

ACKNOWLEDGEMENTS

The following workbook was created by Watersheds Canada staff and Junction Creek Stewardship Committee staff. The contents are linked to the Ontario curriculum for grades 7-12. Additional photography provided by Simon Lunn and Dr. Mary Ann Perron.

The Junction Creek Stewardship Committee is a not-for-profit organization and registered Canadian charity (801685611RR0001) focused on the restoration of Junction Creek, a large urban waterway in Greater Sudbury.

Watersheds Canada is a federally incorporated non-profit organization and registered Canadian 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.

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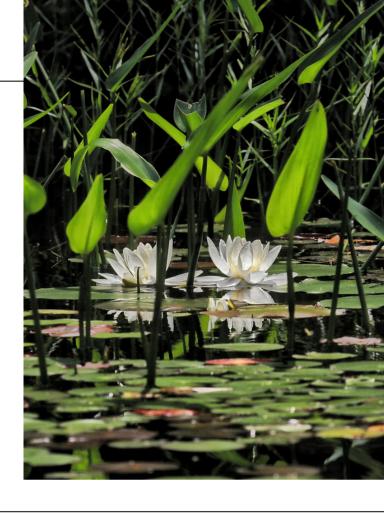








GETTING READY TO EXPLORE NATURE



We are so excited for you to explore your local nature as you learn about different local species and how to protect the health of the Junction Creek Watershed, and beyond!

You get to keep this workbook! This workbook will give you tips to safely explore nature as you learn about different animals and plants that are found along Junction Creek. You will discover what a watershed and the riparian zone are, and see ways you can help nature, all with some fun activities along the way! Please return all field materials back with the backpack.

If you are interested in learning more about

Junction Creek, please visit:

junctioncreek.com

STAYING SAFE



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

- Stay home if you feel sick, if you have been in contact with anyone who has tested positive, or if you are under self-quarantine.
- Practice physical distancing and best hygiene practices when you see other people in nature.
- Bring your own mask, hat, snacks, water, sunscreen, and bug spray. Make sure to bring back any garbage you have so you can properly get rid of it at home.
- Tell someone where you are going and when you will be back.
- Watch wildlife from a safe distance and do not try to handle them.
- Do not pick any wildflowers or plants please leave nature for everyone to enjoy.
- 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?

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 does "8x21mm" mean? These binoculars help you see things 8 times closer. The lens are 21mm wide. Turn the knob to make it clearer to see.
- Use the cleaning cloth if you need to clean the lenses (glass).



Observation Tools

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



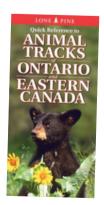
Identification Guides

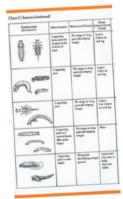
Use these seven identification guides to learn more about different types of local biodiversity like wildflowers, trees, birds, dragonflies, damselflies, reptiles, and aquatic invertebrates. Each type of guide shows photos and information about each species like their size, where they live (their habitat), and what sounds they make. See how many you can find and identify around Junction Creek!

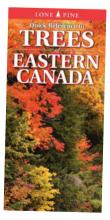








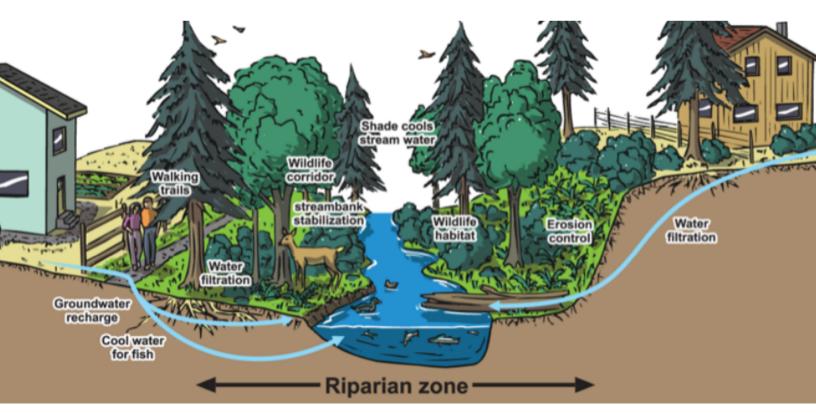






THE RIPARIAN ZONE

- Shoreline ecosystems, or riparian zones, are very important and 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.



