Species at Risk in the Classroom

A Guidebook for Educators on the South Coast of British Columbia

South Coast Conservation Program

Written and compiled by: Olivia Carnrite
Edited by: Pamela Zevit

South Coast Conservation Program
Conserving and Restoring at Risk Species and Ecosystems on the BC South Coast
www.sccp.ca

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Title Page Images: watercolour paintings by Carrielynn Victor; from left to right: Pacific Water Shrew, Western Painted Turtle, Oregon Spotted Frog

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Canada

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Acknowledgements

I would like to aknowledge all of the dedicated, passionate poeple working to protect species at risk in BC. Keep up the good work!

Thank you to the amazing Carrielynn Victor for providing such beautiful artwork for this guidebook.

A big thank you to Kerrie Mortin from WildBC of Habitat Conservation Trust Foundation for genourously allowing us to use some of their wonderful amphibian activities.

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Introduction

The South Coast of British Columbia is one of the most beautiful and diverse places in Canada. The many wonderful features of the South Coast area continue to attract more and more residents to the area. As human population increases plants and animals are faced with increased competition for shrinking habitats, and resources as well as degradation of habitats due to pollution.

The South Coast Conservation Program (SCCP) works to help protect a growing number of species at risk in the South Coast region.

The SCCP identified a need for increased education of youth about species at risk. There is currently a limited amount of educational resources about species at risk, particularly resources that are British Columbia based. The SCCP hopes that this guidebook will help to address that gap by providing activities for both formal and informal educators based on local species at risk.

The South Coast Conservation Program (SCCP)

The SCCP was a established in 2005 by government and non-government organizations to fill coordination gaps between various levels of government, conservation groups, land use interests and local communities to conserve species and ecological communities at risk. The SCCP plays a vital role in assisting various stakeholders in navigating the complexities around species at risk. This is accomplished through a range of activities, including: workshops on guidelines and stewardship practices, networking through social media and supporting on-the-ground applied science on priority species and their habitats.

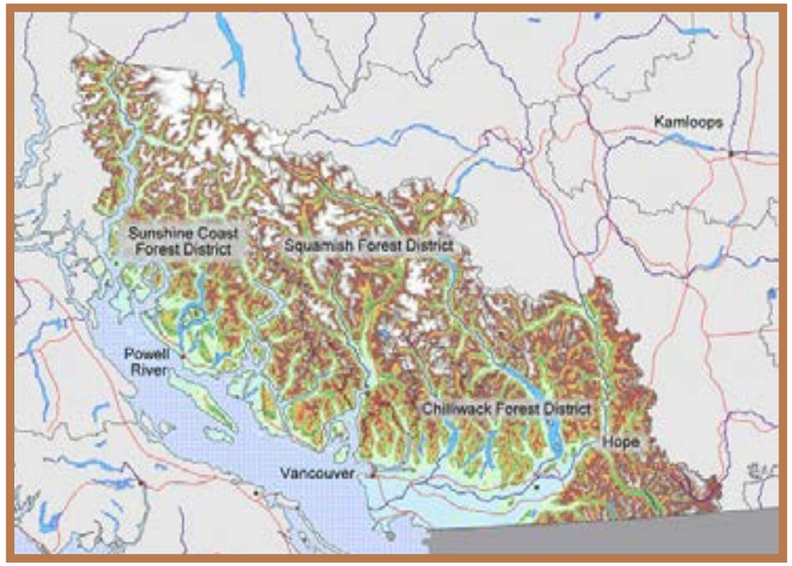
The SCCP is not a legal entity like a society or charity.
It is governed as a collaborative or joint venture through a steering committee comprised of a number of partners including government (provincial, regional district and municipal) and non government (land trusts, stewardship groups, academia, environmental professionals and specialists). The steering committee is Co-Chaired by the South Coast Region's provincial Species at Risk Biologist - Kym Welstead and The former Land Conservancy of BC's Lower Mainland Regional Manager - Tamsin Baker. Administrative support is provided by the BC Conservation Foundation and overall coordination of the various program's project streams, outreach and engagement is provided through a contract with Pamela Zevit a Registered Professional Biologist who has been working on local, regional and provincial conservation and land use issues for almost

The South Coast of BC

The South Coast of BC is home to over 2 million people. It is a geographically diverse landscape facing growing demand for it's natural resources.

