

Outdoor Learning Through the Seasons

Educators' Guide



THOMPSON-NICOLA
CONSERVATION COLLABORATIVE

Acknowledgements

Discussions between members of the Thompson-Nicola Conservation Collaborative and Neskonlith Elder Minnie Kenoras Driver inspired the concept of an initiative to help youth be more connected to nature, the land and their culture.

This Guide is a collaborative effort between experienced educators with input and inspiration from Elders, Knowledge Keepers, youth leaders and youth themselves.

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Introduction

This draft educators' activity guide is a product of the initiative "Connecting with the Land - Field Days for Indigenous Youth, Interweaving Indigenous Knowledge and Western Science", initiated by the Thompson-Nicola Conservation Collaborative (TNCC) with funding from Wildlife Habitat Canada and the Province of British Columbia.

The original purpose of the initiative was to collaboratively develop and deliver with Indigenous Elders two outdoor environmental educational field days for Secwépemc Indigenous youth in the Thompson-Nicola region. A successful field day was held August 17, 2023, with First Nations Elder Terry Denault, environmental educator Sue Staniforth and Skeetchestn First Nations youth members.

However, due to the serious fires and smoke conditions in the Interior during the summer, a second field day was not possible. In order to support some continuity of the field experiences and enable others to share in the learnings, the development of a "legacy" document that captures some of the activities in a curriculum package was discussed. As the traditional teachings are held by Indigenous Knowledge Keepers, the guide will not include specific activities that were shared by the Elder, but focus on environmental education activities with connections to Indigenous learning styles, seasonal activities and methods.

"Place-based education...celebrates, empowers and nurtures the cultural, artistic, historical and spiritual resources of each local community... It re-integrates the individual into her homeground and restores the essential links between a person and her place."

Laurie Lane-Zucker, Orion Society

We hope that this guide provides some useful and engaging activities for students to explore their home place through blending land-based activities, cultural ways of knowing and western scientific methods.

These activities are in draft form, to encourage teachers to adapt them to their students' needs and teaching units. Please send any feedback and suggestions by email to info@tnccollaborative.org, referencing this guide. All input and feedback is very welcome!

Overview

Audiences/Extensions

The activities can be used with almost any age group of students from primary to secondary level but are mainly adapted for primary to middle school-aged learners. Activity extensions for older as well as younger learners are provided.

Conceptual Framework

The key concepts that the activities are grounded in include:

- Place-based education, where local natural and cultural heritage are directly explored and experienced, helps restore and re-integrate the essential links between people, the land, their cultures and communities.
- The discovery, exploration and enjoyment of local natural areas through Western science-based and traditional land-based activities (“Two-eyed Seeing”) provides valuable learning experiences.
- Direct, personal experiences and involvement with natural areas in our communities helps to enhance one’s sense of place.

First People’s Principles of Learning

Of the eight principles, this guide aligns with the following:

- Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors.
- Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).
- Learning recognizes the role of Indigenous knowledge.
- Learning is embedded in memory, history, and story.
- Learning involves patience and time.

Big Ideas and Curriculum Connections

Overall, the following lessons align with the Science, English Language Arts (ELA), Social Studies, and Math standards of the BC Curriculum. The Big Ideas from the following subjects are listed below. To further connect to ELA, connect to stories and other texts to deepen students’ understanding and knowledge of these outdoor activities.

In each lesson, the specific curricular competencies and content in each subject area are listed.

	Big Ideas		
	Science	ELA	Social Studies
Grade 2	Living things have life cycles adapted to their environment.	Curiosity and wonder lead us to new discoveries about ourselves and the world around us.	Local actions have global consequences, and global actions have local consequences.
Grade 4	All living things sense and respond to their environment.	Exploring stories and other texts helps us understand ourselves and make connections to others and to the world.	Interactions between First Peoples and Europeans lead to conflict and cooperation, which continues to shape Canada's identity.
Grade 7	Evolution by natural selection provides an explanation for the diversity and survival of living things.	Exploring and sharing multiple perspectives extends our thinking.	Economic specialization and trade networks can lead to conflict and cooperation between societies.
Grade 9	The biosphere, geosphere, hydrosphere, and atmosphere are interconnected, as matter cycles and energy flows through them.	Language and story can be a source of creativity and joy.	The physical environment influences the nature of political, social, and economic change.

How to use the Guide

There are many ways to implement these activities with youth. Here are some suggestions for activity choices that sequence the guide's concepts and link to months and activities highlighted in the Seasonal Round.

The Sensory Warm Up activities can be done independently and take 10-15 minutes to do with a class or can be one of the routines that you might do when you bring your class outside to start a longer lesson.

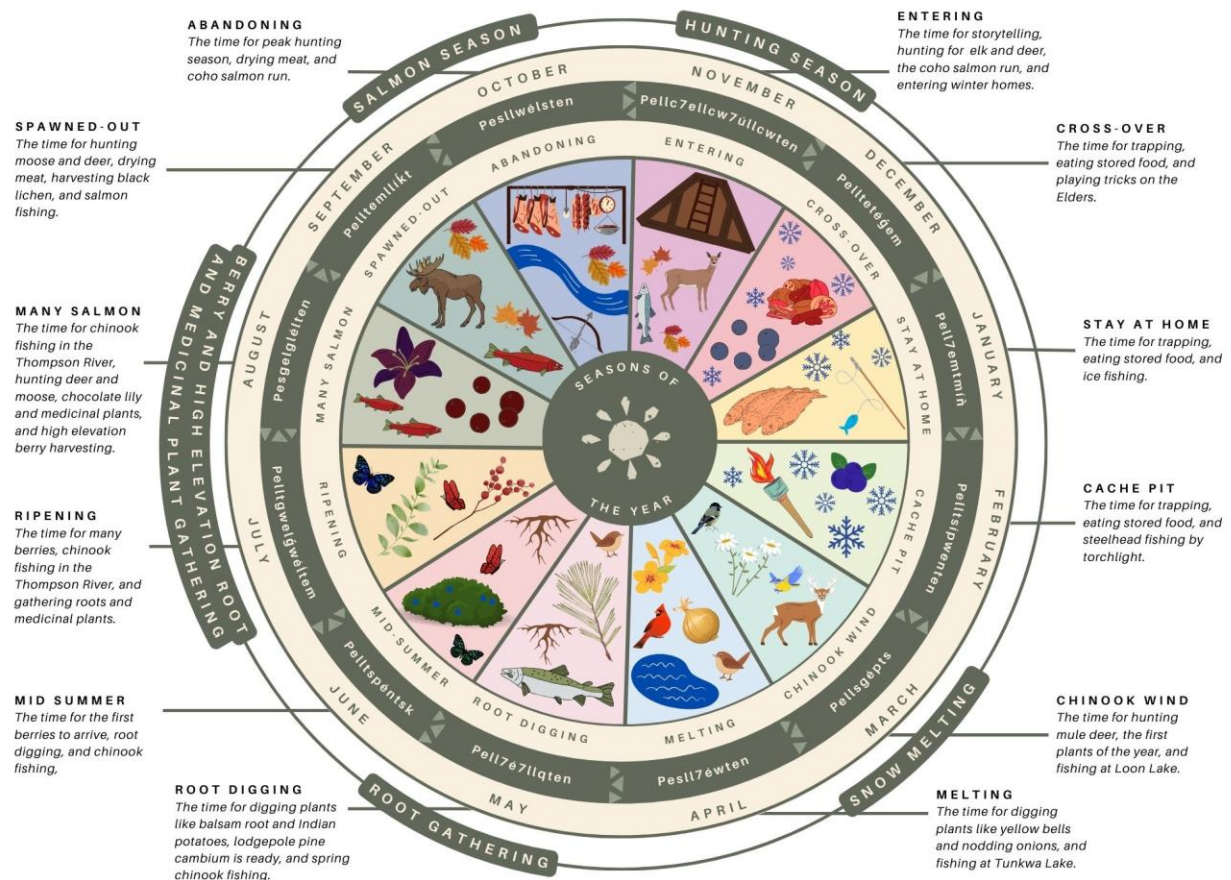
The Habitat Exploration lessons are independent lessons or could be tied together for a multi-week unit. The target age for these are grades 3-10.

