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ACKNOWLEDGEMENTS

This workbook was created together by Watersheds Canada and Girl Guides of Canada - Saskatchewan Council 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 Saskatchewan curriculum for grades K-8. Additional photography in this book is provided by Simon Lunn and Dr. Mary Ann Perron.

Since 1910, Girl Guides of Canada has been challenging girls and young women to broaden their horizons, build leadership skills and to get out into the natural world. Saskatchewan Girl Guides is a provincial council within the national organization of Girl Guides of Canada - Guides du Canada. The area covered includes the province of Saskatchewan which is divided into two areas: Southern Horizons Area with Regina as the hub, and Bridging Rivers Area with Saskatoon as the hub.

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:



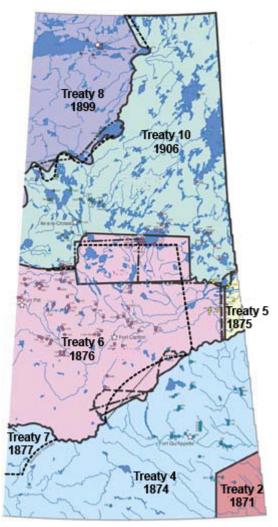






LAND ACKNOWLEDGEMENT

Deep knowledge has been stored in this land that we now call Saskatchewan by the people who have cared for it and lived in relationship with it since time began. As we go out onto the land, it is important to acknowledge and pay our respects to the many First Nations, Métis, and Inuit whose footsteps have marked these lands for centuries.

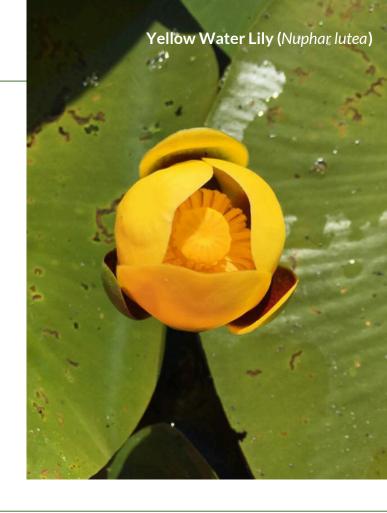


Credit: Office of the Treaty Commissioner www.otc.ca/pages/treaty_map.html

Saskatchewan exists on lands covered by Treaties 2, 4, 5, 6, 8 and 10. These lands are the traditional homelands, meeting grounds, gathering places and travelling routes of many Indigenous peoples, including (but not limited to):

- **Treaty 2 -** Dakota, Anihšināpēk (Saulteaux), Oji-Cree, nêhiyawak (Cree), Dene and Métis peoples.
- Treaty 4 nêhiyawak (Cree), Anihšināpēk (Saulteaux), and Dakota, Lakota, and Nakota, and Métis peoples.
- **Treaty 5** Inninewak and Dene.
- **Treaty 6** nêhiyawak (Cree), Anihšināpēk (Saulteaux), Blackfoot, Métis, Dene, and Nakota.
- Treaty 8 nêhiyawak (Cree), Dene, and Métis.
- Treaty 10 nêhiyawak (Cree), and Dene.

GETTING READY TO EXPLORE NATURE



We are so excited for you to explore your local watershed. You will learn about different local species and how to protect the health of our local rivers, lakes, 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 watersheds and understand the role of the riparian zone. 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 <u>watersheds.ca</u> 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. 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!
- 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 wildflowers, fungi, or plants.
- 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.saskatchewan.ca/government/news-and-media/2023/october/05/lets-talk-about-ticks

WHAT IS IN MY BACKPACK?

Water Rangers tiny test kit

- This water quality test kit is a perfect introduction to water testing!
- The kit includes:
 - a thermometer to measure water and air temperature
 - test strips to measure pH (how acidic or basic the water is)
 - guides to understand test results







Binoculars

- What do the numbers of binoculars mean? For example, if binoculars are 8x21mm, they will help you see things 8 times closer and each lens is 21mm wide.
- Turn the knob to make it clearer to see.
- Use a cleaning cloth if you need to clean the lenses (glass).



Observation Tools

- Use the collection jar 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).



Identification Guides

Use the identification guides and books to learn more about different types of local biodiversity, including species of plants, mammals, birds, dragonflies, and damselflies. Each type of guide shows photos and information about each species like their size and where they live (their habitat). You can also learn about constellations with the Night Sky guide!



INTO THE OUTDOORS

Explore the nature all around you – from the bird on your windowsill, to the wildlife in Canada's national parks! In this program area, you can discover new things in nature, experience camping and go on adventures as a unit, and find new ways to stand up for our one and only Earth.

It's your world - step outside and do some exploring!

Nature Discoveries:



Connect with the wilderness wherever you are – from the heart of the city to a back-country trail and anywhere in between. Head outside and get to know the plants and animals who share your neighbourhood, or investigate how nature works from the comfort of your meeting space.

Our Shared Planet:



Investigate how humans fit into Earth's environment and find ways to be a good neighbour to all living things. Learn about how people in the past and present have cared for the planet as you brainstorm what you can do to build the Earth a better future.