The South Coast area encompasses five Regional Districts:

- Fraser Valley
- Metro Vancouver
- Powell River
- Squamish - Lillooet
- Sunshine Coast



Included in the South Coast are three large Forest Districts:

- Chilliwack
- Squamish
- Sunshine Coast

What are Species at Risk?

A "species at risk" is any plant or animal native to an area that is in danger of becoming extinct or extirpated (disappearing from its range).

Who protects species at risk?

At risk species are recognized by Canada's Federal government under the Species at Risk Act also known as SARA. An independent regulatory body known as COSEWIC, or the Committee on the Status of Endangered Wildlife in Canada, identifies risks to species and reports their findings to the Federal Government. The species identified by COSEWIC may then be eligible for protection and recovery under SARA and/or the Federal Fisheries Act.

In BC, species at risk have additional protection. BC's Ministry of Environment uses a similar process as the Federal government to determine which species are considered at risk. The Ministry of Environment consults NatureServe, a non-profit organization, with similar goals as COSEWIC. The Ministry of Environment then provides its own detailed species at risk ranking. Species may also be protected under the BC *Wildlife Act* and/or BC's *Forest and Range Practices Act* which designates species as Identified Wildlife.

BC Species at Risk Rankings

EXTINCT: A species that no longer exits

EXTIRPATED: A species that no longer exists in its native BC habitat, but may occur elsewhere

ENDANGERED: A species facing immminent extinction or extirpation

THREATENED: A species that is likely to become endangered if limiting factors, such as diminishing population sizes, isolated geographic distribution, and habitat threats are not reversed

RED-LISTED: Any BC species being considered for designation as Extirpated, Endangered or Threatened under the *Wildlife Act*

BLUE-LISTED: Any BC species not immediately threatened, but of special concern due to their sensitivity to human activities or natural events

First Nations Perspectives

Oral traditions have been instrumental in forming and maintaining the foundation of Stó:lō /Coast Salish society. There has always been value in acknowledging the connection that elders have with their children and grandchildren, to experience the sharing of historical understanding through story, uniting past and present. Sharing history through oral society means expressing one's world view, which is a comprehensive, diverse perspective that balances the physical, spiritual and intellectual worlds. World view translates to a living knowledge of resources that reflects thousands of years of observation and connection.

Ancestors of the Coast Salish people were either sky-born "tel swayel" or transformed into their current forms by Xe:xá:ls in the time when the world was 'being set right'. Xe:xá:ls (Transformers – three sons and one daughter of Red headed woodpecker and Black bear) traveled through the land, up and down the river, transforming beings into certain plants, rocks, mountains, animals and geographic places within S'ólh Téméxw long long ago, creating the world as it exists today.

Family connections that date back to the origins of the Coast Salish people still exist. Those connections are alive in the ancestral names, ceremonies and hereditary use and passing of specific sites around the territory.

Species at Risk, and Oral Traditions Building Bridges between Cultures

Some of the Stó:lō origin species include:

Ts'elxwéyeqw *Chilliwack tribe: Black bear with white spot

Pelho'lhxw *Pilalt tribe: Mountain Goat, Rush, Sandhill crane

Máthekwi *Matsqui: Beaver

Some species that have sacred value to all Stó:lō : Sockeye Salmon, Western Red Cedar tree, giant frog, salamander, blue jay

As eras come and go, so do the indigenous creatures of the lands and waters. Creation teaches us to be humble about how we make our footprints in the world, always being sure to only take what we need and honor all living things.

The creatures featured in these 'Species are Sacred' stories provide us with insight as to which winged, four legged, finned and two legged creatures were alive at the time the story was created. In carrying on with oral traditions, giving the creatures humanistic traits offers respect and helps our human hearts and minds better understand them by relating to their circumstances.

