

Why monitor water?

Unpolluted water bodies like ponds and streams are literally teeming with life, little of which we can see. To get a closer look at what's going on underwater, there are many projects and activities that you can carry out which are fun and safe to do. These include carrying out local river clean-ups, doing a survey of what actually lives in your local stream, similar to the ones used by scientists monitoring river pollution.

How to monitor water quality?

You don't need to be a scientist to carry out a survey of your local waterway. As a wildlife detective you can discover many creatures that live in the river neighbourhood by using the "Quality Rating System". This system is used by Irish

biologists to monitor our waterways for signs of organic pollution.



It relates amounts of five key groups of macro-invertebrates (small insects living on the bottom of the stream/river) to water quality, which is then classed from unpolluted (Q5) to highly polluted (Q1). Although the system is primarily

based on surveying the macro-invertebrates, other factors taken into account include the presence of slimy moulds or algae and higher plants.

The best time to see animals around water bodies (rivers, lakes, etc.) is early in the morning or at dusk. If you're the patient type, you might be lucky enough to see a badger, fox or even the secretive otter!

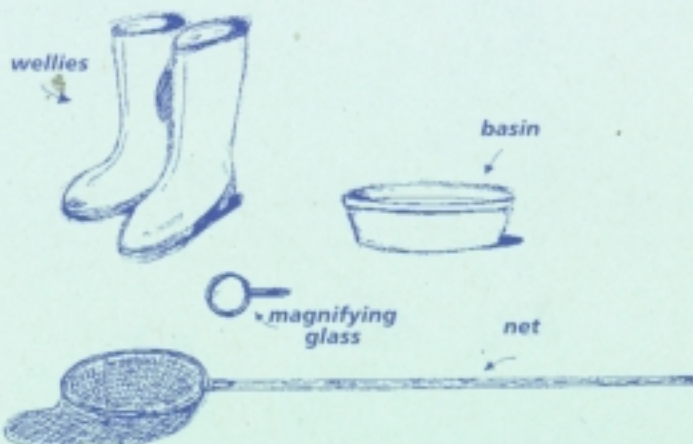
Have a good look around. Bats are common to river areas and summer evenings are a good time to spot them feeding. Watch out also for birds of prey, the hovering kestrel may be lurking about for some food.

No luck yet? Don't worry, many animals are shy and sensitive to human presence. Check for signs of animals that are present - droppings and tracks might be easier to discover.

How to carry out a biological survey

If you want to carry out further study of the animals and plants which live in the river or stream, carry out a small invertebrate survey - these are the insects that live beneath the water surface and can give you a very good idea of the quality of the water and may give an indication of the presence of pollution. Biological surveys might have been carried out before so ask the local library for a copy of it. Try your own river water quality survey. For this you need a pair of wellies, a net, a basin and a magnifying glass.

Note: Do this with friends and be safe.



Action Step 1

Taking a sample

There are two basic methods of sampling for macro-invertebrates which you can use. Try one first and see how it goes:

1) Kick sample

The operator faces upstream and holds the standard net sampler in front of him/her, with the bottom firmly held against the bottom of the river or stream. Vigorously kick the area in front of the net and the debris disturbed flows into the net. After 2-3 minutes stop sampling and place the net over a basin. Empty the material collected and have a look.

2) Stone wash

Take two or three medium sized stones from the stream and place in the basin, have a good look, notice any unusual creature features - some of these animals have special clamping devices which enable them to stick to the stones.

Action Step 2

Examining the sample

Take note of the amount of animals you find in each sample. Have a go at identifying them using a magnifying glass and an identification aid.

There are identification guides available which will help in identifying them. Try your local library for some books or use the simple indicator above. The insects which form an important part of the river ecosystem are very sensitive to slight changes in pollution levels and there might be a



Clean Water (Q5)

stone fly nymph
(10mm brown)



Slightly Polluted

minnow



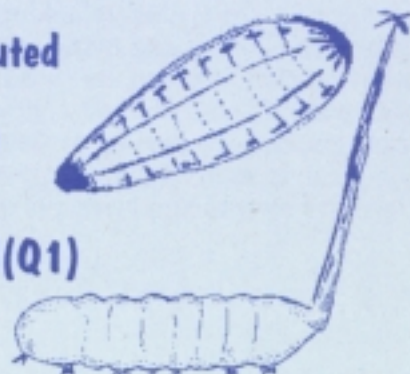
Moderately Polluted

leeches
(10-100mm varied colours)



Heavily Polluted(Q1)

rat-tailed
maggot



big difference between the tolerances of one family of macro-invertebrates to another. For example, stonefly nymphs are sensitive to small amounts of pollution while leeches can live in quite high levels of organic pollution.

What type of creatures have you found? Does it indicate any pollution in the area?

Be safe!

Make your investigation more safe and enjoyable by following these few rules:

- Always wear gloves near rivers or canals to protect your self from 'Weil's Disease', a deadly disease contracted from rats.
- Carry out your survey in a stony shallow area of the stream.
- Always face upstream when sampling.
- Bring your sample to the river bank to examine it.
- If you have any cuts on your hands, let someone else carry out the sampling.
- Some rivers are prone to flooding, so do the survey during a dry spell.

