

NATURE DISCOVERY BACKPACK  
SPLISH SPLASH ACTIVITY WORKBOOK

# CONNECTING WITH NATURE

A PROGRAM OF:



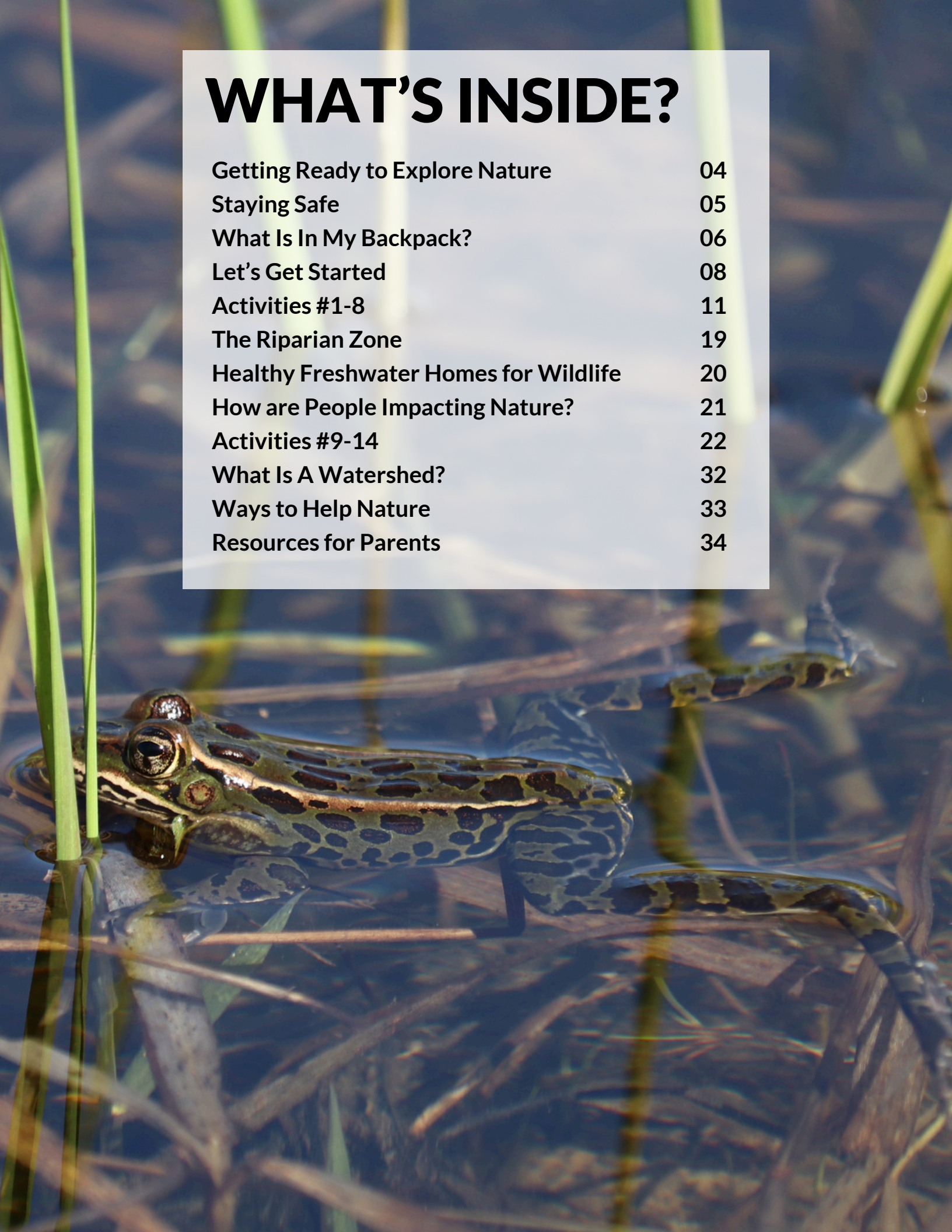
DELIVERED WITH:





# WHAT'S INSIDE?

Getting Ready to Explore Nature	04
Staying Safe	05
What Is In My Backpack?	06
Let's Get Started	08
Activities #1-8	11
The Riparian Zone	19
Healthy Freshwater Homes for Wildlife	20
How are People Impacting Nature?	21
Activities #9-14	22
What Is A Watershed?	32
Ways to Help Nature	33
Resources for Parents	34





# 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.

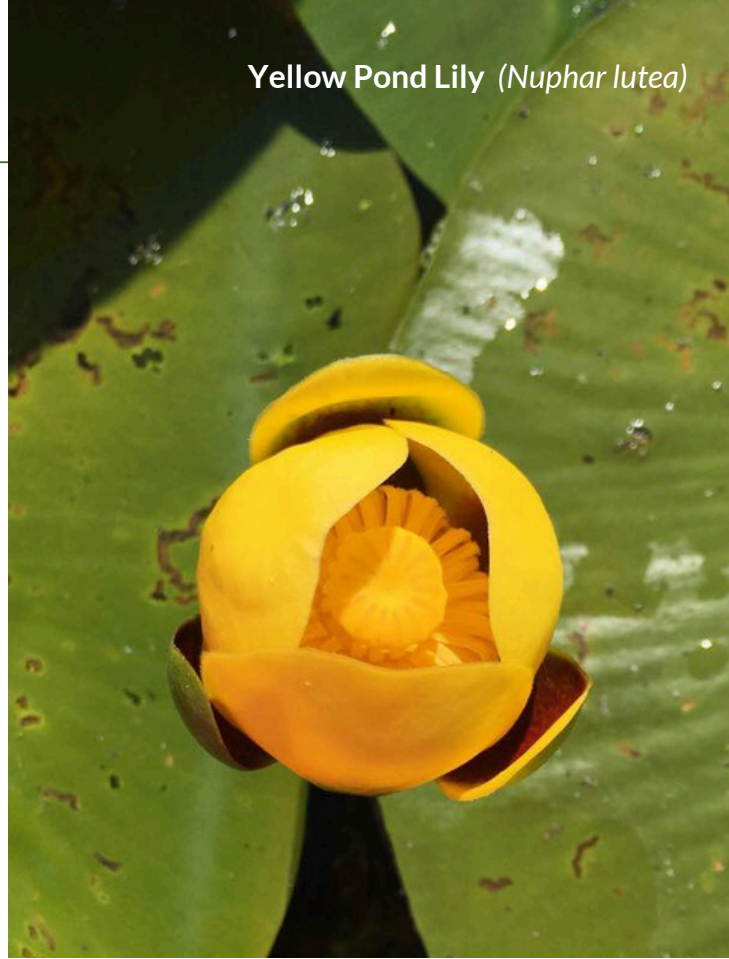
This Nature Discovery program is made possible because of support from:



**TD Friends of the  
Environment  
Foundation**



# GETTING READY TO EXPLORE NATURE



We are so excited for you to explore your local ponds, lakes, and wetlands. 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 animals and plants that are found in this region. You will learn about freshwater and 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](https://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 handle wild things!
- Always swim with an adult nearby who can watch you.
- 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?

