

Ducks Unlimited Canada's Wetland Training for Teachers **Resource Pack**





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Who is Ducks Unlimited Canada?

Since 1938, Ducks Unlimited Canada (DUC) has been conserving, restoring and managing wetlands and associated habitats for North America's waterfowl, other wildlife and people. Active in all provinces, we lead wetland and waterfowl research and conservation work, advocate for wetlands at all levels of government and provide award-winning education programs and meaningful wetland experiences that foster a deep connection to nature. **As of April 2025, DUC is the steward of 6.35 million acres across 14,221 habitat projects.**

DUC education: Connecting children and youth to nature

We believe conservation starts with education. DUC has proudly delivered award-winning nature education for more than 25 years, connecting 1.25 million children and youth with local wetlands and building up the next generation of environmental leaders. We've seen first-hand how our education programs do more than foster a passion for the environment: they improve mental health, boost confidence and build community. Our programs focus on young people not just understanding nature, but feeling connected to it and motivated to protect it.

The power of a collective

DUC is a founding partner of the **Nature Education Collective (NEC)** alongside four other national nature education NGOs. The NEC champions quality nature education for children and youth in Canada to ensure they become environmentally literate and to build generations of sustainability-minded, action-oriented and resilient people. The NEC is partnering with school districts across Canada to provide professional development for teachers and student programs focused on Nature-based Education (NbE), strengthening teacher and student well-being through rich and quality learning experiences.

For more on DUC, its programs and how we're making a conservation impact, visit ducks.ca

For more on the Nature Education Collective, visit natureeducation.ca

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Wetland Field Trip Guide

What is a wetland?

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. **Right:** Different types of wetlands include bogs, fens, marshes, swamps and shallow open-water wetlands (also known as ponds).

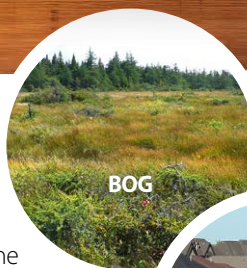
Why go on a wetland field trip?

Wetlands are teeming with life. Students can hear birds and frogs, look for turtles and fish, and dip for swimming critters. Wetlands are great outdoor classrooms to learn about ecosystems, food webs, invertebrate life cycles, animal and plant adaptations, migration, and more. They're also a great way for kids to unplug and connect with the natural world around them.

Why are wetlands important?

Wetlands are part of Canada's environmental identity – we hold 25% of the world's wetlands – and have amazing benefits for all forms of life, including humans:

- ✓ **Clean water:** wetlands naturally filter pollutants from water before they enter our lakes and rivers, helping to make our water drinkable.
- ✓ **Flood and drought protection:** wetlands act like sponges, holding water during wet periods and slowly releasing it when times are dry.
- ✓ **Biodiversity hotspots:** wetlands are home to millions of plants and animals, including more than one third of Canada's species at risk and migratory birds who rely on these habitats to raise their young.
- ✓ **Climate change mitigation:** wetland plants absorb and store carbon dioxide (a greenhouse gas) from the atmosphere.
- ✓ **Coastal protection:** vegetation in a coastal wetland acts as a buffer against waves that hit the coast. The vegetation is sturdy and resilient, stabilizing the soil and protecting the coast from erosion.
- ✓ **Cooling effect:** the water in wetlands acts as a heat sink, absorbing heat and decreasing the surface air temperature above wetlands.
- ✓ **Outdoor recreation:** wetlands are great places to enjoy the outdoors.
- ✓ **Health benefits:** spending time in nature encourages physical activity and can have a positive effect on our mental health.



What can we do on a wetland field trip?

Many different activities can be done with students at a wetland. Below you will find some activities that can be adapted for different age groups and that can meet provincial curriculum expectations.

- ✓ **Critter dipping:** Students observe the biodiversity in a wetland by catching and identifying critters (invertebrates). This activity can support learning about the invertebrate life cycle, food chains, adaptations and how to use indicator species to determine water quality.
- ✓ **Water quality monitoring:** Students use hand-held probes to measure water quality (pH, dissolved oxygen, temperature, etc.). This activity can support learning about the causes of water pollution and what can be done to improve water quality.
- ✓ **Nature walk:** Students walk around the wetland and identify plants and animals. They can use apps like iNaturalist to record their observations and contribute to citizen science.
- ✓ **Scat and track identification:** Students look for scat and tracks to identify local animals that live at the wetland. This activity is great on snowshoes in the winter!
- ✓ **Action projects:** Students can become stewards of a wetland by doing an action project. If your class takes action at a wetland, we want to recognize them as Wetland Heroes! For more information, visit ducks.ca/initiatives/wetland-heroes



Where can we go on a wetland field trip?