Source: "Riparian Areas". (2021). Cowichan Lake and River Stewardship Society, https://www.cowichanlandtrust.ca/portfolio-items/riparian-areas/

ACTIVITY #1: SKETCH IT!

Sketch a section of shoreline along Junction Creek!

Make sure to include the riparian zone — the area

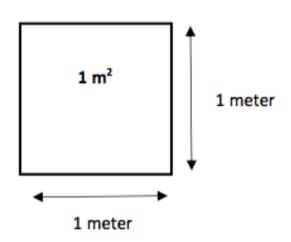
between the water and the tree line.

ACTIVITY #2: 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.





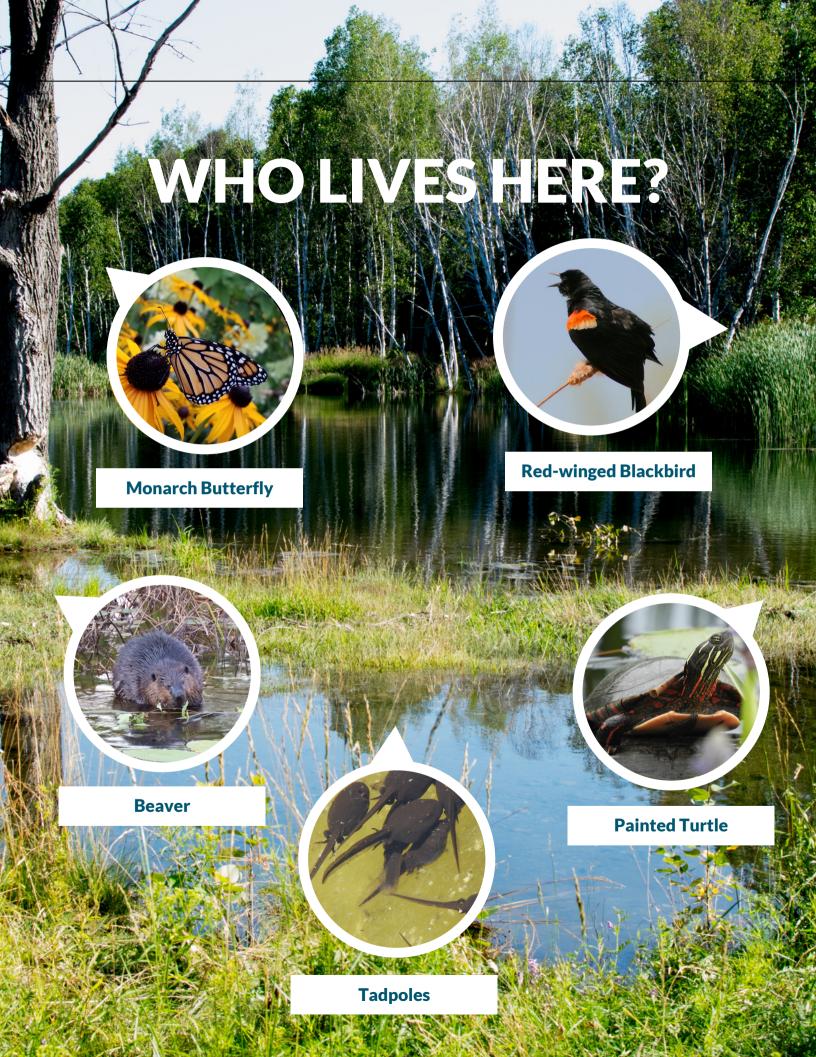
Kneel next to one side of your spot, and look around carefully. As you draw what you find, label what you can using your identification guides.

If you do not know the name of a species, snap a picture and try figuring it online using a website like <u>iNaturalist</u>.

Date:	Time:			
Temperature (use your thermometer	er):			
Weather conditions:				

Follow-up questions:

- 1. How would you describe the diversity of your spot: high or low?
- 2. What non-living (abiotic) factors might affect what lives in this spot?





ACTIVITY #3: 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?

DRAGONFLIES & DAMSELFLIES	FRESHWATER INVERTEBRATES		
ANIMAL TRACKS	WILDFLOWERS		

Sudbury Checklist - 2022

Drafted April 2022

Three hundred and fifteen species of birds have been recorded to the end of 2022 in The District of Sudbury, Ontario.

