

## **Activity - Wetland Critters in the classroom - where they live and the effect of pollution**

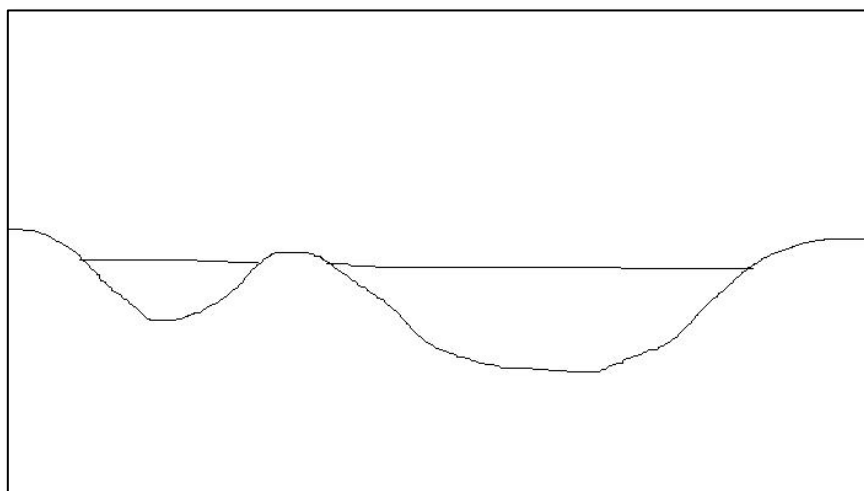
**(Grades K – 6)**

**Overview:** The aim is to promote aquatic conservation by raising awareness of our impacts on urban waterways, the value of maintaining healthy waterways, and the need for habitat restoration and protection. This activity also helps to develop the students listening, writing and recording skills through creating charts, making records of animal's diet and sensitivity to pollution, thinking about biological processes, and creating visual classroom displays. If conducted before taking the 'DEP Discovery trial' at Gould's Lagoon it will provide a good background of the types of animals and plants that may be seen. Alternatively, this is a useful activity to conduct after the excursion as it will remind students what they saw, and promote a review of notes taken and pictures drawn. This activity also helps to develop student's social skills such as working in a team, and considering the need for other creatures and their environment.

### **Task 1: Wetland critters and where they live**

In small groups, or singly, choose a wetland species to research from the list of 25 common and unique wetland species provided on the DEP website.

**Grades K – 3:** Print out the set of 25 common and unique wetland organisms (presented on the following pages) on black and white A4 paper, and ask each student/group to cut out their animal. Ask each student/group to think about their species, where does it occur, how does it use its habitat, or does it provide habitat for other species? Draw a large wetland backdrop on the white board or chalk board showing a typical wetland scene. Here is an example.



If required give them time to research their animals on the DEP website or other sources to find out where they 'shelter', 'feed', and 'breed'. Ask students to organise themselves into groups of plants, invertebrates, fish, mammals, or birds. Ask them one by one to place stick their organism on to the scene in the appropriate place. This works best when you start with plants and work through following the order: plants, invertebrates, fish, then birds. When placing they should tell class why it

belongs there (habitat requirements, stage of life-cycle). As each magnet is positioned the rest of the class can discuss if it is in the right place, and the reasons why an animal or plant belongs in there. Task 2 (see below) can be used as an extended exercise, which asks students if their organism can survive in a polluted wetland.

Each student/group can also create a poster of their organism and add to it facts about where it lives and what it eats.

Grades 4 - 6: Ask each student/group to think about their species, where does it occur, how does it use its habitat, or does it provide habitat for other species? Researching the DEP website and other sources on the internet can they find out the answers to some more detailed questions, such as:

- common and scientific name of the species.
- diet of the species, or tolerance for wet or dry conditions.
- what habitat do they use for feeding, sleeping, and breeding, or do they provide habitat for other species?
- features of the species and how each feature benefits them.
- what predators or grazers does the species have?
- what threats does this species face?
- was it used by indigenous Australians, and what for?