See the Program Connections on page 47 to learn how to earn these badges!

Bonus badge!



ACTIVITY #1: FOLLOW IN THEIR FOOTSTEPS

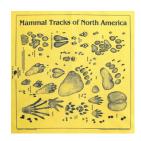
Not seeing any wildlife? You may have just missed them!

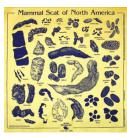
Here are some tips for finding animal tracks and scat:

- Look for tracks and scat in areas with wet sand and soft mud, like beaches, creek beds, trails, and puddles.
- Look in the early morning or late afternoon as the sun better illuminates shaded areas.
- Look off the trail as people's shoe prints will make it hard for you to find animal tracks.
- If you have never tracked an animal before, a good way to get started is to watch an animal make a track and then go look at the track right away.
- Remember that you will not always come across a track or scat that perfectly matches what is shown in your guides! You will have to do some detective work to figure out which animal left behind the clue.

Want more practice before you go in the field?

Try this Scout Life animal track quiz: scoutlife.org/quizzes/6662





?? ACTIVITY #2: ??> WHO AM I?

Using your nature guides, examine the photos and clues below to identify and write the name of the species living in Saskatchewan.



When they sense danger, they raise their white tail to alert other members of their herd.



Despite their name, these large hares aren't actually rabbits and are known for their long ears and powerful hind legs, which help them reach speeds of up to 64 kilometers per hour.



These social rodents live in underground burrows, where they communicate with each other through a series of barks and chirps.



Often mistaken for their grey cousins, these squirrels have a distinctive rusty-red fur coat and are known for their energetic behavior, frequently seen darting through trees.



This game bird is often spotted in open grasslands, where it forages for seeds and insects in small coveys, displaying its characteristic rapid, low flight when startled.



The sound of their hammering travels a long distance through the woods where they live.



As the largest land-dwelling salamander in North America, this amphibian has distinctive yellow blotches on its dark body and can often be found in burrows or under logs near water.



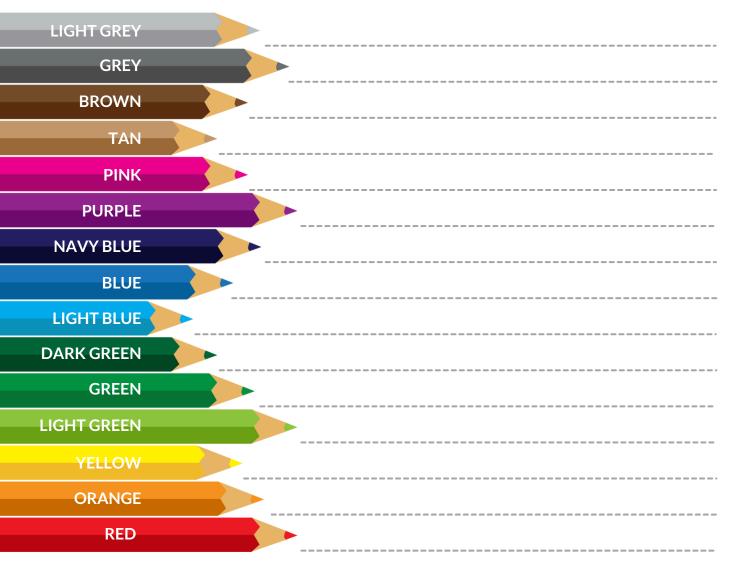
Unlike its larger cousin, the wolf, this canid species typically has a more slender build and a bushier tail, often with a more varied diet that includes fruits, insects, and small mammals.



ACTIVITY #3: I SPY

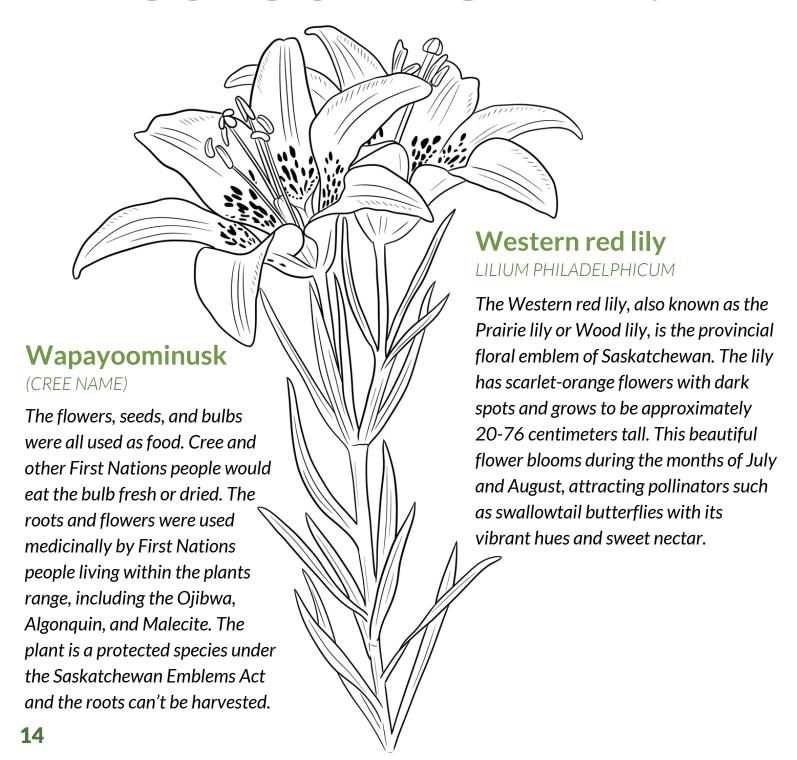
Using your binoculars, how many different colours can you spot outside? Write what you see next to the pencil crayon matching its colour.