The Ponds and Watersheds are two longer units that that focus on what a watershed is and pond explorations (e.g. such as the pond nearby Neqweyqwelsten School). The target age for these are grades K-8.



Secwépemc Seasonal Round

The seasonal round calendar captures the cyclical nature of resource harvesting activities in the year. These activities are what the Secwépemc people in the Skeetchestn area have historically done. The information included in the graphics is from the book, Secwépemc People, Land, and Laws: Yeri7 re Stsq'ey's-kucw by Marianne Ignace and Ronald E. Ignace (specific seasonal round information is on p.195-203). The book also includes very detailed information on resource gathering activities and stories.



Four lessons (Activities 8-11) have been created based on discussions with Neqweyqwelsten School staff, and reflect seasonal learning activities during certain months.

Seasonal round graphics have been created for this guide; they can be found in the Appendix, and ideally printed on 11x17 paper or cardstock, and used to explore throughout the year and during the seasonal round learning activities.

Learning Activities



SENSORY WARM UP ACTIVITIES

We have a whole network of senses that connect us to the world, many more than the five - seeing, hearing, smelling, touching and tasting - commonly referred to. We also have the ability to sense temperature, weight, gravity, balance, time and pressure (Michael Cohen lists over 50 human senses in his book *Connecting with Nature*). Most of us spend much of our time indoors, separated from the natural world by buildings, cars, even clothing, and many of our senses get “shut down” by lack of use. Much of our formal education takes place indoors as well. When we go outside, it is useful to “wake up” our senses, to better connect with the world around us, and tune into our environment in new and different ways.

The sensory warm up activities can be done each time students are taken outside to re-connect them to the natural world, support building observation skills and set the stage for further explorations.

Activity Summary

Activity	Logistics	Materials
Activity 1: Sensory Wakeup Circle	Time: 10 minutes Audience: All ages	None
Activity 2: Rainbow Chips	Time: 15 minutes Audience: All ages	Bag of 30 - 40 paint colour chips from a paint store
Activity 3: Touchstone	Time: 10 minutes Audience: All ages	Small stones; enough for one per participant; hat or bag to hold stones.



Activity 1: Sensory Wakeup Circle

This is a nice introductory and awakening activity to do each time you take a group outdoors.

Time required: 10 minutes

Audience: All ages

Materials: None

Directions:

1. Gather the group in a circle and tell participants that you'll be waking up their senses to better explore and observe the environment.
2. Ask them to list our main senses and remind them of ones they may not think of, such as our sense of temperature, hunger, and air currents.
 - a. Wake the senses up individually:
 - i. *Touch:* have everyone rub their hands together vigorously until they feel heat energy being generated between their palms when they pull them apart slightly. Do this until everyone has "woken up" their fingers.
 - ii. *Hearing:* Have everyone put on "deer ears" - cup hands around their ears so the area for capturing sound is enlarged. To demonstrate how effective larger ears are, have everyone take their "deer ears" off as you keep speaking, and then put them on again, noting how much louder your voice or other sounds become. Try having the group put the "ears" on backwards to hear sounds behind them. Now have everyone close their eyes (to block out the dominant sense of sight) and count the number of different sounds they hear in a 20 - 30 second time frame. Younger students might want to hold up their fingers for each sound. Ask people how many sounds they heard, and to describe some of them.
 - iii. *Smell:* Have everyone close their eyes and focus on their sense of smell by taking a breath through their mouths and then two big breaths through their nose. Have different people in the circle describe what they smell. Now have the group turn to face out of the circle and repeat the smelling exercise; ask for any different scents.
 - iv. *Taste:* If it is raining, have everyone taste a raindrop, or some seawater if you are on the beach, but otherwise save the tasting for lunchtime!
 - v. *Sight:* Send the group out from the circle to do the Rainbow Chips activity (see below).



Adaptation for Older Students - Digital Photo Sensory Shoots

Have students work in groups of two or three, ensuring that each group has a digital camera or cell phone camera to use. Give each group a sensory theme (colour, texture, smells, sounds, contrasts, etc.) and have them take photos in an outdoor area based on their theme, to show to the class later as a PowerPoint display or hard copy collage.

Students can also use apps like iNaturalist or plant identification apps to identify plants that they find. iNaturalist is a platform for people who are curious about the natural world and want to help each other identify and document the species they encounter. You can record, share, and discuss your observations of nature and can be used online or through a mobile app.

For more information, read the [Teacher's Guide](#) about iNaturalist. There is also an alternative app called [Seek by iNaturalist](#) that is more geared towards younger students, that may work better for your classroom. Alternatively try this fun [iNaturalist scavenger hunt!](#)



Activity 2: Rainbow Chips

This is a fun and easy activity that gets participants looking closely at things around them and hones their observation skills.

Time required: 15 minutes

Audience: All ages

Materials: Bag of 30 - 40 paint colour chips from a paint store

Directions:

1. Collect a selection of paint chips from your local paint store, ensuring that you get a good range of colours and shades. Cut up the chips if they are in strips and place them in a bag or hat.
2. Hand each participant a "rainbow chip", telling them that every colour of the rainbow exists in nature all around us, and send them off to match their chip colour as closely as possible with something natural (human-made items like garbage or clothing don't count!).
 - a. Offer some hints: Turn leaves and stems over to see colours beneath, look closely at rocks and pebbles, lichen, tree bark and sap.
 - b. Note: Ask them not to pick their matched item if it is alive, but to show it to someone close by.
3. Once they have found a match, give them another colour chip to match, or a whole strip of paint chips of similar shades to match. Take photos of the matched items to share later or provide the paint chips for students to add to their nature journals or worksheets, and have them draw the item that matches the colour.
4. Ask the students:
 - a. What surprised you the most about this activity?
 - b. What colours were hardest to find?

Adaption:

An adaptation of this activity uses a selection of colours of embroidery thread skeins that students can use to match colours.



Activity 3: Touchstone

This is an easy and engaging sensory awareness activity that gets participants focused on their sense of touch.

Time required: 10 minutes

Audience: All ages

Materials: Small stones; enough for one per participant; hat or bag to hold stones.

Directions:

1. Have the groups form a circle facing inwards, and ask everyone to step forward until their shoulders are touching.
2. Have everyone hold their hands behind their backs and tell them to be ready to hold a small rock that you will be passing out.
3. Give out one stone per person, stressing that no one should look at their rock - they must get to know it purely through their sense of touch, by noting its texture, size and unique features.
4. After a minute or two, collect all the stones and place them in the centre of the circle.
5. Have participants try and find their stone first just by looking at it. Then let them pick up the stones to search using their sense of touch.
6. Ask the students:
 - a. Could you find your stone just by looking?
 - b. Did you have to touch it to be sure?
 - c. Did your stone look different than you thought it would?



HABITAT EXPLORATION

These activities are a great way to explore a natural habitat in a fun and engaging way. The Scavenger Hunt can be used as an introductory activity on a field trip. It can also be used to capture some baseline data on a habitat or natural area, and then repeated seasonally to showcase changes in the habitat, as well as annually to mark any overall changes in the biodiversity of an area.

The Ecosystem Web Game is a great introductory activity to do before beginning a study of a habitat such as a pond or forest ecosystem. It highlights important interconnections and dependencies and is a great way to assess student understanding.

