Macroinvertebrates
Teacher's Notes

AusVELS Domain and (Level): Science (F-6), Civics and Citizenship (F-6)
Equipment: Net, bucket, flat white tray, magnifying glass, spoons, ice-cube trays, Macroinvertebrate Identification Sheet and Macroinvertebrate Results Sheet
Duration: Two hours
Setting: In the field

What are Macroinvertebrates?

A macroinvertebrate is a small animal without a backbone (invertebrate). They are a diverse group of animals including worms, snails, mites, bugs, beetles, dragonflies and freshwater crayfish. Most freshwater macroinvertebrates are very small but many can still be seen with the naked eye. Macroinvertebrates inhabit all types of waters including rivers, streams, creeks, dams and ponds.

Why survey Macroinvertebrates?

Macroinvertebrate monitoring can provide information about how healthy your waterway is by looking at the diversity and number of individuals found, with their tolerance levels highlighting issues about water quality. Monitoring, via sampling and identification, will raise awareness about the macroinvertebrate community in your waterway, will help you understand the story of your river and promote a sense of ownership and responsibility towards the health of your waterway.

When you sample, you are collecting information on the abundance, diversity, composition and pollution tolerance of the macroinvertebrates in your waterway.

Abundance refers to the *number* of macroinvertebrates present. Large numbers of a single species of animals tend to be found in water enriched with nutrients. Small numbers may indicate erosion, pollution or flooding.

Diversity refers to the number of *different types* of macroinvertebrates present. Healthy streams have greater diversity than degraded streams. Waterways with a variety of species are more stable and healthier.

Composition refers to the *proportion* of different types of animals living together. For example, a sample from healthy streams tends to contain a good number of mayflies, stoneflies and caddisflies; whereas a sample from a degraded stream may contain a lot of worms and midge larvae.

Pollution tolerance refers to the *tolerance* of animals to organic pollution from sewage, industrial effluent and heated water. For example, most stonefly families are intolerant of pollution whilst worms are very tolerant.

What you will do…

With the help of the Regional Waterwatch Coordinator, your class will sample your local waterway using the testing kit, then collect and identify the macroinvertebrates found and interpret the results on their results sheet. The information gives an indication of the health of your waterway and will raise questions about the presence and absence of species, lead to discussions about why there is an imbalance and the impacts this may have, as well as some of the actions that can be undertaken by students to improve the habitat for macroinvertebrates. This biological data combined with the chemical data that you collect monthly will provide a snapshot of the health of your local waterway.