

NATURE DISCOVERY BACKPACK
THINGS WITH WINGS ACTIVITY WORKBOOK

CONNECTING WITH NATURE

A PROGRAM OF:



DELIVERED WITH:



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Great Blue Heron
(*Ardea herodias*)

ACKNOWLEDGEMENTS

This workbook was created together by Watersheds Canada and Gravenhurst Public Library with the common goal to educate students and families about the benefits of healthy waterways, lakes, and the surrounding environment for our collective future. This book is linked to the Ontario curriculum for grades K-8. Photography in this book is provided by Watersheds Canada unless otherwise labelled. Cover photo: Getty Images.

Gravenhurst Public Library (GPL) serves a community of 13,000 people and helps to promote a balance between the protection and the enjoyment of Muskoka's beautiful natural landscape. GPL offers a variety of programs, resources, and services for all ages. It is equipped with Wi-Fi and computers and provides tools like park passes, fishing rods, and adventure packs, for people to explore Muskoka and learn about the environment.

GPL acknowledges that the Anishnaabeg, Haudenosaunee and Metis people were and are still the keepers and caretakers of the land and waters upon which the Town of Gravenhurst now sits. This is covered by the Williams Treaty and the One Dish with One Spoon Treaty. GPL is deeply grateful for the enduring presence of Indigenous Peoples who have shaped and strengthened this community for the benefit of future generations. GPL is committed to moving forward in the spirit of reconciliation and respect.

Watersheds Canada is a federally incorporated charity (863555223RR0001) committed to providing education and stewardship programs to communities and individuals across the country to enhance and protect the health of their lakes, rivers, and shorelines.

This Nature Discovery program is made possible because of support from:



**TD Friends of the
Environment
Foundation**

GETTING READY TO EXPLORE NATURE



We are so excited for you to explore your local nature and the winged creatures that live there. You will learn about different local species and how to protect the health of our local natural spaces and beyond!

You can keep this workbook! This workbook will give you tips to safely explore nature, as well as information about different species that are found in this region. You will learn how you can help protect nature. The workbook will teach you what you can do to help nature, with fun activities along the way!

Please return all field materials in the backpack.

If you are interested in learning more about Watersheds Canada, please visit watersheds.ca or scan this QR code!



STAYING SAFE



Here are some things to keep in mind when exploring outside:

- Bring a hat, snacks, reusable bottle with water, sunscreen, and bug spray.
- Tell someone where you are going and when you will be back.
- Watch wildlife from a safe distance. Do not try to handle wild things!
- Please leave nature for everyone to enjoy. Do not pick any plants or bring home any wildlife or insects with you.
- Make sure to bring back your garbage so that you can properly get rid of it at home. With the help of an adult, you can also pick up any garbage you find in nature and bring it home for disposal!
- **There are ticks in the area. Wear long sleeves and long pants if walking in a wooded area. Learn more about tick safety: <https://www.ontarioparks.com/parksblog/how-to-protect-yourself-from-ticks/>**

WHAT IS IN MY BACKPACK?

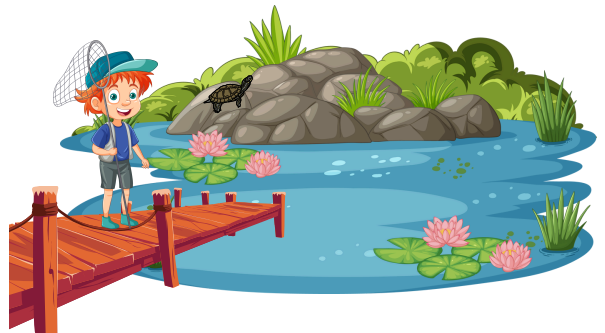
Observation Tools & Fun Things

- Use the collection jar, net, magnifier, bug catcher kit, and pop-up bug collector net to closely look at insects and small aquatic invertebrates (fun fact: they have no backbone!).
- To find invertebrates in a pond, try dragging the net along the surface of the water or just below the surface (not through the mud bottom).
- You also have Let's Roll Garden Friends rollers for more hands-on and art-based exploring!



Meet watery friends!

Grab your net, jar, magnifying glass, and guides and see who lives underwater in a nearby pond, wetland, or lake!



Notes for Adults: Any animals taken from a pond and put into a jar or bucket need to stay in water to stay alive. A fish or aquatic snail, for example, should have water to swim in, just like it has in the pond where it lives. Animals and plants from the wild cannot be taken home as pets and should always go back to their homes in the wild when you are done looking at them.

Be gentle whenever handling pond critters. Do not handle pond critters if you have lotions, sunscreen, or bug spray on your hands as this can pass through the sensitive skin of the critter and hurt it. Be safe when near water and always keep children within arm's reach.

Identification Books & Tools

Use the identification guides to learn more about local biodiversity, like species of bees and bugs. Each book shows photos and information about each species.