Activity Summary

Activity	Logistics	Materials
<p>Activity 4: Who Lives Here? Habitat Biodiversity Scavenger Hunt</p>	<p>Subject: Science Time: One or two periods outdoors, in-class time to create posters and/or a habitat mural Audience: Grades 3-10</p>	<ul style="list-style-type: none"> • Clipboards • Pencils • Habitat Data Sheets for student teams • Tools for exploring: Trowels, buckets, plastic containers, hand lenses, small collecting nets, bug jars, binoculars, various field guides, art supplies
<p>Activity 5: Everything is One: Ecosystem Web Game</p>	<p>Subject: Science Time: One period indoors or outdoors as part of a field trip. Audience: Grades 2-10</p>	<ul style="list-style-type: none"> • Paper • Markers • Pictures of plants and animals and non-living things that are found in an ecosystem (e.g. forest, wetland), or labels (e.g. Water, Sun, Bullrush, Duck, Dragonfly, Rock, etc). • Masking tape or bull clips to affix the labels to each student



Activity 4: Who Lives Here? Habitat Biodiversity Scavenger Hunt

Students participate in a hands-on exploration of a local natural area to gain an awareness of the number and variety of species present and understand what makes up an organism's habitat. *Note: This activity is best done in the spring or fall, when more life can readily be observed, but it is also useful for collecting baseline data about an area and repeating it each season for comparison.*

Science	
Curricular Competencies	Content
<ul style="list-style-type: none">• Questioning and predicting• Planning and conducting• Processing and analyzing data and information• Evaluating• Applying and innovating• Communicating	<p>Grade 3:</p> <ul style="list-style-type: none">• Biodiversity in the local environment• The knowledge of local First Peoples of ecosystems <p>Grade 4:</p> <ul style="list-style-type: none">• Sensing and responding: humans, other animals, plants• Biomes as large regions with similar environmental features <p>Grade 5:</p> <ul style="list-style-type: none">• First Peoples concepts of interconnectedness in the environment <p>Grade 9:</p> <ul style="list-style-type: none">• First Peoples knowledge of interconnectedness and sustainability

Time: One or two periods outdoors, in-class time to create posters and/or a habitat mural.

Audience: Grades 3-10

Materials:

- Clipboards
- Pencils
- Habitat Data Sheets for student teams
- Tools for exploring: Trowels, buckets, plastic containers, hand lenses, small collecting nets, bug jars, binoculars, various field guides, art supplies.

Background: Habitat and Biodiversity

What is a habitat? Whether you live in a house, apartment building, trailer, condo or some other style of home, you need air to breathe, a source of water nearby, food, safe shelter, and enough space to live and grow. Other living things in our neighbourhoods share these same basic needs. A plant or animal's home is its *habitat* - this is where it finds sufficient food, water, shelter and enough space to live and move. If any one of these is inadequate - for instance, a place has food and shelter, but no water close by - it's not a suitable habitat for that species. Within any area there may be many habitats, all slightly different from one another. The size of a habitat varies widely, from an entire forest to a pond, a rock or a patch of grass. Habitats, like our homes, are not static places and are always changing. For example, a salmon stream is affected by what happens within its watershed. Loss of any of the elements of habitat will have serious impacts on the animals living there - for instance, a water source might dry up, a tree is cut down, or a field is sprayed with pesticide. Humans have choice in how we impact the planet's habitats.

Biological diversity - or biodiversity - is a term used to describe the variety of life on the planet: plants, animals, fungi and micro-organisms. Our lives connect in thousands of ways with the plants and animals we share the earth with. Everything we eat, our homes, our running water and our possessions were all once living things, or connected with the lives and habitats of other species by some natural process. Our health, cultural vitality and very survival depend on conserving the variety of life on earth. We need to care about the living things in our world in order to protect them. To care about them, we need to understand them.

In this activity, students explore a natural area to discover and document its biodiversity and range of habitats.

Directions:

Part One: Biodiversity Explorers

1. Discuss some guidelines for how to act when being outside in a natural area, and invite students to develop their own rules for outdoor exploration (E.g. stay on the trails, do not pick any live material, or remove things from their location, fill in any holes, turn any rocks or logs back over, observe wildlife quietly and respect their space, etc.).
2. Pair students up, and give each team a clipboard, pencil, a Habitat Data Sheet and some extra paper (or their nature journals).
3. Define and discuss the background information above with the class. Explain that they will be honing their observation skills by looking for examples of biodiversity and habitat.
4. Head outside to a local green space that has a few trees and plants - your school grounds or a local park (you don't need a large natural area). Do one or two sensory awareness activities such as Sensory Wakeup Circle and Rainbow Chips, to tune everyone into their surroundings.

5. Have teams work to find examples of all the biodiversity clues on the habitat data sheet, taking turns locating and drawing their discoveries. Give them about 10 - 15 minutes. Have some field guides or species cards available to look up any insects, birds or plants that students find.

Part Two: Habitat Hunting

6. Next, have the teams choose a specific habitat: tell them to focus on one animal or plant and describe a) where it lives, b) some of its neighbours, and c) where gets its food and water. They should choose a name for their habitat, make a sketch of the components and record their findings on the data sheet. Have some fun with this part! (E.g. "Darlene Dragonfly's Home")
7. Tell students they'll be making a poster or mural with their information and drawings, so it's important to capture as many details about colours, shapes and sizes as they can.

Part Three: Habitat Diversity Mural

8. Once back in class, give students art supplies and paper, and have teams create a colour representation of the species and habitat they studied, with its name and specific components illustrated.
9. Have teams present their habitats to the class, and then create a Habitat Biodiversity Mural in a hallway with the completed posters.

Ask students:

- a. How many different types and numbers of habitats were found?
- b. What are some of the significant differences?
- c. Why is the diversity of habitats important?
- d. What are some ways they can be damaged by people?
- e. Are any of these habitats in danger of disappearing? Why?
- f. How could they be protected or enhanced?

Additional discussion question:

Most humans use resources far beyond the boundaries of our "habitats". Where does your food and water come from? Research what you had for lunch today, and refer to an atlas to explore the habitats of some of the things you and your family buy.

Assessment:

- Data sheets are complete with sketches and adequate descriptive detail.
- Habitat posters include references to an organism's food source (photosynthesis for a plant), water (e.g., rain, a puddle, a nearby creek), shelter or home (e.g., an ant hill, hole in a tree, patch of earth to grow in), and space to live and move (e.g., evidence of sufficient space for a tree to grow, large enough pond for a dragonfly to hunt insects in, or enough area close by for caterpillars or pill bugs to collect food).

Habitat Data Sheet

Name: _____

Date: _____

Biodiversity: or biological diversity is the term used to describe the variety of life on earth - plants, animals, fungi and micro-organisms.

Habitat: the place where an organism lives and can find accessible food, water, shelter and living space and varying in size from an ocean to a rotten log to a puddle.

Part One: Biodiversity Explorers

Find each of the clues, then draw one of each.

Three different sized leaves from the same plant	At least three different kinds of leaves	At least three different kinds of plant "skins" or surfaces.	A plant which has three different colours	At least three different kinds of seeds
At least three leaves with different textures	At least five different kinds of plants	At least three different kinds of plants growing under a tree	At least three different holes made by animals	Three different signs of an animal having eaten something
Three different consumers (animals) or evidence of them	Three different kinds of decomposers	At least three plants with different odours	At least three different kinds of leaf stalks	At least three different insects

Part Two: Habitat Hunting

Now that you've explored the area's biodiversity, choose one habitat and describe it on the back of this sheet, or in your journal, in words and drawings, using the following items for a guide.

