Freshwater Monitoring – Macroinvertebrate (Bug) Sampling

Aim: To establish what life is present in the stream.

Equipment

- net
- bucket
- pipettes
- white sorting trays
- bug boxes
- magnifying glass
- macro-invertebrate ID sheet
- Stream Health Monitoring Data Recording Sheet

Method

1. Place the net into the water flow so that anything disturbed or uncovered will flow into it. Make sure the seams of the net are on the outside so that organisms are not caught in them.
2. Use a variety of methods to dislodge invertebrates:
    - Keeping your hands in the water – lift up and rub small rocks or sticks to dislodge invertebrates into the net.
    - Gently kick the stones in streams with a stony substrate, while holding the net downstream.
    - Run the net along the sides of the stream, under the vegetation, in streams with soft or silty substrates.
3. After a few minutes of hunting, turn the net into a bucket half-filled with stream water.
4. Decant (pour) the bucket contents into the sorting trays.
5. Wait a few minutes for the invertebrates to start moving.
6. Use the pipettes to gently take the invertebrates from the trays.
7. Sort them into the bug boxes.
8. Use the macroinvertebrate identification sheet to identify the creatures that you've found.
9. Also note the pollution tolerance index number – the coloured number – for each of the creatures.
10. Record this information on the data recording sheet.
11. Carefully return the invertebrates to the stream.

Things to discuss:

1. Ask the students to look at the stream and think about what sorts of animals might live in this stream.
2. Ask "Where do you think these animals might live?"
3. Look at the stream and talk about all the different places that animals would live: under rocks, along the stream bank, under branches in the stream, in the flow.
4. Ask students to work carefully and return rocks to where they picked them up from and not damage the animals' habitat in any way.
5. Look at the macroinvertebrate identification sheet and discuss the creatures, pointing out subtle differences that will help with identification.
6. Also look at and discuss the pollution tolerance index numbers and what they mean.
7. Discuss the things that can impact negatively on the bugs in the stream, such as low clarity, high nutrient inputs, dumping of waste.

Reflect

- What kinds of animals did you find?
- What were their pollution tolerance index numbers?
- What does this tell us about the water quality in our stream?
- Is this what we would have expected to find in this stream?
- What other factors might have affected our result? *Storms, heavy rain can wash animal life away but they should regenerate within three weeks.*