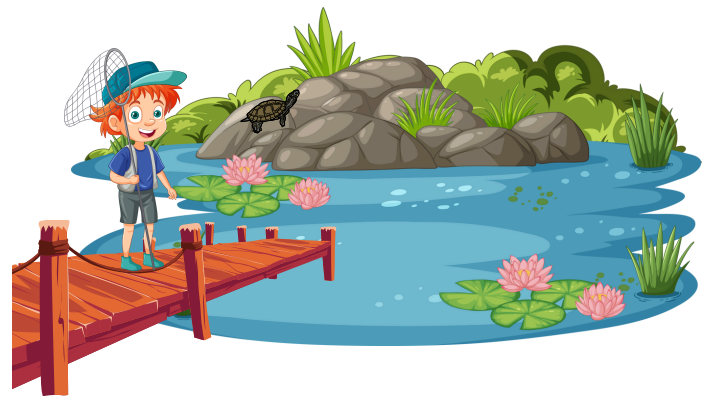
## Observation Tools

- Use the collection jar and magnifier to closely look at insects and small aquatic invertebrates (fun fact: they have no backbone!).
- To find invertebrates, try dragging the net along the surface of the water or just below the surface (not through the mud bottom).



## 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 Guides

Use the identification guides and books to learn more about different types of local biodiversity, including turtles, frogs, lizards, snakes, fish, and aquatic macroinvertebrates. Each type of guide shows photos and information about each species like their size.



## Water Rangers tiny 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!





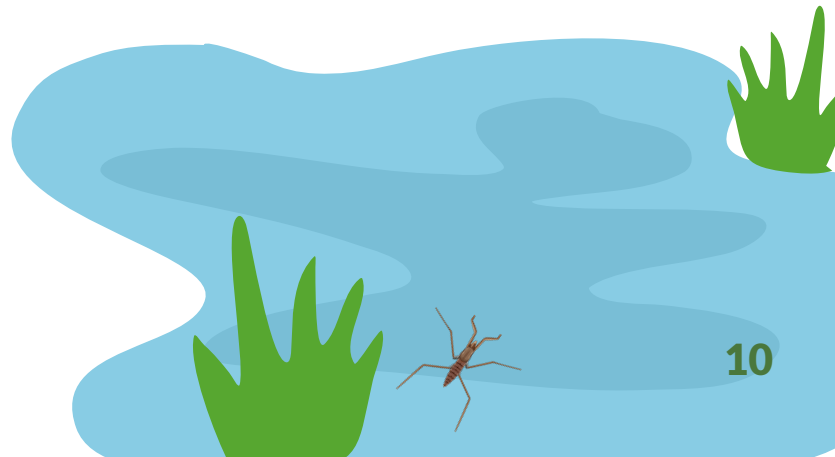
## What did you find?

☐☐☐☐☐☐☐☐

### 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?

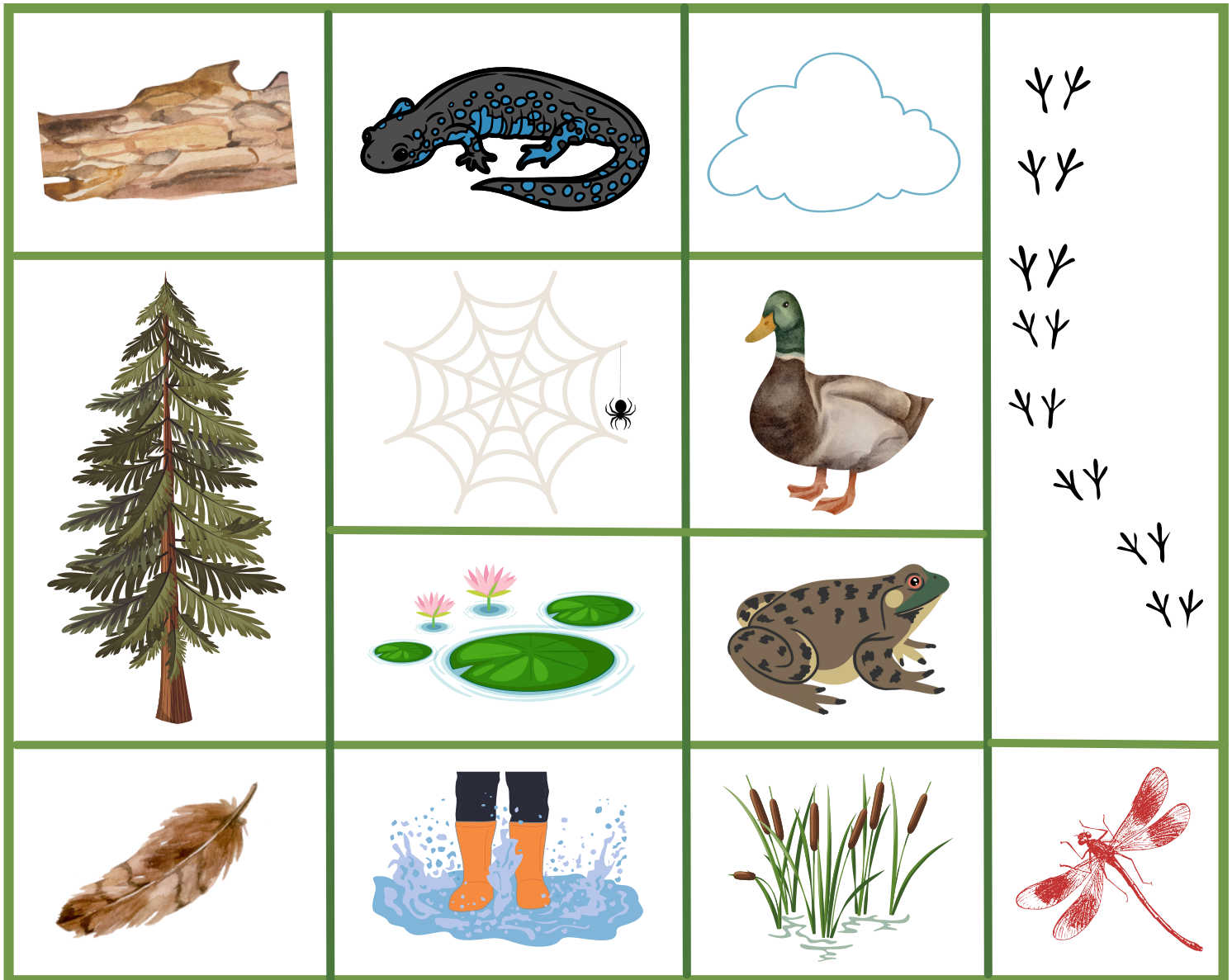
Draw what you heard 🗣️ and saw 👁️  
at the pond!





