



Making a difference...together

AT RISK IN LAND, SKY & SEA

Educators Guide

Program at a Glance

Throughout British Columbia, including our own Capital Region, many plant and animal species are dwindling in number. On this enlightening program, students will discover examples of species at risk from the forest to the beach. We will explore and learn about their habitat, threats to their populations, and how we can help. Through interactive activities along the trail, students will discover the lives of some lesser-known species in



the region. We will also cover success stories of species at risk rebounding, such as that of the Bald Eagle. There will be gentle beach exploration to respectfully investigate the intertidal life. Leaving this program, students will be inspired to take action to help all species, including those at risk.

In this program, your students will...

- Identify the names and habitats of some species at risk
- Explore the forest and beach, learning respectful exploration
- Understand the importance of protecting species at risk
- Evaluate the impact of our actions on these species
- Become inspired to take action to help protect parks, plants, and animals

Curriculum Connections

Our place-based school programs directly relate to the K-5 science curricula. Below you will find some big ideas, curricular competencies and content that will be addressed on your program.

Big Ideas:

- All living things sense and respond to their environment (Gr 4)
- Questioning what we hear, read, and view contributes to our ability to be educated and

engaged citizens (Gr 4 & 5)

- Multicellular organisms have organ systems that enable them to survive and interact with their environment (Gr 5)

Curricular Competencies:

- Exchange ideas and perspectives to build shared understanding (Gr 4)
- Demonstrate curiosity about the natural world (Gr 4)
- Make predictions based on prior knowledge (Gr 4)
- Make observations about living and non-living things in the local environment (Gr 4)
- Make simple inferences based on their results and prior knowledge (Gr 4)
- Identify some simple environmental implications of their and others' actions (Gr 4)
- Represent and communicate ideas and findings in a variety of ways (Gr 4)
- Contribute to care for self, others, school, and neighbourhood through individual or collaborative approaches (Gr 4 & 5)
- Transfer and apply learning to new situations (Gr 4 & 5)
- Observe objects and events in familiar or unfamiliar contexts (Gr 4 & 5)
- Demonstrate an understanding and appreciation of evidence (Gr 4 & 5)
- Identify First Peoples perspectives and knowledge as source of information (Gr 4 & 5)
- Experience and interpret the local environment (Gr 4 & 5)
- Express and reflect on personal or shared experiences of place (Gr 4 & 5)
- Exchange ideas and perspectives to build shared understanding (Gr 5)
- Develop a plan of action to address a selected problem or issue (Gr 5)
- Differentiate between intended and unintended consequences of events, decisions, and developments, and speculate about alternative outcomes (cause and consequence) (Gr 5)
- Demonstrate an openness to new ideas and considerations of alternatives (Gr 5)
- Communicate ideas, explanations, and processes in a variety of ways (Gr 5)

Content:

- Sensing and responding: humans, other animals, plants (Gr 4)
- Biomes as large regions with similar environmental features (Gr 4)
- The nature of sustainable practices around BC's resources (Gr 5)
- First Peoples concepts of interconnectedness in the environment (Gr 5)

Suggested Pre-trip Activities

- Have students draw pictures about the field trip and make predictions about what they might see

- Create a K-W-L chart (what I know, what I want to know, and what I learned), and fill out the first two categories as they relate to species at risk. Have students develop questions they would like to investigate.
- Show photographs of some of Vancouver Island’s species at risk, such as elephant seals, marbled murrelets, common sharp-tailed snake, sand-verbena moth, Western painted turtle, Northern red-legged frog, Steller sea lion, contorted-pod evening-primrose, Townsend’s big-eared bat, and Howell’s triteleia.
- Go out on the school grounds to see what habitat is there; make drawings or take photographs. Brainstorm what plant or animal species might call this place home.
- Have a sharing circle to allow students to share their stories and experiences about being in nature, including how they can help protect parks, plants, and animals

