

The thought processes to design a pipeline for accurate extraction, processing and ultimately reporting of microplastics

Dr Lucy Woodall

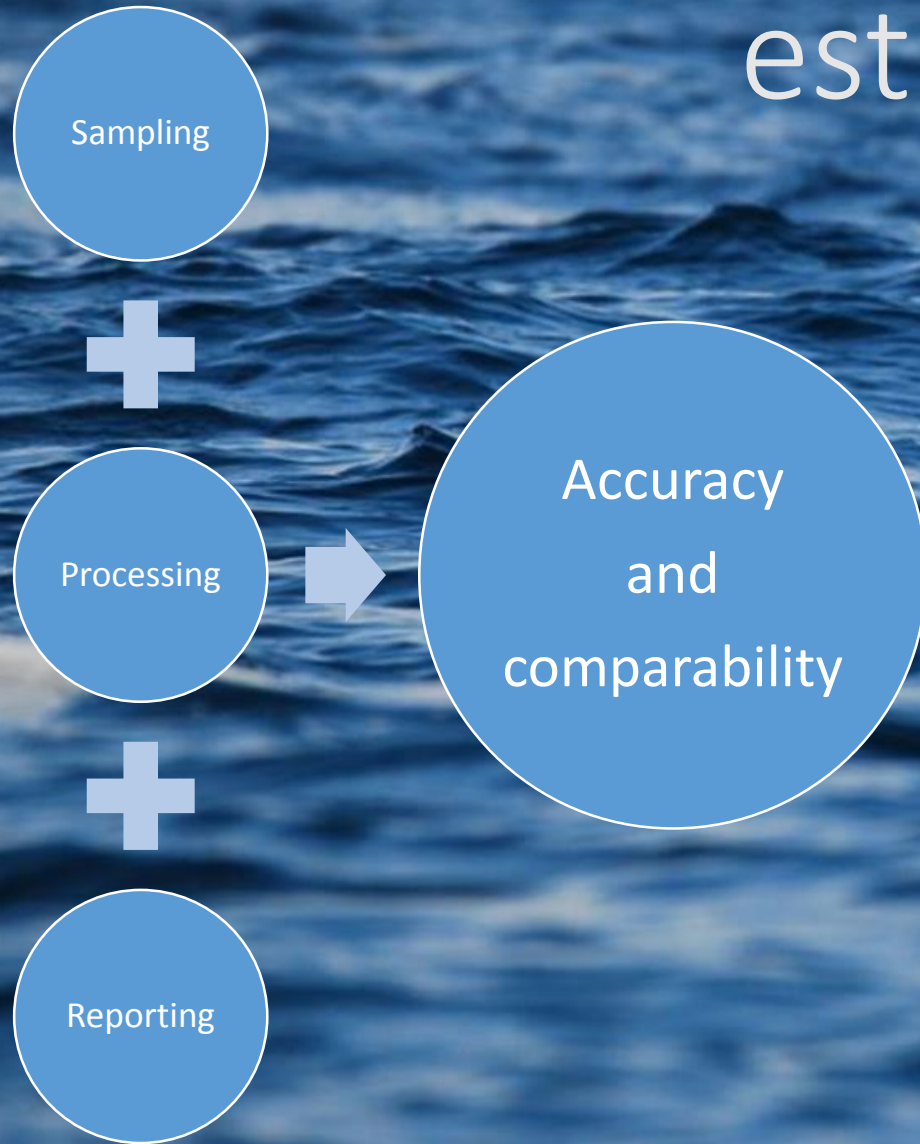
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It all depends on the
question!