I spy, with my little eye and binoculars something that is...



CHALLENGE! What is the farthest away living thing you can see?

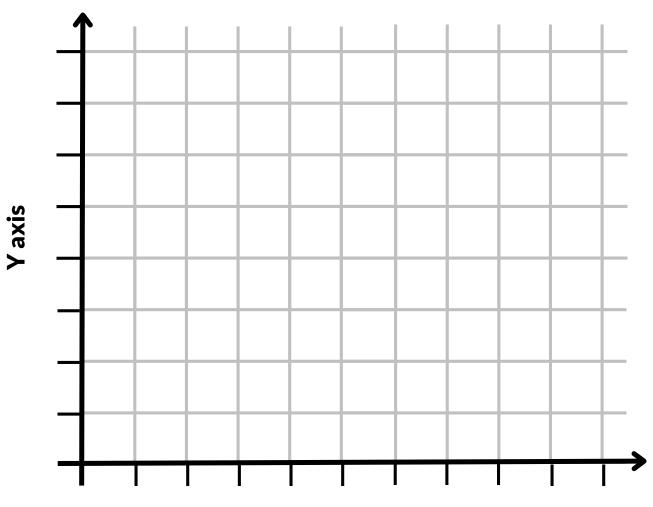
ACTIVITY #4: COLOURING TIME!



ACTIVITY #5: CREATE A CONSTELLATION

A constellation is a group of stars that form a shape and has a name (Orion, Ursa Major/Big Dipper, etc.). Many cultures use constellations to tell the stories of their ancestors and their beliefs. Constellations can be used to navigate the globe, and they connect us to the place we live.

Create your own constellation on the grid below, making sure to put your dots where two lines come together!



X axis

What is the story, teaching, or meaning behind your constellation?

Next, take your field guide out at night and along with a trusted adult, see how many constellations you can find. Make a list of the ones you find:

1.

2.

3.

4.

5.

6.

7.

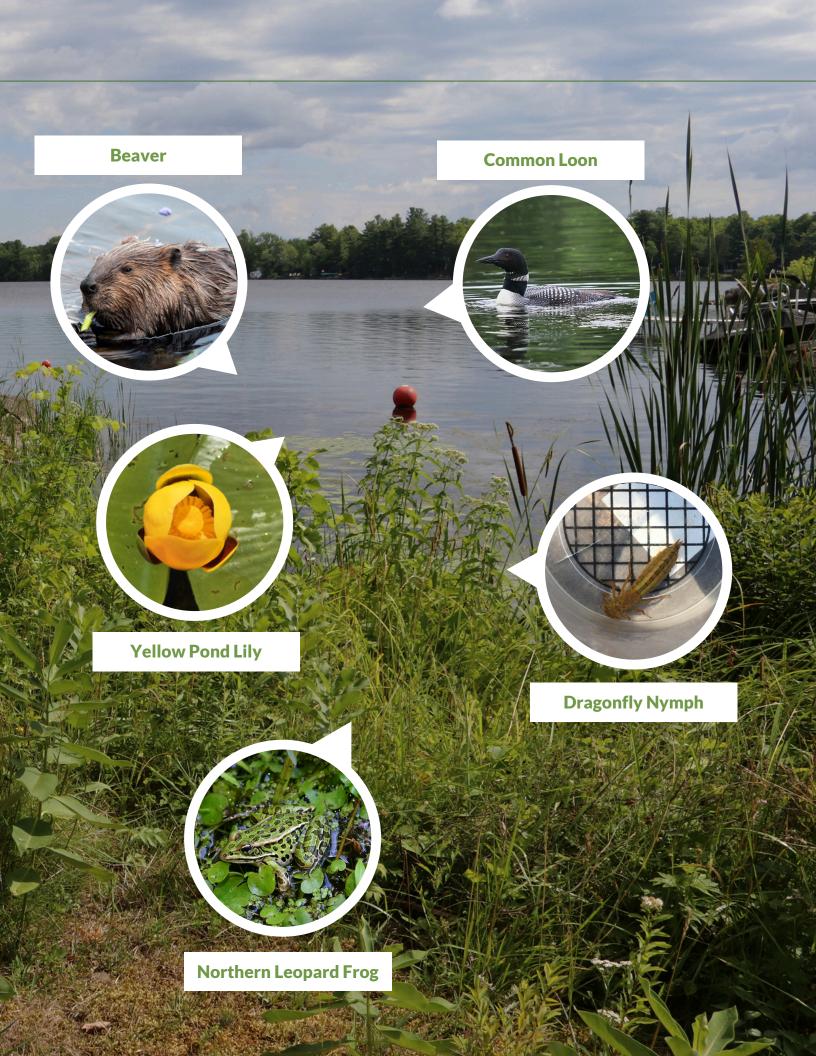
8.