# ACTIVITY #1: SCAVENGER HUNT

Circle the items as you find them in a local watery area!



# ACTIVITY #2: WORD SEARCH

Find the hidden words →/↓.

E	Q	Z	X	I	O	T	N	B	E	D	T
G	Z	N	V	Y	R	L	C	G	Y	X	U
G	C	H	D	M	A	W	Y	B	B	E	R
S	F	R	O	G	X	M	A	U	E	Y	T
M	R	H	A	T	C	H	L	I	N	G	L
E	V	N	P	W	A	N	M	U	T	X	E
H	A	L	I	F	E	C	Y	C	L	E	B
T	A	D	P	O	L	E	Y	K	A	B	Y

LIFE CYCLE

FROG

TURTLE

HATCHLING

EGGS

TADPOLE



# ACTIVITY #3: WHICH FISH ARE YOU?

*Circle your preferred choice and count up your results!*

- |                  |   |    |   |                   |
|------------------|---|----|---|-------------------|
| Spots            |    | or |    | Stripes           |
| Small            |    | or |    | Large             |
| Being alone      |   | or |   | Being in groups   |
| Prey             |  | or |  | Predator          |
| Vegetated waters |  | or |  | Open waters       |
| Picky eater      |  | or |  | Adventurous eater |
| Springtime       |  | or |  | All seasons       |

How many light blue? \_\_\_\_

If you chose more **light blue**,  
you are a **Northern Pike**!



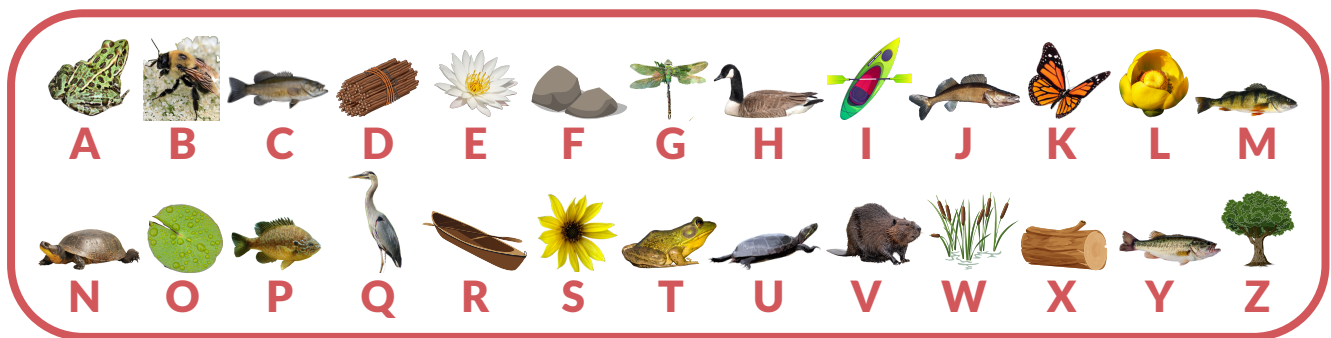
How many dark blue? \_\_\_\_

If you chose more **dark blue**,  
you are a **Yellow Perch**!



# ACTIVITY #4: CODEBREAKER!

Each letter of the alphabet has a corresponding symbol.  
Match the symbol to the correct letter to break the code!