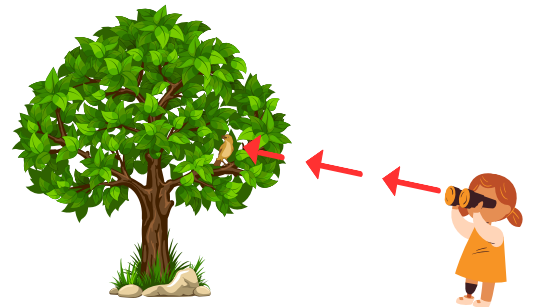


Binoculars



Help you see things that are far away from you!

Turn the knob on the binoculars to make it easier to see.



Water Rangers tiny water test kit

Look inside this blue bag to find:



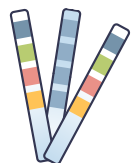
1

A thermometer to measure how hot or cold water and the air is



2

Small white test strips to measure pH (how acidic or basic the water is)



3

An information book



LET'S GET STARTED!

This activity book has many ways for you to connect with local nature and meet different animals. Let's go through an example activity together!

#1:
The activity

ACTIVITY: POND STUDY

#2:
**What you
will learn**

Your goal is to find different critters and learn their names using your identification guides!

#3:
**What you
will do**

Some tips for a safe pond or lake study:

- Fill up big containers with water before starting.
- Don't wear sunscreen or bug spray on your hands if you want to touch animals.
- Use your net to catch pond critters. Gently and quickly put them in your containers.
- When you are done looking, gently empty your container just above the water.
- Refill your containers with new water for your next discoveries!

#4:
**Backpack
items you
can use**



Turn the page to write what you find!



What did you find?

☐☐☐☐☐☐☐☐

Some things to think about:

- Did you find many critters? Did you find different life stages of the same thing (e.g., dragonfly nymph and adult, tadpole and frog)?
- Is your freshwater body biodiverse (many different types of animals)? Do you think that means it is healthy?

Draw what you heard 🗣️ and saw 👁️
at the pond!



Cross off each bird as
you see or hear them
outside!

Get out the
binoculars!



ACTIVITY #1: BIRD BINGO

				
American Robin	Brant	Song Sparrow	Canada Goose	Yellow Warbler
				
Barn Swallow	Red-winged Blackbird	Northern Flicker	American Avocet	Black-capped Chickadee
		FREE SPACE		
Turkey Vulture	Eastern Kingbird	FREE SPACE	Baltimore Oriole	Blue Jay
				
Mallard	Rose-breasted Grosbeak	American Goldfinch	Eastern Phoebe	Cedar Waxwing
				
Great Horned Owl	Common Raven	Common Loon	White-breasted Nuthatch	Downy Woodpecker

ACTIVITY #2:

TALK TO THE BIRDS

You may hear birdsong in a forest or your backyard, but have you ever tried to have a conversation with these birds?

Try to whistle and mimic (copy) their noises and use your binoculars to see if anyone comes to see you!



Red-breasted Nuthatch

- Small blue-gray bird with strongly patterned heads. They have a black cap and stripe through the eye broken up by a white stripe over the eye.
- Their bellies are rusty-brown in colour.
- Habitat: mainly coniferous woods and mountains.
- Songs and calls: a fast series of nasal, hornlike notes that sound like "yank-yank".



Common Raven

- Entirely black, large bird with a thick neck.
- Habitat: open and forest habitats across western and northern North America.
- Calls: make many different kinds of calls, varying from a low gurgling croak, to harsh grating sounds, to shrill alarm calls.

Belted Kingfisher

- Stocky, large-headed bird with a shaggy crest on the top and back of the head and a straight, thick, pointed bill.
- Habitat: near streams, rivers, ponds, lakes, and estuaries.
- Diet: feeds almost entirely on aquatic prey, diving to catch fish and crayfish.
- Call: similar to a rattle.



Pileated Woodpecker

- Large woodpecker with a long neck and chisel-like bill. Triangular red crest that sweeps off the back of the head.
- Calls: typically make a high, clear, series of piping calls that lasts several seconds.
- Habitat: forests with standing dead trees and downed wood.



Black-capped Chickadee

- Small bird with short neck and large head. They are black (on cap and bib), white (cheeks and underside), and grey (back, wings, and tail).
- Call: "chicka-dee-dee-dee".
- Songs: pure 2 or 3-note whistled "fee-bee" or "hey, sweetie".



Keep practicing your bird call identification skills with these websites:



Merlin Bird ID



ACTIVITY #3:

DIY BIRD NEST CRAFT

*Building a nest is a fun way to be creative and help local feathery neighbours!
Make your own nest and see who moves in!*



Gather

Head outside and start looking for your materials. Look for things already on the ground like leaves, twigs, grass, and feathers. You can also use natural materials from your house.