9.

10.







WATERSHEDS IN SASKATCHEWAN



Credit: Saskatchewan Association of Watersheds

- With over 100,000 lakes and rivers traversing its numerous landscape, Saskatchewan is home to approximately 60 major watersheds! 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. It is the land where precipitation - like rain - falls and flows to a common, watery place.
- Regina, the provincial capital, lies within the Qu'Appelle River watershed and Saskatoon is located along the South Saskatchewan River which falls within the South Saskatchewan River watershed.

ACTIVITY #6: BIRD BINGO



ACTIVITY #7: 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!



Eastern Screech Owl

- Appearance: Small, stocky owls with prominent ear tufts and bright yellow eyes. Their brown or grey feathers match the bark of trees which helps them camouflage.
- Habitat: Mainly forests and woodlands.
- Calls: Many calls are soft, low hoots; loud, sharp screeches that indicate alarm or agitation.



Blue Jay

- Appearance: Blue Jays are striking birds with bright blue feathers on their back, wings, and tail. They have black markings on their face and white patches on their wings and tail, which flash when they fly.
- Habitat: A variety of habitats including forests, woodlands, parks, and suburban areas.
- Calls: The most common call is a harsh, loud 'jay'
 or 'jay-jay' sound, often repeated several times in
 a row.

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Yellow Warbler

- Appearance: Small, bright yellow birds with a splash of reddish streaks on their breasts. They have short, thin bills perfect for picking insects off leaves and flowers.
- Song: "Sweet, sweet, I'm so sweet!"
- Habitat: A variety of habitats including shrubby areas, wetlands, forests, and gardens.



Pileated Woodpecker

- Appearance: Large woodpecker with a long neck and chisel-like bill. Triangular red crest that sweeps off the back of the head.
- Call: 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

- Appearance: Small bird with a short neck and large head. Their black (on cap and bib), white (on cheeks and underside), and grey (on back, wings, and tail) colours are distinctive.
- Call: "Chicka-dee-dee-"
- Songs: Pure 2 or 3-note whistled "fee-bee" or "hey, sweetie."



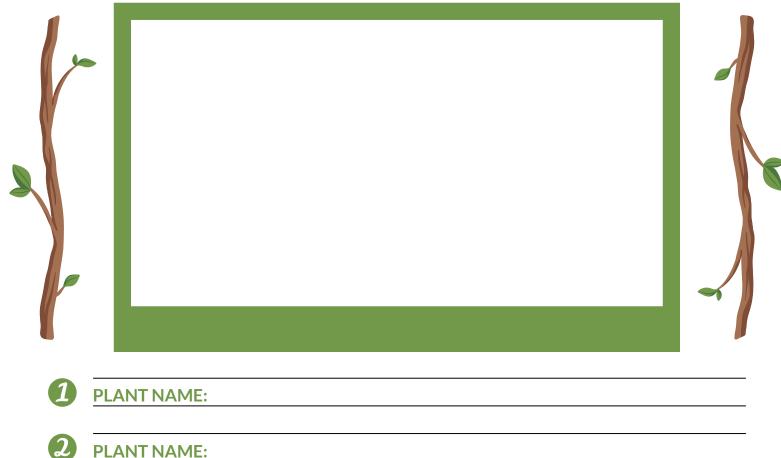
Keep practicing your bird call identification skills with these Apps:





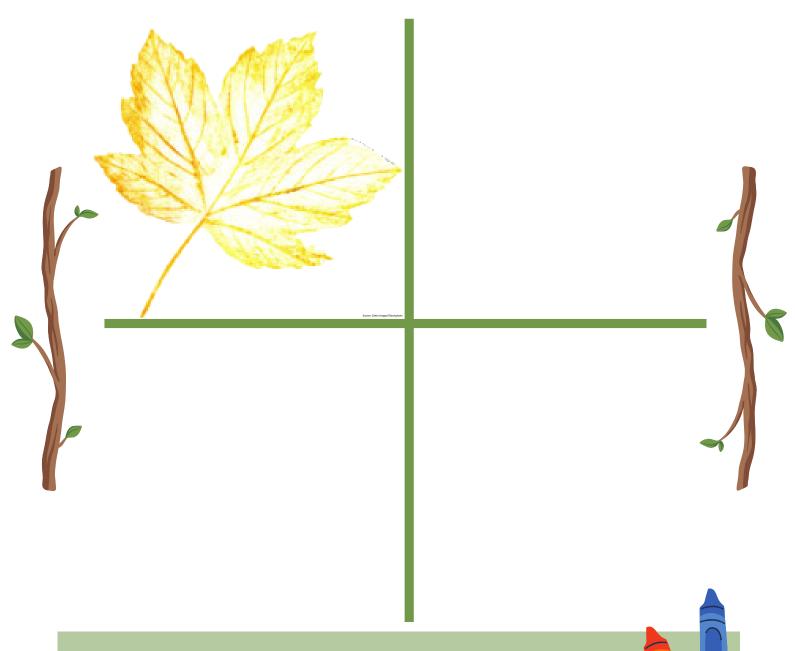
ACTIVITY #8: MAKE A PLANT FRIEND

Using your 'Plants Growing Along the River' book, identify and sketch four different plants. Then describe the plants in words and write what you love about each one.



