Microplastic in River Taff
Caveats of microplastic sampling

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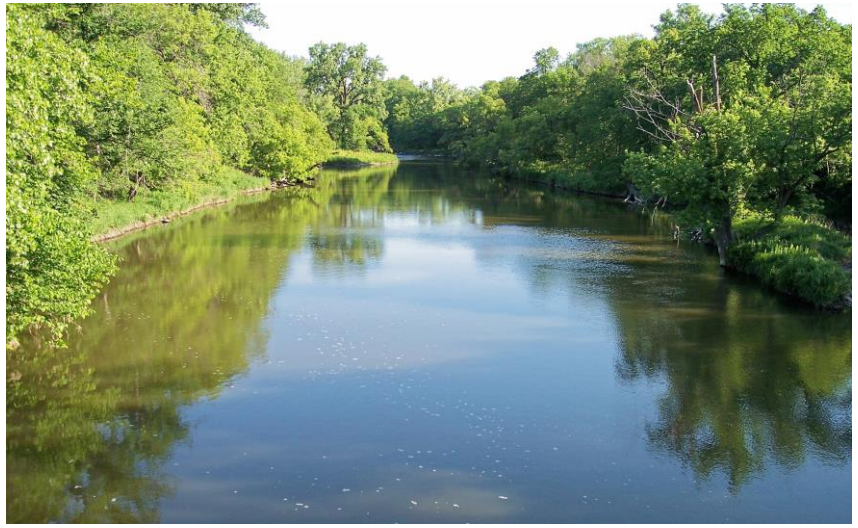


Why rivers?

Major pathway from land to sea.

Important ecosystems to protect.

Potential sources:

Point sources – WWTPs, CSOs

Diffuse sources – atmospheric deposition and surface run-off of urban dust, agricultural sludge, tyre wear particles etc.

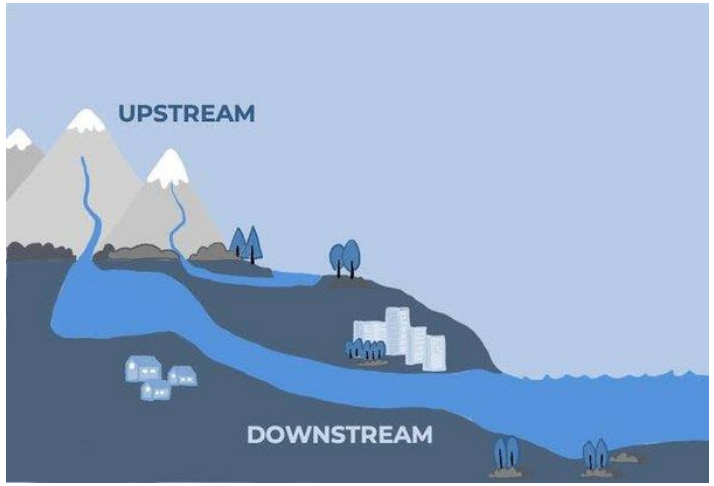
Spatial trends

Microplastic loads **increase** towards **urbanised** areas:

- Higher population density & economic development
- Greater coverage of non-permeable surfaces
- Increased wastewater & industry