Species added to the checklist since 2005 are marked: **NEW**.

Uncommon species, recorded five or fewer times in a year, are designated:

U. Very rare species, five or fewer observations ever, are marked: R. Persons observing a rare species are asked to make careful field notes and take pictures.

Rare & uncommon species

are highlighted

Blk-bell'd Whistling Duck: R

Snow Goose: Ross's Goose: R

Greater White-fronted Goose: R

Brant: U

Cackling Goose: R
Canada Goose:
Mute Swan: R
Trumpeter Swan:
Tundra Swan: U
Wood Duck:
Blue-winged Teal:
Northern Shoveler:
Gadwall:

EurasianWigeon: R American Wigeon:

Mallard:

American Black Duck: Northern Pintail: Green-winged Teal: Canvasback: U Redhead:

Ring-necked Duck:
Greater Scaup: U
Lesser Scaup:
King Eider: R
Common Eider: R
Harlequin Duck: U
Surf Scoter: U

White-winged Scoter: U Black Scoter: U

Long-tailed Duck: Bufflehead:

Common Goldeneye: Barrow's Goldeneye: R Hooded Merganser: Common Merganser:

Red-breasted Merganser:
Ruddy Duck: U
Wild Turkey: R
Ruffed Grouse:
Spruce Grouse: U
Willow Ptarmigan: R
Sharp-tailed Grouse: U
Ring-necked Pheasant: R

Pied-billed Grebe: Horned Grebe: Red-necked Grebe: **Eared Grebe:** R Rock Pigeon:

Band-tailed pigeon: R White-winged Dove: R

Mourning Dove:

Passenger Pigeon: EXTINCT Yellow-billed Cuckoo: U Black-billed Cuckoo: Common Nighthawk: Eastern Whip-poor-will: Chimney Swift:

Ruby-throated Hummingbird: Rufous Hummingbird: R

Virginia Rail:

Sora:

Common Gallinule: U American Coot; Sandhill Crane: Black-bellied Plover: American Golden-Plover: Semipalmated Plover: Piping Plover: R

Killdeer:

Upland Sandpiper: U

Whimbrel:

Hudsonian Godwit: U Ruddy Turnstone: U Red Knot: U

Ruff: R

Stilt Sandpiper: U Red-necked Stint: R

Sanderling: Dunlin:

Purple sandpiper: R Baird's Sandpiper: Least Sandpiper:

White-rumped Sandpiper: U Buff-breasted Sandpiper: U Pectoral Sandpiper:

Semipalmated Sandpiper: Western Sandpiper: R
Red-necked Stint: R
Short-billed Dowitcher:
American Woodcock:
Wilson's Snipe:
Spotted Sandpiper:
Solitary Sandpiper:
Lesser Yellowlegs:

Willet: R

Greater Yellowlegs: Wilson's Phalarope: U Red-necked Phalarope: U Black Guillemot: NEW-R

Sabine's Gull: R Bonaparte's Gull: Little Gull: New-R Franklin's Gull: R Ring-billed Gull: California Gull: R Herring Gull:

Thayer's Gull: NEW-R Iceland Gull: U

Lesser Black-backed Gull: U

Glaucous Gull:

Great Black-backed Gull:

Caspian Tem:
Black Tern: U
Common Tern: U
Arctic Tern: R
Red-throated Loon: R
Pacific Loon: R
Common Loon:

Double-crested Cormorant: American White Pelican: U

American Bittern:
Least Bittern: R
Great Blue Heron:
Great Egret: U
Snowy Egret: R
Little Blue Heron: R
Cattle Egret: U
Green Heron: U

Black-crowned Night-Heron: U

Turkey Vulture:

Osprey:

Swallow-tailed Kite: R Golden Eagle: U Northern Harrier: Sharp-shinned Hawk: Cooper's Hawk: U Northern Goshawk: Bald Eagle:

Red-shouldered Hawk: U
Broad-winged Hawk:
Swainson's Hawk: R
Red-tailed Hawk:
Ferruginous Hawk: R
Rough-legged Hawk:
Eastern Screech-Owl: R
Great Horned Owl:
Snowy Owl: U
Northern Hawk Owl: U