Check out your neighbourhood first! Visiting a local wetland provides opportunities for students to feel a sense of connection to a nature space in their community. Beyond your neighbourhood, consider nature centres, conservation areas and parks as they often contain wetlands. Check with your municipality, your local conservation authority, and provincial and national parks.

Visiting the site before the wetland field trip will allow you to familiarize yourself with it, identify any potential hazards or challenges and determine what activities can be done with students there. Consider the points below to help choose an appropriate wetland for a field trip:

- ✓ **Publicly accessible:** You have permission to visit the site.
- ✓ **Boardwalk:** A boardwalk allows students to safely get close to the water's edge and is ideal for critter dipping.
- ✓ **Washrooms:** A site with washrooms is best, especially if you have to travel to the wetland or if you'll be away from the school.
- ✓ **Distance to walk:** Depending on the age of students, it might be best to find a site that doesn't require too much walking so you can get there in a timely manner and the students don't get tired.
- ✓ **Avoid stormwater retention ponds:** Man-made stormwater ponds can be nice spots for a nature walk, but students are prohibited from entering the water, ruling out critter dipping and water testing.

When to go on a wetland field trip?

Wetlands can be visited every season! If you're critter dipping, May to September should be a good time to find living critters in the water. Spring and fall migration seasons are excellent for birdwatching. A winter visit on snowshoes can be the perfect time to identify tracks and scat on the snow. Just make sure you bring the appropriate clothing and items to tolerate the heat, the cold, the rain and the bugs!

Wetland safety

We want field trip leaders to feel ready and excited to take students out to the wetland. Your school will have its own safety procedures, as will parks and conservation areas, but we've created a checklist to help make sure you're prepared for your trip. **Please review the teacher and student field trip checklists on the next two pages.**



Wetland Field Trip – Teacher Checklist

Trip preparation

- Make sure students have completed any necessary field trip forms and arrange appropriate supervision for the age and size of your group.
- Evaluate the wetland area and identify actual and potential hazards.
- Make sure you have access to safety equipment, identify students' medical concerns, and know the closest available emergency and medical services.
- If you live in a rural area, bring a two-way radio.
- Conduct a safety session with your students and cover hazards, safety equipment, signals at the wetland, first aid kit location, tool use and emergency procedures.
- If you decide students can enter the water, we suggest no deeper than ankle-depth and that students wear life jackets.
- Make sure to identify if students are non-swimmers.
- Check the weather forecast for the area and reschedule if conditions are dangerous (e.g. strong winds, storms, heatwaves).
- Bring all necessary materials and equipment for the wetland activities, including guides like our *Marsh World* booklet and our waterfowl ID guide.

At the wetland

- Set boundaries with your group. With an older group, you can set boundaries based on landmarks. With a younger group, provide physical markers such as pylons or blaze tape. Make sure all youth are always visible or within earshot.
- Use the buddy system for younger groups where youth partner up with someone for the duration of your trip. Roll calls can be used to maintain head counts for your group.
- Encourage safe, exciting play while reminding students that we don't rough-house, and we walk when it's important to keep the group safe.
- Remind students that wildlife is protective of its territory, and respecting their space helps keep both the animals and our group safe.
- Agree upon signals that will bring the group back together. For example, three whistle blows for an emergency and a hand-raise and single whistle blast to call attention for non-emergencies.
- At the first sound of thunder, get the group away from open water immediately. Wait half an hour from the last sound of thunder before resuming programming.
- After working in wetlands, it is important to wash any exposed skin with soap and water or use hand sanitizer. Youth should also wash their clothes afterwards.
- Take away all materials and tools used in the fields, as well as any trash. The wetland should be left the same as you found it (or even better)!

Safety Equipment

The following safety equipment is recommended on the days that you visit a wetland.

- Buoyant throwing assist with a 15-metre buoyant line attached
- Reaching pole at least three metres in length
- Standard first-aid kit
- Bear spray (as needed)
- Life jackets (check with school guidelines)

Personal Protective Equipment

Some wetland activities, like removing invasive species, will require the use of Personal Protective Equipment (PPE). Select the appropriate PPE for your wetland activity prior to visiting the site.

- Protective headwear (e.g. hard hat)
- Protective eye/face wear
- Gloves (e.g. nitrile, insulated, etc.)
- Protective footwear (e.g. close-toed shoes, hiking boots)
- Clothing appropriate for the environment

Sunscreen and insect repellent are not considered PPE but may be advisable depending on the season and environment.