Microplastic loads **increase** from **upstream to downstream:**

- Accumulation of particles
- More urbanised downstream

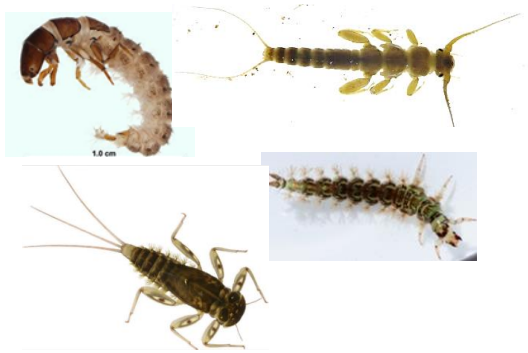


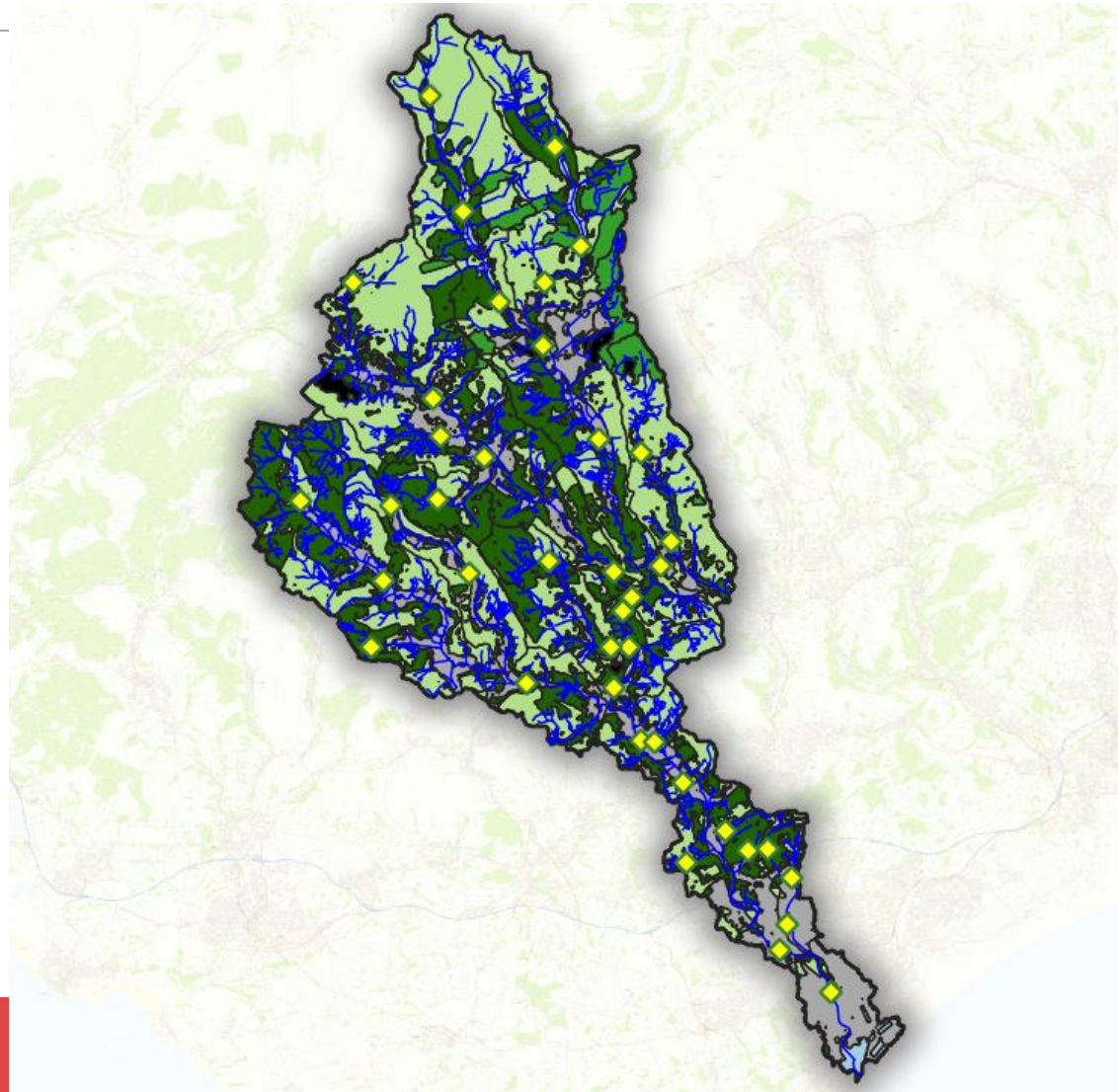
River Taff

Spatial assessment of microplastics across **River Taff freshwater catchment**.