1








































2



































3






































# ACTIVITY #5: 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



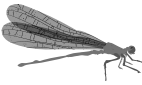
Mayfly



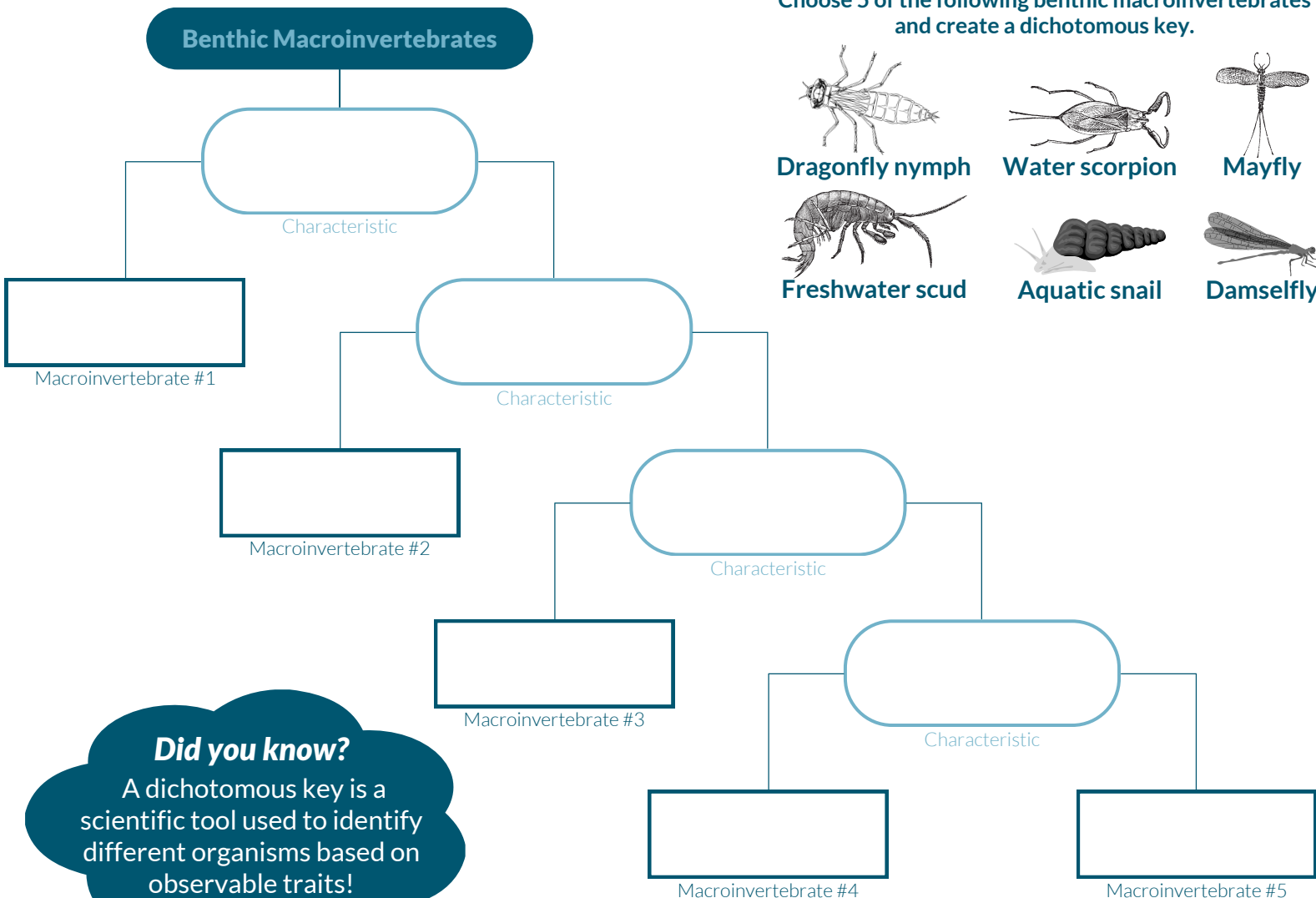
Freshwater scud



Aquatic snail



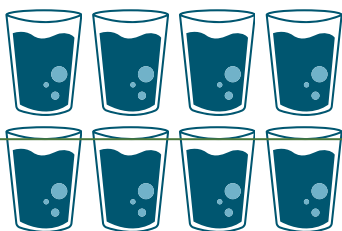
Damselfly



### Did you know?

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





# ACTIVITY #6: MY FRESHWATER DIARY



Did you know?  
Most of your body is  
made up of water!

You should try to drink 6-8 cups of water a day! But for some, finding clean freshwater is not as easy as turning on a tap.



## How much water do I use?



ACTIVITY

TIMES PER DAY

REASON



Shower/Bath

1

To clean myself



Flushing the toilet

Washing my hands

Drinking water/juice

Washing fruits & veggies



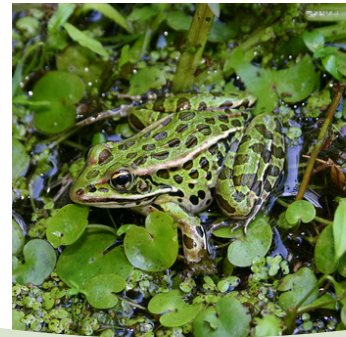
What can I do to use less freshwater?

# ACTIVITY #7: WHO AM I?

*Meet some new forest friends! Look at the photos and clues and then write the name of the species living in Ontario.*



This medium-sized fish has a green back and sides. Its upper jaw goes past its eye and it has a deep notch between its dorsal fins.



My favourite foods are bugs and spiders. I am often green in colour with dark round spots that have a light edge.



This large bird has a big yellow-orange bill and is found in small ponds, marshes, and bays.



I like to live in ponds, marshes, and lakes that have lots of logs to stretch out on and aquatic vegetation to hide in.

# ACTIVITY #8: POETRY

*List 6 things that describe what you love about rivers using the first letter of each line. This will make an acrostic poem. Lines do not have to rhyme.*