Construct

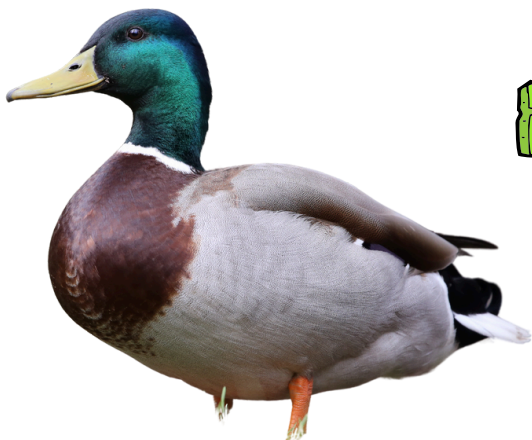
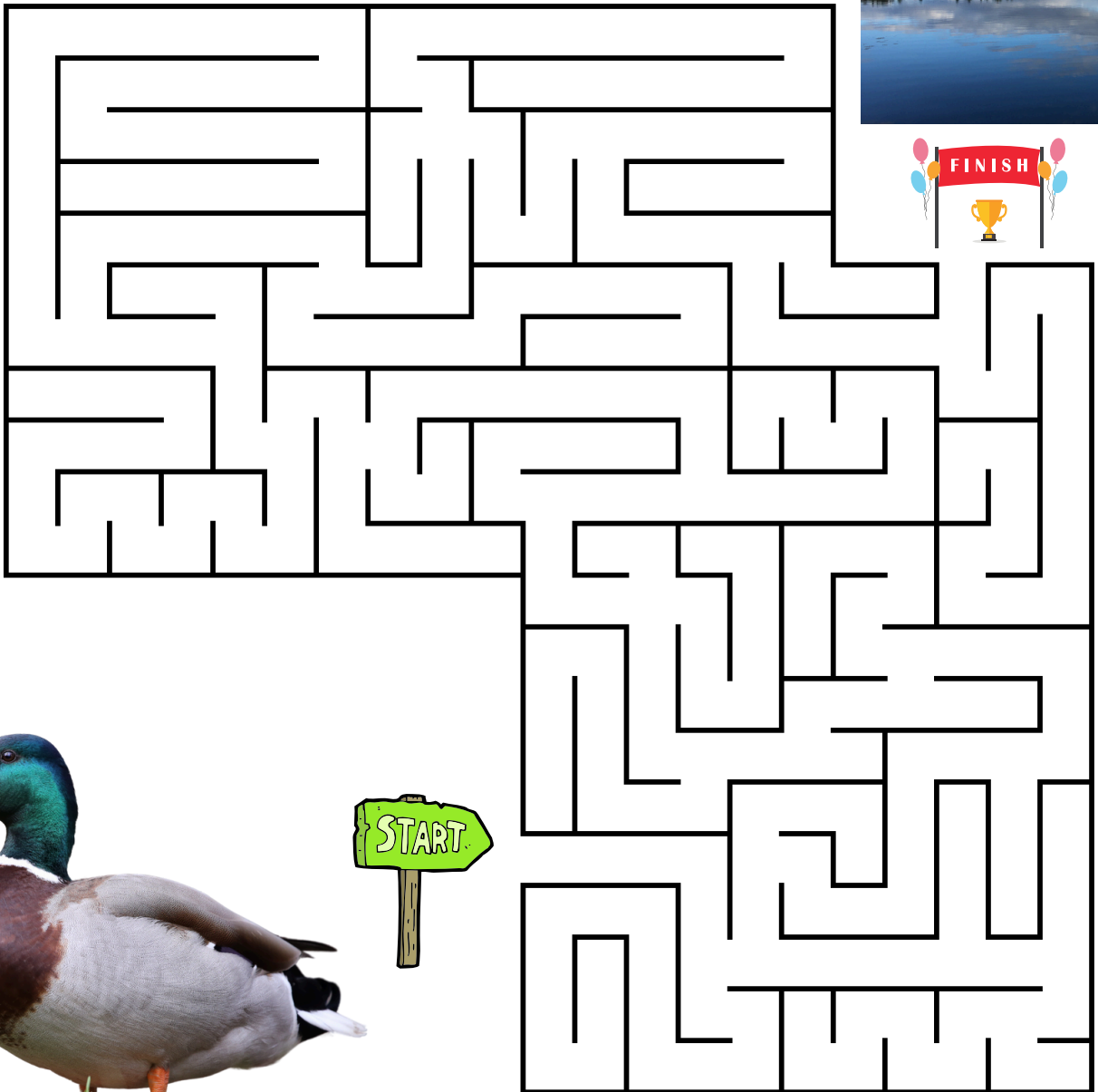
Weave your items together to make into a bowl shape, adding some feathers or leaves to the bottom as some cushion for the bird and its eggs.



Watch

Set your nest in a safe spot outside and keep an eye on it through the winter and spring to see if any of your local feathered neighbours take refuge.