38 sites

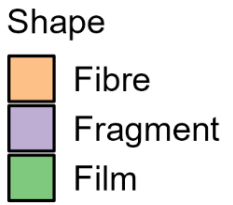
Sediment & aquatic insects





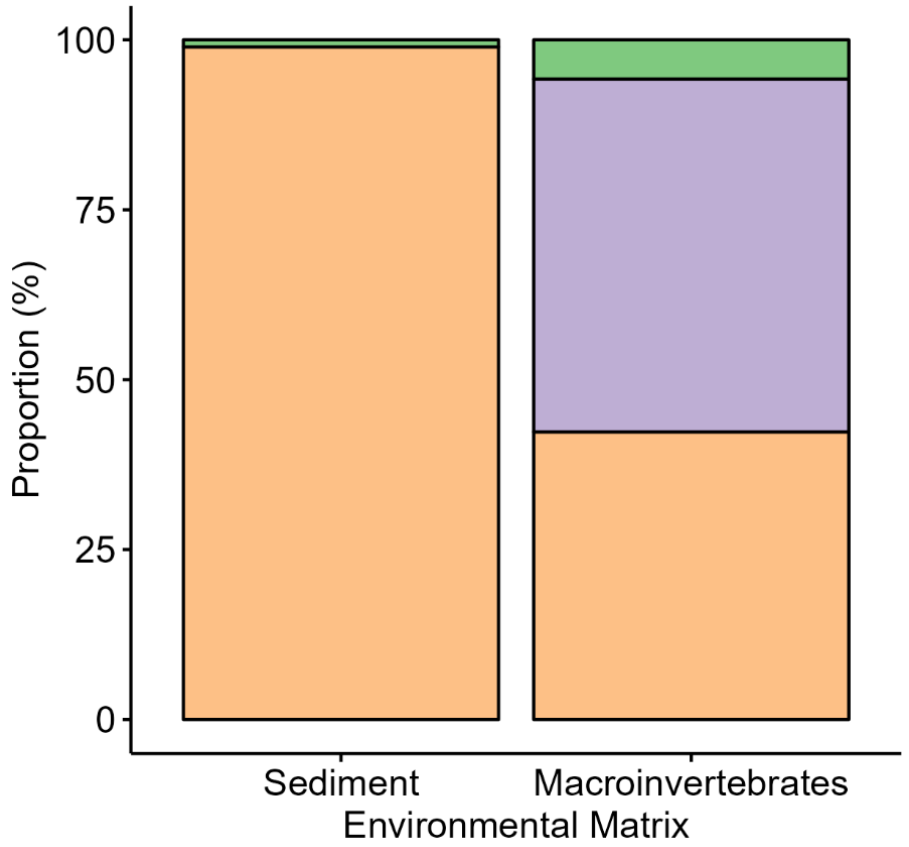
Results

Patchy distribution – no variation with land use



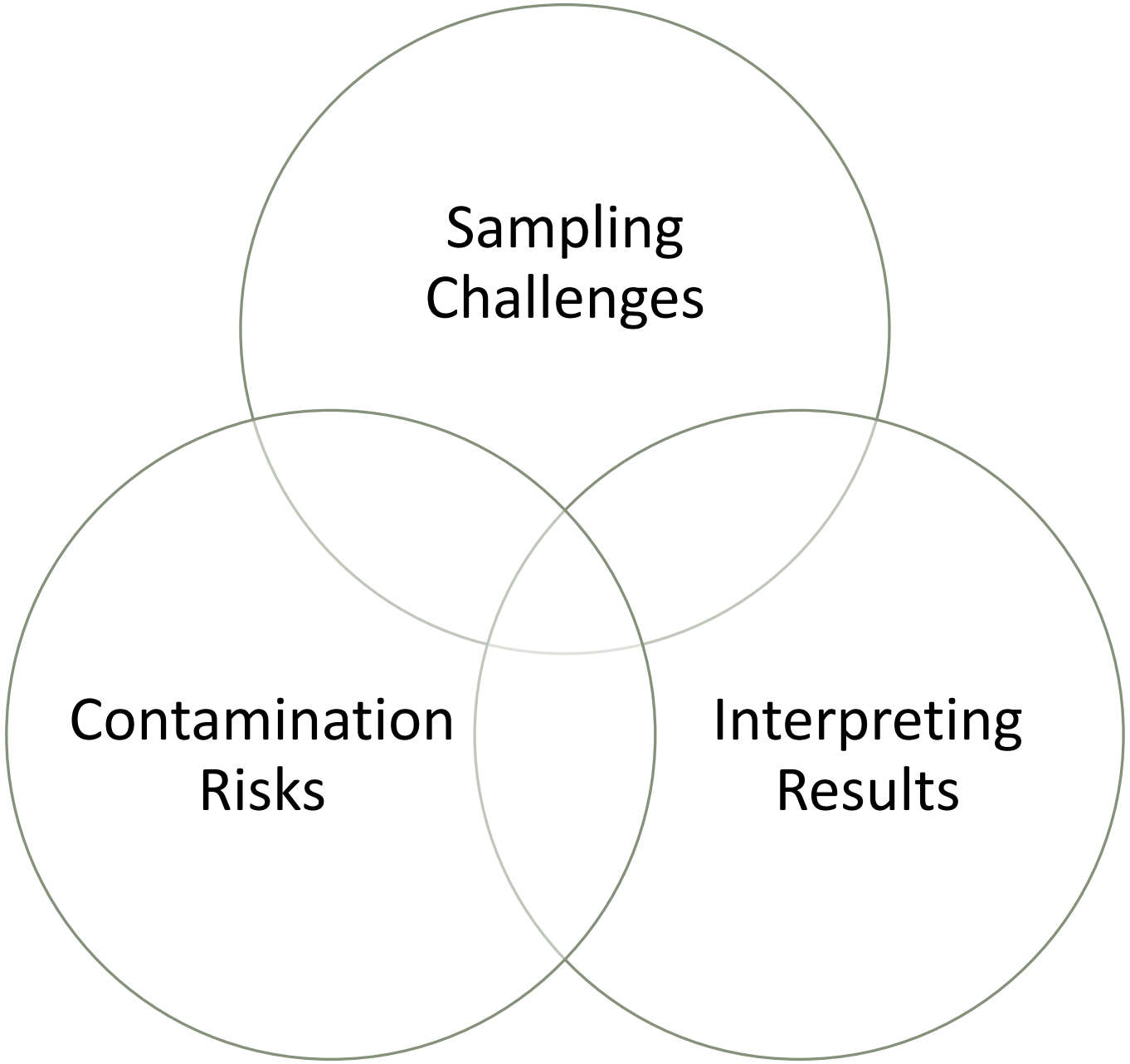
Insects - **5%** contaminated across **50% of sites**
- 0.5 – 1.6 particles/individual

Sediment – **35%** contaminated **across 70% of sites**
- 73 - 594 particles/kg dw



High amounts of **cellulose**, **nylon**, **polyethylene, cellophane –** clothing fibres.