History through story provides opportunity to seize a moment, and offer the passing of relevant wisdom. Not everyone is a story-teller. Those who carry the history are responsible for keeping & maintaining the knowledge and passing it on in order to preserve the historical record.

Some stories and teachings are shared only with specific people and at very specific times in one's life, for example: coming of age teachings for girls would not be shared with boys.

There are still people who believe that oral traditions should remain unwritten, and continue on as oral traditions. This is partially based on the fluidity and evolution that oral traditions allow, where written and static forms of history are to be taken as solid fact and remain that way. The 'Species Are Sacred' pages are designed to share Stó:lō world view, history and artwork as well as provide awareness about local indigenous species at risk in the lower Fraser Basin.

Stories and history adapted by Carrielynn Victor (Xemontalot) Village of Cheam, Pilalt Tribe.
Artwork designed and provided by Carrielynn Victor.

Why we Need to be Concerned: Biodiversity and You!

British Columbia is Canada's most biologically diverse province. With ecosystems ranging from the cool waters of the Pacific Coast to the snow-capped Rocky Mountain peaks, and the hot, semi-arid grasslands of the Okanagan, to the old-growth temperate rain forests of Vancouver Island it is easy to see how a variety of different organisms call BC home.

Biodiversity supports a complex interconnected web of life that has many benefits to human populations.

Biodiversity

- Supplies us with food, building materials, energy, and medicines
- Moderates our climate
- Filters our water and air
- Conserves soil and nutrients
- Controls pests
- Provides us with a source of inspiration and beauty

The South Coast area of British Columbia, which includes Metro Vancouver and the Fraser Valley, has the highest population density in British Columbia. It is also one of BC's top five biodiversity hotspots. Increasing demands for limited resources, particularly space, are placing more pressure on species at risk and biodiversity every day.

Stewardship: How can we Help?

There are many simple actions that people of all ages can do everyday to **help protect species at risk.**

Here are a few ideas:

- **Reduce, Reuse, Recycle!**
- use **environmentally friendly cleaning products** around the house

Try making this simple recipe for use around the home and in the classroom:

Greener Cleaner

(recipe courtesy of Langley Environmental Partners Society)

1 tsp. glycerine soap (or eco-friendly dish soap)
1/2 tsp. essential oil of your choice (try lemon or lavender)
1 cup water
1/2 cup white vinegar

Mix ingredients together in a spray bottle and use for cleaning hard surfaces.

- Another great way to help protect species at risk is to **provide animal-friendly habitat.** Consider turning your backyard into a biodiversity wonderland by planting native plants, providing a fresh water source for birds and other wildlife, and reducing or eliminating pesticide and chemical fertilizer use.

Image: watercolour painting of Northern Red-legged Frogs
by Carrielynn Victor

MODULES

1 Amphibians and Reptiles

Introduction to Module 1

This module consists of five activities. The activities are based on the following three themes:

1. Getting to know the amphibians and reptiles at risk on the South Coast

2. Threats to amphibians and reptiles

3. Taking action to protect species at risk

Module 1: Activity Summary

Activity name:	Description of activity:
ACTIVITY 1 Amphiban and Reptile Who's Who	In this activity students learn about the amphibians and reptile at risk in the South Coast area. Students compare the similarities and differences between the species.
ACTIVITY 2 Lonely Frogs and Scared Turtles	In this activity students learn more about frogs by identifying their calls and learn how they can assist scientists in tracking frog populations. Reasons for population decline are also discussed.
ACTIVITY 3 Bullfrog Tag	In this activity students will learn about invasive Bullfrogs and the impact they are having on native amphibian and reptile populations. They will also learn how to limit the spread of Bullfrogs.
ACTIVITY 4 Home Sweet Home	In this activity students learn about the importance of habitat protection and how to create a healthy habitat.
ACTIVITY 5 Think Globally, Act Locally	In this activity students identify the pressures facing amphibians and reptiles, suggest possible solutions, list personal actions, and assess proposed actions on their potential effectiveness and convenience.

