



Term 3, Lesson 3

Macroinvertebrates

Learning Objectives:

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



Photo credit: Dr. James Van Dyke

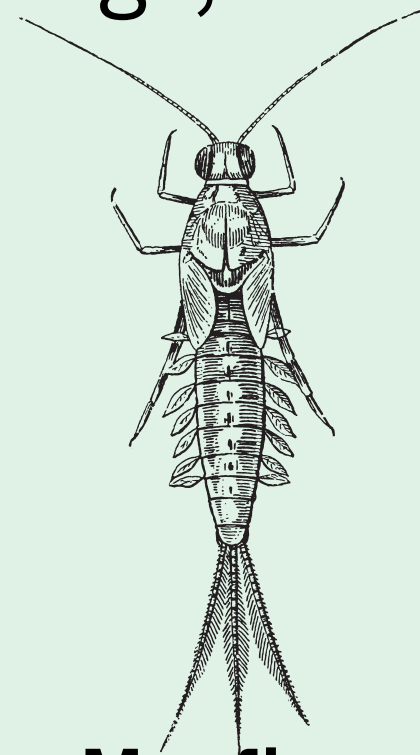
What are macroinvertebrates?

Water bugs (also known as macroinvertebrates) are small animals without a backbone that are large enough to see without a microscope.

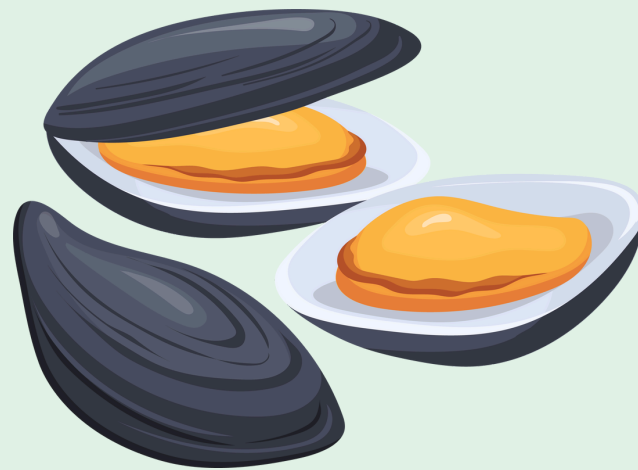
Water bugs spend all or part of their life in the water and are a source of food for fish, frogs, birds and freshwater turtles.



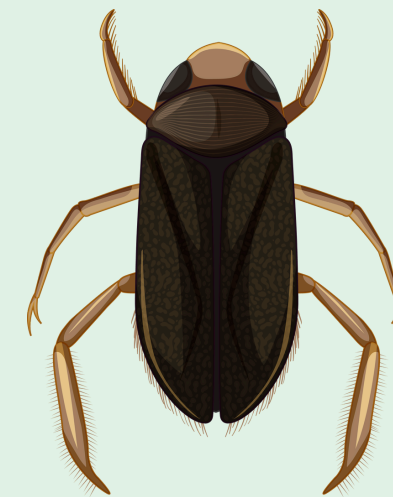
**Dragonfly
larvae**



**Mayfly
larvae**



Freshwater mussels



**Water
boatman**



Yabby

What can water bugs 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.



SIGNAL (Stream Invertebrate Grade Number - Average Level)

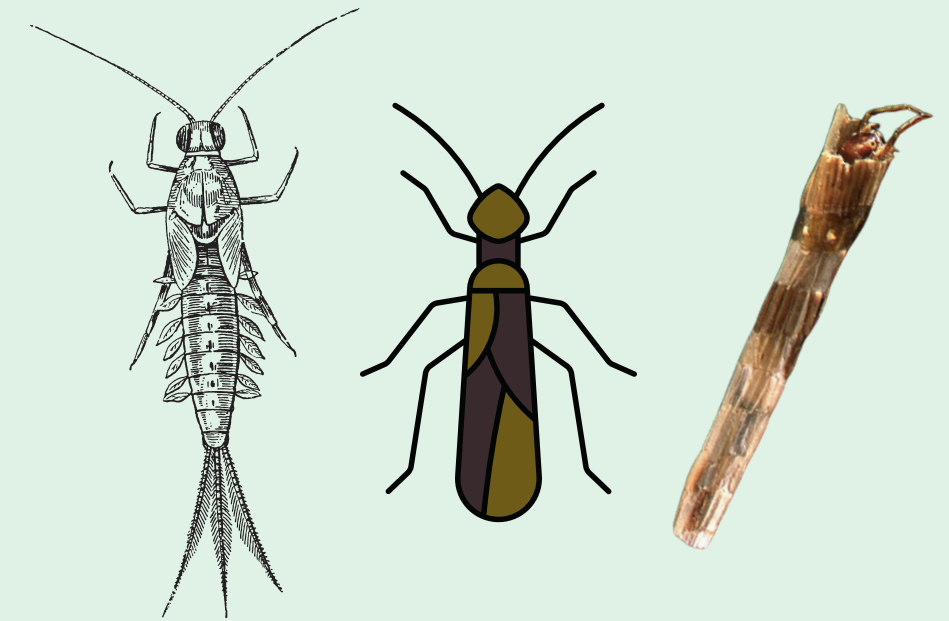
The SIGNAL (Stream Invertebrate Grade Number - Average Level) score associated with a water bug signifies the species' level of tolerance.