Obtaining accurate and repeatable estimates



Sampling

Specific reviews:

Ingested particles- Lusher et al 2017

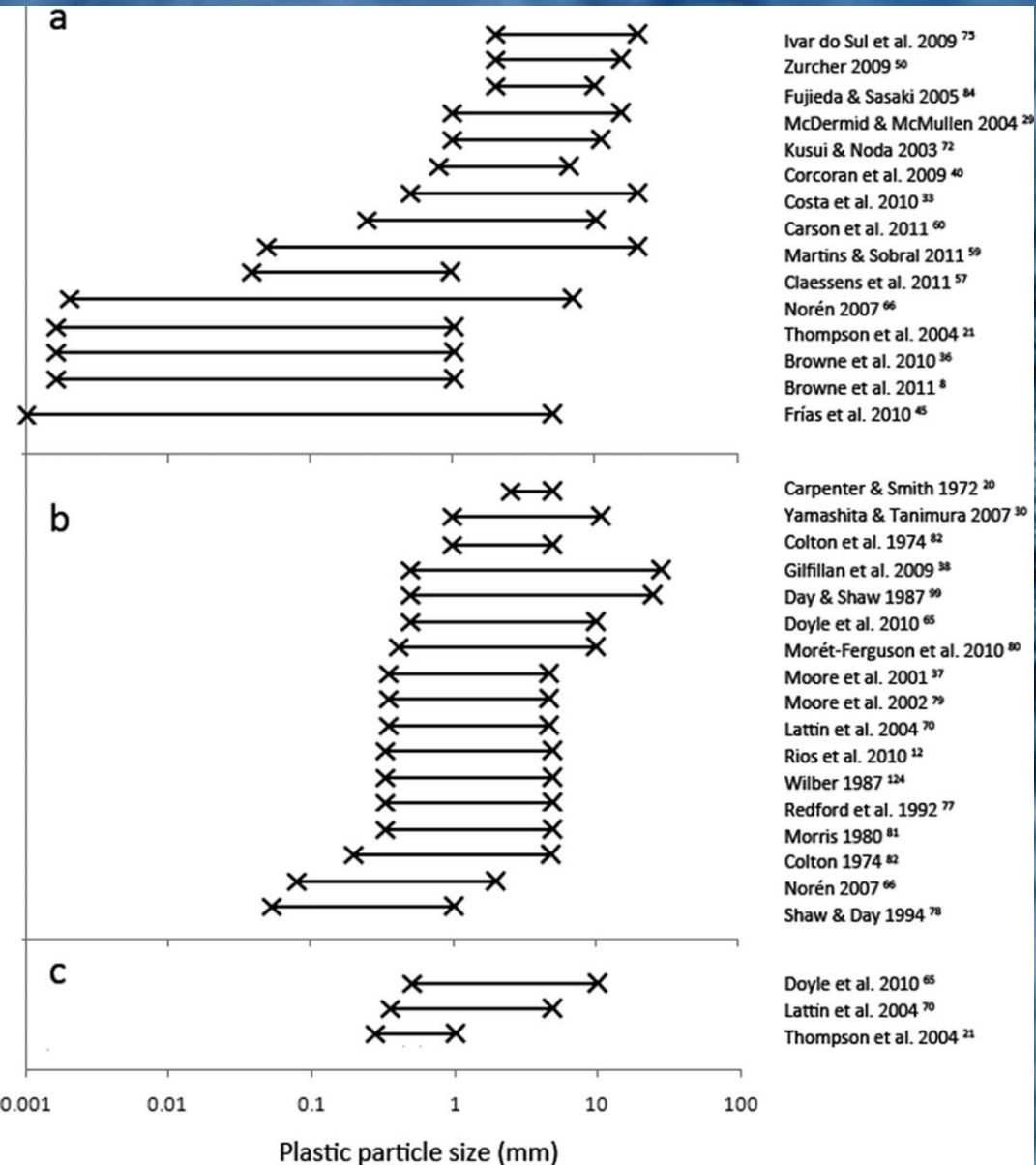
Sediment samples - Hanvey et al 2017

Water example–

- Grab vs net- Barrows et al 2017
- Trawl comparison- Eriksen et al 2018

Anti-contamination and contamination monitoring protocols

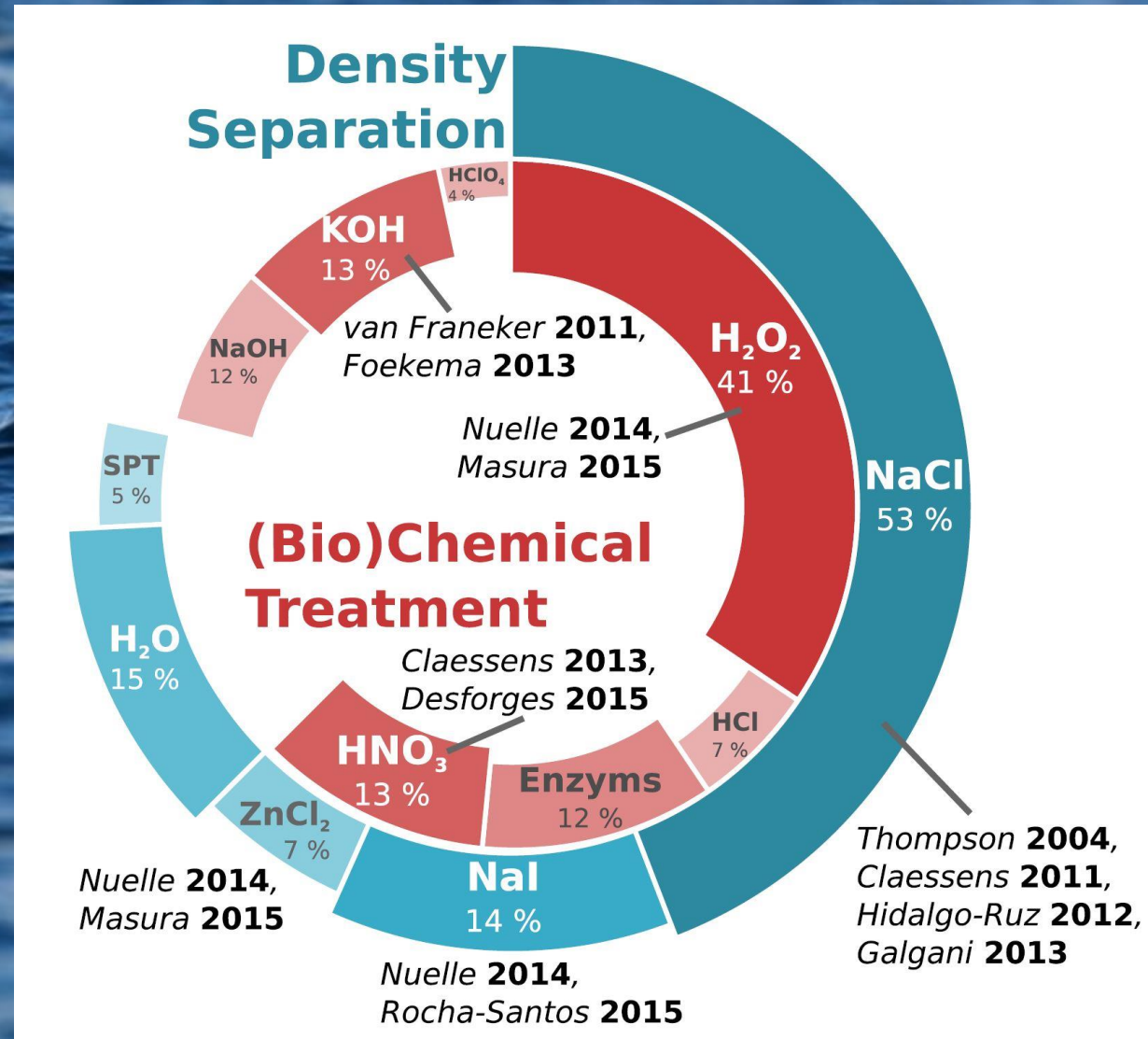
Size



- A Sediment
- B Sea surface
- C Water column

Since this paper size range have increased, with many more studies working on smaller fragments

Extraction



Identifying

Visual- unassisted
Polarised light

Spectroscopy- Raman and FT-IR

Thermal extraction

Liquid extraction

Elert et al 2017

- No one method alone works for every question
- Faster methods do not give particle size or number but can give quantify polymer
- Visual methods required to determine state of degradation and number of particles

Measuring and reporting

Does this matter?

Yes!