ACTIVITY #4: MALLARD MAZE

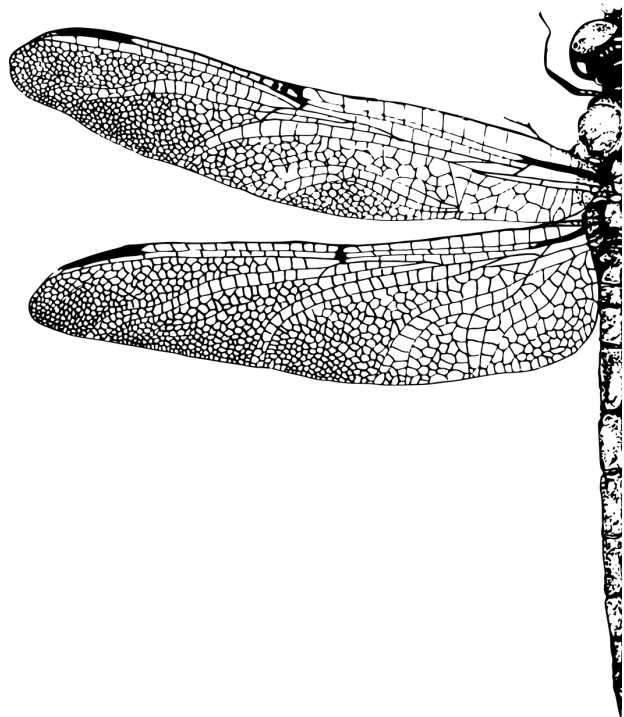
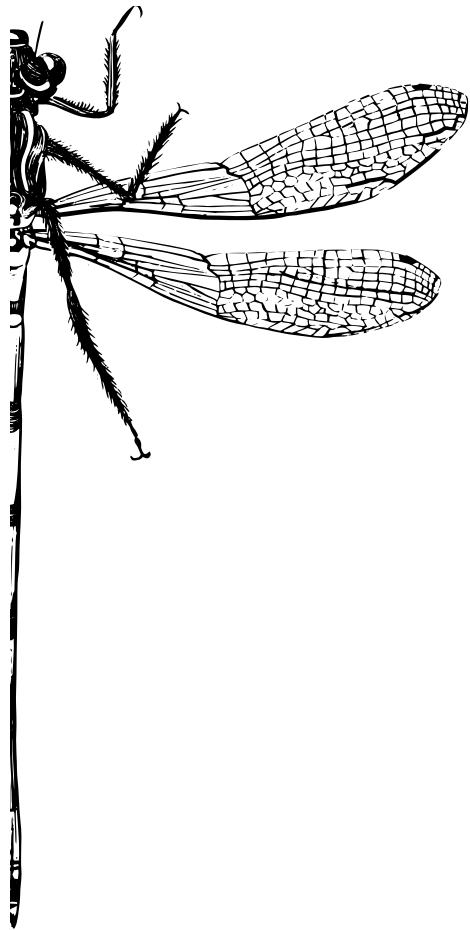


ACTIVITY #5: COLOURING TIME!

Monarch butterflies are a type of pollinator species that need milkweed plants for their food and for a place to lay their eggs!

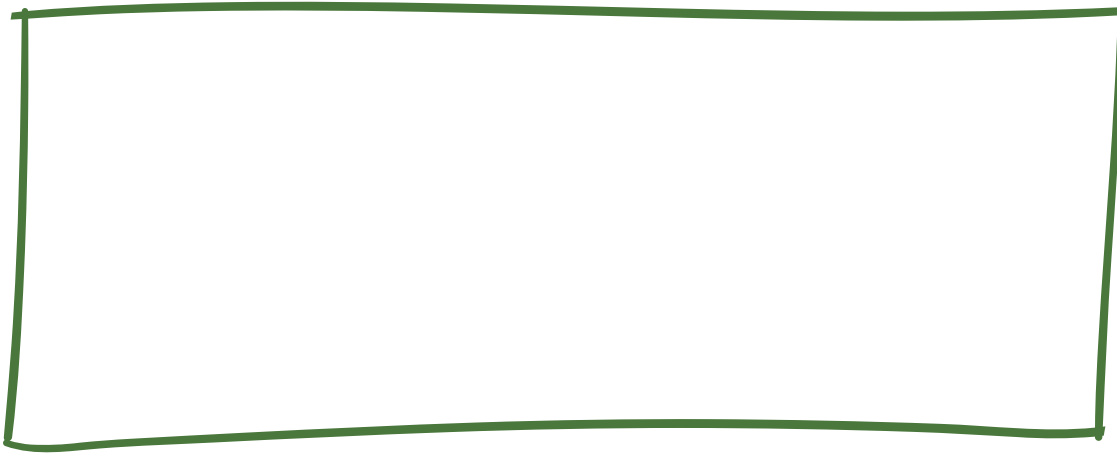


Draw the other half on this dragonfly (top) and damselfly (bottom).