Follow-up Activities

- Return to the class bulletin board to make changes in their drawings or predictions based on their new knowledge gained from the field trip.
- Revisit the K-W-L chart and fill in the “L” (What I learned). Discuss answers to their investigative questions.
- Have each student choose a species at risk to research and write about. Presentation to the class is optional.
- Start a nature logbook for your classroom. Each time students observe something, have them write down or draw what they have seen.
- Look into applying for World Wildlife Fund’s Go Wild Grants with your ideas to help your schoolyard’s nature thrive: <https://schools.wwf.ca/events/primary-go-wild-school-grants/>

Background Information

Ecosystem At Risk

British Columbia has been divided into 14 “biogeographic zones” based on similarities in vegetation, soils and climate. The smallest and most geographically restricted of these zones is the Coastal Douglas-fir ecosystem, which is found primarily on southeastern Vancouver Island, as well as on the southern Gulf Islands and a narrow strip of the Sunshine Coast.

The Coastal Douglas-fir zone is in the rainshadow of Vancouver Island and Washington’s Olympic Mountains. Consequently, the summers are warm and dry, and the winters are mild and wet,

although drier than most other BC coastal zones. This Mediterranean-type climate creates a unique set of conditions, allowing for a diverse group of plants and animals. Within the Coastal Douglas-fir zone, Garry oak ecosystems occur in sites characterized by particularly shallow, dry and/or rocky soils. Around 100 species (plants and animals) are considered at-risk and found in this ecosystem. The Garry oak ecosystem itself is endangered with less than 5% remaining intact in a near-natural condition.

Coastal Douglas-fir ecosystems are among the most imperiled coastal ecosystems. Since they occur along the coast in regions favoured by people, they were some of the first forest types targeted for logging and cleared for urban and agricultural development. Today, very few older forest ecosystems remain in the Coastal Douglas-fir zone, and those that do are highly fragmented. In other words, they exist as isolated "islands" among a landscape altered by human development.

Coastal Douglas-fir ecosystems, including Garry oak ecosystems, help to maintain biodiversity, store and sequester large amounts of carbon dioxide, help to prevent flooding by soaking up rainwater, filter contaminants in runoff, purify the air, provide forestry jobs and revenue, and provide natural areas for research, recreation and aesthetic enjoyment. Regional Parks protect some fine examples of Coastal Douglas-fir ecosystems and offer valuable opportunities to explore and learn about these habitats.

What are species at risk?

Over 100 species of plants are found in Coastal Douglas-fir ecosystems. These plants, along with fungi and the associated soil microorganisms, form the structure of the forest and provide habitat and food for the great diversity of animals that live in the Coastal Douglas-fir ecosystem.

Many of these plants and animals are endangered or threatened – “species at risk”. These species have low populations and are in danger of disappearing. Species at risk can have different classifications federally and provincially. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent advisory panel to the Minister of Environment and Climate Change Canada that assesses the status of wildlife species at risk of extinction. This is a federal level for status, while the BC Conservation Status is a provincial level given by the Conservation Data Centre (CDC).

The CDC assigns each species at risk to the red, blue or yellow list based on their conservation status rank – a code that identifies the level of concern about their risk. Red-listed species have the highest level of concern, and considered extirpated from BC, endangered or threatened. Blue-listed species are of ‘Special Concern’, meaning sensitive to human activities or natural events but not considered endangered or threatened. Yellow-listed are secure species but may have sub-species that are red- or blue-listed. Table 1 below shows both the federal and provincial status for 12 species at risk in the Capital Region in alphabetical order.

Note that some species at risk have different population numbers in varying areas. For example, little brown bats are listed federally as ‘endangered’ due to a low population in Eastern Canada with the devastation of white nose syndrome (a syndrome that causes bats to wake up too early in winter, leading to starvation and death). In Western Canada, however, little brown myotis have higher numbers as white nose syndrome has not affected populations here; they are still listed federally as ‘endangered’ as they are grouped with the eastern bat populations.