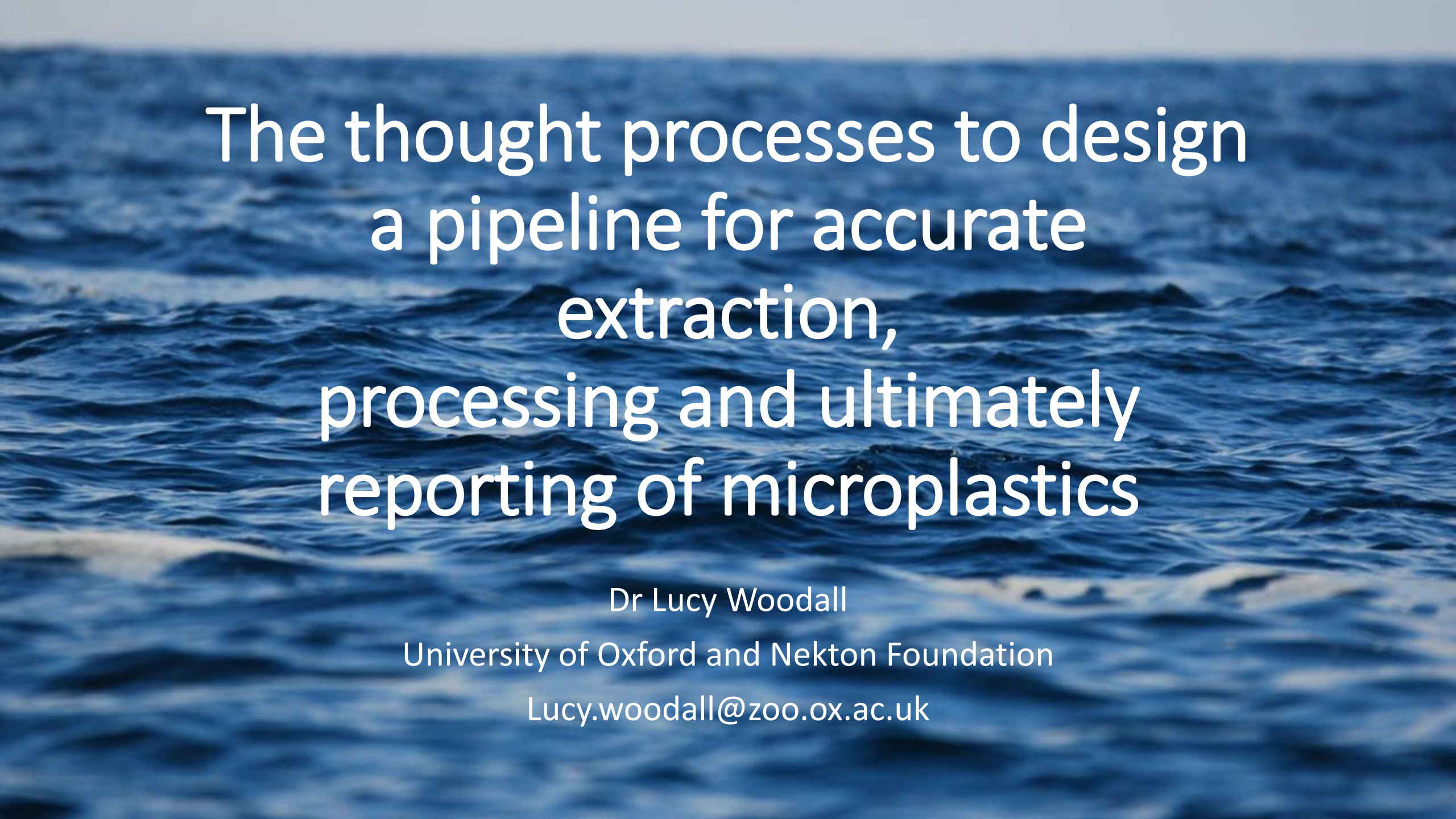
Take home messages

Methods matter

- Give clear details on all aspects
- Carefully contemplate where the data can align with others
- Take replicate samples
- Use a flow meter in conjunction with surface sampling when possible

Reporting matters

- Consider the heterogeneity of the plastics fragments to determine how the data is reported
- Suggest plastic surface area is reported it is relative easy to measure and less likely to cluster around zero
- Give raw data as supplementary material



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