R

\_\_\_\_\_

I

\_\_\_\_\_

V

\_\_\_\_\_

E

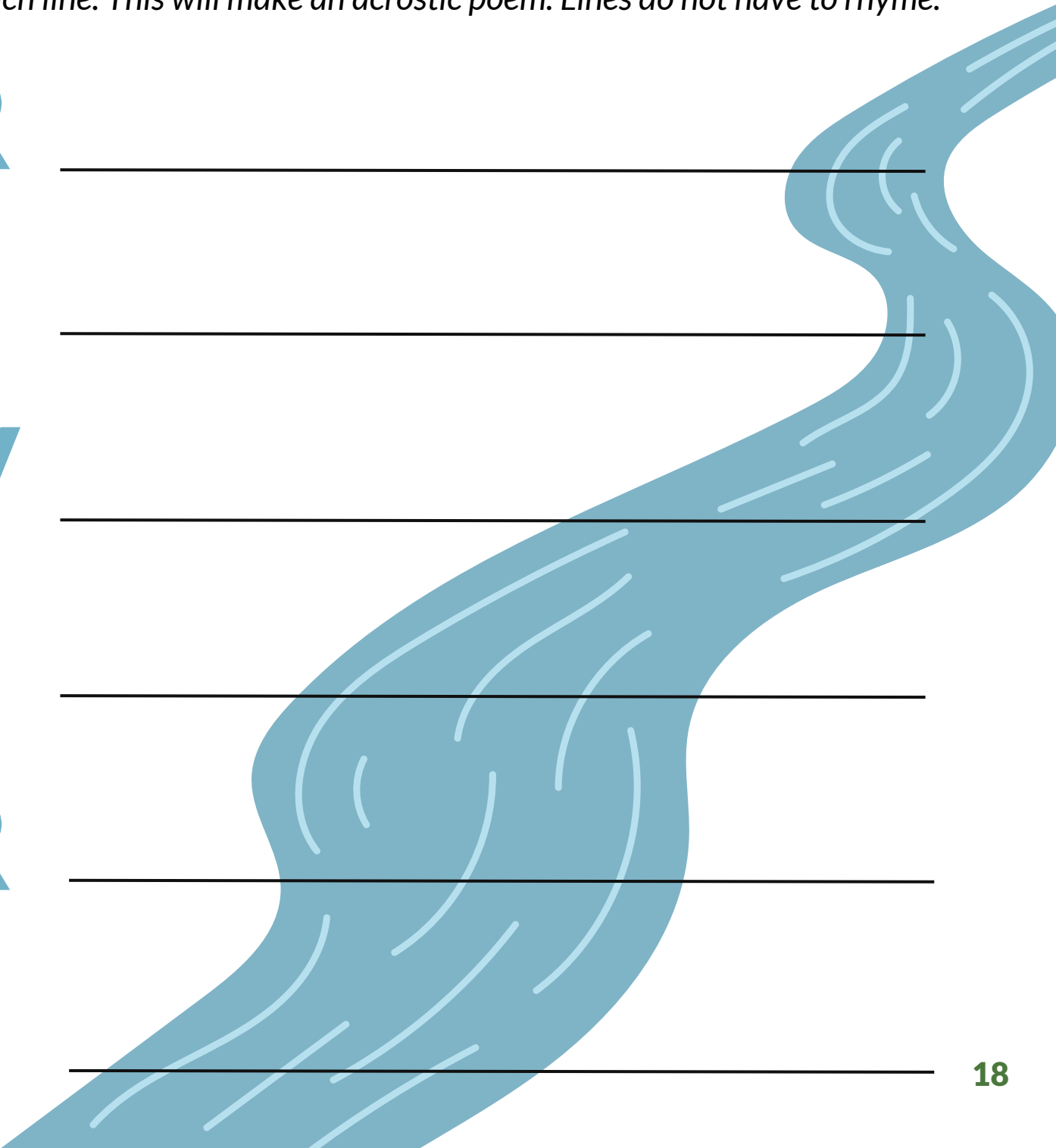
\_\_\_\_\_

R

\_\_\_\_\_

S

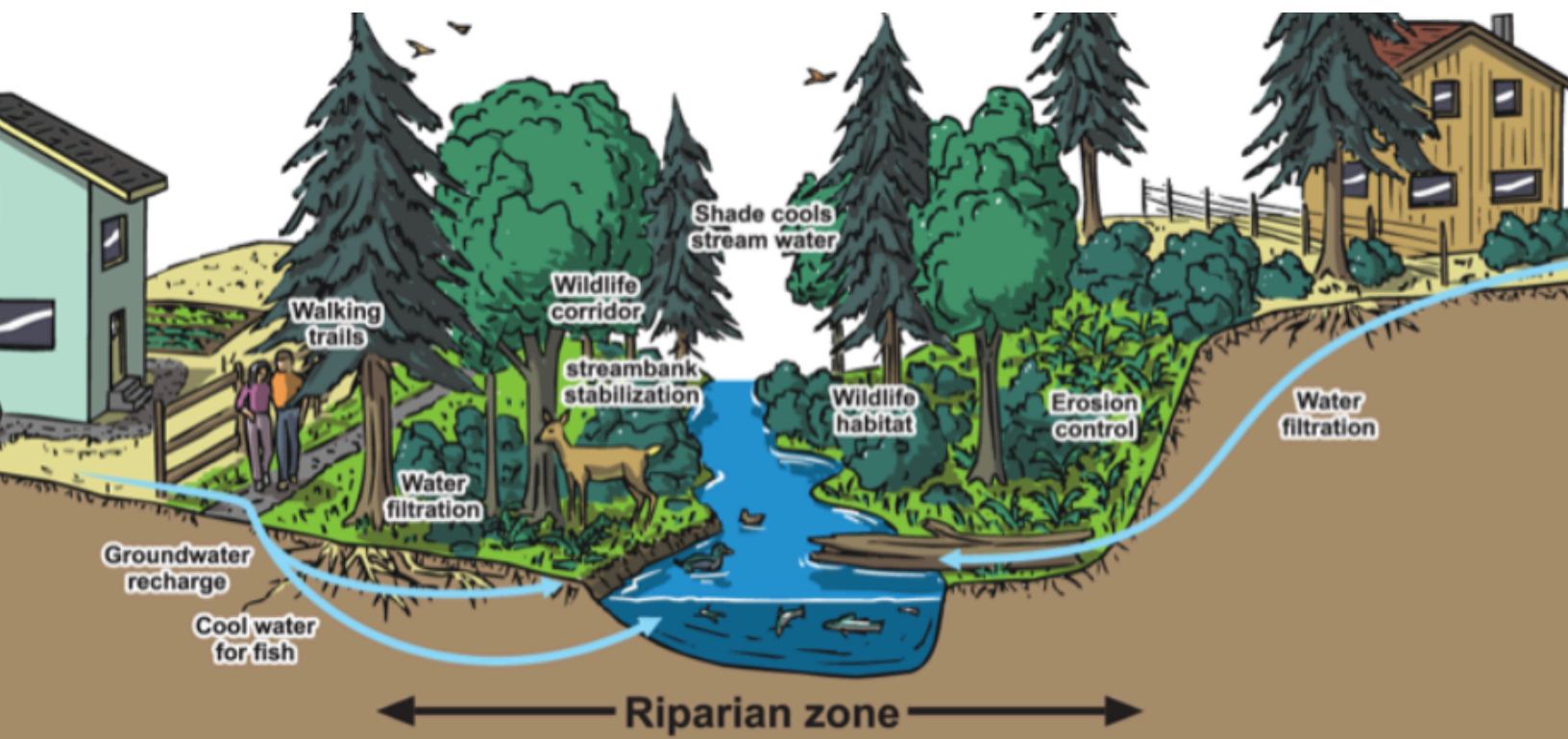
\_\_\_\_\_





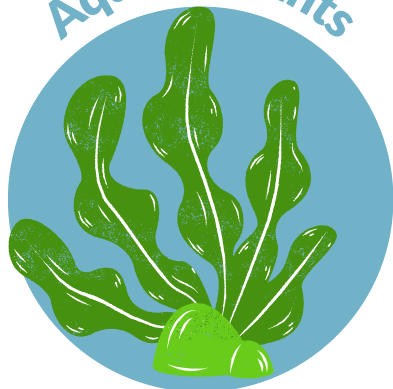
# THE RIPARIAN ZONE

- Shoreline ecosystems, or riparian zones, are very important and are valuable habitat for land-based and water-based wildlife.
- The shoreline area includes the first 30 metres of land around a lake or river. It is considered the “ribbon of life” because it supports 70% of land-based wildlife and 90% of aquatic species at some point in their lifetime.
- Native wildlife species like birds, mammals, insects, fish, reptiles, and amphibians depend on shoreline habitat for food, water, shelter, and breeding.



# HEALTHY FRESHWATER HOMES FOR WILDLIFE

Aquatic plants



As the lungs of the lake, aquatic plants produce oxygen and filter out carbon dioxide.

Shoreline vegetation



Acting like a shield, shoreline vegetation prevents erosion and invading invasive species!

Upland forests

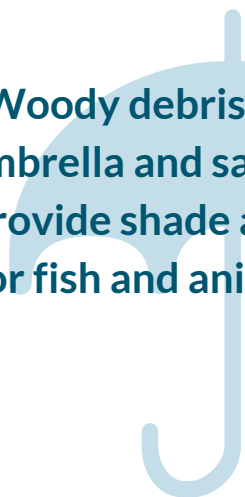


Forests are known to provide a breath of fresh air through oxygen production, and are important habitat.