Activity 1: Amphibian and Reptile Who's Who

The South Coast of BC is a hotspot of biodiversity. There are a wide variety of amphibians that call this region home. There are eight frogs, five salamanders, and two turtles that live in the South Coast. That's a total of fifteen different amphibians and reptiles! Of this fifteen there are currently six species that the South Coast Conservation Program, along with other conservation organizations, have identified as being at risk and requiring enhanced protection measures.

Each species at risk in the South Coast is unique. They come in a variety of colours, shapes, and sizes, each with their own distinguishing features. Learning about the similarities and differences between them can help students learn basic biology, get to know species at risk, and hopefully become motivated to take action to protect them.

MATERIALS:
SPECIES AT RISK FACTSHEETS (APPENDIX A), POSTER PAPER

TIME REQUIRED:
60+ MINUTES

AUDIENCE:
GRADES K - 7

OBJECTIVES:

Students will be able to:

- List the physical characteristics of BC amphibians and 1 reptile
- Compare their similarities and differences

PROCEDURE:

1. Review with students the different amphibians and one reptile at risk on the South Coast of BC. Ask students how each animal is different in their physical appearance. How are they similar? Make a chart that lists some of their similarities and differences.

2. For older students (grades 4 - 7): Have students choose two different amphibians and/or reptile and create a poster with information, graphics and range maps for each. They should summarize the information from the Species at Risk Factsheets and/or do more research in the library or on the internet. See Appendix 3 for a list of recommended websites.

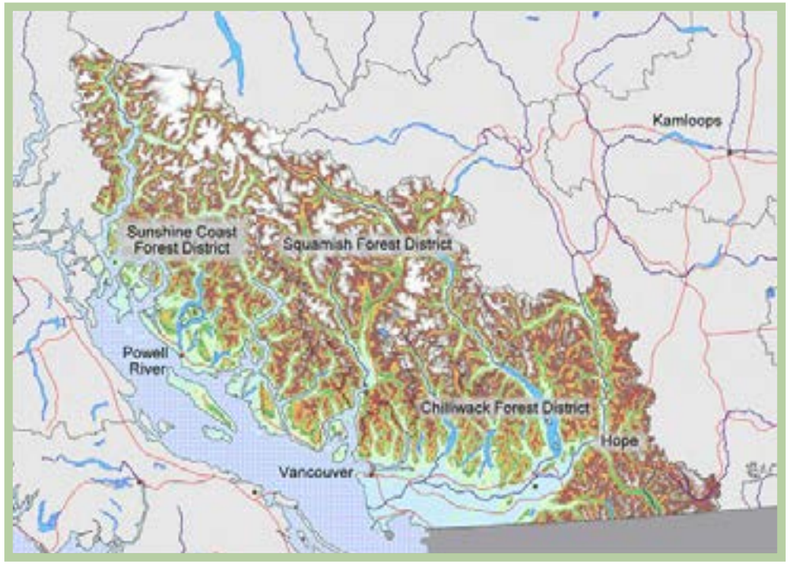
3. Once the posters are finished, allow the students time to view the posters created by others. Have students list all the similarities and differences of the two amphibians and/or that they chose for their poster.

ASSESSMENT – Have students do a presentation to the class about the amphibians and/or reptiles they chose, identifying the similarities and differences.

EXTENSIONS:

Students could present their findings to other students or other classes. Groups could combine their work to create one poster presentation or bulletin board on the amphibians and retiles at risk on the South Coast. Other ideas could include creating three dimensional models of the different species.

(Acivity adapted with permision from WildBC of Habitat Conservation Trust Foundation)



Activity 2: Lonely Frogs and Scared Turtles

Scientists often refer to frogs as "bio-indicators" because they are living organisms that tell us about the health of our environment. For example, the amount of frogs present in an area can be a sign of a healthy ecosystem or a warning that something is wrong.