1. Habitat name (make up your own!) and description.

2. Plants you find here.

3. Birds or mammals, or their signs, that you see here.

4. Insects you see here.

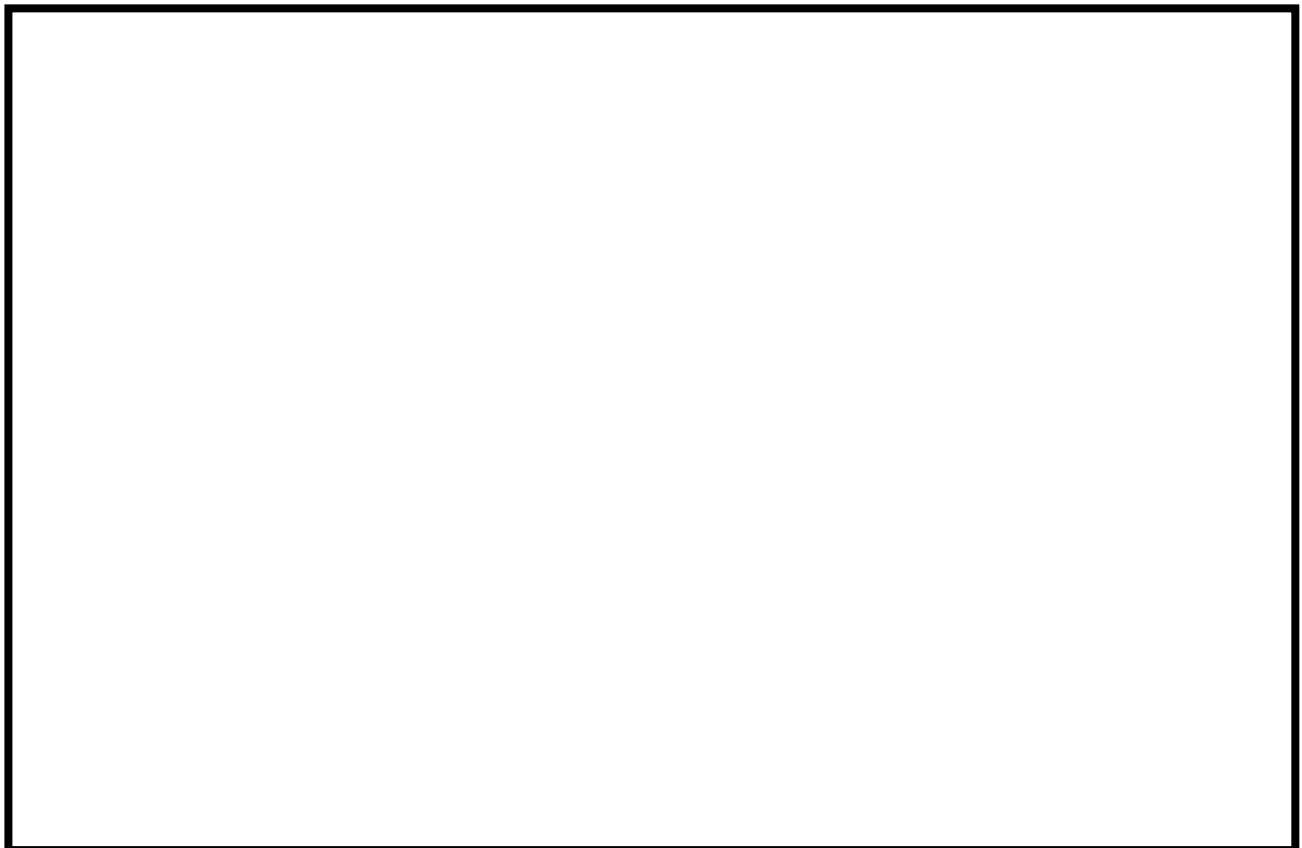
5. What else might live in this habitat?

6. Why would an animal or plant live here?

7. What are the signs of human influence?

8. Why would you choose to protect this habitat?

9. Make a rough sketch of the habitat you are visiting: include the food sources, water, shelter and living space for a chosen animal.





Activity 5: Everything is One: Ecosystem Web Game

This activity helps to highlight the interconnectedness between all living things and the planet: by visually creating a “web” with string, many of these connections are made more tangible for students. This is a great activity to use as an introduction to the study of an ecosystem, as well as a way to gauge understanding after a unit or field trip. It is also useful for collecting baseline data about an area and repeating it each season for comparison.

Science	
Curricular Competencies	Content
<ul style="list-style-type: none">• Questioning and predicting• Applying and innovating• Communicating	<p>Grade 3:</p> <ul style="list-style-type: none">• Biodiversity in the local environment• The knowledge of local First Peoples of ecosystems <p>Grade 5:</p> <ul style="list-style-type: none">• First Peoples concepts of interconnectedness in the environment <p>Grade 9:</p> <ul style="list-style-type: none">• First Peoples knowledge of interconnectedness and sustainability

Time: One period indoors or outdoors as part of a field trip.

Audience: Grades 2-10

Materials:

- Paper
- Markers
- Pictures of plants and animals and non-living things that are found in an ecosystem (e.g. forest, wetland), or labels (e.g. Water, Sun, Bullrush, Duck, Dragonfly, Rock, etc).
- Masking tape or bull clips to affix the labels to each student

Background:

The Indigenous people that live in the place now known as British Columbia have deep knowledge and cultural connections to the lands and waters. Before colonization, Indigenous people relied on the land for everything they needed in life! This includes foods, medicines,

and materials used to build homes, to make clothing, baskets, canoes, hunting and fishing tools, and those used in spiritual ceremonies. Many people were able to recognize hundreds of different types of plants. They knew where they grew best, what pollinated them, what animals would eat them or nest in them, and how plants could be used by people. People understood that they were intricately connected to the great web of life, that everything is interconnected and “Everything is One”. This concept of interconnectedness is embedded in how people interacted with the natural world. It is also rooted in language, for example:

- Nuu-Chah-Nulth (Central and Northern Coastal BC) say Hishuk ish ts’awalk, “everything is one and all are connected”
- Haida (Haida Gwaii) say Gina ‘waadluxan gud ad kwaagid, “Everything depends on everything”
- Secwepmc (Shuswap, South-Central Interior) say Kweseltnews, “We are all family”

Directions:

1. Before the activity, cut out images or make labels of different species (a diversity of native species from the small to large) and non-living things (sun, soil, water, rocks, air, etc) found in the environment in your region. Choose an ecosystem that the students are familiar with, or may be studying (e.g. a pond, forest, meadow).
 - a. E.g. For a forest ecosystem you might make labels for lodgepole pine, white pine, woodpecker, wood boring beetle, ants, mushrooms, snails, squirrels, mice, owls, cougar, wolf, hawk, mosquitos, swallows, water, soil, rocks, air, etc.
 - b. If you are studying ponds and wetlands, see the [Let’s Go to the Pond - Field Guide ID Cards](#) (if you have a set they make great labels as well).
 - c. You can also check the species cards included in [Notice Nature Pond Life Identification](#) for examples for a pond.
2. Present the phrase “Everything is One” and ask the students what they think it means. Tell them that it is a concept that is expressed in many First Nations languages and share some examples (in “Background” section, above).
3. Have students discuss the phrase “Everything is One” as a class or in small groups. Ask students to come up with examples of interconnectedness in the natural world. Provide them with discussion questions, such as:
 - a. How are you interconnected with other species in the environment? (e.g. What did you eat and drink for dinner last night? Where did those plants / animals come from?)
4. Give everyone their “identity” (have them tape the labels or images of the different species onto their chests) and have them gather in a large circle. Have them introduce themselves to each other.
5. Begin by giving one student the ball of yarn. Ask them to hold the end of it and identify another student that they are somehow connected to.
 - a. Consider the food chain (what eats the animal and what it eats) and its habitat needs (such as where it nests, shelters, or spends part of its life cycle). For example, the sun provides energy to the pine tree, the tree grows in the soil, the squirrel eats the pine seeds, the owl eats the squirrel, the fungus decomposes the tree, etc.

6. While holding the end of the yarn, the student describes how they are connected to another student and passes the ball of yarn to that person, who then hangs on to it, identifies another student that they are connected to and passes the ball of yarn.
7. Discuss the relationships found between each connection and continue passing the yarn until everyone is connected in a giant web. Discuss how the web represents that all things in natural systems are interconnected and interdependent.
8. Consider what would happen if one species were removed from the web. To demonstrate an imbalance in the system, state that the area is undergoing a drought, and have the person who is labelled "Water" drop their strings to show how the connected system will unravel. Discuss some threats to the species in the web (such as habitat loss, pollution, over-harvesting, development) and ways that the web can be protected (conservation actions, local organizations and stewardship activities).



PONDS AND WATERSHEDS

This section on Ponds and Watersheds begins with an introductory look at what a watershed is and how what occurs in a watershed affects everything in that region.

The “Let’s Go to the Pond!” activity guide was developed by the Habitat Conservation Trust Foundation folks. This comprehensive, free activity guide, identification cards and photos are useful and practical tools for all pond explorations. The guide outlines some great information around ponds and wetlands, and a range of activities to prepare students for a pond field trip, what to do at the pond, tips for field trip logistics and some follow up activities to do back in the classroom. While developed for grades K - 3, the basic hands-on activities like pond dipping are useful for any age.

Activity Summary

Activity	Logistics	Materials
<p>Activity 6: Water and Watersheds: Let's Explore!</p>	<p>Subject: Science Time: One to two periods outdoors, in-class time to create schoolground maps. Audience: Grades K-8</p>	<ul style="list-style-type: none"> - A rainy day - An outside area like a schoolyard, parking lot or field - Chalk or string - Pencils and paper - Popsicle sticks or bread tags - Plastic zip lock bags - Optional: Large orange garbage bags, duct tape, markers to make personal raincoats
<p>Activity 7: Pond Life / Let's Go to the Pond!</p>	<p>Subject: Science Time: One to two periods outdoors, in-class time to create drawings and murals Audience: K- 8</p>	<p>See Activity 7 for list and your own suggestions. This may include, field guides, species cards, dip nets, white buckets, spoons, turkey basters, magnifiers, and pond scopes.</p>



Activity 6: Let's Explore Water and Watersheds!