Barred Owl:
Great Gray Owl: U
Long-eared Owl: U
Short-eared Owl: U

Boreal Owl: U
Northern Saw-whet Owl:
Belted Kingfisher:
Lewis Woodpecker: R
Red-headed Woodpecker: U
Red-bellied Woodpecker: U
Yellow-bellied Sapsucker:
Am. Three-toed Woodpecker: U

Black-backed Woodpecker: Downy Woodpecker: Hairy Woodpecker: Northern Flicker: Pileated Woodpecker: American Kestrel:

Merlin:
Gyrfalcon: U
Peregrine Falcon:
Great Crested Flycatcher:
Western Kingbird: R
Eastern Kingbird:

Scissor-tailed Flycatcher: R Fork-tailed Flycatcher: R Olive-sided Flycatcher: U Eastern Wood-Pewee: Yellow-bellied Flycatcher: U Alder Flycatcher: Willow Flycatcher: U Least Flycatcher: Eastern Phoebe:

White-eyed Vireo: NEW-R Yellow-throated Vireo: R Blue-headed Vireo:

Philadelphia Vireo: Warbling Vireo: Red-eyed Vireo: **Loggerhead Shrike: R** Northern Shrike: Canada Jav:

Blue Jay:
Black-billed Magpie: R
American Crow:

Common Raven: Black-capped Chickadee: Boreal Chickadee:

Horned Lark: Bank Swallow: Tree Swallow:

Northern Rough-winged Swallow:

Purple Martin: D Barn Swallow: Cliff Swallow:

Golden-crowned Kinglet: Ruby-crowned Kinglet: Bohemian Waxwing: Cedar Waxwing: Red-breasted Nuthatch: White-breasted Nuthatch:

Brown Creeper:
Bohemian Waxwing:
Cedar Waxwing:

Blue-gray Gnatcatcher: R

House Wren:
Winter Wren:
Sedge Wren: U
Marsh Wren: U
Carolina Wren: U
Bewick's Wren: R
Gray Catbird:
Brown Thrasher:

Northern Mockingbird: U European Starling: Eastern Bluebird: Townsend's Solitaire: R

Veerv:

Gray-cheeked Thrush: U Swainson's Thrush: Hermit Thrush: Wood Thrush: U American Robin: Varied Thrush: R House Sparrow: U-NEW

Eurasian Tree Sparrow: R American Pipit: Evening Grosbeak: Pine Grosbeak:

Gray-crowned Rosy-Finch: R

House Finch: U
Purple Finch:
Common Redpoll:
Hoary Redpoll (morph):
Red Crossbill:

White-winged Crossbill:

Pine Siskin: American Goldfinch: Lapland Longspur:

Chestnut-collared Longspur: R

Snow Bunting:

Grasshopper Sparrow: U
Lark Sparrow: R
Chipping Sparrow:
Clay-colored Sparrow:
Field Sparrow: U
Fox Sparrow:

American Tree Sparrow: Dark-eyed Junco:

White-crowned Sparrow: Rolden-crowned Sparrow: R

Harris's Sparrow: R White-throated Sparrow: Vesper Sparrow:

LeConte's Sparrow: U
Savannah Sparrow:
Song Sparrow:
Lincoln's Sparrow:
Swamp Sparrow:
Eastern Towhee: U
Yellow-breasted Chat: R
Yellow-headed Blackbird: U

Bobolink:

Eastern Meadowlark: Western Meadowlark: U Orchard Oriole: R
Baltimore Oriole: Red-winged Blackbird: Brown-headed Cowbird: Rusty Blackbird:

Brewer's Blackbird: U-NEW

Common Grackle: Ovenbird:

Northern Waterthrush:
Golden-winged Warbler:
Blue-winged Warbler: R
Black-and-white Warbler:
Tennessee Warbler:
Orange-crowned Warbler:
Nashville Warbler:
Connecticut Warbler: U
Mourning Warbler:

Common Yellowthroat:
American Redstart:
Cape May Warbler:
Cerulean Warbler: R
Northern Parula:
Magnolia Warbler:
Bay-breasted Warbler:
Blackburnian Warbler:
Yellow Warbler:
Chestnut-sided Warbler:
Blackpoll Warbler:

Black-throated Blue Warbler:

Palm Warbler: Pine Warbler:

Yellow-rumped Warbler: Black-throated Green Warbler:

Canada Warbler: Wilson's Warbler: Summer Tanager: R Scarlet Tanager: Western Tanager: R Northern Cardinal: Rose-breasted Grosbeak: Black-headed Grosbeak: R

Blue Grosbeak: R Indigo Bunting: Painted Bunting: R Dickcissel: R

Definitions

NEW-R New since 2005 checklist Five or fewer observations ever

NEW-U New since 2005 checklist More than five observations

R-RARE

Five or fewer observations ever

U – Uncommon

Five or fewer observations in a year

U- NEW - now uncommon

AOU 62th Supplement July 2021

File Word/Monthly Reports/ Master

List

Created by the Sudbury Ornithological Society



ACTIVITY #4: 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-winged Blackbird

- Males have red shoulder patch bordered in yellow (pictured)
- Have a slender, cone-shaped beak
- Habitat: near watery areas like marshes
- Close to the size of an American Robin
- Song sounds like they're singing "conk-la-ree!"



Northern Cardinal

- Females are pale brown with reddish tinges in the wings, tail, and crest, with a red-orange beak and black face around the beak
- Males are red all over, with a red bill and black face around the beak (pictured)
- Song: "cheer-cheer-cheer-purty-purty"

Barred Owl

- Large owl with a round head, no ear tufts, and a medium length rounded tail
- Habitat: large, mature forests, often near water
- Nest in tree cavities (holes)
- Call: "whooo-cooks-for-you"



American Goldfinch

- In spring and early summer, males are bright yellow with black forehead and black wings with white markings (pictured)
- Habitat: fields, floodplains, roadsides, yards
- Diet: seeds
- Song: "pa-chip-chip-chip"



Northern Flicker

- This woodpecker is a ground forager, always looking for delicious insects to eat!
- Habitat: open habitats near trees (woodlands, edges, yards, and parks)
- Song: "kleeeyer-wik-wik-wik"



Keep practicing your bird call identification skills with these websites:





ACTIVITY #5: BECOME A COMMUNITY SCIENTIST

Using the information you gathered in activities #3 and #4, 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:

















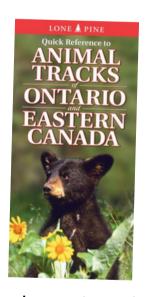


ACTIVITY #6: FOLLOW IN THEIR FOOTSTEPS

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

Here are some tips for finding animal tracks:

- Look for tracks 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 that perfectly matches what is shown in your guide! You will have to do some detective work to figure out which animal left the track.

Want more practice before you go in the field? Try this Scout Life animal track quiz: https://scoutlife.org/quizzes/6662/

HOW ARE PEOPLE IMPACTING NATURE?



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

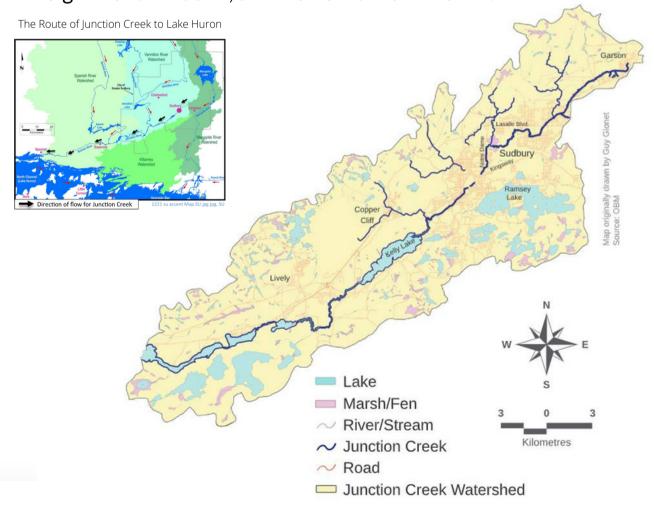
Some threats to wildlife and water health include: plastic pollution, introducing nonnative (invasive) species. road mortality, and habitat removal and fragmentation.

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.



THE JUNCTION CREEK WATERSHED

- The Junction Creek Watershed is 320 square kilometers (km) in size and is 52 km long!
- 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.
- Did you know Junction Creek flows through a Provincially Significant Wetland, and drains into Lake Huron?



