

Lesson Plan: Critter Dipping

Grades: Elementary – grade 3 and up
Duration: 30 minutes (*plus travel time to and from the wetland*)
Setting: At a wetland

Learning Objectives

- ⊕ Observe adaptations that help invertebrates live in wetlands.
- ⊕ Compare the aquatic and terrestrial stages of the lifecycle of some insects.
- ⊕ Realize the role and the importance of invertebrates in wetland food chains/webs.
- ⊕ Recognize the impact that human activities like water pollution can have on aquatic invertebrates and the effects on wetland ecosystems.

Background

There is more life in a wetland than first meets the eye! While people are quick to spot a duck or frog in a wetland, few realize the large diversity of invertebrate life that thrives under the water's surface. Many of the common insects we associate with wetlands such as dragonflies, damselflies and even mosquitoes all begin life as an aquatic invertebrate. These critters form an essential link in wetland food chains as they are the food source for fish, frogs, songbirds, waterfowl, and other invertebrates.

Invertebrates are also important scavengers helping to break down dead plant and animal material in the wetland (nature's vacuum cleaners!). Without a healthy invertebrate population, we would not see ducks, swallows or frogs on the surface of our wetlands. We can also learn a lot about animal adaptations by investigating how these creatures move, breathe and find prey in the water.

Materials

- ⊕ 1 small dip net per student
- ⊕ 1 container per group (e.g. margarine container or small white bucket)
- ⊕ 1 invertebrate identification sheet per group
- ⊕ 2-4 large white dish pans/collection trays (optional)
- ⊕ 1 handheld magnifying glass per group (optional)
- ⊕ 1 plastic spoon per group (optional)
- ⊕ Recommended safety equipment (see checklists in our [Wetland Field Trip Guide](#))

Pre-Activity

As an educator, we recommend you read our [Wetland Field Trip Guide](#) before going out to the wetland. In this guide, you will find tips on choosing a wetland site that is safe and accessible. It also contains a Teacher and Student Checklist to prepare for the trip.

We recommend discussing the following questions with your students to get the most out of the activity:

What is a wetland and why are wetlands important?

- ⊕ Wetlands are wet areas of land that have poorly drained soils and aquatic vegetation. They can be found across the country in cities, in the prairies, in the boreal forest, along coastlines and in the tundra. The different types of wetlands are bogs, fens, marshes, swamps and shallow open-water wetlands.



- ⊕ Wetlands are important ecosystems because they are home to millions of animals and plants including at-risk species, they filter and clean water, help protect against floods and droughts, help mitigate the effects of climate change, protect coasts and are a great place to visit to enjoy the outdoors and connect with nature.

What are invertebrates?

- ⊕ Invertebrates are animals without a backbone. Most of the critters we find in the water at the wetland are invertebrates. Some have shells or hard cases to protect their bodies. Examples of invertebrates are snails, leeches, beetles, and spiders. Have students feel their backbone and explain that we're part of a different group of animals called vertebrates.

What are the different stages of an insect's life cycle?

- ⊕ Many invertebrates living in the water are insects that begin their life as an egg and go through stages of metamorphosis until they become their adult form. Some insects have a stage of their life cycle that is aquatic (a nymph or larval stage), and the adult part of their life cycle is terrestrial.
- ⊕ One example is the dragonfly. A dragonfly starts its life as an egg and then emerges from the egg in the water as a nymph. When the aquatic dragonfly nymph has grown big enough, it is ready to become an adult. It climbs out of the water on a plant, splits its skin open, unfolds its wings, and flies away once it's dry enough. A dragonfly nymph can live in the water for one to three years before becoming the dragonfly we see flying around!

What are adaptations?

- ⊕ Adaptations are features that help animals live and survive in certain habitats. Adaptations can be physical (e.g. wings, webbed feet) or behavioural (e.g. migration). For aquatic invertebrates, interesting adaptations include how they breathe underwater (e.g. using gills), move without a skeleton or backbone (e.g. by sucking in and shooting out water to propel themselves), and how they catch their food (e.g. by hunting or filter feeding).

How do I handle critters with care and respect?