In this activity, students explore what a watershed is and discuss how people affect water as it passes by us. This is a good activity to do before a pond or stream study, to provide a bigger context for the water body you are visiting, and help students see that the pond or stream - as well as the school grounds and their community - are part of a larger connected water system. This is also useful for collecting baseline data about an area and repeating it each season for comparison.

Science	
Curricular Competencies	Content
<ul style="list-style-type: none"> • Questioning and predicting • Planning and conducting • Processing and analyzing data and information • Evaluating • Applying and innovating • Communicating 	<p>Kindergarten:</p> <ul style="list-style-type: none"> • Seasonal changes • First Peoples knowledge of seasonal changes • Weather changes <p>Grade 2:</p> <ul style="list-style-type: none"> • Water sources including local watersheds • Water conservation • The water cycle • Local First People's knowledge of water: water cycles, conservation, connection to other systems <p>Grade 3:</p> <ul style="list-style-type: none"> • Biodiversity in the local environment • The knowledge of local First Peoples of ecosystems <p>Grade 4:</p> <ul style="list-style-type: none"> • Sensing and responding: humans, other animals, plants • Biomes as large regions with similar environmental features <p>Grade 5:</p> <ul style="list-style-type: none"> • First Peoples concepts of interconnectedness in the environment

Time: One to two periods outdoors, in-class time to create schoolground maps.

Audience: Grades K- 8

Materials:

- A rainy day
- An outside area like a schoolyard, parking lot or field
- Chalk or string
- Pencils and paper
- Popsicle sticks or bread tags
- Plastic zip lock bags
- Optional: Large orange garbage bags, duct tape, markers to make personal raincoats

Part One: Make a Watershed Model

Background

Streams, ponds, lakes and rivers are part of a larger system known as watersheds. A watershed is the region or area drained by a stream. Imagine standing in the water and looking upstream; you are looking at the land that the stream drains - its watershed. Watersheds are mostly made up of land, not water. Every body of water has a watershed, and all people live in watersheds.

A useful way to visualize a watershed is to use the analogy of a huge deciduous tree. When rain falls, one drop may join with others to form a rivulet. The rivulets join with others to form a stream (tree branches are the streams). The streams flow into rivers which combine to form larger rivers (the largest branches). Imagine the tree trunk as the largest river that finally reaches the ocean.

Directions:

1. Use chalk to draw a large tree-like structure on a paved area of the school yard. (Note: If your school yard doesn't have a paved area, use a stick to scratch the figure on the ground, or use string or surveyor's tape and golf tees to peg out a "tree" on the lawn.)
2. Make sure there is one "twig" for each student in the class. Place each student at the end of a twig. Ask students to walk slowly, one at a time, from their twigs to the nearest branch, where they will join with other students. Keep joining the groups together until they are all walking down the trunk of the tree.
3. Explain that they started as individual water drops and joined together. When the students look back at their "tree" they will see their watershed. Repeat the procedure but give students in one branch some "pollution" (popsicle sticks or bread tags) to float down to the main stream and demonstrate how contamination is transferred.

Part Two: Schoolground mapping

Background:

It's important to realize how we affect water as it passes by us. Everything we do affects the plants and animals using the water downstream. By exploring the school grounds, students

can begin to see how water flows and pools, and how different activities (e.g. parking, gardening, erosion, etc.) can impact the water flowing through.

Procedure

1. In planning for a rainy day, have students create a map of the school grounds. Divide the school grounds into sections and assign groups of students to map each area. Orient students to which direction is north, so all maps face the same direction.
 - a. Note: Don't worry about scale or measurements - just have students capture details such as school buildings, parking lots, trees, playgrounds, grass, flower gardens, areas of bare soil, and any water features (e.g. ponds, downspouts from roofs, fountains, etc.).
2. Looking at their map and the school yard, have students predict where and how they think water will flow in their area, and mark their maps with arrows.
3. On a rainy day, have students dress properly, head outside and go on a simple tour of the school grounds with their maps in plastic bags.
4. Have students identify patterns of water flow - have them look for slopes, depressions, cracks in the sidewalk, rocks, gardens, water coming off buildings and downspouts, and any soil movement / erosion.
5. Have students use pencils to mark up their maps showing the actual flow of water. Also have students note what is in the water - caution them not to touch it, especially if it is running off a parking lot.
6. Post the student maps on the wall and discuss the general pattern of water flow at the school.
 - a. What slows down the water?
 - b. Where does it collect?
 - c. How accurate were their predictions?
 - d. Does the school ground contribute to pollution (e.g. oil or dirt from cars, fertilizer from grass or gardens?)
 - e. What did you see in the water? (e.g. oil or gas, soil, garbage, gravel, etc.)
 - f. Does the water run off the school parking lot?
 - g. Where does the water go? Does it flow into a storm drain?
 - h. Then where does it go? Into a local pond? Lake? River?
 - i. What could be done to help prevent any pollution from the school grounds getting into nearby water bodies?

Adaptions for Grades K-2

Have students work in small groups to investigate sites of flowing or standing water on the school grounds after a rain. Where does the water coming off the school roof go? Are there areas where the water forms pools? Have them observe what is in the water, but caution them not to touch it, especially if it is running off a parking lot. Students can collect some natural materials with which to construct tiny boats (bark, twigs, leaves). Have boat races to see where and how far the boats travel!

Students could also do this same activity in each of the seasons, and discuss how the water and precipitation changes at different times during the year.



Activity 7: Pond Life

Pond studies are one of the most interesting and engaging activities to do with students of any age! They provide opportunities to study really interesting critters and their adaptations, wetland habitats, succession, water quality and water cycles.

Science	
Curricular Competencies	Content
<ul style="list-style-type: none"> • Questioning and predicting • Planning and conducting • Processing and analyzing data and information • Evaluating • Applying and innovating • Communicating 	<p>Kindergarten:</p> <ul style="list-style-type: none"> • Seasonal changes • First Peoples knowledge of seasonal changes • Weather changes <p>Grade 2:</p> <ul style="list-style-type: none"> • Water sources including local watersheds • Water conservation • The water cycle • Local First People’s knowledge of water: water cycles, conservation, connection to other systems <p>Grade 3:</p> <ul style="list-style-type: none"> • Biodiversity in the local environment • The knowledge of local First Peoples of ecosystems <p>Grade 4:</p> <ul style="list-style-type: none"> • Sensing and responding: humans, other animals, plants • Biomes as large regions with similar environmental features <p>Grade 5:</p> <ul style="list-style-type: none"> • First Peoples concepts of interconnectedness in the environment

Let's Go to the Pond! Field Trip Ideas and Activities

The Habitat Conservation Trust Foundation publication [Let's Go to the Pond!](#) is a free downloadable guide that is great for planning and implementing a Pond Field Trip.

The guide has a range of really useful information and activities for pond study. While it is aimed at younger grades, most of the activities are suitable to use for any age group.



