Workshop plan – Where are the marine microplastics?

Overview:

Time: 1-2hrs
Demographic: Environmental studies/science college or university students
Workshop setting: Outdoor – sandy beach or water access
Purpose: Provide broad overview marine plastic pollution, monitoring and practice one monitoring method
Outcomes: Learn about different types and causes of marine plastic pollution, learn about different ways to monitor microplastic pollution and practice one CLEAR microplastic sampling methods.

Planning information:

Workshop title: Where are the marine microplastics?
Who:
What:
Where:
When:

Materials needed:

- CLEAR Shoreline Sediment Microplastic Survey sampling materials
  - **1 x Hand-held GPS unit** or reliable GPS phone app.
  - **3 x ropes** that are exactly 2 m long doubled up and tied. This is your quadrat. When laid on the ground and stretched into a square, the rope will make a square of 1 m on each side. If you have more than 2-3 people, have 3 ropes per 2-3 people.
  - **2 x buckets**. Ideally one 5 gallon bucket. The second can be smaller. If you have a large group, bring 2 buckets per 2-3 people.
  - **1 x scoop** (any plastic or metal cup with a thin lip will work). This is to scoop sand into buckets. Bring 1 scoop per 2-3 people.
  - **3 x sieves**. One should be 5mm, one should be 1mm, and one should be .335 mm. These are the standard sizes used in science on marine plastics. If you cannot afford these sieves, you can make your own using fine mesh or nylon pantyhose. The minimum size should be .335 mm, but 1mm is also a useful measure for microplastics.
  - **12 x sample bags or jars**. These should be able to contain 800ml or more, though it depends on how much plastic is on your beach.
  - **1 x permanent marker for writing on specimen bags. 1 marker per 2-3 people.**
  - **1 x 100m measuring tape**. Surveyor's wheels or tapes work best.
  - **Garbage bags** for disposing of any extra plastics you find on the beach.
  - **Paper or booklet** to record information.
  - (optional) **12 x tent pegs**. These are to stake the quadrats. You can also use sticks found at the site, but not all beaches have sticks.

OR

- CLEAR BabyLegs © Trawl microplastic sampling materials

  - waterproof container with a mouth at least 6 inches wide
  - plumber's clamp that will fit around the container
  - nylon baby or toddler's tights- we recommend pink or red incase fibres contaminate your sample, as it will be easy to pick out. Cotton tights will get too heavy to trawl when wet, so ensure tights are nylon.
  - rope- we recommend a bright colour in case threads contaminate your sample
  - scissors or utility knife
  - screwdriver to open and close the plumber's clamp
  - drill or grommet punch (optional, but useful)
  - file or sandpaper (optional, but useful)
- Samples of macro- and microplastics
- Copies of the appropriate sampling protocol
- Copies of Plastics Spotter's guide
- Copies of Analyzing microplastics
- Copies of Microplastic Resource document

Activity Plan

Component	Time	Lead	Description	Materials
Introductions	5 mins		Introduce self, what your role is at Coastal Action	N/A
Marine microplastics	10 mins		Introduce the problem of microplastics • Scale of the problem • Causes of microplastics (consumer, industrial – highlight ghost gear) • Types of microplastics (Macro vs micro and primary vs secondary)	Samples of plastics
Coastal Action and Microplastics	10 mins		Introduce projects: • Atlantic Canada Microplastic Research Project • Atlantic Ecosystems Initiative • EcoAction – Trapping and monitoring of microplastics • Ghost Gear	N/A
Overview of sampling	5 mins		Provide an overview and quick demo of sampling method	Sampling materials
Sampling	30 mins – 1 hour		Follow protocol and conduct sampling • Guide students through each step • Initiate conversation regarding marine macro- and microplastics • Analyze findings with microscope if possible	Sampling materials
Sampling wrap up	5 mins		Give an overview of the sampling procedure	

			• Ask students if there were any interesting results • Ask how these results might be used	
Wrap-up	5 mins		How can you help? • Practice the 5 R's (Refuse, Reduce, Reuse, Rot, Recycle) • Pack it in pack it out • Audit your own waste • Think about sources of microplastics in your local area	