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.



Tolerant water bugs



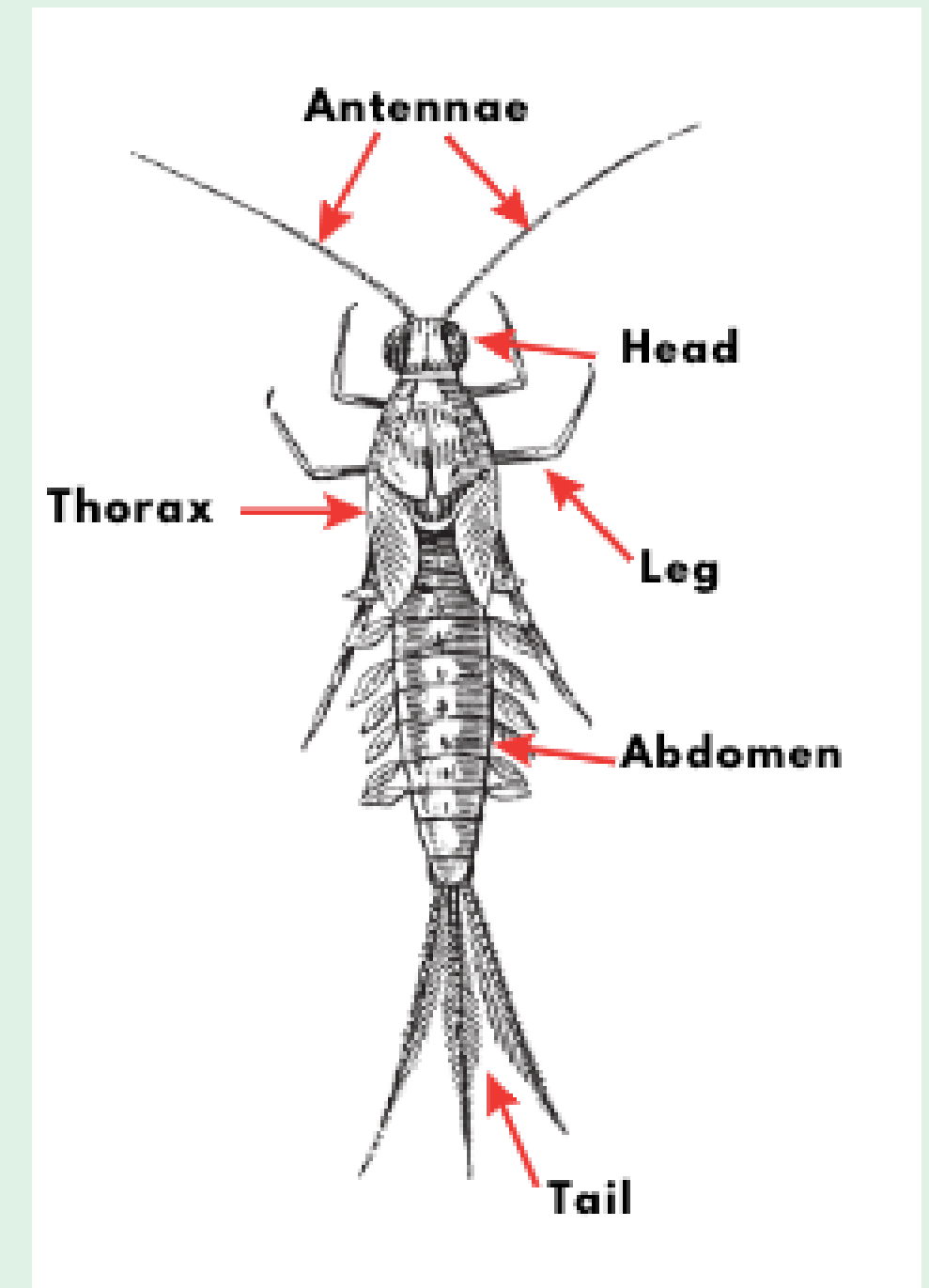
Sensitive Water bugs

Anatomy of a Macroinvertebrate

Head: The eyes, mouth, and antennae are located on the head.

