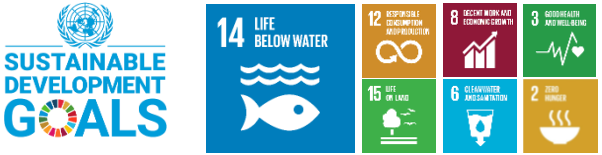
Dioses-Salinas et al., 2020



Cowger et al., 2020

Why do we need harmonisation?

- There are growing requirements for countries to monitor plastic pollution



- Many different suggested approaches are emerging

  - **e.g., Europe**: EU Member States and Regional Sea Conventions must ratify monitoring frameworks and instruments

Why do we need harmonisation?

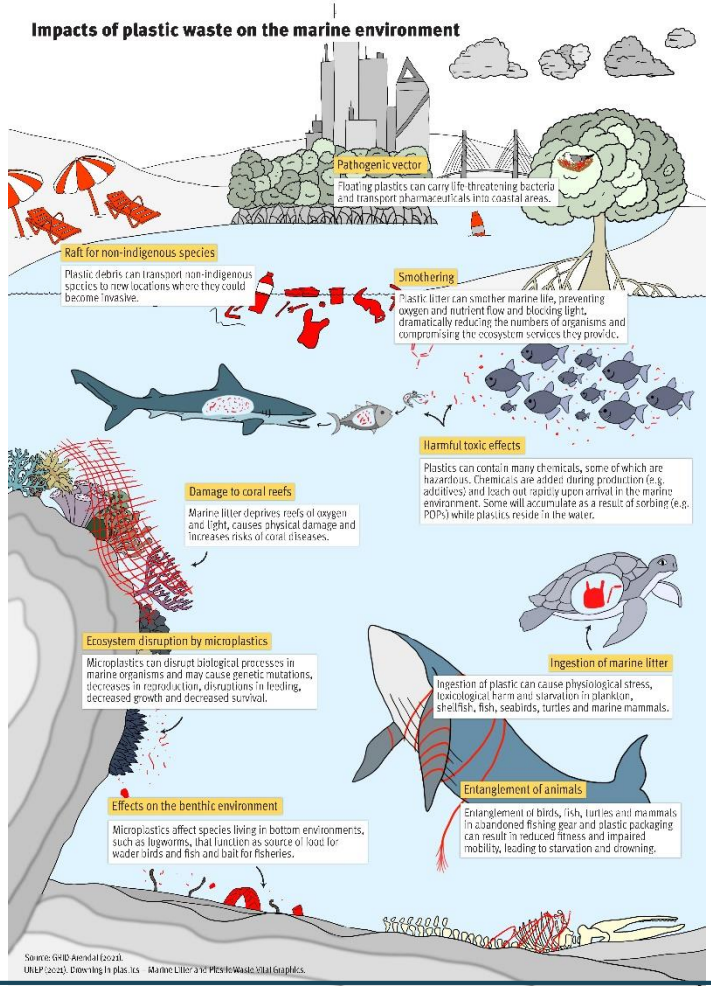
Different approaches for analysis can hamper the setup and design of large scale databases and therefore the assessment of marine debris

- Between different labs and different countries
- Application for monitoring, risk assessment and legislation.

To reach substantial improvements in environmental sustainability and socio-economic development, it is essential to undertake major actions for the evaluation and optimization data generated during assessments of marine debris

Summary

- Marine debris can impact wildlife and fisheries in several ways
- We have a lot of work to do as an international community to reach harmonization in our data
- We need data platforms which can account for variations in data and methods to generate comparable datasets



Thank you for listening

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Questions?

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EUROPEAN QUALITY CONTROLLED HARMONIZATION ASSURING REPRODUCIBLE MONITORING AND ASSESSMENT OF PLASTIC POLLUTION

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