Activity - Wonderful Waterbugs

(Grades 4 – 10)

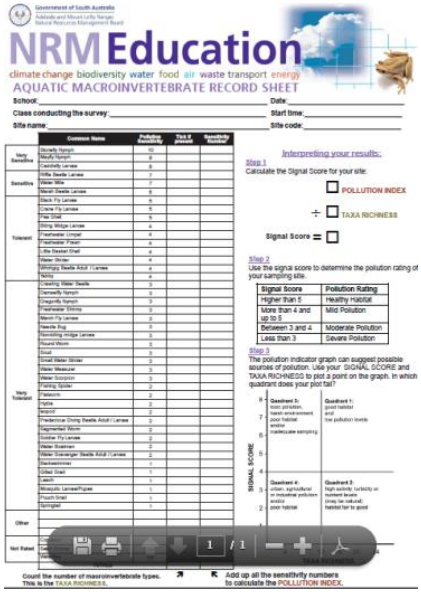
Overview: Healthy wetlands contain an incredibly abundant and diverse community of microscopic animals. This activity focuses on collecting and looking closely at water samples to appreciate the number and variety of waterbugs, or macro-invertebrates that live there. It introduces students to the diversity of tiny animals that live in wetlands, the roles they play in processing nutrients, and their importance as food for larger wetland animals. Dip netting is the best way to discover which types of waterbug are abundant in the water, which can tell us about the health of the wetland. Waterbug Watching provides a snapshot of what lives there and is useful for one-off events, such as community field days, and school projects.

Task: Students use dip nets and containers to collect and sort waterbugs, and identification charts and identify them. Take samples of different areas of the wetland to identify organisms and plants that you find.

Materials needed per team of 3 – 5 students

- fine gauze nets (with 2 m long sting tied to the hand of the user to retrieve net if dropped)
- 1 white plastic square tray
- 4 white ice cream containers
- 2 spoons and 2 brushes
- 2 clear plastic jars
- magnifying glasses
- pencils
- 1 camera
- Bug field sheet to enter results (Pre made field sheet available on line- See below)
- 1 'Bug identification' field guide (Pre made ID cards available on line- See below)

http://nrmeducation.net.au/uploads/Engaging%20with%20Nature/Aquatic%20macro%20record%20sheet.pdf