Thorax: The thorax is the middle part of a macroinvertebrate's body, kind of like their middle section. This is where their legs are attached.

Abdomen: The abdomen is the back part of a macroinvertebrate's body, behind the thorax. Inside the abdomen, they have their digestive system and sometimes even their breathing parts.

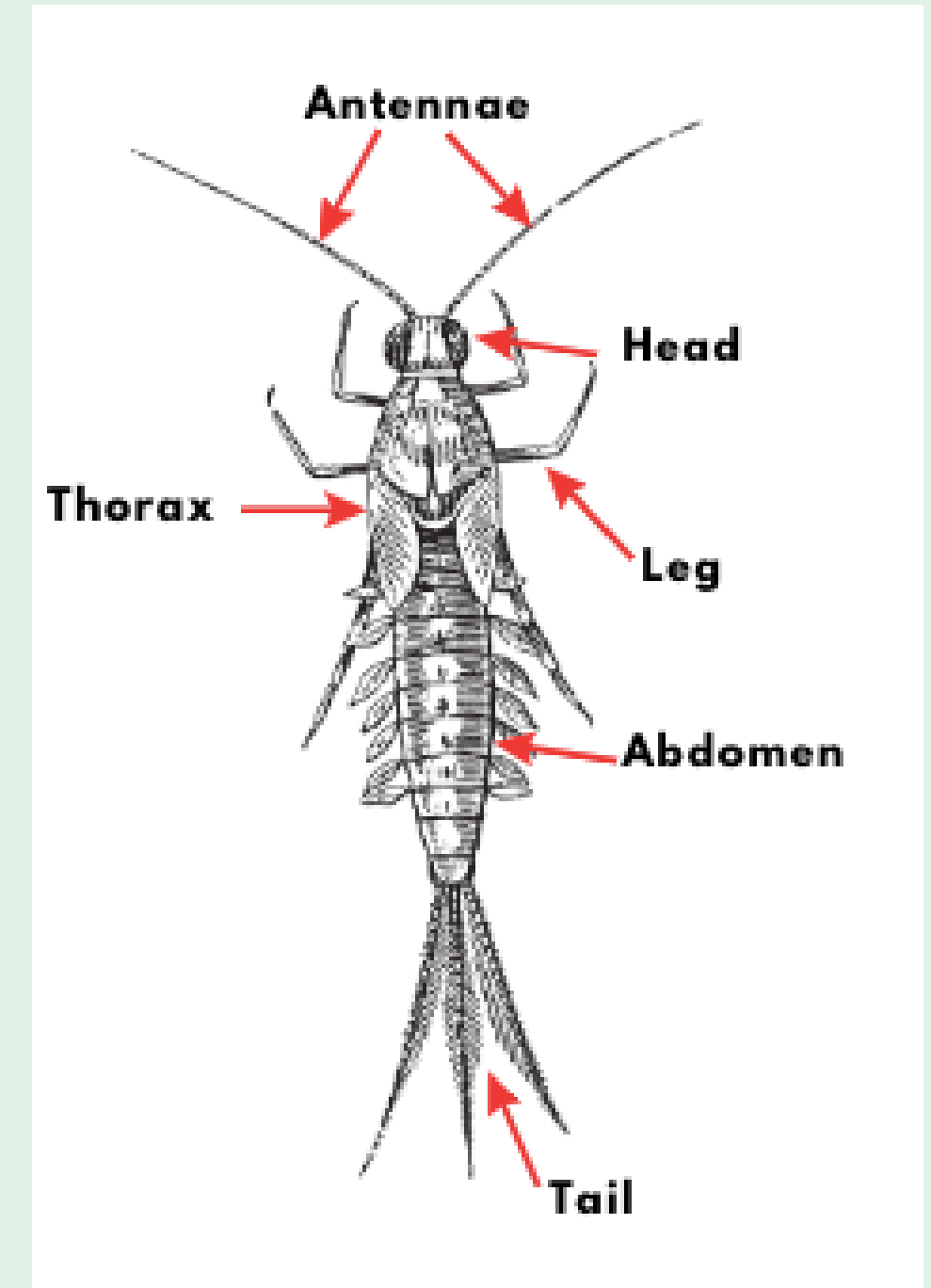


Anatomy of a Macroinvertebrate

Tail: Some macroinvertebrates have a tail-like structure at the end of their abdomen. It helps them swim and move through the water.