Student Workbooks

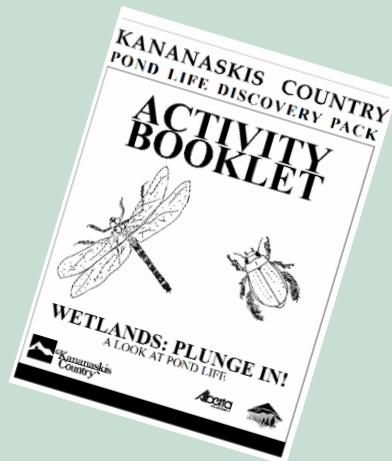
[Wetlands! Student Field Notebook](#)

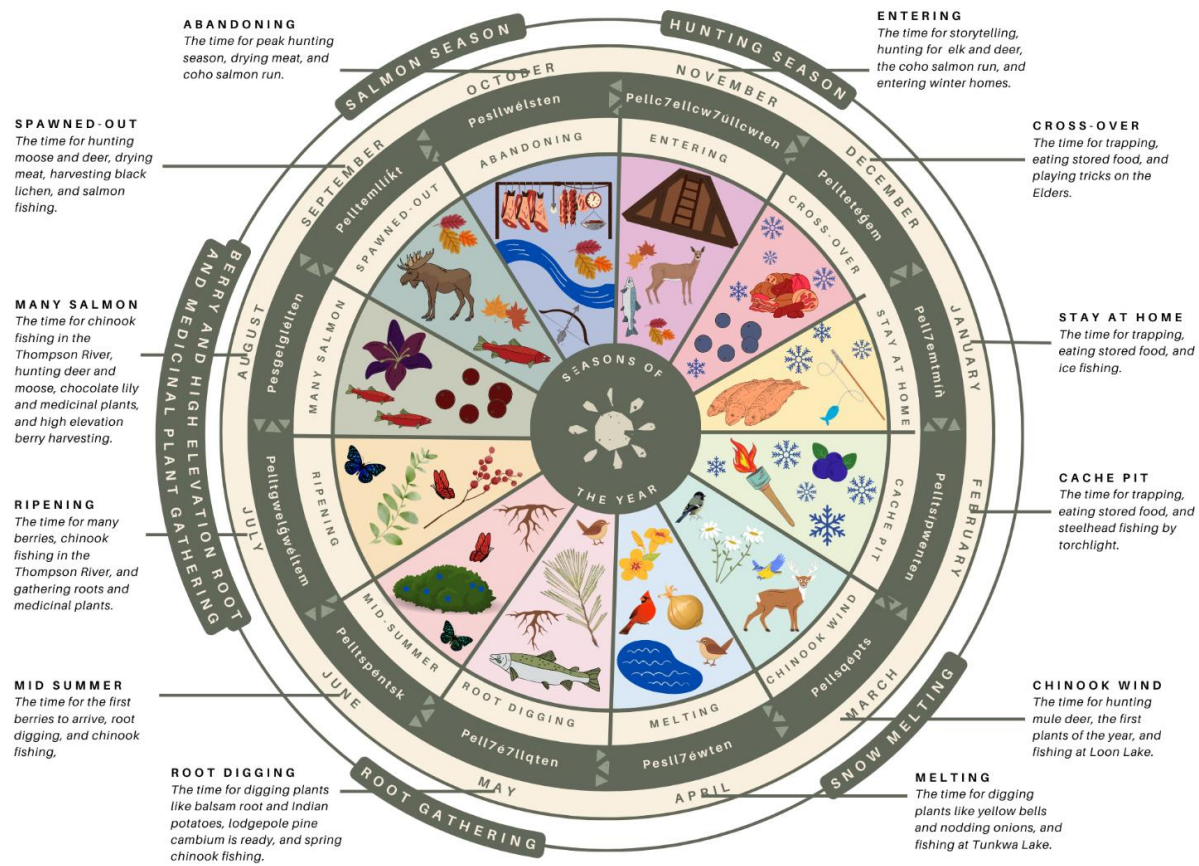
From Ducks Unlimited Canada, a simple guide for elementary students to use, to document site data such as weather, plant cover and signs of wildlife, plus collect field notes on animals, plants and leaves.



[Pond Life Discovery Activity Booklet](#)

A well designed workbook for middle school and older. While developed for Alberta Parks, the booklet is very useable in BC and contains great charts on identifying and collecting wildlife.





SEASONAL ROUND

The seasonal round captures the cyclical nature of resource harvesting activities in the year. These activities are what the Secwépemc people in the Skeetchestn area have historically done. The information included in the graphics is from "Secwépemc People, Land, and Laws: Yeri7 re Stsq'ey's-kucw" by Marianne Ignace and Ronald E. Ignace (p.195-203). The book also includes further detailed information of resource gathering activities and stories.

Since time immemorial, Secwépemc have used five seasons, called *nek'ltmicw*. The five seasons are:

1. Early spring (snow melting)
2. Mid to late spring (root gathering)
3. Summer (berry and high-elevation root and medicinal plant gathering)
4. Late summer to early fall (salmon season)
5. Mid to late fall (hunting season)

The seasonal round begins with **Pellc7ellcw7úllcwten** "Entering month", but the months have been shifted to align with the school year starting in September. Teachers can begin teaching with the Activity 8: Seasonal Round Inquiry, which provides an introduction to the Seasonal Round.

Secwépemc Seasonal Round Months and Learning Activities

Month and Pronunciation	Gregorian Calendar	Associated Activity
 Ignace: Pelltemlíkt Pellc. wéwlemten "Spawned out month"	September	Activity 8: Seasonal Round Inquiry Activity 9: Water Pollution
 Pesllwélsten "Abandoning month"	October	Activity 9: Water Pollution
Pellc7ellcw7úllcwten "Entering month"	October / November	
 Pell-tetéqem "Cross over month"	December	
 Pellkwetmín "Stay at home month"	January	
Pelltsípwenten "Cache pit month"	February	
Pelltkélayiten "Chinook wind month"	March	Activity 10: Spring Math
 Pell-tskúlecwten "Melting month"	April	Activity 10: Spring Math
Pell7é7llqten "Root digging month"	May	Activity 10: Spring Math Activity 11: Soil Compaction
Pellspéntsk "Mid-summer month"	June	
 Pell-tpéntsk "Getting ripe month"	July	
 Pelltéxelfcten "Many salmon month"	August	



Activity 8: Seasonal Round Inquiry

Science	
Curricular Competencies	Content
<ul style="list-style-type: none"> • Questioning and predicting • Evaluating • Applying and innovating 	<p>Kindergarten:</p> <ul style="list-style-type: none"> • Seasonal changes • First Peoples knowledge of seasonal changes <p>Grade 2:</p> <ul style="list-style-type: none"> • First Peoples use of their knowledge of life cycles <p>Grade 3:</p> <ul style="list-style-type: none"> • Biodiversity in the local environment • The knowledge of local First Peoples of ecosystems <p>Grade 5:</p> <ul style="list-style-type: none"> • First Peoples concepts of interconnectedness in the environment

Time: 45 minutes

Audience: All ages

Materials:

- Seasonal round poster printed (in colour)
- Calendar

Directions:

1. This lesson can be done at any time of year when introducing the seasonal round.
2. Introduce the Seasonal Round by asking the students these questions and discussing the round:
 - a. What are the seasonal cycles in the natural world around me? What are the four seasons that we know?
 - b. Since time immemorial, Secwépemc have used five seasons, called *nek'ltmicw*. The five seasons are:
 - i. Early spring (snow melting)
 - ii. Mid to late spring (root gathering)

- iii. Summer (berry and high-elevation root and medicinal plant gathering)
 - iv. Late summer to early fall (salmon season)
 - v. Mid to late fall (hunting season)
 - c. How do these seasons differ from the four we often use? These seasons tell us about what to harvest!
 - d. Now let's think about the moon, what is the significance of the moon in our lives today? Discuss how its regular cycles are very good at keeping time. With its regular cycle, it was used to make calendars. What is a calendar used for?
3. Introduce the Secwépemc seasonal round, that has thirteen lunar months. The thirteen months were made to fit with the twelve named months to adjust the time of the Pellc7ellcw7úllcwten ("entering month").



