

# CULLESON

## TERM THREE

# MACROINVERTEBRATES

- Learning Objectives
- Background
- Activities
- Curriculum Mapping





# CONTENTS

## **PAGE 3**

### **LEARNING OBJECTIVES**

Here you will find the learning objectives for this lesson

---

## **PAGES 5 - 6**

### **CLASSROOM ACTIVITIES**

There are three activities for this lesson.

---

## **PAGES 4 - 5**

### **BACKGROUND INFORMATION**

Learn about macroinvertebrates and what they can tell us about wetland health

---

## **PAGE 7**

### **CLASSROOM ACTIVITIES**

See how this lesson maps with the Australian curriculum

---

# Learning Objectives

At the end of the lesson, students will be able to:

- (1) Define a macroinvertebrate;
- (2) Describe how macroinvertebrates can be used to assess wetland health.



**Define**

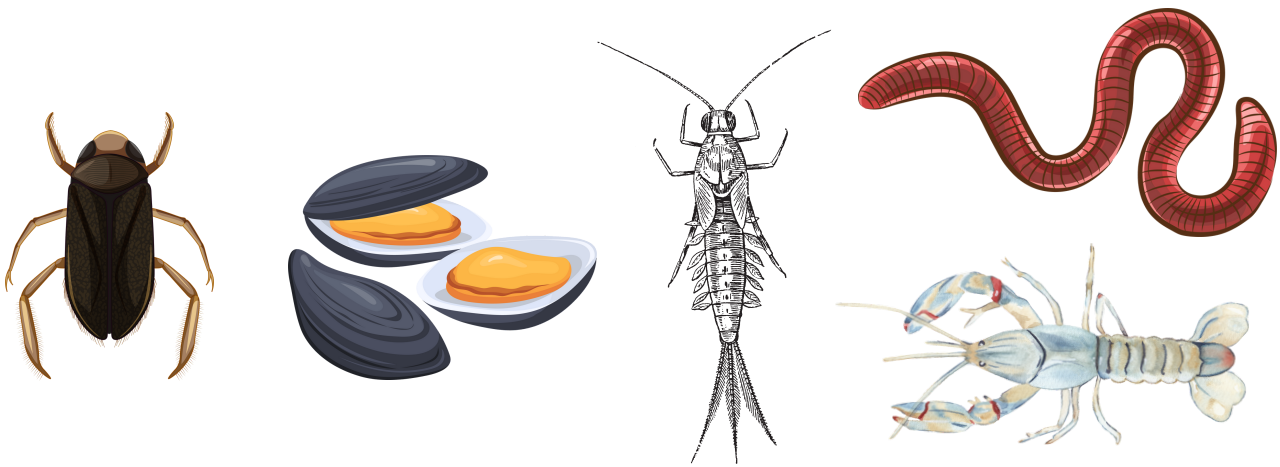


**Describe**

# Background Information

## What are macroinvertebrates?

Macroinvertebrates (also known as water bugs) are small animals without a backbone that are large enough to see without a microscope. Water bugs spend all or part of their life in the water and are a source of food for fish, frogs, birds and freshwater turtles. Some common water bugs are beetles, snails, dragonfly and damselfly nymphs, mayfly and stonefly nymphs, yabbies, shrimp, worms and mussels.



## What can macroinvertebrates tell us about the health of our water bodies?

The presence of different water bugs within a water body can serve as an indicator of its overall health. Water bugs exhibit diverse tolerances to alterations in the aquatic environment, such as changes in temperature, turbidity and pH. The SIGNAL (Stream Invertebrate Grade Number - Average Level) score associated with a water bug signifies the species' level of tolerance.

SIGNAL scores:

- A SIGNAL score of 6-10 indicates the species is very sensitive to changes in their environment.
- A SIGNAL score of 1-5 indicates the species is very tolerant of environmental change.

## Macroinvertebrate SIGNAL scores:

SIGNAL scores are indicated in the brackets.

Garland, I. and Coleman, K. (2020) Waterbug Blitz Education Resource for Australia Schools. National Waterbug Blitz, NSW.

**Very Sensitive Bugs** - Stonefly nymph (10), Mayfly nymph (9)

**Sensitive Bugs** - Alderfly larvae (8), Caddisfly larvae (8), Riffle beetle & larvae (7), Water mite (6).

**Tolerant Bugs** - Beetle larvae (5), Dragonfly nymph (4), Water strider (4), Whirligig beetle and larvae (4), Freshwater yabby (4), Damselfly nymph (3), Fly larva and pupa (3), Midge larva and pupa (3), Freshwater mussel (3), Nematode (3), Freshwater sandhopper (3), Freshwater shrimp (3), Water scorpion/Needle bug (3).

**Very Tolerant Bugs** - Diving beetle (2), Flatworm (2), Hydra (2), Water treader (2), Freshwater worm (2), Freshwater slater (2), Waterboatman (2), Backswimmer (2), Bloodworm (1), Leech (1), Mosquito larva and pupa (1), Freshwater snail (1).

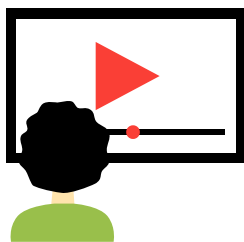
## Classroom Activity

### ACTIVITY 1 -

(1A) Watch the following video as a class. The video gives an overview of macroinvertebrates and how to identify different organisms.

Link to video: <https://www.youtube.com/watch?v=HtE70kzYDPM> [Copy and paste into browser]

(1B) Initiate a class discussion about what students learnt from the video about macroinvertebrate sampling. Write the students ideas on the whiteboard.



**Video**



**Discuss**

# Classroom Activity

## ACTIVITY 2 -

(2A) Assign students a short writing task where they explain the importance of macroinvertebrates in assessing wetland health.

(2B) Encourage the use of scientific terms and concepts learned during the lesson.



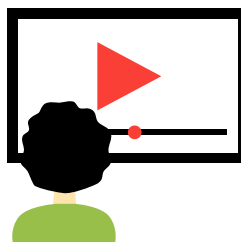
## ACTIVITY 3 -

(3A) Students explore the National Waterbug Blitz website.

Link to website: <https://www.waterbugblitz.org.au/> (Copy and paste into browser).

(3B) Should explore the websites content, including the *Meet the Bugs* page and *How to Video*.

Link to video: [https://www.waterbugblitz.org.au/cb\\_pages/resources.php?category\\_id=3915](https://www.waterbugblitz.org.au/cb_pages/resources.php?category_id=3915) (Copy and paste into browser).



**Video**

# Australian Curriculum addressed in this Lesson



## Science

### Strand: Science Understanding (Year 5)

#### Sub-strand: Biological Sciences

**AC9S5U01:** examine how particular structural features and behaviours of living things enable their survival in specific habitats.

### Strand: Science Understanding (Year 6)

#### Sub-strand: Biological Sciences

**AC9S6U01:** investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions.



## English

### Strand: Literacy (Year 5)

#### Sub-strand: Creating texts

**AC9E5LY06:** plan, create, edit and publish written and multimodal texts whose purposes may be imaginative, informative and persuasive, developing ideas using visual features, text structure appropriate to the topic and purpose, text connectives, expanded noun groups, specialist and technical vocabulary, and punctuation including dialogue punctuation.

### Strand: Literacy (Year 6)

#### Sub-strand: Creating texts

**AC9E6LY06:** plan, create, edit and publish written and multimodal texts whose purposes may be imaginative, informative and persuasive, using paragraphs, a variety of complex sentences, expanded verb groups, tense, topic-specific and vivid vocabulary, punctuation, spelling and visual features.