Wetland Field Trip – Student Checklist

What to wear

- Old clothing (you may get wet and muddy)
 - Warm days: lightweight and light-coloured, long-sleeved shirts and pants – these will protect you from insect bites.
 - Cool or wet days: a jacket, rainwear, hat and mitts. If you're working around water, keep your mitts dry and use them only to warm up your hands. Dress in layers – you can adjust for the weather.
- Rubber boots or waterproof boots – these help in long grass or when there are damp spots and especially if you are allowed to wade in the water. Tip: at the end of the day, have an extra pair of dry socks and shoes that you can change into if your feet get wet.
- Hat and sunscreen to protect you from the sun

What to bring

- Water/drinks
- Litterless lunch or snacks
- Insect repellent (your teacher may provide this). Keep it off your hands if you are studying invertebrates or if you may handle frogs and other small creatures.
- Any items that you or your group are expected to bring for the trip
- Your teacher may ask you to bring other items (camera, binoculars, etc.) Discuss these with your teacher first and make sure you have permission from home to take them on your trip.

At the wetland

- Listen to and obey your teacher's and/or the naturalist's instructions.
- Stay together as a group – with your field trip team or your buddy.
- No rough-housing and **walk, don't run!** Don't splash or push people.
- Speak quietly so you can hear the animal sounds.
- Tell an adult if something is wrong or if someone leaves the group.
- Treat all living animals, plants and fungi with respect. If you take animals out of their natural habitat, release them safely where you found them.
- Wash your hands after your wetland investigation. If you will touch animals, wash your hands before touching them.
- Don't litter and dispose of any garbage, water test samples and strips or other items safely and as instructed by the teacher or guide.
- Don't wear perfume or other scents right before your trip, to avoid attracting biting insects like mosquitoes.



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 on pages 4-5)

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, 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! For more information, visit ducks.ca/initiatives/wetland-heroes

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

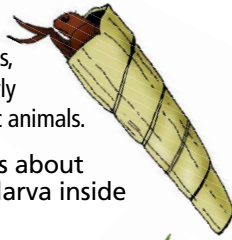
You can find other resources for educators at ducks.ca/resources/educators



Marsh Monsters

Caddisfly Larva

Builds a tube-like home using bits of grass, leaves, sand grains and even old snail shells. Walks slowly along the bottom eating algae and small aquatic animals.



Case measures about 8 to 25 mm with larva inside

Dragonfly Nymph

Greenish in color, it usually walks slowly on the bottom or among vegetation. Eats worms, insects, small crustaceans and plankton.



Ranges from 10 mm to 45 mm

Mayfly Nymph

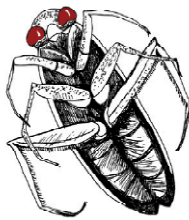
Similar to the damselfly nymph, except the projections at the end of its body are finer. Eats algae, small animals and plant material.



Ranges from 7 mm to 40 mm

Backswimmer

The backswimmer is black and white in colour with large red eyes. It is boat-shaped and swims along on its back using its legs like oars. Preys on insects and small fish. Often confused with water boatman.



Ranges from 7 mm to 15 mm

Leech

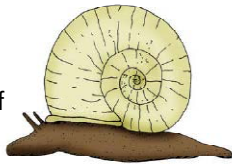
A flat-bodied, dark-coloured worm with a sucker at each end of its body. Abundant in calm, warm, shallow water. It swims waving in ribbon-like fashion or moves like an inchworm along the bottom. Eats snails, insect larvae and worms. Only a few suck blood.



Ranges from 9 mm to 80 mm and can even reach up to 125 mm in length

Snail

Moves around on a muscular foot extending out of a spiral or orb shell. Uses a rough "tongue" to scrape up algae and dead material for food.

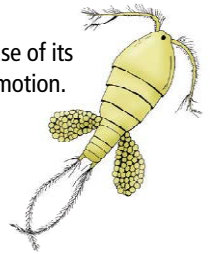


Ranges from 5 mm to 36 mm in length



Copepod

This small crustacean is often called "cyclops" because of its single eye spot. Moves in constant, jerky swimming motion. Eats dead plants and animals and is very tiny.



Less than 2 mm long

Damselfly Nymph

Usually found on the bottom or attached to plants underwater. Has three leaf-like gills at the end of its body. Eats insects and plankton.



Ranges from 10 mm to 34 mm

Giant Water Bug

This large, flat, brown bug is usually found among plants. It eats a variety of aquatic animals, even tadpoles and small fish. Swims by kicking its hind legs.



Ranges from 20 mm to 60 mm

Sideswimmer

A freshwater shrimp, greyish in colour that swims on its side by beating its many legs. Largely scavengers, some feed on plants.