Activity 9: Water Pollution

In early September, the **sockeye salmon** were fished; from mid to late fall, the **coho** were then fished, mainly in the Fraser River tributaries (Ignace, M. and Ignace, R.). This activity will teach about September, or Spawned Out Month, by creating a water model. When we are fishing, we need to make sure that our water is good, so that the fish are healthy. *Connect to prior knowledge of the water cycle.*

Science	
Curricular Competencies	Content
<ul style="list-style-type: none"> • Questioning and predicting • Planning and conducting • Processing and analyzing data and information • Evaluating • Applying and innovating • Communicating 	<p>Kindergarten:</p> <ul style="list-style-type: none"> • Seasonal changes • First Peoples knowledge of seasonal changes • Weather changes <p>Grade 2:</p> <ul style="list-style-type: none"> • Water sources including local watersheds • Water conservation • The water cycle • Local First People’s knowledge of water: water cycles, conservation, connection to other systems <p>Grade 3:</p> <ul style="list-style-type: none"> • Biodiversity in the local environment • The knowledge of local First Peoples of ecosystems <p>Grade 4:</p> <ul style="list-style-type: none"> • Sensing and responding: humans, other animals, plants • Biomes as large regions with similar environmental features <p>Grade 5:</p> <ul style="list-style-type: none"> • First Peoples concepts of interconnectedness in the environment

Time: 60 minutes x 2 days

Audience: All ages

Materials:

- Plasticine
- Watering can/jar
- Cocoa/sprinkles

Directions:

1. Have the class make a model(s) of the local area using plasticine over two days, including with higher elevation areas for hills and lower areas for creeks and rivers, or check out this handy guide for students to build a simple watershed model using plastic sheets and newspaper: <https://hctfeducation.ca/file/what-is-a-watershed.pdf>
2. When the model is done, do the following activity.
3. With a watering can, sprinkle water onto the model. See how the water drains down and collects in the rivers, and eventually the ocean.
4. Sprinkle cocoa powder or sprinkles on the model. These represent fertilizers, raw manure from farms, chemicals from industry, oil from the roads, litter from the school grounds, etc. What happens when the rain comes? All of the pollutants go into the river! That's why we need to pick up our garbage, use limited fertilizers, and make sure farm animals don't enter the rivers and they are fenced in.
5. Show them the video: [Water Pollution for Kids](#)

Additional lesson outside:

At this time of year, **black tree lichen** is harvested, which was an important food that was harvested from trees, pit cooked, then dried.

*"Another integral part of the diet of Secwépemc and other Interior peoples was wile or black tree lichen (*Bryoria freemontii*), which our people raked off Douglas fir, lodge pole pine or sub alpine fir trees at mid to higher elevations in early fall. After being washed to remove its outer layer of sulphuric acid, it was pit-cooked, shaped into loaves or cakes, and then dried for future use (Turner 1974; Turner and M. Ignace ms.). The dietary importance of wile was long considered to lie in its capacity to be an always available "starvation food." Recent experimental graduate research by Crawford and Yip (2007) have shown that in pit-cooking ovens, wile acted as a catalyst to enhance the nutritional composition of root plants during the slow-cooking process." - Ron Ignace, [source](#).*

Extension: Connect to a pit cooking activity. Find more information at this [SD73 link](#), and this [First Nations Health Authority fact sheet](#).



Activity 10: Spring Math

This activity is all about using students' math skills and applying them during the Chinook Wind Month, Melting Month and/or Root-Digging Month.

Math	
Curricular Competencies	Content
<ul style="list-style-type: none"> Reasoning and analyzing Understanding and solving Communicating and representing Connecting and reflecting 	Kindergarten: <ul style="list-style-type: none"> Number concepts to 10 Repeating patterns with two or three elements Grade 2: <ul style="list-style-type: none"> Addition and subtraction to 100 Repeating and increasing patterns Grade 4: <ul style="list-style-type: none"> Increasing and decreasing patterns, using tables and charts

Time: 45-60 minutes for 1-4 of the following activities, or multiple days

Audience: All ages

Materials:

- Clipboards and pencils
- Recording sheets
- Various nature loose parts

Directions:

- In small groups, students can practice their observation and counting skills, which can be adapted to the appropriate age and skills that are being done in math.
 - Textures:** Using colored pencils or crayons and a blank piece of paper, do a rubbing of things outside of various textures. Experiment with different pressures and sides of the crayons, they will create different colours! Students can practice making bark or leaf rubbings of different trees in an area, then give them to another group to see if they can correctly match the bark or leaf rubbing to the tree!
 - Sound:** Do to the Sensory Wake up Circle first with students, then encourage them to hear 5 sounds, feel or look for 4 textures around them, 3 things they

can see, 2 smells, and 1 thing they might taste if it was in season (but not today, unless the teacher can confidently identify it). For bird songs and information on bird identification, check out this website:

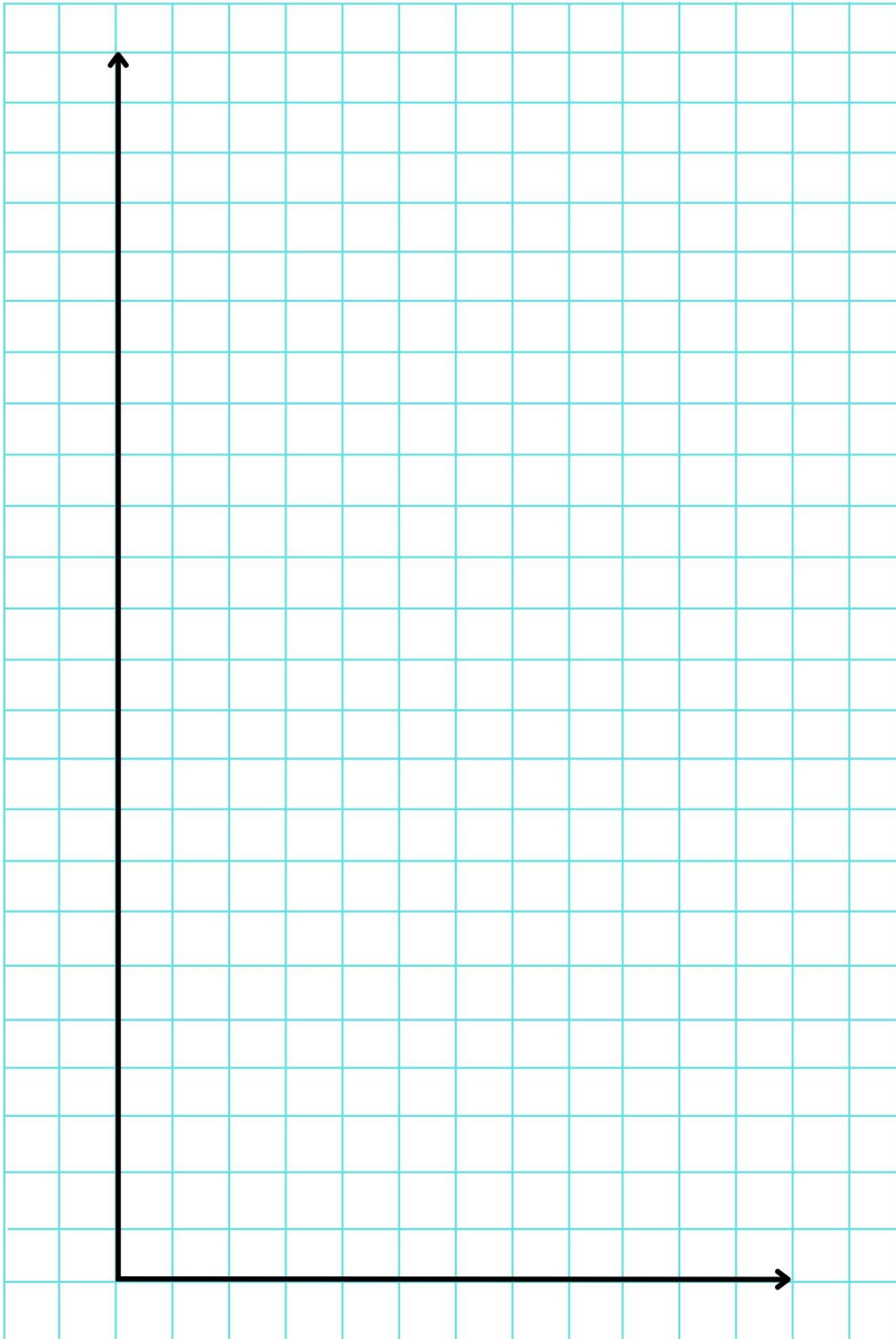
<https://www.birds.cornell.edu/k12/teaching-bird-id/>.