Caveats of microplastic sampling



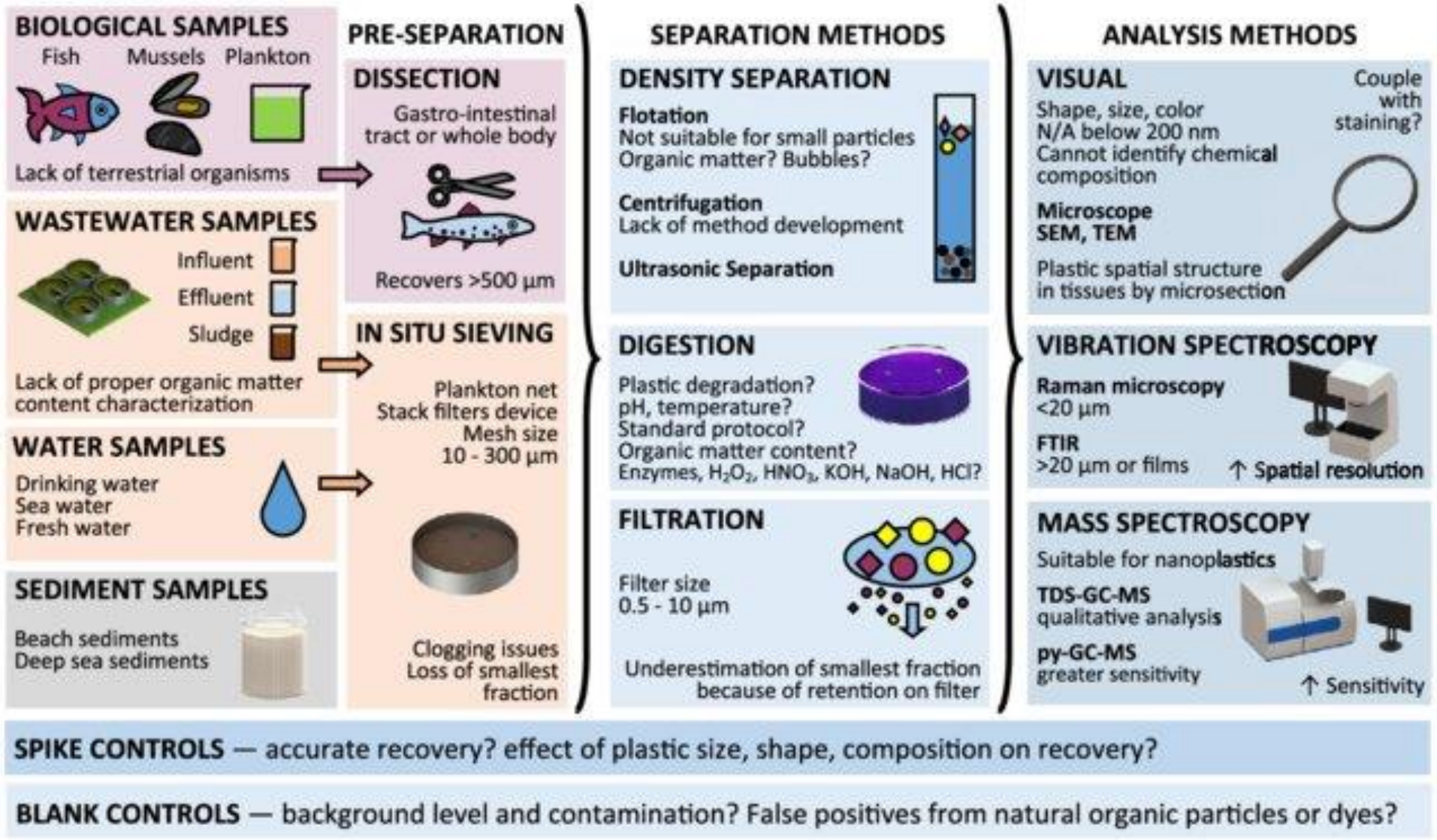
Spatial Variation: Pollution levels vary across different spatial scales.

Temporal Variation: Microplastic levels can fluctuate with the seasons, rainfall, and river flow.

Sampling Bias: Different studies use different methods, making comparisons difficult.