Ranges from 5 mm to 20 mm long

(Dock) Fishing Spider

Having the ability to move across the top of the water without breaking the surface tension, the dock spider "fishes" by resting one or more of its feet on the water so that it can feel the vibrations of an insect trapped in the surface film of the water below.



Up to 25 mm body 75 mm from leg tip to leg tip

Water Boatman

Slender and black with fine yellow bars, this bug swims by paddling its long, skinny, oar-like legs. Eats algae, dead plants and animals. Often confused with backswimmer.



Ranges from 4 mm to 15 mm



Lesson Plan: **Beginner Birding**

- Grades:** Elementary and high school
Duration: 30 minutes or longer
Setting: Outdoors at a wetland, if accessible. If not, consider another outdoor space where you can easily see birds like a park or schoolyard.

Learning objectives

- ⊕ Practice listening and observational skills to find, observe and describe birds.
- ⊕ Learn field markers to identify birds.
- ⊕ Develop confidence in using binoculars.
- ⊕ Recognize that wetlands are important habitats for birds to nest, feed, rest and raise their young.
- ⊕ Participate in citizen science by reporting bird sightings on an app like iNaturalist (*optional*).

Background

Birds are beautiful and interesting animals that come in many sizes and colours. Birding is a great way to connect students with nature and introduce them to the importance of wetlands and other habitats as a home for animals. Birds rely on wetlands to find food, rest during migration, make their nest and raise their young.

Students who spend time outdoors birding can learn about local birds and habitats, enjoy a new hobby and develop an interest in conservation. They will also build skills that help identify birds and understand bird behaviour, like observation, patience, concentration, teamwork and perseverance.

Materials

- ⊕ Binoculars
- ⊕ Field guides of birds in your area
- ⊕ Journal and pen, or electronic device to record observations
- ⊕ Spotting scope and tripod stand (*one for group, optional*)

Pre-Activity

Planning a wetland field trip to go birding with your students? If so, we recommend you check out our [Wetland Field Trip Guide](#). We also recommend discussing the following questions with your students to set the scene for the activity.

Did you know?

- ⊕ A recent study found that seeing or hearing birds improved people's mental well-being for up to eight hours.
- ⊕ Another study reports that bird-watching is more effective at improving mental health and reducing stress than simply going on a nature walk.

What is a wetland and why are wetlands important ecosystems?

- ⊕ 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, protect against floods and droughts, mitigate the effects of climate change, protect coasts from erosion, and are a great place to visit to enjoy the outdoors and connect with nature.
- ⊕ Wetlands provide important breeding and migrating areas for waterfowl like ducks, geese and swans.

What birds live in wetlands and what roles do they play?

- ⊕ Many birds live in wetlands, such as:
 - ⊕ Waterfowl (ducks, geese and swans). Look for diving ducks like the canvasback and common goldeneye, and dabbling ducks like the mallard and green-winged teal.
 - ⊕ Wading and shorebirds (e.g. great blue heron, spotted sandpiper)
 - ⊕ Birds of prey (e.g. osprey, bald eagle)
 - ⊕ Songbirds (e.g. marsh wren, tree swallow)
 - ⊕ Gulls, terns and others (e.g. ring-billed gull, belted kingfisher)
- ⊕ Some birds eat plant seeds and release these seeds in their droppings, helping plants grow in many different wetlands and other ecosystems. Migratory birds connect distant wetlands thanks to their seed-containing droppings.
- ⊕ Birds are nature's perfect bug controllers – they eat many insects and other invertebrates. They can also help manage pests and invasive species.
- ⊕ Birds and bird eggs can make a great meal for predators like red foxes, raccoons and coyotes.

Why can male and female birds of the same species look different?

- ⊕ For some bird species, like the mallard, the male will have brighter colours or patterns compared to the female. Males tend to use their bright colours to attract females during the mating season. The female tends to protect the eggs in the nest. If the female was as colourful as the male, a predator could more easily spot her. Since she blends into the environment and is well camouflaged, she better protects herself and her family.

What is birding etiquette and why is it important?

- ⊕ Birding etiquette is a set of guidelines that emphasize the respect of birds, other wildlife and their environment, as well as fellow birders. Here are some key guidelines to follow:
 - ⊕ Minimize noise and approach birds slowly so as not to scare the birds away.
 - ⊕ Keep a safe distance from birds so as not to disturb their normal behaviour, especially during nesting season.
 - ⊕ Stay on designated trails to minimize disturbance to vegetation and nesting sites.
 - ⊕ Avoid using recorded bird calls or mimicking sounds to attract birds, as this can be confusing and stressful for them, especially during breeding season.
 - ⊕ Avoid feeding bread or other foods that can be harmful to a bird's health.
 - ⊕ Leave no trace – avoid littering and damaging the environment.