ACTIVITY #6: CREATE A BUTTERFLY

*Design your own butterfly on this page!
On the right, list 4 things your butterfly needs in its home.*



1

2

3

4

FLYING INSECTS WITH SCALE COVERED WINGS



FOLD WINGS UP BEHIND THEIR
BACK WHEN RESTING



CLUB-SHAPED ANTENNAE



USUALLY OUT DURING THE DAY



BUTTERFLY

Monarch Butterfly



SPREAD WINGS OUT OR HOLD
AGAINST THEIR BODY AT REST



FEATHERED ANTENNAE



MORE ACTIVE DURING THE NIGHT



MOTH

Luna Moth



ACTIVITY #7: MAKE BUTTERFLY MAGNETS

Materials:

- Glue
- Food colouring or watercolour paints
- Coffee filters
- Droppers
- Pipe cleaners
- Magnets



Photo: The Laurie Berkner Band

1. Pour water into a small plastic container and add a few drops of food colouring. Do this with several different colors. You can also use watercolour paints instead.
2. Flatten a coffee filter. Use the droppers to place several different colours of the food colouring/water mixture on the filter. The colours will run together and blend.
3. Let the coffee filter dry.
4. Pinch the coffee filter together in the middle and wrap a pipe cleaner around its center to form a body for the butterfly. Leave enough of the pipe cleaner ends at the top to form the butterfly's antennae.
5. Glue a magnet to the underside.
6. Let the glue dry.

ACTIVITY #8: POETRY

List 6 things that describe what you love about animals using the first letter of each line. Lines do not have to rhyme in an acrostic poem.

F

L

Y

I

N

G



ACTIVITY #9: MEET ONTARIO'S BATS!

Read each sentence, and circle if it is true or false.

- | | |
|--|----------------------|
| 1. The Big Brown Bat is the second largest bat species in Ontario. | True or False |
| 2. The Little Brown Bat is not commonly seen in Ontario. | True or False |
| 3. The Eastern Small-Footed Bat mates in early spring. | True or False |
| 4. Hoary Bats are the largest bat in Ontario. | True or False |
| 5. The Eastern Red Bat migrates to Mexico over the winter months. | True or False |
| 6. All species of bats in Ontario give birth to twins. | True or False |
| 7. Most Ontario bats catch insects in mid-air. | True or False |



ACTIVITY #10: ECHOLOCATION IN ACTION

Bats use a technique called echolocation to determine the location of objects. They send out sound waves through their mouth and nose. When the sound waves hit an object, they produce echoes. The echo bounces off the object and returns to the bat's ears. This helps them to navigate and find food in the dark. This activity will allow you to experience echolocation using household items.

What You Need:

- 2 people
- 2 empty paper towel rolls per set up
- 2 aluminum pie plates per set up
- masking tape
- ruler



Instructions:

- Tape down the tubes on a flat surface so that they are angled towards each other but are not touching.
- Place the aluminum pie plate on its edge, facing the tubes, but at least 12 inches away from it.
- Tape the pie plate down or place books behind it for support.
- One person whispers into a tube. The other person listens for the sound to bounce off the pie plate and come back through the other tube.

ACTIVITY #11:

BAT MATCH

Use your guide to match the bat to its name!

A)



1) Eastern Red Bat

B)



2) Big Brown Bat

C)



3) Hoary Bat

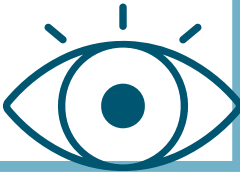



D)



4) Silver-Haired Bat

ACTIVITY #12: SENSES CONNECTION

Find a spot in nature. What do you find? What can you see? What other senses can you use while spending time in nature? Use your senses and record what you see, hear, smell, and touch.

SEE 	SMELL 
 HEAR	 TOUCH

?? ? ACTIVITY #13: WHO AM I? ?? ?

Meet some new flying friends!

Look at the photos and clues and then write the name of the species.



This bat weighs between 4-11g and has a tragus that is long, thin, and rounded at the tip. A tragus is a prominence on the inner side of the external ear.



This dragonfly is one of the most widespread species in Canada. It has a multigenerational, long-distance migration that takes it from Canada to Mexico and the Caribbean.



This is the only bird of prey that can dive into the water to catch its food, it almost exclusively eats fish.



In June and July, you can find this butterfly flying in forests and clearings. It drinks nectar from flowers and sap from rotting plants!



ACTIVITY #14: WATER QUALITY EXPERIMENT

The guideline for pH (potential Hydrogen) is a range of 7.0 to 10.5 in finished drinking water.¹ Generally, a range of 6.5 to 8.2 is preferred for most life in the water. Different things can affect the pH of the water like an algal bloom or increased pollution (e.g., road salt, car wash soap).