Antennae: Antennae are like little feelers on the macroinvertebrate's head. They use them to sense things around them.

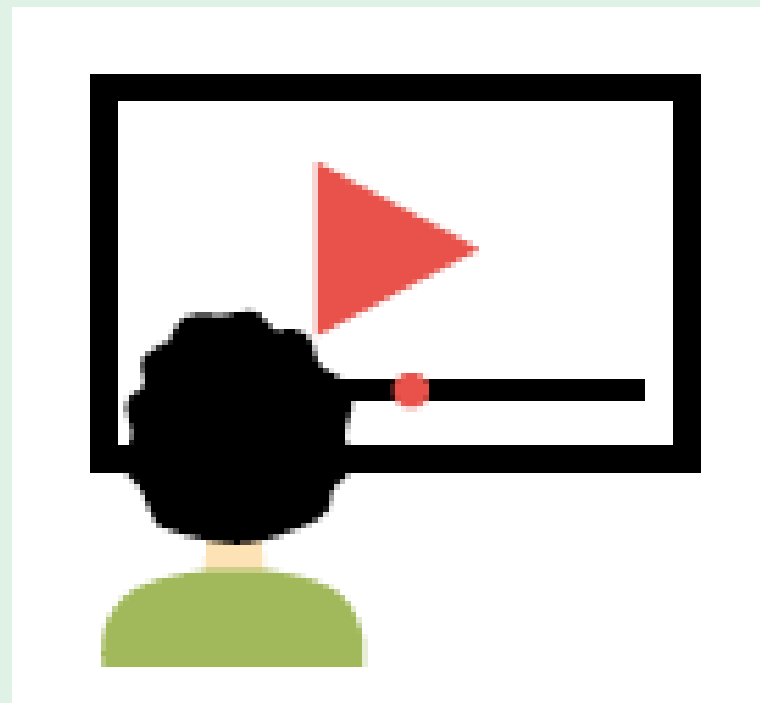
Legs: Macroinvertebrates have legs attached to their thorax, and they use them for walking, crawling, or swimming.



Classroom Activities

Activity 1 - Video: Macroinvertebrates

<https://www.youtube.com/watch?v=94YcjbYBchc>



Classroom Activities

Activity 2 - Writing task

- Explain the importance of macroinvertebrates and how they are used to assess wetland health.



Classroom Activities

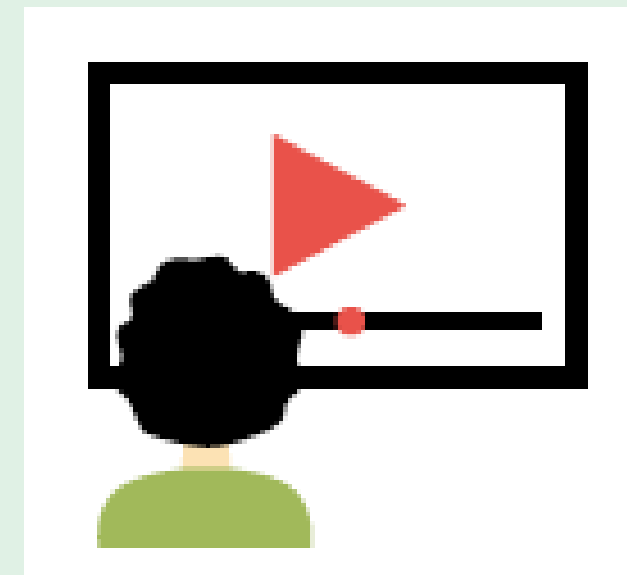
Activity 3 -

Explore the National Waterbug Blitz website.



Watch the following videos:

- *Meet the Bugs*
- *How to Videos*



Classroom Activities

Activity 4 -

- Brainstorm potential research questions related to macroinvertebrate presence at the wetland.
- Select one of the research questions and develop a hypothesis and experimental design.