ACTIVITY #7: WATER QUALITY EXPERIMENT

The guideline for pH (potential Hydrogen) is a range of 7.0 to 10.5 in finished drinking water (Health Canada, 2015). 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.

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).

Reference: 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

To compare results, use your water test kit in 5 different spots. If you cannot get to five different natural areas, use tap water and add different things to each container that might end up in our freshwater sources, like salt (road salt) and soap (car washes).

Before you begin testing, make a hypothesis — an idea that proposes a possible explanation about what will happen. Where and why do you think you will find different conditions for air temperature, water temperature, and pH?

Record your findings each time. What did you find?



Want to learn more about the non-profit organization Water Rangers? Visit their website for videos, resources, and more: <u>waterrangers.ca</u>

ACTIVITY #8: POND STUDY

Your goal is to find as many different creatures as possible and identify them using your identification guides.

An added bonus if you find animal tracks in the mud, too!

Materials: dip net, observation containers, identification guides

Some tips for a successful pond or lake study:

- Fill up your containers with water before starting. You are pulling aquatic creatures from the water so make sure they stay in water!
- Make sure to wash your hands before handling any creatures as sunscreen, lotions, and bug spray can be harmful to them.
- Once you are done looking at the creatures, slowly and gently pour them back in the water. Refill your container with water for your next discoveries!











What did you find?		

Some things to think about:

- Did you find many creatures? Did you find or see different life stages of the same creature (ex: dragonfly nymph and adult)?
- Is your freshwater body biodiverse? Do you think that means it is healthy?

HOW CAN I HELP?

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> .
Participate in a Junction Creek cleanup or pickup litter on your own and share your photos. Access resources and learn more: https://junctioncreek.com/restoration/litter-monitoring-and-clean-ups/
If you have a shoreline property or live in town, consider adding native plants to provide habitat, food, and stabilization to your property. This is especially important along a shoreline. Native wildflowers help pollinators, small mammals, and birds. Learn more: https://naturaledge.watersheds.ca/plant-database/
Volunteer with a local nature group or join a field naturalist group like the Sudbury Naturalists to learn more about local wildlife and spend time in nature with like-minded people.
Take part in Junction Creek's Youth Nature Programs or check out our community events throughout the summer and fall! You can explore Junction Creek through fun outdoor activities and help restore the creek ecosystem. Learn more: https://junctioncreek.com/2022-youth-nature-programs/
Become a Junction Creek member and be the first to be informed about upcoming events, announcements, and volunteer opportunities. Learn more: https://junctioncreek.com/membership/

ACTIVITY #9: NATURE SEARCH

DOB VACHOC OL Z VQ L OTRI AU E V FRAREMNOS AWFTEKHPADZCWZ RAMJOLPVAREKHFWZEYBSLCU S S G A L K X O E D R I B DOUEEBOJ - 1 R E COSYSTEMSOGHJREDEKMK R L D J W F 7 A O ACFNT J R Ε FEOB OTICROYNN LAVEHTKS ILPUYTAL KFFF F F C AWPLAS R RTFUGCTVT C ANSZ AGY FYYKRA J **BKFROGDSNHNH** OSHLVS RKO Z PEINCHOS A RCHZWAUOAI A T RREZXY E ROHSBC Т Ε N AFTHBI D \mathbf{E} \mathbf{R} S IRZQAABIO VOIANAI RAP FACBDOLG R U ZWAKLOBFG H R E

Ecosystem	Biodiversity	Biotic	Frog	Safety
Freshwater	Nature	Shoreline	Plants	Plastic
Riparian	Monarch	Native	Abiotic	Bird

ACTIVITY #10: NATURE JOURNALLING

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 an artist!





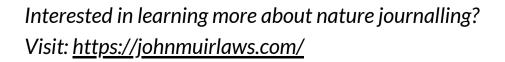
Source: John Muir Laws

You can journal anything that is interesting to you.

Add diagrams,

Add diagrams, maps, numbers, or sketches.

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





Junction Creek Stewardship Committee

Comité d'intendance du ruisseau Junction

B4-30 St. Anne Rd. Sudbury, ON, P3C 5El junctioncreek.com



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

Great Egret

Ardea alba