Some aquatic animals are very sensitive to changes in pH, and are often used as living indicators ("bioindicators") of an ecosystem's health. One example is dragonflies because they have a biphasic lifecycle, meaning they spend part of their life in the water as aquatic nymphs and part of their life in the terrestrial environment as adults.



Photo: Mary Ann Perron

Common Green Darner (*Anax junius*).



Photo: Mary Ann Perron

Band-winged Meadowhawk (*Sympetrum semicinctum*).

¹Health Canada (2015). Guidelines for Canadian Drinking Water Quality: Guideline Technical Document — pH. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. (Catalogue No H144-28/2016E-PDF).

Getting started

Open your Water Rangers test kit. Take out a water test strip. Look at the pH chart. Before you begin testing, guess the pH levels of your water sample (make a hypothesis - an explanation of what you think will happen). Do you think the sample will be preferred by life in the water?



Where and why do you think you will find different conditions for air temperature, water temperature, and pH?

Record your findings each time on the Water Rangers data sheet in the test kit, or below on this page. What did you find?

ACTIVITY #15: CREATE A DICHOTOMOUS KEY

A dichotomous key consists of a series of statements involving characteristics with two contrasting alternative choices (i.e., yes/no, wings/no wings) in each step that lead users to the correct species.

Benthic Macroinvertebrates

Choose 5 of the following benthic macroinvertebrates and create a dichotomous key.



Dragonfly nymph



Water scorpion



Mayfly



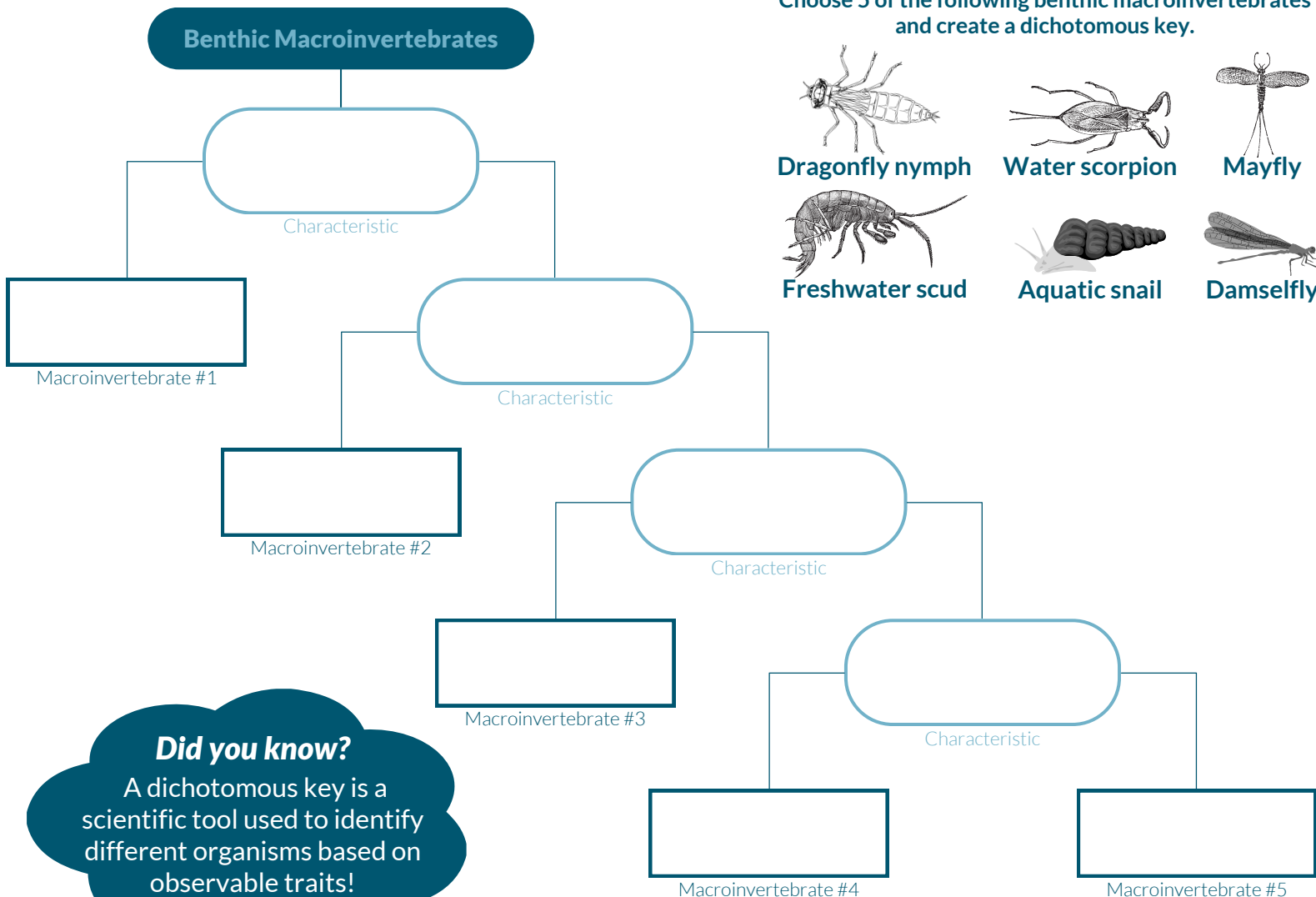
Freshwater scud



Aquatic snail



Damselfly



Did you know?

