Field Day Procedures Reference Sheet (Marine Debris and Microplastics)

Tools for Collecting and Recording Marine Debris

1. 4 marking flags - use to mark the four corners of the transect
2. the tape measure - use to measure the transect (dimensions will be determined by the teacher)
3. GPS (most likely an app on teacher's phone) - use to locate the coordinates of the four corners of the transect.
4. a trash picker - use to pick-up debris
5. a garbage bag - use to dispose of debris after it is recorded on the data sheet
6. a Debris Collected Data Sheet (pages 17-18) - use to record all marine debris collected
7. Marine Debris Survey Photo Identification Guide (pages 20-28) - use to ID debris during the survey
8. biohazard box - use for disposal of needles and biohazards (teachers should handle all hazardous items)
9. a bucket - use to collect any marine debris of interest after recording it on the data sheet

Marking a Transect

1. Select an area of the field location where a transect can be created. Use the measuring tape to measure the predetermined dimensions (confirm with the teacher). Place a flag at the first corner of the transect. Have one person hold the end of the measuring tape at that corner, and have a second person move away with the measuring tape until they have reached the desired measurement. Have another person place a flag at this point. Repeat this process until all four corners have been marked by a flag. Be sure to give the measuring tape to another group for use in creating their transect.
2. Notify the teacher that the group is ready to log GPS coordinates. Use the GPS app/device to determine the coordinates of each corner of the transect, and record on the Debris Collected Data Sheet (page 17).
3. Take a moment to sketch the transect in a science journal. Record any predictions about what kind of marine debris will be found.

Collecting Macro Marine Debris Data

1. Complete the remaining information on page 17 of the Debris Collected Data Sheet. (tip - large debris is debris that should be recorded, but not collected. It will be 1' or larger).
2. Take a moment to review the Marine Debris Survey Photo Identification Guide (pages 20-28).
3. Assign roles: record data, use the trash picker to pick-up items, hold the trash bag, or use a rotation system for roles.
4. Begin at the top of the transect and walk back and forth in a narrow path while looking for debris. Use the trash picker to collect debris as it is spotted. Log the debris in the appropriate place on page 18 of the Debris Collected Data Sheet before putting it in the garbage bag. Continue to walk back and forth in narrow paths until the entire transect has been surveyed. Remember to collect debris only within the transect. **If any hazardous objects such as needles are found, DO NOT HANDLE them. Have a group member ask the teacher to remove the item and add it to the biohazard box.*
5. Add debris that is logged but is of interest to the bucket.

Tools for Collecting and Recording Microplastics

1. quadrat square - use to select the area with in the transect to sample
2. 4 marking flags - use to mark the corners of the quadrat
3. a dowel - use to trace the boundaries of the quadrat before removing the quadrat square
4. a scoop - use to remove the top layer of sediment in the quadrat for filtering
5. a sieve - use to place sediment from the quadrat to be filter with water
6. a water sample bottle - use both for pouring water through sediment in the sieve and to collect a water sample to bring back for filtration at school
7. a ruler - use to measure any microplastics found to confirm they are 5mm or less
8. Examples of Microplastics (pages 7-8) - use to ID microplastics during the survey
9. Microplastic Data Log for Sediment (page 32) - use to record any microplastics found in the sediment samples from the quadrat.
10. plastic bag - use to collect any microplastic samples from the quadrat after filtering the sediment

11. permanent marker - use to label plastic bags with date and location for any microplastic samples
12. grease pencil - use to mark the date and location of water sample collected on the water sample bottle

Marking a Quadrat

1. Select a random area of the transect to place the quadrat square. Place a flag at each corner of the quadrat. Use the dowel to trace the borders of the quadrat square from flag to flag. After marking each border, remove the quadrat square for easier access to the sediment.
2. Notify the teacher that the group is ready to log GPS coordinates. Use the GPS app/device to determine the coordinates of each corner of the quadrat, and record on the Microplastic Data Log for Sediment (page 32).
3. Take a moment to sketch the quadrat in a science journal. Record any predictions about what kind of microplastics will be found.

Collecting Sediment Data

1. Scan the sample area, remove any large pieces of debris. Remove any visible microplastics (confirm that the item measures 5mm or less)and record on the Microplastic Data Log for Sediment (page 32).
2. Fill the water sample bottle with water from the river (or nearby water source). Use the scoop to skim off sediment from the top layer of the quadrat (about a ¼“ depth). Carefully place a scoop of sediment from the sample area into the sieve. Pour water into the sediment in the sieve until the sediment has completely filtered through the sieve. Retrieve and identify (using the Examples of Microplastics on pages 7-8) any microplastics left behind on the Microplastic Data Log for Sediment (page 32). Repeat the process with another scoop of sediment from the quadrat until the entire top layer has been processed and all microplastics data has been recorded.
3. Place any collected microplastics in the plastic bag and label with the date and location of collection.

Collecting a Water Sample

1. Notify the teacher that the group is ready to collect a water sample. Carefully approach the river or nearby water source.
2. Fill the water sample bottle with water. Secure the lid.
3. Use the grease pencil to label the water sample bottle with the date and location of collection.
4. Bring the water sample to the teacher. The sample will be processed for microplastics at school.