# Activity: Meet the waterbugs (Years 5 and 6)

How do waterbugs get their oxygen?

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| Victorian Curriculum F–10[[1]](#footnote-1) links:  **Levels 5 and 6**  **Science**  **Science Understanding**  **Biological sciences**  Living things have structural features and adaptations that help them to survive in their environment  The growth and survival of living things are affected by the physical conditions of their environment  **Geography**  **Geographical Knowledge**  **Factors that shape places and influence interconnections**  Influence of people, including the influence of Aboriginal and Torres Strait Islander peoples, on the environmental characteristics of Australian places  Environmental and human influences on the location and characteristics of places and the management of spaces within them |

## Students identify the waterbugs in a sample and draw conclusions about the health of the waterway from the sensitivities of the waterbugs found.

### Equipment

Waterbug collection equipment: net, pole, bucket and gloves

Waterbug sample from a local waterway

For each group:

Waterbug viewing equipment: one catering tray for sorting, ice cube trays; spoons; magnifying glasses

One laminated **Macroinvertebrate ID charts** (attached)

Digital microscope and plastic petri dishes (if possible)

Access to a whiteboard or data projector

### Preparation

Before the lesson, collect a sample of waterbugs from a local creek. After the lesson, make sure that you take them back to the same place you collected them. Ensure that all safety requirements are followed.

### Activity steps

1. Display the Scope Waterbugs video [3:13] found on the [Melbourne Water website](https://www.melbournewater.com.au/node/229).
2. Show students the water samples and explain that they will be looking at the waterbugs.
3. Explain how to look for waterbugs in the sample and how to identify them. Use this opportunity to demonstrate how to treat creatures ethically i.e. caring for the live organisms, using spoons for carefully lifting the waterbugs from the sample.
4. Demonstrate how to use equipment correctly. For example:

* using the spoon to carefully lift the waterbugs from the sample into the ice cube trays for observation
* using magnifying glasses to look for features on our waterbugs
* using the **Macroinvertebrate identification charts** (with photos) to help identify common waterbugs
* not stirring up the sample—it makes it harder to see the waterbugs!

1. Organise students into small groups. Explain that they will be looking for waterbugs in a tray. Assign the groups a tray to look at.
2. Using the naked eye or magnifying glasses, students to make some observations of the sample of waterbugs such as:

* the number of different types
* the numbers of each type
* the size, shape, colour of the waterbugs
* features such as legs, tail, wings or mouth parts.

If possible, use a computer microscope to view waterbugs using a magnification of 10X.

1. As a class, discuss the waterbugs that were found and explain why a diversity of waterbugs is important. Using the class data, complete a **Macroinvertebrate data form** (download from <<http://www.waterwatchmelbourne.org.au/content/library/Macroinvertebrate_Data_Form.pdf>>
2. Talk about the sensitivity (bug score) of the waterbugs. The higher the bug score, the more sensitive the organism is to the environmental conditions. If you have a wide variety of waterbugs including those with a high bug score, it indicates that the waterway is healthy.

What do the class results indicate about the quality of the waterway in which they were found?

How did the waterbugs found in the sample obtain their oxygen? What does that indicate about the quality of the waterway in which they were found?

1. Ask students what kind of actions can they take to help protect their waterways? Examples include:

Increased nutrients affect water quality. Therefore you need to pick up dog poo when walking your dog as it enters waterways via stormwater.

Make sure litter goes in the bin as litter can enter waterways via stormwater.

If you like to see a range of animals around your local waterway, do your bit to limit water pollution.

Look after the small macro-invertebrates and you are looking after the larger animals.

Plant trees to increase shade and oxygen levels.

### Extension activity

Present scenarios such as:

A water scientist found large numbers of different macro-invertebrates including mayfly nymphs, caddis fly larvae and dragonfly nymphs. What might this tell you about the water quality?

A water scientist found large numbers of several macro-invertebrates such as mosquito larvae, water boatmen and water striders. What might this tell you about the water quality?

The vegetation along a creek bank is removed and the water turbidity increases. What might happen to macro-invertebrates with gills?

What larger animals do you expect to find if there is a large variety of macro-invertebrates/low variety of macro-invertebrates?

### Key messages

Our waterways support a diverse range of plant and animal life, including native fish, frogs and platypuses. They are worth looking after.

Everyone can help improve local rivers and creeks by reducing stormwater pollution – simple things like picking up after your dog, binning rubbish and fixing oil leaks in your car can reduce the impacts.



1. Creative Commons Licence Victorian Curriculum and Assessment Authority (VCAA) <<http://victoriancurriculum.vcaa.vic.edu.au/>> Accessed 14 August 2016. [↑](#footnote-ref-1)