- ⊕ It's important to understand that the animals you'll find in the wetland need water to live and breathe. Before dipping for critters and taking them out of the water, the first thing everyone must do is put water in their buckets. Once critters are caught, they must be put into the bucket of water immediately so they don't dry out.
- ⊕ Be gentle when sweep netting and when transferring the invertebrates from the nets to the buckets so we don't harm these small animals.
- ⊕ A good sweep netting technique is to do a figure-eight motion with the net so the open end is always leading the way. After a couple of sweeps, look in your net to see if there are any critters. Gently turn over the dip net in the bucket of water to release your catch. Repeat this technique and try sampling different depths of water and different areas of the wetland.
- ⊕ At the end of the activity, everyone must gently dump their buckets and the collection trays back into the wetland so the critters can return to their habitat.

How do I safely dip for critters?

- ⊕ Dip for critters on your belly! We want everyone to stay safe and dry – the best way is to lie on your belly and dip off the edge of a boardwalk. For more information on recommended safety practices, please consult our [**Wetland Field Trip Guide**](#).



Program

Introduction (5 minutes)

- 1 Land acknowledgment – find out the history of the land you are on and share that with your students. Explain that all treaty people, Indigenous and non-Indigenous, must be respectful of the land. Have they heard the word “respectful” before? What do they think it means to be respectful of the land?
- 2 Inform students that they are going to explore the ‘wet’ part of a wetland and learn about the animals which live on and under the water. They will see many different types of creatures, observe how these animals move, and discover how they interact with each other.
- 3 Remind students that before they catch invertebrates, they must fill their buckets with water. Then, they can dip for critters on their bellies, and practice the figure-eight sweep netting motion. Demonstrate how to do a figure-8 shape with the dip net. When they catch invertebrates, they must gently put them in their bucket with water.
- 4 Explain that these animals may be swimming in the water column or crawling on the mud below the water so they must search hard and may want to scrape some of the bottom sediment or collect some mud and search through it carefully. Tell them to think like an invertebrate. Where would they be? Hiding in vegetation, under rocks, in the mud?
- 5 Form groups of 2-3 students and ask each group to get a kit that should include: one white bucket or margarine container, dip nets and ID sheets. Optional items to include are a plastic spoon and a magnifying glass.

Critter Dipping (15-20 minutes)

- 1 While the students are critter dipping, fill the collection trays with water.
- 2 As the finds start coming in, encourage the students to take a closer look at the creatures in their containers using the magnifying lenses or simply with their eyes. Have them find the most active animal in their tray. How does it move? Find the smallest and the largest animals. Try to transfer some of the animals with a plastic spoon into the larger collection trays for a closer look.
- 3 Encourage students to use the identification sheets to identify the invertebrates.

Identification and Discussion (5-10 minutes)

- 1 After collection, escort the group of students off of the boardwalk or dock and into an area where everyone can gather around the teacher in a large half circle with the trays in the middle. It is now time to discuss with the students what they found in the wetland.
- 2 Using the plastic spoons, place some critters of interest in separate viewing containers that you can pass around the group and discuss in more depth. Describe how these animals move in the water, their life cycle, what they eat and who eats them.
- 3 Discuss the importance of these creatures to the ecosystem and the role that they play. These critters are food for other wetland animals like ducks and other birds, fish and frogs. Without these critters, bigger animals couldn't survive in the wetland. Also, the variety and abundance of critters can be an indicator of the health of a wetland. Some species like the mayfly nymph only thrive in healthy wetlands.
- 4 Ask students: What could happen to the biodiversity of the wetland if chemicals or other pollutants were spilt in the water?
- 5 Remind the important roles that wetlands play in the lives of all living creatures, from tiny organisms like the ones found by the group to the large organisms that are a noticeable part of our daily lives, including humans.
- 6 Get the students to release their collections back into the water in roughly the same place that they found their creatures. Make sure that leeches don't remain stuck in containers and dishpans.



Post-Activity

Consider discussing the actions below that educators and students can take to help keep their local wetlands healthy and protected.

- ⊕ Talk about wetlands with friends and family .
- ⊕ Go explore a wetland with friends and family.
- ⊕ Clean up a wetland with friends and family.
- ⊕ Tell your local politician why you care about wetland.
- ⊕ **Sign up for our education newsletter** to stay informed.
- ⊕ Do an action project and get recognized as a Wetland Hero! **Click here** and **here** to get more information.

Looking for invertebrate identification sheets? Email us for more information at **education@ducks.ca**.

You can find other resources for educators
at **ducks.ca/resources/educators**