Before going outside to observe birds, we encourage you to prepare students so they're somewhat comfortable with binoculars and know what to look for in the field. Here are some tips to make your birding experience successful:

- ⊕ **Field markers:** Show pictures or field guides with local bird species that students might encounter. Practice noticing field markers that help with identification, such as size, colour and behaviour.
- ⊕ **Practice:** Have the students practice using binoculars before going birding. You may want to show a video on how to use binoculars. Getting students comfortable with naming the important parts of the binoculars (i.e. eye cups, barrels, focus wheel and diopter) and getting them to focus properly will help develop confidence in using them and maximize their time while they're out birding.
- ⊕ **Observations:** Set expectations for recording observations. If students are filling out an observation journal, review what field markers to look for in advance (e.g. size, colour, behaviour).
- ⊕ **Pictures:** If students will be taking pictures to contribute to citizen science, explain what makes a quality picture and what doesn't. Good bird photos should show the colour and shape of the bird, details of the face and a bit of scenery showing the location. A blurry photo, taken from far away or that doesn't show details may make it too hard to identify.

Program

Introduction (5-10 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 Explain that the students are going to become bird watchers and look for some of the many birds that share this space. Emphasize the importance of being present and using the senses of hearing and sight to spot and observe birds. Go over birding etiquette guidelines, field markers and common bird species that you might encounter.

Birding (20 minutes or longer)

- 1 Pass out one set of binoculars to each student or each group.
- 2 Have students put the string around their necks so that if they let go of the binoculars, they won't fall into the wetland or get damaged.
- 3 Show which side of the lenses to look through so the students know how to orient the binoculars.
- 4 Demonstrate how to focus with the middle wheel or main dial, adjust to the distance between the eyes until a single middle circle is achieved, and adjust the eye cup depending on if someone wears glasses (fully retracted) or doesn't wear glasses (fully extended). This may vary depending on the binoculars you are using.
- 5 Find a landmark and label it twelve o'clock. Students can use this as a reference point to direct their classmates in spotting new birds they see. (E.g. “Hey, Great blue heron sighted at 3:00!”)
- 6 Optional practice: Place an object at a specific location and ask the students to find it with their binoculars. This helps them get familiar with using binoculars before looking for birds.
- 7 As students are birding, have them point out any interesting bird behaviour they notice (e.g. feeding, nesting, preening, courting, territorial defence, songs or calls).
- 8 If using a scope, have it set up and focused on an interesting bird. Ask the students to look through the scope one at a time. It's a good idea to have an adult stationed at the scope to help students with their observations.
- 9 If you'll be contributing to citizen science, remind students to try and take quality pictures.

Wrap-up (5-10 minutes)

- 1 Go over the species that were observed by the group and congratulate the students on their great birding skills.
- 2 Review how wetlands make important habitats for birds and the important roles birds play in an ecosystem.
- 3 Make sure everyone puts binoculars away properly.

Post-Activity

Consider the optional activities below to help deepen your students' connection to nature, birds and wetlands.

- ⊕ Post your class's bird and other wildlife pictures on iNaturalist to contribute to citizen science. Between March and October, you can post bird observations on the DUC Migration Tracker project. Want to make this a competition between classes? Look into creating your school's very own BioBlitz!
- ⊕ Build birdhouses and/or duck nest boxes. Research birds that live around you and refer to guides on how to build and clean out boxes. Before moving forward with this project, make sure you have permission to install houses and or nest boxes and consider who will be responsible for installing and cleaning the boxes.
- ⊕ Encourage creativity with a bird art project to showcase their beauty and bring awareness to local bird species.
- ⊕ Allow students to journal and reflect on how being in nature made them feel. Did they notice a change in their mood before and after being in nature? How did observing birds feel? Did they feel a sense of connection to the natural world? How would they feel if the ecosystem they visited was threatened by human activities, such as habitat alteration or destruction, climate change, invasive species, pollution or species overexploitation? What could they do individually, with their school and in their community, to help protect this ecosystem?

Have questions? Reach out to us at education@ducks.ca.

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





Lesson Plan: Wetland Mystery

- Grades:** Recommended for Grades 2-9 (*can be adapted for other grades*)
Duration: 35-45 minutes (*depending on number of stations and age group*)
Setting: Indoor or outdoor



Learning objectives

- ⊕ Investigate and identify animals from their physical characteristics and behaviours.
- ⊕ Describe interactions between animals sharing the same ecosystem.
- ⊕ Identify examples of how animals depend on each other and their environment for survival.
- ⊕ Recognize that wetlands are important habitats for many local animals.