Sampling Challenges

Sampling bias



Nguyen *et al.* (2019) Separation and Analysis of Microplastics and Nanoplastics in Complex Environmental Samples, *Accounts of Chemical Research*, **52**:4

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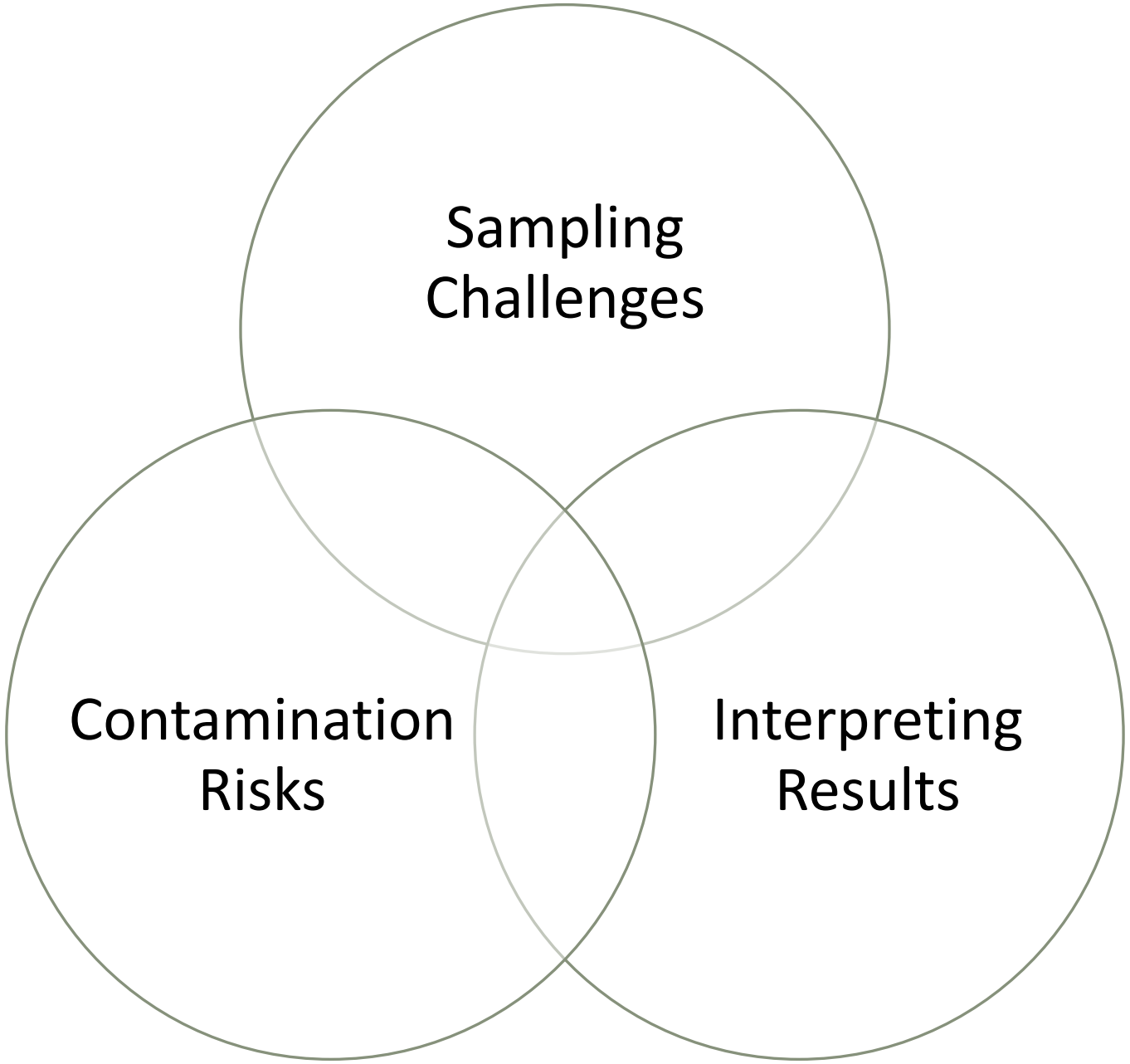

Airborne fibres, clothing, or lab equipment can introduce microplastics, complicating results.