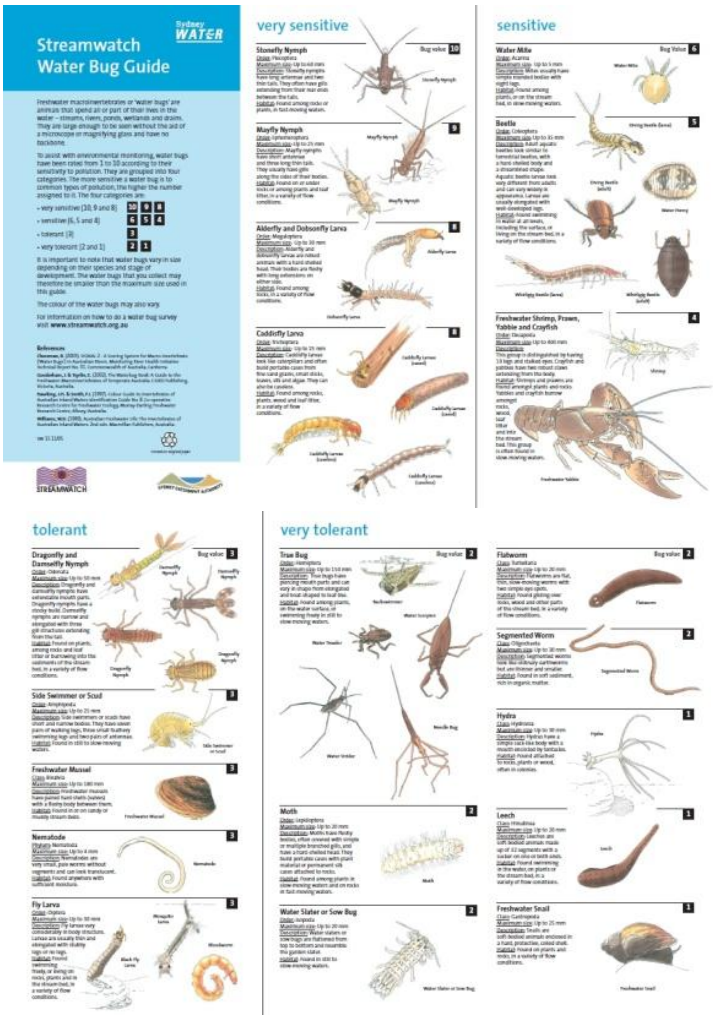


NRM Education

climate change biodiversity water food air waste transport energy

AQUATIC MACROINVERTEBRATE RECORD SHEET

http://www.streamwatch.org.au/cms/resources/manual_pdfs/BugGuide.pdf



Streamwatch Water Bug Guide

very sensitive

sensitive

tolerant

very tolerant

Sampling method *and procedure*

- **Collect** – Stop at the collection sites identified along the Discovery trail. Collect your sample from the edgewater close to banks, and amongst water plants in pools. Using a dip net, sweep backwards and forwards just below the surface through any aquatic plants to trap animals attached to the plants or swimming in the water. Do not collect too much material in your net. Empty the contents of the dip net into your bucket or tray. If you don't get many waterbugs then have another go with the dip-net this time trying to collect waterbugs attached to rocks and plants, and hiding in leaf packs.
- **Watch** - Use a magnifying glass to look at microscopic animals in detail. Often the waterbugs are moving, so they are easy to find.
- **Identify** - each type of waterbug by their body shape and general features using the 'Bug identification' field guide.
- **Sort -** Label 4 white ice cream containers with the names, 'worm-like', 'crayfish-like', 'insect-like' and 'animals with shells'. Add stream water to the containers to make it about about 1 centimetre deep. Now sort through your sample and use a pipette, spoon or brush to transfer different types of waterbug to the labelled containers based on what they look like. Sort the bugs so similar looking bugs are all placed in the same container.
- **Record –**Use a magnifying glass to look at microscopic animals in closer detail. You can transfer them to clear plastic jars for closer inspection. Identify them using the 'Bug identification' field guide, and record the number and type of different bugs you see onto your 'Bug field sheet'.
    - Can you count the number or legs
    - Describe their body shape
    - Record their body length
    - Can you assess the number of waterbugs from each of the four major groups as either: none, occasional or plentiful
    - Draw one of each type, or take photos with a camera
- **Return** - all the waterbugs, leaf matter and rocks to the wetland at the site where you collected them.
- **Wash** - your hands, clean all your equipment, and collected all rubbish.
- ***Further Interpretation –*** back in the classroom you can follow the waterwatch guidelines to interpret your waterbug results and gain an insight into the health or pollution in the wetland. http://www.waterwatch.org.au/publications/module3/waterbug.html
  The variety and number of waterbugs in your sample give you a sense of the health of the stream (see Table 5). Some waterbugs cope well with pollution or changes in their habitat, whilst others are very sensitive and diet.
  If you find
    - *Only one or two kinds of animals, e.g. worm-like animals, but many of them, then it **s**uggests = Severe organic pollution.*

- *A variety of animals, but only a few of each kind, and the wetland sample appears clean, then it **s**uggests = wetland has undergone flooding or the sample was taken during high flows.*
- *No animals, then it **s**uggests = Toxic pollution.*
  From: http://www.waterwatch.org.au

- ***Useful reading:***
  For a more detailed description of these methods read 'Water quality and macroinvertebrates in SA and WA', which is also relevant to TAS.
  http://nynrm.sa.gov.au/Portals/7/pdf/LandAndSoil/17.pdf