Background

Students learn about wetland animals and some of their characteristics with a tactile mystery game. After hearing about a “wetland mystery”, students investigate clues to identify which animals were involved and what their role was (*e.g. predator, prey, witness*).

Materials

- ⊕ Animal clues (real or replicas) (*e.g. track and scat replicas, furs, skulls, eggs, nests*)
- ⊕ Printed or written station numbers and instructions
- ⊕ Track/scat guide or ID sheet (*optional but recommended*)
- ⊕ Plastic boxes with covers (*optional but recommended if playing this activity outside to identify the stations and protect the clues*)
- ⊕ One student answer sheet per group, paper or laminated
- ⊕ Pencils, or dry-erase marker and eraser if using laminated student answer sheets

Pre-Activity

Set-up:

1. Choose the wetland animals you want your students to learn about. We recommend choosing animals that are locally relevant to you. Assign a role to each animal and decide what clues you will include for each animal (*see suggestions on the next page – you don't need all the clues suggested here; use what is available to you and what is appropriate for your age group*).

	Role	Animal	Clues
Station 1	Victim	Duck	Scat, track, skull, feathers, nest, egg
Station 2	Predator	Red fox	Scat, track, fur
Station 3	Witness	Porcupine	Scat, track, quills
Station 4	Hero	Beaver	Scat, track, chewed tree
Station 5	Survivor	Snowshoe hare	Scat, track, fur
Station 6	Partner in crime	Raccoon	Scat, track, fur
Station 7	Escapee	Deer	Scat, track, antler

- Prepare the stations or boxes. Each station or box will represent one animal and will contain clues to help students identify it. Clues can be replicas (e.g. *scat and tracks*), or real feathers, furs, quills, nests, etc. Include pictures if you can't find physical objects. Write or print station numbers and if necessary, instructions for each station that will guide the students in their identification.
- Print the following:
 - Station number/instructions. If using plastic boxes with covers for each station, tape the printed sheet on the box's cover.
 - Student answer sheets (*one per group*). If you want to reuse the same answer sheets, you can have them laminated so the students can write their answers with dry-erase markers and erase them at the end of the activity.
- Include a track/scat ID guide or sheet (*if using*) for each station or box.
- Set up the boxes around the space/room.

Warm-Up

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

1. What is a wetland and why are wetlands important ecosystems?

- 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, they help protect against floods and droughts, they help mitigate the effects of climate change, they protect coasts, and are a great place to visit to enjoy the outdoors and connect with nature.

2. What animals live in a wetland?

- Wetlands are biodiversity hotspots, meaning they are home to many animals, like invertebrates that live in the water (e.g. *dragonfly nymphs, mosquito larvae, leeches and snails*). For vertebrates, wetlands make a great habitat for many birds (e.g. *marsh wren, mallard, Canada goose*), amphibians (e.g. *frogs, salamanders*), reptiles (e.g. *turtles*), mammals (e.g. *red fox, white-tailed deer, beaver*), and fish (e.g. *northern pike, minnows*).

3. What is a predator-prey relationship?

- A predator is an animal who hunts and eats another animal (prey). The prey is the animal being hunted and eaten by the predator.

4. What is scat and why is it interesting?

- Scat is another word for poop! All animals leave droppings (scat) because they eat and must eliminate their waste. Different kinds of animals leave different kinds of scat, so knowing how to tell which is which can help us track or identify them. Also, an animal's scat can tell us what they eat, if they're sick and where they spend most of their time.

5. What are tracks and why are they interesting?

- ⊕ Tracks are prints left by animals on the move. They're easiest to find in snow, mud, soft soil and sand. Tracks, like scat, are useful when trying to track or identify animals. Tracks also help us figure out where the animal came from, where it went, what it was doing and when it passed by. The shape and size of the track, toes and nails are important clues to look for.

6. How are track and scat replicas made?

- ⊕ Real tracks and scats are used to make molds. The molds are then used to pour vinyl material in them, which takes the shape of the mold.

Program

Introduction (5 minutes)

1. Tell a story to set the context of the game. Here's an example: *It was early in the morning and the wetland was quiet. The sun had come up and there was a bit of mist coming off the water. Suddenly, there was a big splash that was a warning sign to all the animals in the wetland – there was a predator nearby! And it had attacked a nest! Everyone scurried and swam away to escape the crime scene. Who was the predator, and who was the prey? We have a wetland mystery on our hands!*
2. Explain that there are stations containing evidence that students will analyze to solve the wetland mystery. Ask students to read the instructions at each station before analyzing the clues. Remind students that this is a crime scene, so we want to be gentle with the clues to prevent damaging them.
3. If using a scat/track guide or ID sheet, demonstrate how to use it.
4. Divide students into groups, one group per station. Give each group a printed or laminated Student answer sheet and a pencil or whiteboard marker and eraser. Start each group at a different station. It doesn't matter where the students start, as long as they follow the clues in the same order (e.g. rotate clockwise).