Species	COSEWIC status	BC Provincial Conservation Status
Blue-grey tailed slug	Threatened	Blue
Common sharp-tailed snake	Endangered/Threatened	Red
Contorted-pod evening-primrose	Endangered	Red
Elephant seal	Not At Risk	Red
Howell’s triteleia	Endangered	Red
Little brown myotis	Endangered	Blue
Marbled murrelet	Threatened	Blue
Northern abalone	Endangered	Red
Propertius duskywing	N/A	Red
Sand-verbena moth	Endangered	Red
Steller sea lion	Special Concern	Blue
Western painted turtle	Threatened	Red

Table 1: Twelve species at risk in the Capital Region and their federal and provincial status.

Threats to Species at risk

In the Coastal Douglas-fir ecosystem, there can be many threats to species, not just those at-risk. Some threats include, but are not limited to:

- Pollution – runoff from agriculture, roads, and industry
- Climate change – an increase in temperature, changing habitats and seasons
- Habitat loss and fragmentation – this can be through logging, development, agriculture, roads, etc.
- Invasive species – these can outcompete native species
- Wildfires – as climate warms, more frequent and severe wildfires can occur, burning larger areas

How We Can Help

There are numerous ways we can help species at risk in their region. Coming on this program to learn about some species at risk starts students thinking about the world around them in a different way and how they can help. Continuing this education at school and at home is paramount.

With assistance from an adult, students can help monitor and identify species in parks and their own backyard. Using apps or websites like www.iNaturalist.org or www.ebird.org to record observations, students can play a role in citizen science. Researchers can use this data to help track where species, including those at-risk, are being sighted. This helps determine where further protection may be needed.

Invasive species removal is another way students can be involved in stewardship and conservation. Whether through a non-profit organization, school club, or government organization, learning how to remove invasives can be a valuable experience for students. They will see first-hand the effect of invasive species removal. As time goes on and invasive species continue to be removed, students can see the return of native species and a higher biodiversity. Higher biodiversity can help species at risk that are dependent on native species. For example, the sand-verbena moth is dependent on the yellow sand-verbena plant found in coastal dune ecosystems for food and larvae-laying habitat.

While in regional parks, students can stay on trail, thereby protecting sensitive ecosystems, and allowing plants and animals to thrive. Removing garbage, picking up after dogs, and modelling

responsible park etiquette are all ways students can help. By each doing our part, Regional Parks and the plants and animals that call them home, including those at-risk, will continue to be enjoyed by future generations.

Resources

Committee on the Status of Endangered Wildlife in Canada

<https://www.cosewic.ca/index.php/en/>

Earthday Education Resource Library - <https://www.earthday.org/education-resource-library/>

Protect Our Species Toolkit - <https://www.earthday.org/wp-content/uploads/2020/01/Climate-Education-Week-2019-Toolkit-Biodiversity.pdf>

Government of BC's Species at Risk - <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/species-ecosystems-at-risk>

Invasive Species Council of BC Educators - <https://bcinvasives.ca/for-youth/for-educators/>

NatureKids BC Resources - <https://naturekidsbc.ca/educational-resources-2/>

NatureWatch (report sightings and join other citizen scientists!) -

<https://www.naturewatch.ca/blog/2014/10/16/naturewatch-wants-you/>

Science First Peoples Teacher Resource Guide. First Nations Education Steering Committee, 2016.

<https://www.fnesc.ca/wp/wp-content/uploads/2015/08/PUBLICATION-61496-Science-First-Peoples-2016-Full-F-WEB.pdf>

Sierra Club BC Resources and Activities - <https://sierraclub.bc.ca/education/teachers/>

Including 'Addressing the Fears of Teaching Environmental Education in the Classroom'

World Wildlife Fund Activities - <https://schools.wwf.ca/primary-activities/>

Go Wild Grant – <https://schools.wwf.ca/events/primary-go-wild-school-grants/>

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