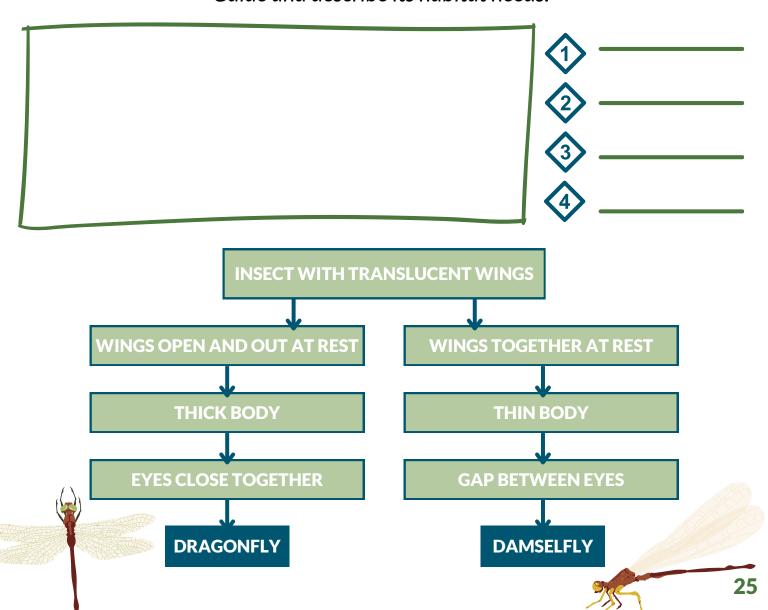
- 3 PLANT NAME:
- PLANT NAME:

Give a tree a hug and experiment with leaf and bark rubbings! Holding your paper tightly, gently rub a crayon on its side over the surface of your paper on the leaf or bark. With just enough pressure, the texture will begin to show on the paper. The first one is done for you!

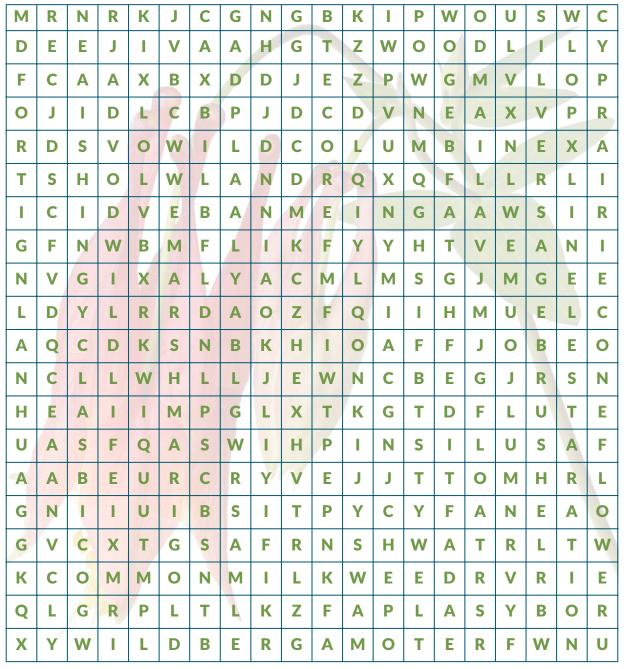


ACTIVITY #9: / DRAGONFLIES AND DAMSELFLIES

Design your own dragonfly using the Dragonflies & Damselflies Guide and describe its habitat needs.



ACTIVITY #10: NATIVE PLANT WORD SEARCH

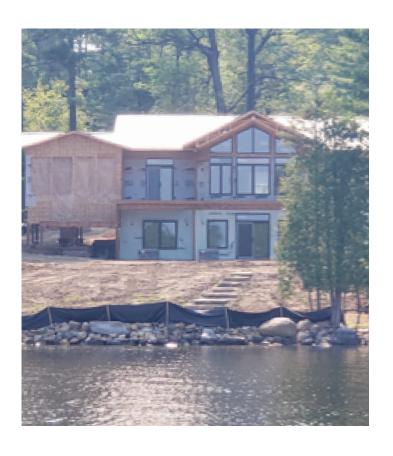


SILVER SAGEBRUSH
COMMON MILKWEED
PRAIRIE CONEFLOWER

MEADOW BLAZINGSTAR
GIANT HYSSOP
WILD BERGAMOT

WILD COLUMBINE
WOOD LILY
MARSH MARIGOLD

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 nonnative (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.