Note: For younger classes, teachers can hold up the clues and get students to ask questions and brainstorm the answers. This can prevent damaging the clues, and students can give their answers in discussion form rather than writing them down.

Playing the game (20-30 minutes)

1. Decide how much time to allow each group per station (*we recommend 3-5 minutes*). Have a timer ready so the students know when to change stations. Remind students to write their guesses on the Student Answer Sheet before changing stations.

Discussion (5-10 minutes)

After each group has rotated through all stations, gather the clues so they can be demonstrated when discussing the answers.

1. Reveal the answer to each station one at a time. We recommend showing the clues and photos of the animals to reveal their identities. Starting with Station 1, ask the groups what they had for answers. This is a good opportunity to relate animal structures or characteristics to their functions and discuss how these adaptations help the animals survive.
2. After the answers are revealed, review together the animals that live in wetlands and how to identify them (*tracks, scats, feathers, etc.*). Identify any examples of how animals depend on each other for survival, like predator-prey interactions. Lastly, review how wetlands are important habitats for many local animals.

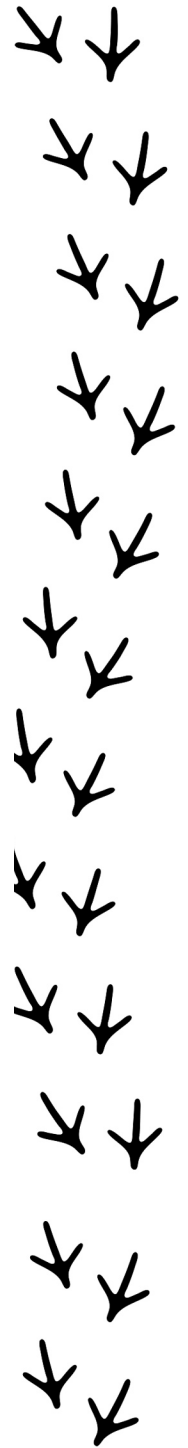
If you would like sample clues and Student Answer Sheets, please contact us at education@ducks.ca

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



Wetland Mystery: Who Could It Be?

Write down the names of the animals
that left the clues behind.