Did you know?  
Even woody debris can play a role in supporting life in the environment!

Woody debris acts as an umbrella and safe house to provide shade and shelter for fish and animals alike!



# 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



# ACTIVITY #9: WATER QUALITY EXPERIMENT

The guideline for pH (potential hydrogen) is a range of 7.0 to 10.5 in finished drinking water.<sup>1</sup> 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.



Common Green Darner (*Anax junius*).



Band-winged Meadowhawk (*Sympetrum semicinctum*).

<sup>1</sup>Health 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 #10: DESIGN A NATURAL SHORELINE

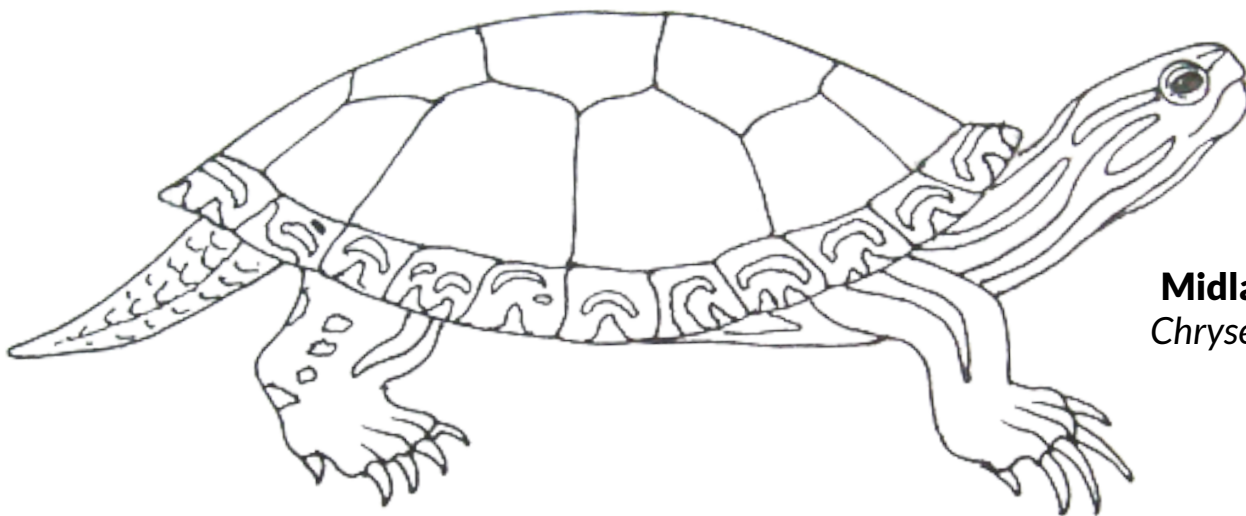
*Can you help Tisna and her family plant their shoreline? Draw different plants in the riparian zone that will help hold the soil together!*



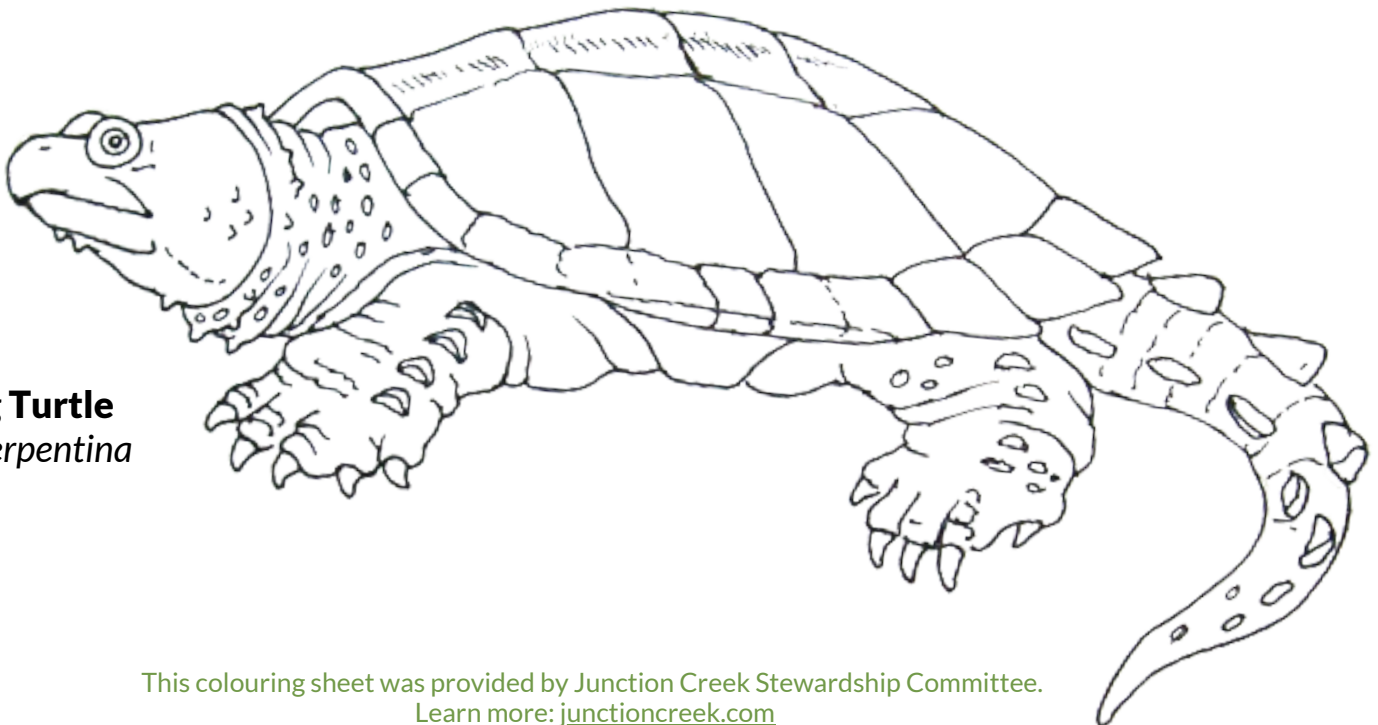
*The place where the water meets the land is called the shoreline, or riparian zone. The shoreline area is the first 30 metres of land around a lake or river. This area helps almost all plants and animals grow during their life.*

# ACTIVITY #11: COLOURING TIME!

Ontario is home to 10 native turtle species. Turtles need healthy lakes and wetlands so they can find food, grow, and lay their eggs.