INVASIVE SPECIES

Invasive species are aggressive and can degrade ecosystems by outcompeting native species. Help protect your local ecosystems by learning how to identify invasive species, staying on trails while hiking, and cleaning equipment.



Eurasian watermilfoil

MYRIOPHYLLUM SPICATUM

Eurasian watermilfoil is an invasive aquatic plant that rapidly spreads in water bodies, creating thick mats. This species negatively impacts aquatic ecosystems by crowding out native vegetation, altering water quality, and impeding recreational activities. It is spread through the fragmentation of plants and the release of aquarium plants and pets.



Purple loosestrife

I YTHRUM SALICARIA

Purple loosestrife is an invasive perennial plant that spreads quickly by seed and root fragments. Its tiny seeds are dispersed by moving water, wind, mud, wildlife, and people. It grows in wetlands, wet pastures, aquatic habitats, and roadside ditches. It is recognized by its bright pinkish-purple flowers.

Keep an eye out for these invasive species. If you spot one while out exploring, report it to <u>eddmaps.org/</u>

ACTIVITY #11: WATER QUALITY EXPERIMENT

The guideline for pH (potential Hydrogen) is a range of 7.0 to 10.5 in finished drinking water. 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.







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?

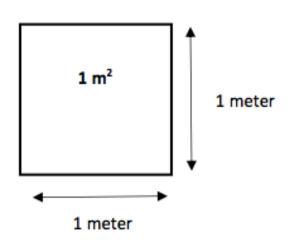
Record your findings each time on the Water Rangers data sheet in the test kit, or below on this page. What did you find?

ACTIVITY #12: LIFE IN A SQUARE

In this activity, you will discover the diversity of living (biotic) species and non-living (abiotic) factors in a specific spot.

Find an area that seems to have a lot of biodiversity present. Your area should be about 1-meter (m) square in size.

On the next page, draw a top view of the area. Draw in any plants, rocks, insects, pollution, leaves, and other features you find.





Kneel next to one side of your spot, and look around carefully. Use your identification guides to label what you have found.

If you do not know the name of a species or rock, snap a picture and try to find it online using a website like <u>iNaturalist</u>. Or, ask a trusted adult.

Date:	Time:				
Air temperature (use your thermometer):					
Water temperature, if	you are near water (use the thermometer):				
Weather conditions:					
Location:					

Follow-up questions:

- 1. How would you describe the diversity of your spot: high or low? Did you find LOTS of different things (high diversity), or just a few (low)?
- 2. What non-living (abiotic) factors might affect what lives in this spot (e.g., rocks, water, slope, pollution)?

ACTIVITY #13: DO A BIO-BLITZ

A BioBlitz is a volunteer-led count of the biological species found in an area. Using your identification guides, you can get a "snapshot" of the species and biodiversity found in your area.

What can you find in 30 minutes? An hour?

BIRDS	TREES

DRAGONFLIES & DAMSELFLIES	AMPHIBIANS AND REPTILES
ANIMAL TRACKS	OTHER

ACTIVITY #14: BECOME A COMMUNITY SCIENTIST

Using the information you gathered in activity #13, consider submitting your sightings to one of the many free and open access community science programs.

When you enter your animal or plant observations online, it can help scientists and nature groups keep track of different populations over time as they see local and regional impacts from climate change, increased human development, and pollution. Here are just a few community science programs you can pick from:









Merlin Bird ID





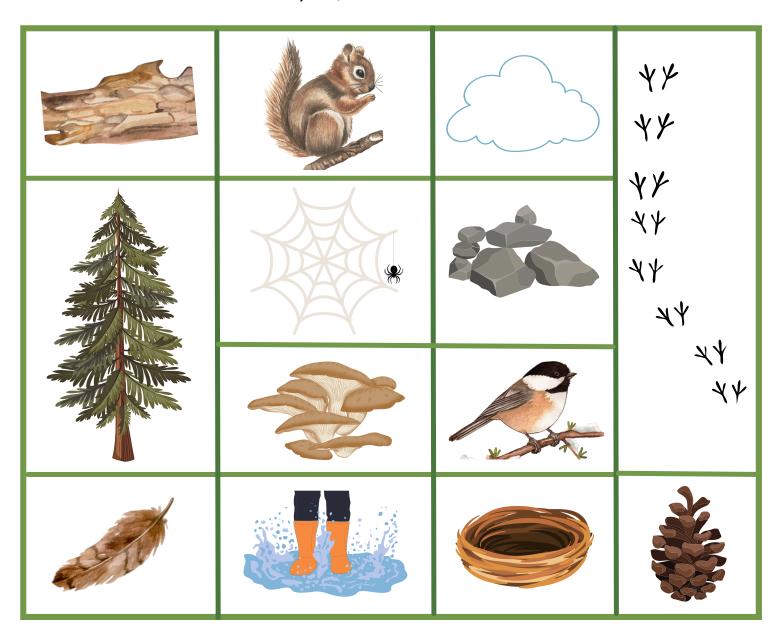






ACTIVITY #15: NATURE SCAVENGER HUNT

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



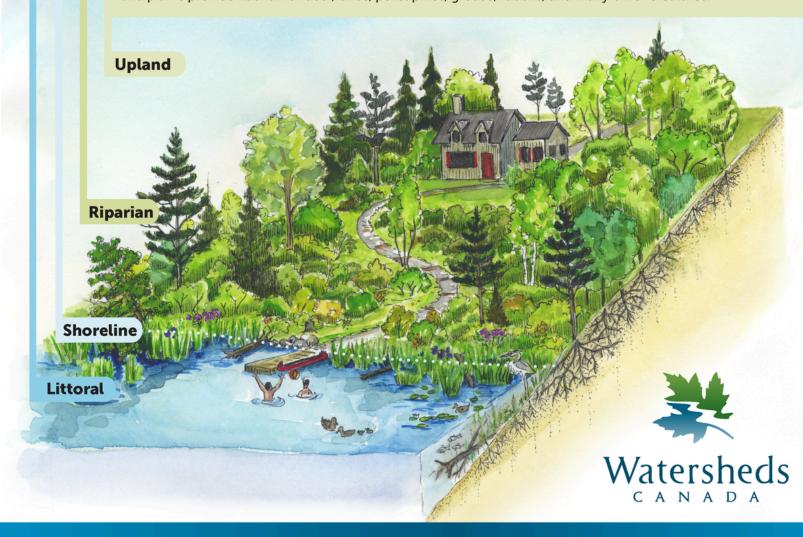
RESILIENT SHORELANDS

The **Littoral Zone** extends from the water's edge to where sunlight no longer penetrates to the bottom of the water. This is where docks are built and people swim. However, we share this area with an incredible array of biodiversity as up to 90% of lake species (e.g., pike, ducks, otters and turtles) are born, raised, fed, or live in the littoral zone.

The **Shoreline** is the edge where the land and water meet. The mix of plants, shrubs, and trees form an intricate web of roots, foliage, and fallen limbs that hold the waterfront together and fend off erosion from wind, rain, boat wakes and ice.

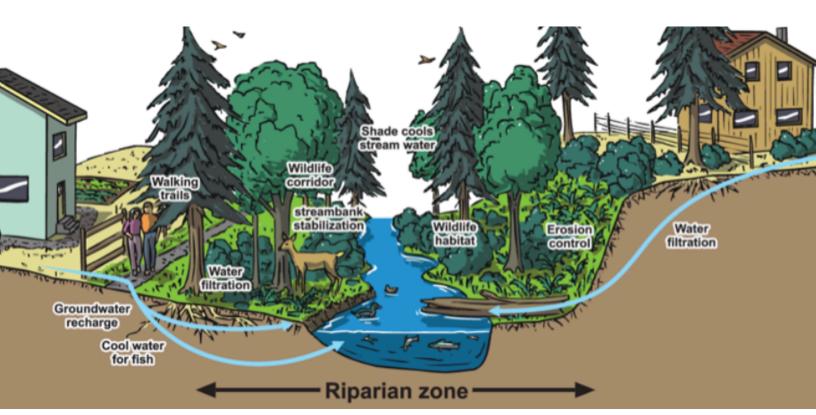
The **Riparian Zone**, also known as the Ribbon of Life, extends inland from the shoreline for at least 15 metres and may be flooded during high water periods. It is a natural buffer protecting the shoreline, water quality, and natural habitat both on land and in the water. It is made up of trees, shrubs and grasses that absorb excess nutrients (e.g., fertilizers) and pollutants (e.g., seepage from septic systems, oil, gas and pesticides) before they can contaminate the water.

The **Upland Zone** is a drier forested area with better drainage compared to the riparian zone. The deep roots of trees stabilize the slope, the foliage buffers the effects of wind, the canopy cools its surroundings, and plants provide habitat for deer, birds, porcupines, grouse, rabbits, and many other creatures.



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 meters 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.

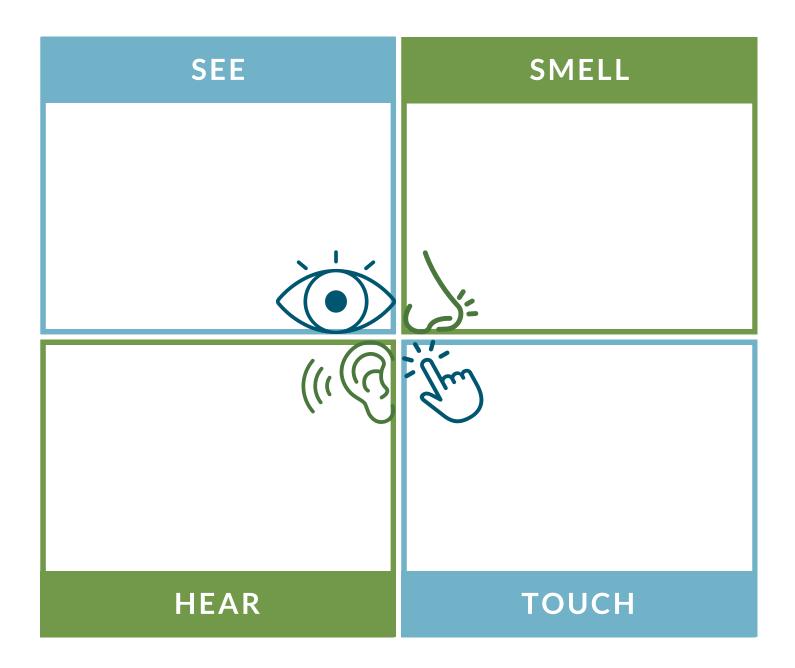


ACTIVITY #16: SKETCH IT!