1. The victim

2. The predator

3. The witness

4. The hero

5. The survivor

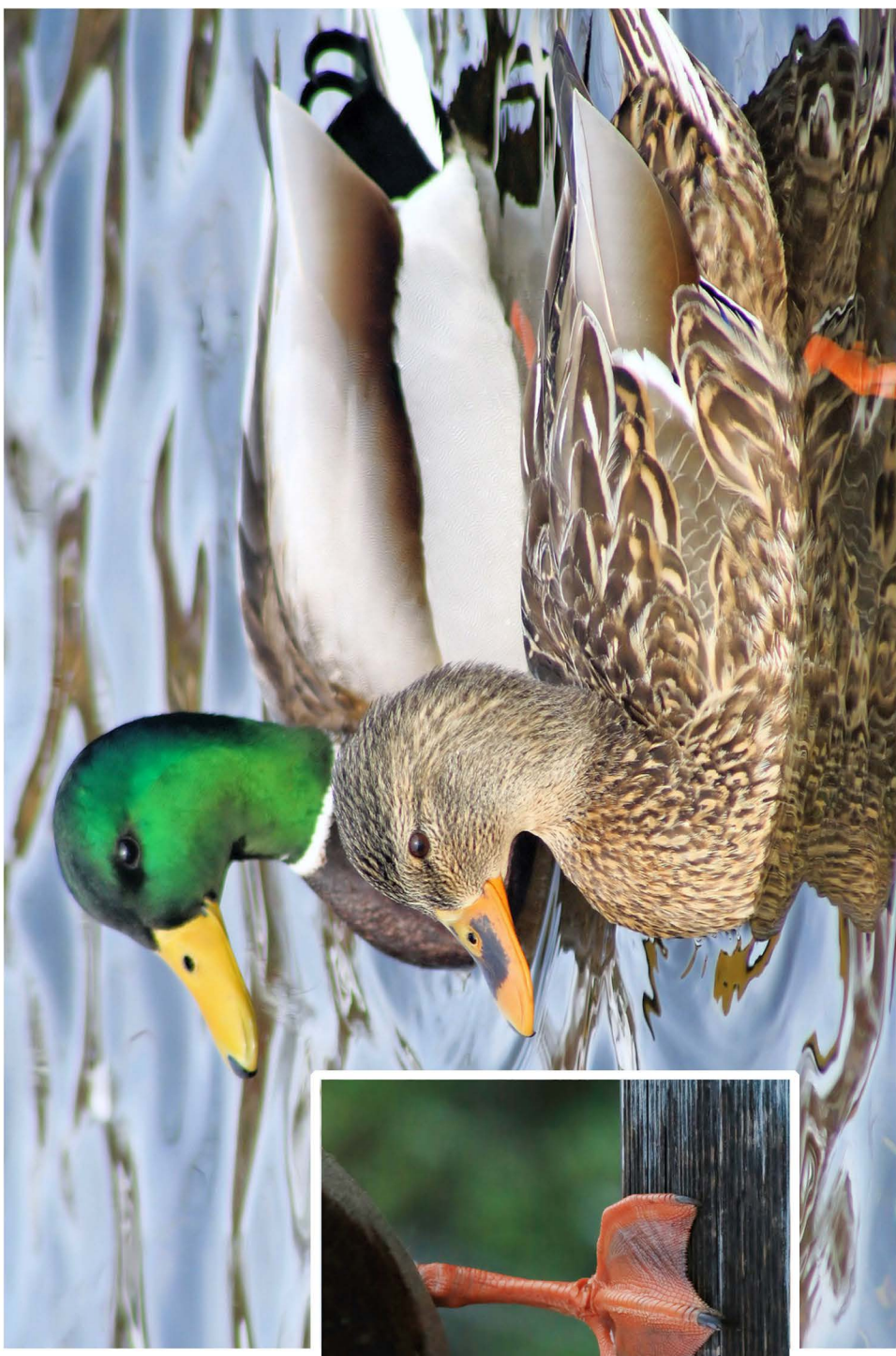
6. The partner in crime

7. The escapee



Clue #1: Victim or prey

MALLARD



Clue #2: Predator

RED FOX



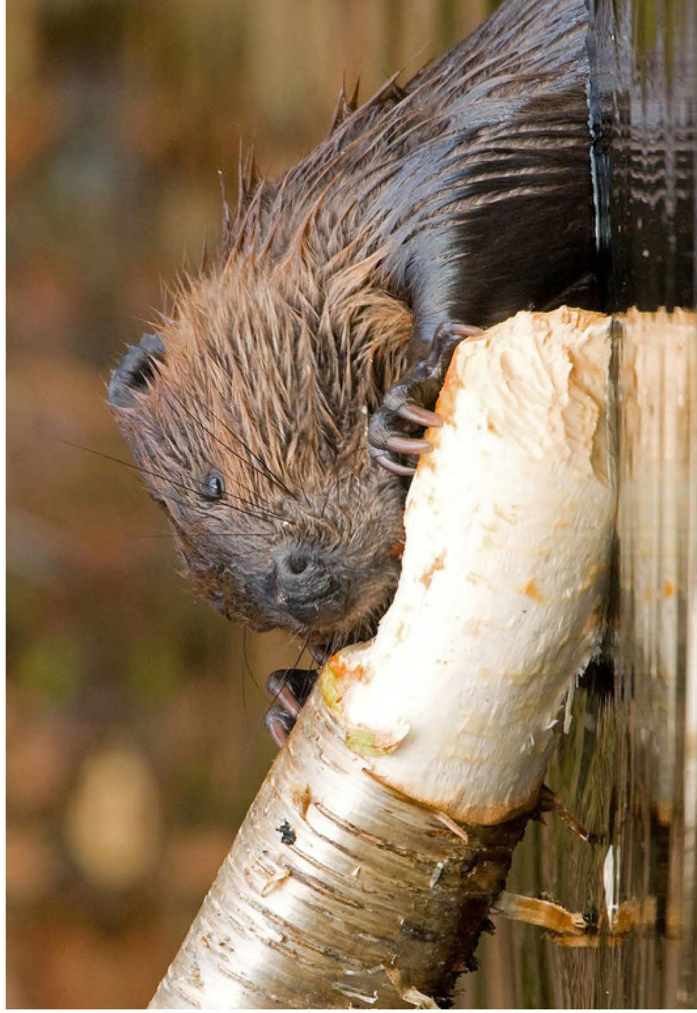
Clue #3: Witness

PORCUPINE



Clue #4: Hero

BEAVER



Clue #5: Survivor
SNOWSHOE HARE



Clue #6: Partner in Crime

RACCOON



Clue #7: Escaptee

WHITE-TAILED DEER