Give a presentation or prepare a written report containing the answers to these and any other questions about their animal.

Once complete ask the class to think more broadly about the diversity of organisms in each habitat type, and try to classify them according to a range of different groupings.

- Classification 1 - Organism Type: How many are algae, plants, invertebrates, or vertebrates?
- Classification 2 - Animal Type: How many are hydrozoa, insects, beetles, worms, snails, crustaceans, fish, birds, mammals?
- Classification 3 - Habitat Type: How many live under water, on the top of water, in vegetation, on land, or in the air?
- Classification 4 - Feeding Methods: How many are shredders, filter feeders, scrapers, predators?

### **Task 2: How does pollution affect wetland organisms and the broader habitat**

Grades 2 - 3: Following on from the interactive 'Wetland critters and where they live' activity, consider what happens when a wetland becomes polluted. Perhaps a factory has been built upriver and is dumping contaminants in the wetland. Ask students assigned single organisms to re-organise themselves into new groups depending upon where they sit in the food chain. Groups should represent plants, animals who feed on plants, invertebrates, animals who feed on invertebrates (fish, birds and mammals), and animals who prey on other animals (e.g., herons, harriers, snakes). In their new groups ask students to discuss how their organisms are likely to be affected by polluted water. Print off a copy of the Streamwatch Waterbug Guide

[http://www.streamwatch.org.au/cms/resources/manual\\_pdfs/BugGuide.pdf](http://www.streamwatch.org.au/cms/resources/manual_pdfs/BugGuide.pdf)

and give it to the invertebrate group. Ask them to further group based on their organisms sensitivity to pollution, as either 'Very Sensitive', 'Sensitive', 'Tolerant' or 'Very Tolerant' following the waterbug guide.

As a class discuss:

- Can algae grow in polluted water, or does too much algae grow?
- Will waterbugs survive?
- If waterbugs die off then what will happen to the animals that eat waterbugs?
- Can plants survive?
- What happens to those animals who use plants as feeding or breeding habitat?
- What are the flow on effects of the loss of waterbugs and plants to large animals such as birds, snakes, and eels?

*Extension Activity - Will you survive or disappear?*

Now re-visit the wetland habitat scene on the board. Consider the situation in a severely polluted wetland where 'Very Sensitive', 'Sensitive', and 'Tolerant' invertebrates have died. Only 'Very Tolerant' invertebrates remain. Ask each student assigned single organisms to have a think about the impact of pollution on their organisms. One by one go to the board and tell the class if their organism will survive, and if not remove it from the board. Start this process with plants and working through invertebrates, fish, then amphibians, birds and mammals.

- How many animals types would disappear from a wetland if their impact was severe?
- Why have they disappeared, how have conditions changed (i.e., loss of food, or poor living conditions)?

*Extension Activity - How do you restore a polluted or degraded wetland?*

Ask students to think about what sort of human activities would see a return of all animals to the wetland. What can industry or the community do to restore habitat in wetlands and to improve water quality?

Grades 4 - 6: Ask the class to brainstorm the different types of wetland degradation that are likely to exist in agricultural and urban areas. Degradation can include human based impacts such as pollution, habitat loss, alteration of flows, fire, or pests and weeds. Split the class into groups and assign them a type of impact for follow up research. In smaller groups students should think about their assigned impact and document the causes, the consequences, the habitats and organisms affected. Perhaps use the internet to research the topic more widely.

Some factors to consider include:

- how an impact will affect wetland organisms, i.e., direct removal (vegetation), mortality, or avoidance.
- the varied sensitivity or tolerance of different organisms, and how you can interpret wetland water quality from biological survey results.
- common measures that are taken to reduce or avoid any given impact
- methods of restoring wetlands relevant to a given impact
- which of these methods are used in tasmania?
- can you find some local examples?