Sketch a section of shoreline of a lake in your area! Make sure to include the riparian zone - the area of plants between the water and the tree line.

ACTIVITY #17: SENSES CONNECTION

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



ACTIVITY #18: POETRY

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

N.	
A	
T	
U .	
R	
E	

ACTIVITY #19: PLANTS

Plants have different meanings and uses in many cultures. Métis in Saskatchewan have used and appreciated the plants in their local environment for many generations. The 'Plants Growing Along the River' highlights traditional Métis uses of plants and lists the name of each plant in different languages, including English (common name), Latin, Heritage Michif, and Northern Michif.

"The Métis worldview, expressed through the Michif language and close community relationships, is one of respect for all living things and their place in the world." - Plants Growing Along the River Guide

Use your 'Plants Growing Along the River' guide to identify plants by their Latin, Heritage Michif, Northern Michif, or common name and draw a line to the matching image.









Heritage Michif: lii konouille

Latin: Achillea millefolium

Northern Michif: masân

Common name: Wild Raspberry

ACTIVITY #20: NATURE JOURNALING

Nature journaling is a way for you to document and organize what you see, smell, and hear while outside. You will collect your observations, explanations, and questions using words, drawings, and numbers (data). You do not need to be a professional artist to journal!





Source: John Muir Laws

You can journal anything that is interesting to you.
Add diagrams, maps, numbers, or sketches.

Count the number of species you see, and add the time, weather, and date.

Here are some writing prompts if you want help getting started:

- Find a comfortable spot in nature. Close your eyes for a minute and listen. What sounds do you hear? What do you smell?
- Spend time in a quiet place in nature. Write your thoughts and feelings about being there.
- Sit beside a tree. Imagine you are that tree and write a story about your day as a tree.
- Look up! What shapes do you see in the clouds? Write a story about what you see.

Here are some drawing prompts if you want help getting started:

- Find a plant starting to bud and draw it. Guess what the leaf or flower will look like in full bloom draw a picture and write a description.
- Draw a comic strip about the animals and plants you see around you.
- Imagine you are an inventor and you are making something to explore a lake in your area. Draw your invention and write how it works and what you will discover!
- Find a wild mushroom and draw a detailed picture of it. Write any interesting features it has and label your drawing.

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 <u>iNaturalist</u> , <u>eBird</u> , <u>MonarchWatch</u> , or <u>Water Rangers</u> .
Get involved. Volunteer with a local lake association or nature group to learn more about local wildlife and spend time in nature with like-minded people.
Be natural. If you have a shoreline property or live in town, consider adding native plants to provide habitat, food, and stabilization to your property for pollinators, mammals, and birds. Learn more about native plants: naturaledge.watersheds.ca/plant-database
Keep it clean. Prevent invasive species like invasive phragmites from spreading by cleaning all equipment after boating and staying on trails while hiking.
Be respectful. Saskatchewan is situated within the traditional territories of several Indigenous peoples, each with unique cultural histories and connections to the land. The province encompasses ancestral lands of various Métis and First Nations, including the Cree, Saulteaux, Dene, Nakota, and Dakota Sioux. It is special. It is beautiful. It is important. Please take care of it.
Explore. Learn more about why we should protect wild places. Discover local parks, such as Cypress Hills Interprovincial Park, Prince Albert National Park, and Grasslands National Park. These are beautiful places to spend time outdoors and try activities like canoeing, birding, hiking, and education programs

PROGRAM CONNECTIONS

The activities from this workbook can go towards a variety of themes in the program.

	Nature Discoveries	Our Shared Planet	My Mighty Mind	My Physical Self	Art Studio	Science Lab	Canadian Connections
#1: Follow in their Footsteps	\checkmark			V			
#2: Who Am I?	V						
#3: I Spy	V						
#4: Colouring Time!	V		V		V		V
#5: Create a Constellation	V				V		
#6: Bird Bingo	V						
#7: Talk to the Birds	V						
#8: Make a Plant Friend	V		V		V		
#9: Dragonflies and Damselflies	V						
#10: Native Plant Word Search	V						
#11: Water Quality Experiment		V		V		V	
#12: Life in a Square		V				V	
#13: Do a Bio-Blitz		V				V	
#14: Become a Community Scientist		\checkmark				V	
#15: Nature Scavenger Hunt		V		V			
#16: Sketch it!	V				V		
#17: Senses Connection	V		V				
#18: Poetry	V				V		
#19: Plants	V						V
#20: Nature Journaling	\checkmark				V		





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<u>watersheds.ca</u>