A dichotomous key is a scientific tool used to identify different organisms based on observable traits!

ACTIVITY #16:

FRESHWATER HELPER

Cross out the 5 human actions that can harm freshwater fish and their watery home with a big ✕!



Save the River!



The river needs a hero like YOU!

What can you do to help save the river from pollution
and storm water runoff?

Write down your action plan here!



WHAT IS A WATERSHED?

- A **watershed** is an area of land that water flows through or across on its way to a particular water body, like a stream, river, wetland, lake, or coastline.
- A watershed is the land where precipitation — like rain — falls and flows to a common, watery place!
- Depending on where you live in Muskoka, you may be in the Muskoka River Watershed or the Black-Severn River Watershed.

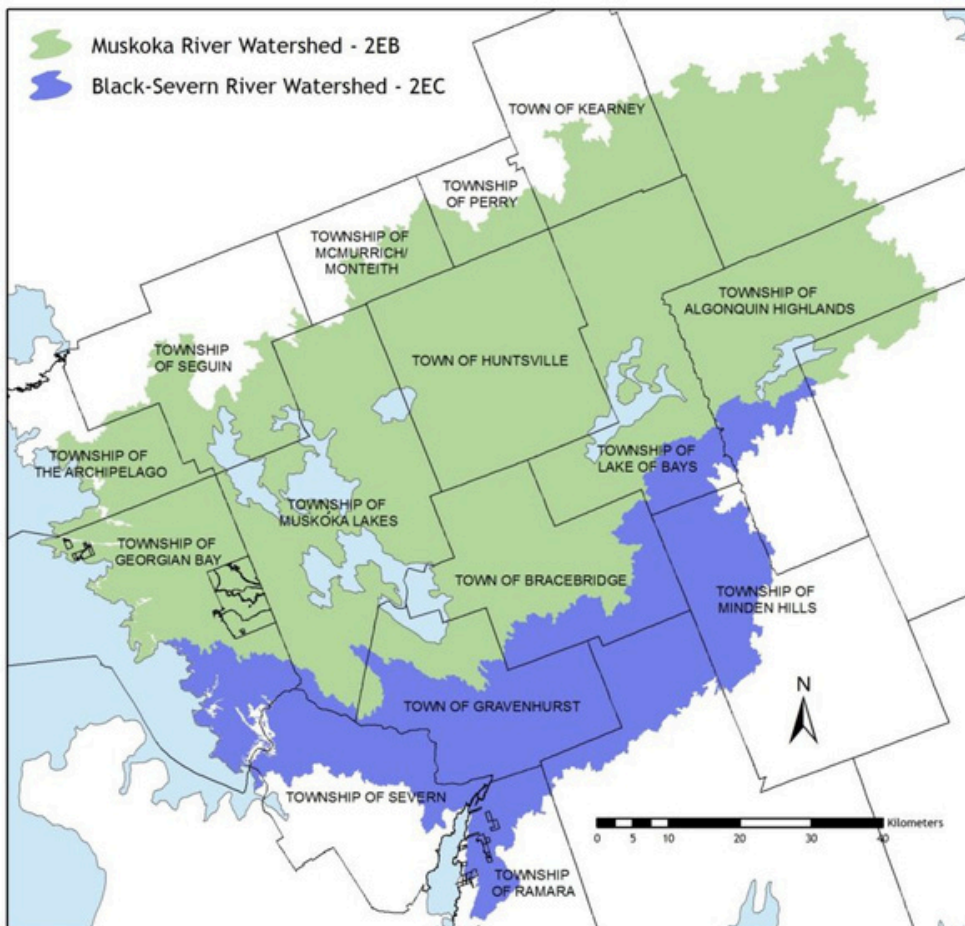


Photo credit: "Muskoka River Watershed".
(n.d.). Muskoka Watershed Council. Internet:
<https://muskokawatershed.org/watersheds/muskoka-river-watershed/>

HOW ARE PEOPLE IMPACTING NATURE?



As shorelines become more developed, humans are changing the way shorelines look and the species that can live there.

Some threats to wildlife and water health include: plastic pollution, introducing non-native (invasive) species, road mortality, and habitat removal and fragmentation.

One way to help is to replant a shoreline with native plants along the edge. This buffer helps to filter and stop things like fertilizers and pesticides from entering the water. Plant roots also help keep soil together in heavy rainstorms which prevents erosion.