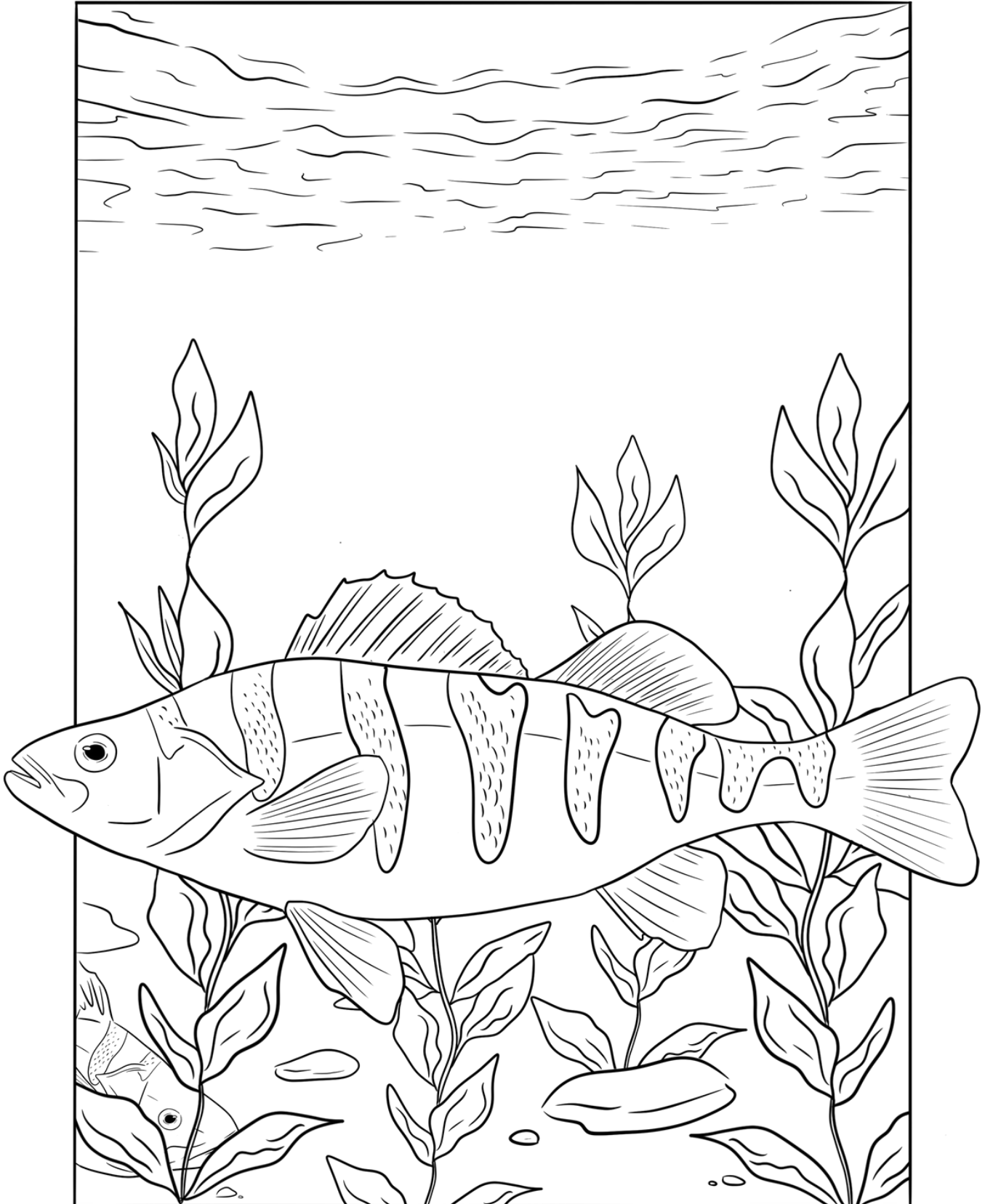


**Midland Painted Turtle**  
*Chrysemys picta marginata*



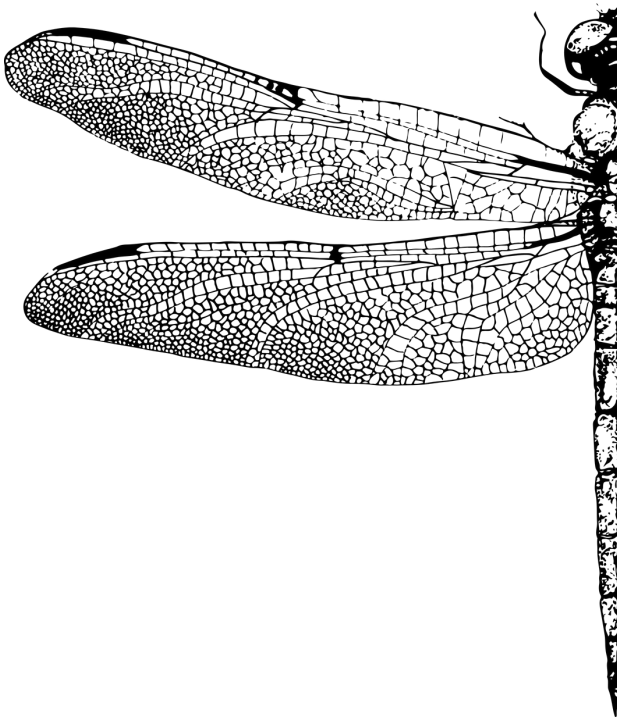
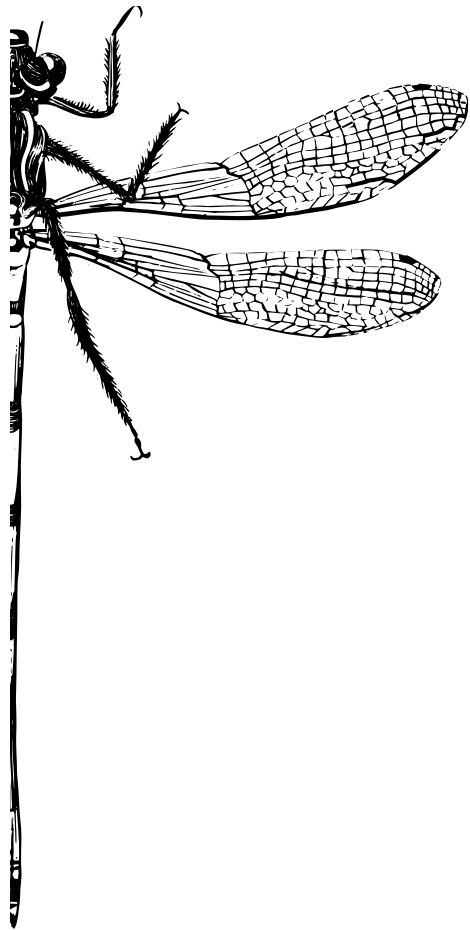
**Snapping Turtle**  
*Chelydra serpentina*

# Yellow Perch





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



# ACTIVITY #12:

# SALAMANDER HUNT

*You may not see them but that does not mean they are not there!*

Here are some tips for finding salamanders:

## Notes

- Salamanders are delicate so it is best not to touch them. Instead take photos and enjoy them from afar.