Contamination Risks

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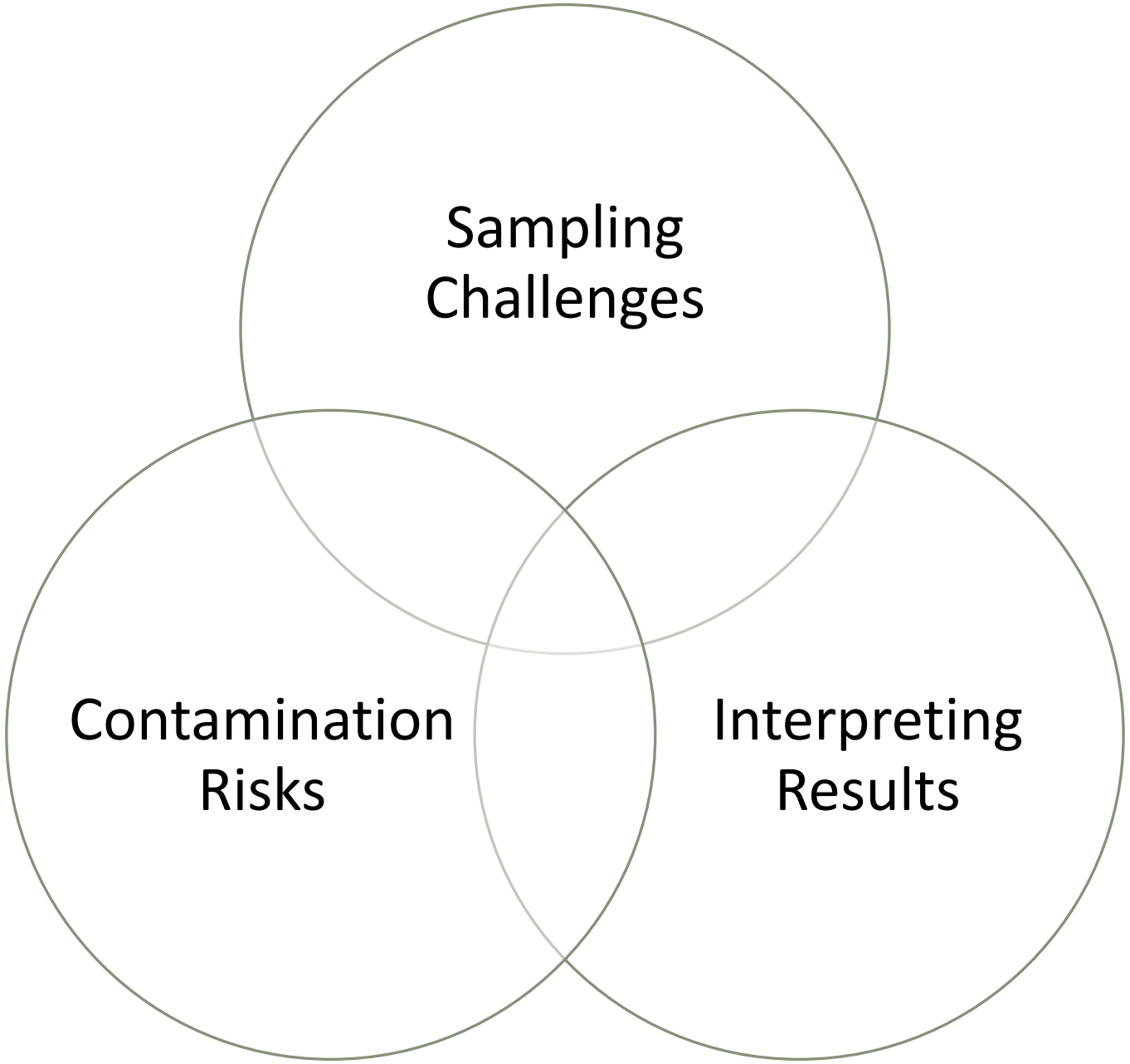

Distinguishing natural material from synthetic microplastics can be tricky, leading to potential misclassification.

Interpreting Results

Thank you for listening.

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