Photo: Stephany Hildebrand

WAYS TO HELP NATURE

- ☐ **Gather data.** Take photos and observations of different animals and plants you see in nature and submit them to an online database like [iNaturalist](#), [eBird](#), [MonarchWatch](#), or [Water Rangers](#).
- ☐ **Help local bees.** The City of Gravenhurst is a certified Bee City! Join in and plant pollinator friendly gardens: beecitycanada.org/bee-cities/gravenhurst/
- ☐ **Be natural.** Consider adding native plants to provide stabilization, habitat, and food to your property. Learn what native species to plant on your property: naturaledge.watersheds.ca/plant-database/
- ☐ **Keep it clean.** Prevent the spread of invasive species by staying on trails while hiking and by cleaning equipment after boating. Learn more: <https://ontario.ca/page/invasive-species-fact-sheets>
- ☐ **Be respectful.** Take only photos and leave only footprints when exploring in the forest. This lets other people, animals, and plants use the space too.
- ☐ **Get connected locally.** Join the [Muskoka Little Sprouts Eco-Club](#), visit the [Tree Museum](#), follow the [Muskoka Envirohub Climate Corner](#), visit a [local trail or park](#) like Chamberlain Trail or Peninsula Trail, or join [Muskoka Conservancy](#).
- ☐ **Follow Gravenhurst Public Library online!** Hear about collection and program updates by visiting the library website (gravenhurst.ca/library), or by following on Facebook (@gravenhurstpubliclibrary) and Instagram (@gravenhurstlibrary).
- ☐ **Check out more from the Library!** Sign-out [TackleShare Equipment](#), snowshoes, park passes, ice skate shoes, hiking poles, a telescope, and other themed Nature Discovery Backpacks like this one with your Gravenhurst Public Library card.

RESOURCES FOR PARENTS

Fireworks

Although fireworks create a spectacular show enjoyed by many, there are risks to this activity.

Noise and light from fireworks can have a negative impact on wildlife, including nest desertion. The particulate left in the sky after a firework explodes contains heavy metals which can land directly on the lake or be washed into the lake following a rain storm. This has harmful effects on the aquatic food chain. Fires and injuries to people and pets are also possible.



Be 'Wake-Aware'

Lakes and rivers are fragile environments. Fish, wildlife habitat, shorelines, and docks are vulnerable to damage from boat wakes.

- Be aware of the size of your wake while operating a boat. Adjust your speed and directions to minimize your impact on shorelines.
- Distribute passengers throughout the boat to reduce time spent in transition speed.
- Wakeboard and water ski away from shorelines.
- If boat shopping and a motor-free boat is not an option, opt for an outboard motor which gives the driver more control over the amount of water being forced downwards.

LIGHT POLLUTION

Many of us have likely sat out at night and noticed the lights at properties across the way or in the sky. Take a moment to reflect on how this makes you feel and consider if light from your property is also contributing to this. This doesn't mean we have to get rid of all our outdoor lights, though! Perhaps we do not need as many or they can be retrofitted to reduce the glare. Here are some questions to ask:

- Does the area on my property really need to be lit?
- Does it need to be this bright?
- Is the light transmitted further than it needs to be?

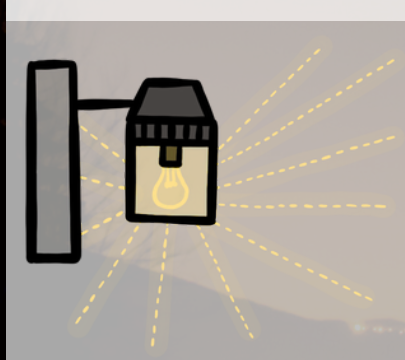
Learn more: <https://watersheds.ca/light>

Not Recommended: Glare Lights

Typical 'Wall Pack'



Typical 'Yard Light'

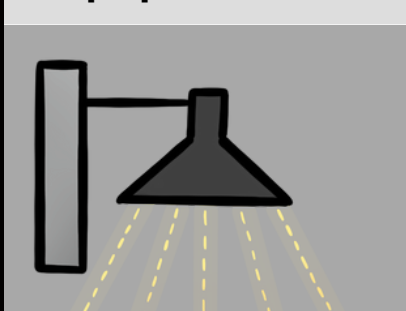


Flood Light



Recommended: Shielded Lights

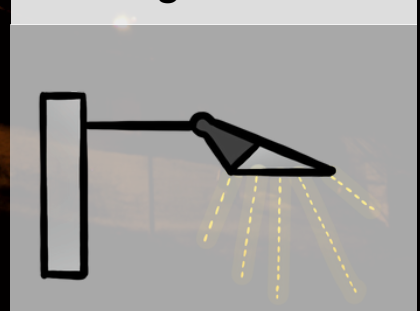
Opaque Reflector



Typical 'Shoebox'



Flood Light with Hood





Watersheds
CANADA

115-40 Sunset Blvd, Perth, ON, K7H 2Y4
watersheds.ca



Great Blue Heron
Ardea herodias