## Conditions

- Amphibians tend to wait for rain to move longer distances.
- Sometimes thousands of frogs or salamanders move in mass migrations on warm, rainy nights.

## Habitat

- Salamanders prefer cold, damp places so look under rocks, stumps, logs and leaves. Put them back in their original spot when done.
- Shorelines and wetlands (such as fens, bogs, swamps, meadows and marshes) are home to a high diversity of reptiles and amphibians.
- Most frogs and salamanders congregate in wetlands during their breeding season (usually spring and early summer) and can be found easily during these times.
- Forests next to open fields, rock barrens, or meadows are a favourite of many reptiles.



# ACTIVITY #13: LIZARD LETTER MIXUP

Make nature words using the letters of Ontario's only native lizard, the  
*Common Five-lined Skink.*

C O M M O N  
F I V E - L I N E D  
S K I N K

Moose

# ACTIVITY #14:

## 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.

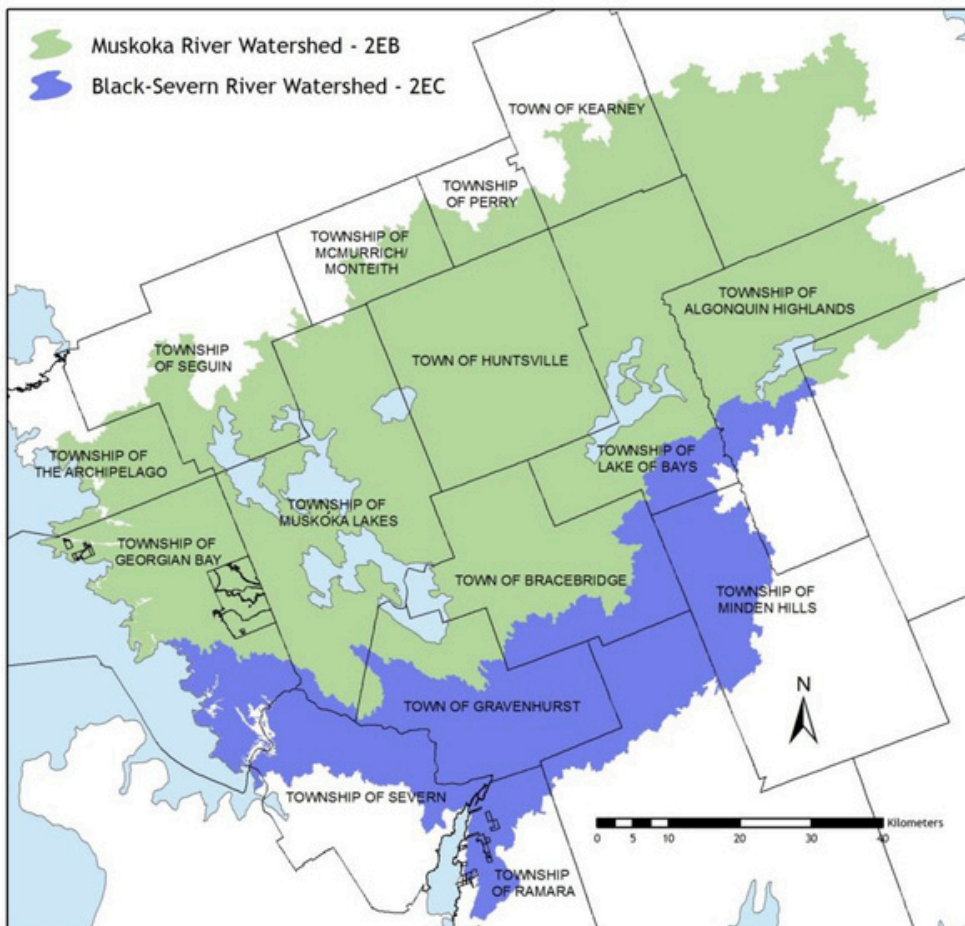


Photo credit: "Muskoka River Watershed".  
(n.d.). Muskoka Watershed Council. Internet:  
<https://muskokawatershed.org/watersheds/muskoka-river-watershed/>

# 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/](http://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/](http://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](http://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?

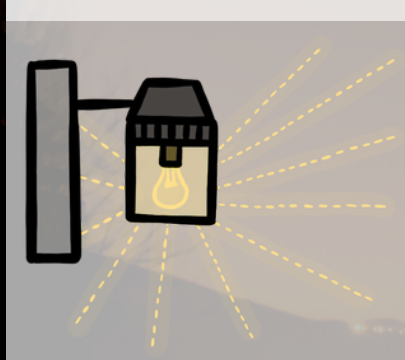
Learn more: <https://watersheds.ca/light>

## Not Recommended: Glare Lights

Typical 'Wall Pack'



Typical 'Yard Light'

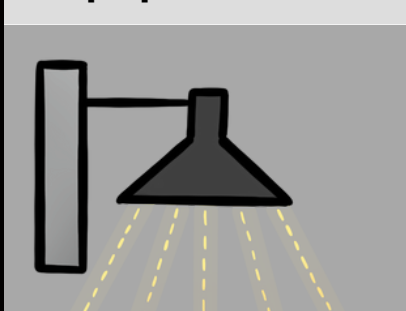


Flood Light



## Recommended: Shielded Lights

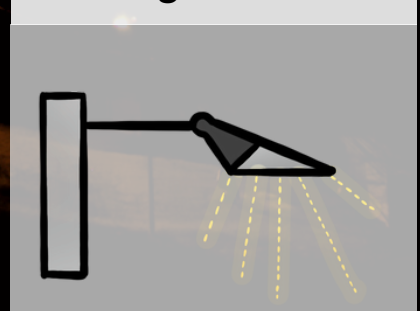
Opaque Reflector



Typical 'Shoebox'



Flood Light with Hood







Watersheds  
CANADA

115-40 Sunset Blvd, Perth, ON, K7H 2Y4  
[watersheds.ca](http://watersheds.ca)



Great Blue Heron

*Ardea herodias*