- c. **Patterns:** Without picking anything from a living plant, encourage students to find loose parts, like sticks, leaves, tree cones, rocks, etc. They can gather them together and make various patterns: ABA, ABC, ABB, and more! After they finished linear patterns, practice making circular patterns, similar to mandalas. Check out this website for seed mandalas: <https://meganzeni.com/seed-mandala-art-project/>. Read through the *Sorting through Spring* book by Lizann Flatt. For older grades, learn about the Golden Ratio and the Fibonacci sequence, especially in flower petals.
- d. **Shapes:** Have students find objects that are squares, rectangles, circles, triangles, etc. They could also make these shapes with loose parts they find.
- e. **Symmetry:** Find objects that are symmetrical, like leaves, flowers, and tree cones. Where is the line of symmetry? Draw a picture on a data sheet.
- f. **Graphing:** Using the worksheet below, count various objects and record them on a bar graph. For example, how many purple, red, yellow, flowers do we see today? How many different types of leaves? For each different item or colour, fill in another box.
- g. **Estimation:** Using a measuring tape or ruler, estimate the length of various sticks, rocks, and leaves. Practice estimating large groups of things, like a pile of rocks. "If this is how big 10 rocks are, how many do you think are in that large pile?" Estimate how old trees are, then count the tree rings in downed trees to compare.

Spring Math Worksheet

Name: _____

Date: _____





Activity 11: Soil Compaction

During May, or the Digging Month, it is important to understand soil compaction in order to harvest and dig plants like arrowleaf balsamroot, water parsnip, and mountain potato. Use this activity to teach students about biodiversity, plants and Digging Month.

Science	ADST
<p>Grade 3:</p> <ul style="list-style-type: none">• Biodiversity in the local environment <p>Grade 4:</p> <ul style="list-style-type: none">• Sensing and responding: humans, other animals, plants <p>Grade 5:</p> <ul style="list-style-type: none">• First Peoples concepts of interconnectedness in the environment	<ul style="list-style-type: none">• Applied Design• Applied Skills

Time: Several days

Audience: Grades 4-12

Materials: Sticks, knives for wood carving, string

Directions:

1. Making Secwépemc digging sticks (pétse, [pronunciation on First Voices](#)). Sticks were made with saskatoon or black hawthorn wood with handles made of antler or birch, sharpened to a point and hardened by fire ([Shuswap Passion](#)). This shape allowed the roots of the plants to be harvested without digging up the entire plant.
2. An alternative activity could be to have students complete the Soil Compaction Worksheet below, and research and draw plants whose roots would be dug up by a pétse; these include, arrowleaf balsamroot, water parsnip, mountain potato, yellowbells, nodding onions, bisquitroot, and more.

Extension: Complete this [Soil Filtration Experiment](#)

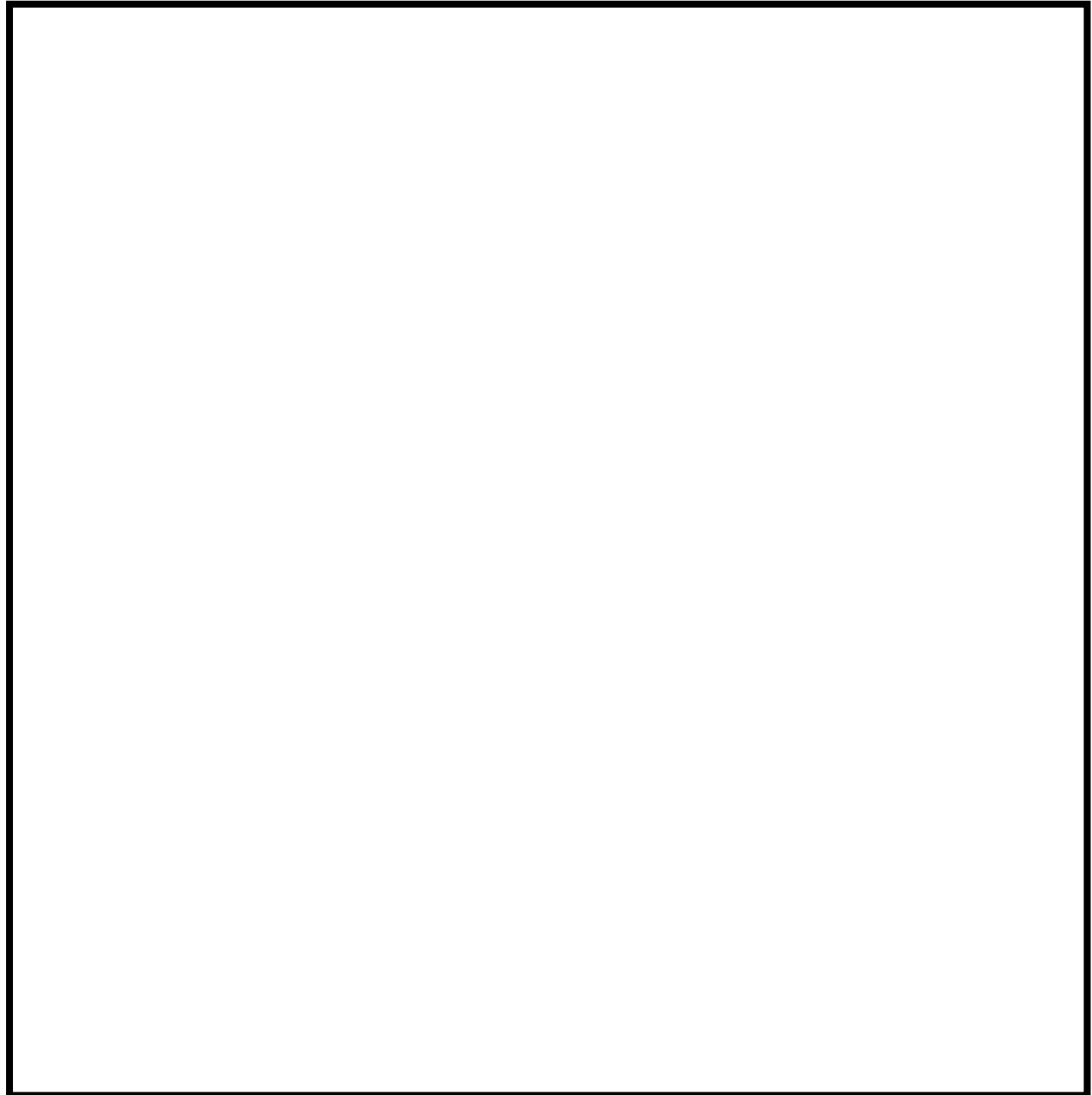
Soil Compaction Worksheet

Name: _____

Date: _____

If I had a p tse (digging stick), I would use it to harvest _____

_____.

A large, empty rectangular box with a thick black border, occupying the lower half of the page. It is intended for a drawing or a detailed response to the question above.

Additional References and Resources

Binder, Guy and Penn (1995). *Backyard Biodiversity and Beyond. A Handbook for Students and Teachers.* Ministry of Environment, Province of BC.

HCTF Education (2022) *Let's Go to the Pond! Field Trip Ideas and Activities to Explore at Ponds and Wetlands in BC Parks and other Special Places in BC,* HCTF Education. Available at: <https://hctfeducation.ca/resource/?resourcecode=RR000143>.

Icons by [Icons8](#)

Ignace, M. and Ignace, R. (2017) *Secwépemc People, Land, and Laws: Yeri7 re Stsq'ey's-kucw.* McGill-Queen's University Press, Montreal. Copyright of the Shuswap Nation Tribal Council.

McClaren, Fulton & McMahan. (1998) *Water Stewardship. A Guide for Teachers, Students and Community Groups.* Ministry of Environment, Province of BC.

Project WET! *Curriculum and Activity Guide* (1999). The Watercourse and Council for Environmental Education, Houston, Texas.

Staniforth (2009). *Get Outdoors! An Educator's Guide to Outdoor Classrooms,* Wild BC and BC Ministry of Environment. Available at: <https://hctfeducation.ca/resource/?resourcecode=RR000289>.

Turner, Nancy J. (2005) *The Earth's Blanket. Traditional Teachings for Sustainable Living.* Douglas & McIntyre, Vancouver / Toronto.

Appendix A: Seasonal Round Print Files

The following pages have three versions of the Secwépemc Seasonal Round for teachers to print out for their classroom. By printing them out, teachers can have the seasonal round in the classroom year-round. The three versions consist of:

- Version 1: A complex version of the round with graphics inside and seasonal activities outside of the round.
- Version 2: A simpler, graphic version of the round with no text.
- Version 3: A compact version of the round with text and graphics on the inside of the round.

Please print out one of the three versions of the Secwépemc Seasonal Round on 11" X 17" paper for your classroom.