Amphibians make a variety of calls usually used to attract mates but their calls can also be used to startle predators or to defend their territotries. One of the indicators of the amount of frogs in an area is the amount of noise they make! Students can learn more about frogs by identifying their calls and assist scientists in traking frog populations by participating in the BC Frogwatch population monitoring program (http://www.env.gov.bc.ca/wld/frogwatch).

MATERIALS:
FROG SOUNDS (http://www.env.gov.bc.ca/wld/frogwatch/whoswho/calls/), **FROG CALL ID CARDS,** ***The Lonely Frog*** book (if available)

TIME REQUIRED:
20 - 25 MINUTES

AUDIENCE:
GRADES K - 7

OBJECTIVES:

Students will be able to:

- Identify the sounds of local amphibians and reptiles
- Consider the consequences of local amphibians and reptiles going extinct

PROCEDURE:

1. Allow students to listen to frog sounds from website listed above (if possible), play them the calls for the at risk frogs from the South Coast (Oregon Spotted Frog, Northern Red-legged Frog, and Western Toad, (Pacific Tailed Frog does not call)). If website isn't available use the sounds from the Frog Cards to demonstrate (or have a student demo), have students repeat calls after you.

MODULE 1: ACTIVITY 2

2. Ask students: what time of year, and time of day do they think that frogs look for a mate? (usually in the springtime during the evening) How do they attract a mate? (by calling) Tell them not all amphibians and reptiles call the attract mates. Sometimes amphibians and reptiles will make a noise to scare away a predator.

3. Tell students that they are going to become a frog chorus and their job is to find their partner who is a the same kind of frog as they are. Hand out frog cards and then have students walk around saying their frog call until they find someone with the same call as them. When they find their partner they must sit down. Continue game until all students are sitting. Play game a few times allowing students to try different frog calls and search for different partners. Tell them that the Pacific Salamander and the Western Painted Turtle both make noises to scare away predators. See if they can guess which animals they are when they play the game.

4. Discussion: What will happen if frogs can't find a partner in the spring? (The frogs will start to disappear or go extinct and/or there will be no more frogs). Brainstorm reasons why frogs and reptiles are disappearing. Why does it matter if frogs disappear? Discuss importance of biodiversity.

ASSESSMENT - Assess oral responses during discussion time to check understanding of concepts.

EXTENSIONS:

Read students *The Lonely Frog* book (if available). Discuss why the frog is lonely and why she has such a difficult time finding a mate. Discuss some of the threats to amphibians and reptiles on the South Coast.

Western Toad
TWIT

Northern Red-legged Frog
STUT

Western Painted Turtle
HISS

Oregon Spotted Frog
KNOCK

Pacific Giant Salamander
GRRRRRRR

Pacific Tailed Frog
QUIET, DOES NOT CALL

Activity 3: Bullfrog Tag

Humans aren't the only threat to local amphibians and reptiles. Invasive plants and animals are also having a big impact on amphibian and reptile poulations. The Bullfrog is a species that was introduced to BC, it is referred to as an invasive or introduced species.

Bullfrogs were introduced to BC in the 1930's and 40's by entrepreneurs who wanted to farm the frogs for their meat. Bullfrogs are much larger than our local amphibians and have large, meaty legs. However, the Bullfrog eating trend never became popular in this area and Bullfrogs were let out into the wild.

The Bullfrog is having a very negative impact on local frog and reptile populations. It is a voracious, efficient predator that eats pretty much everything it can fit into its very large mouth! In this activity students have a chance to get active while learning about threats to species at risk at the same time.

MATERIALS:
LARGE AREA (INDOOR OR OUTDOOR), 10 HULA HOOPS

TIME REQUIRED:
15 - 20 MINUTES

AUDIENCE:
GRADES K - 7

OBJECTIVES:

Students will be able to:

- Distinguish between the following terms: invasive/introduced species, and native species
- Identify how invasive/introduced speices are causing a negetive impact on native species
- Determine ways to stop the spread of invasive sepcies

PROCEDURE:

1. Introduce the terms invasive species and native species.

Invasive species: A plant or animal that does not occur naturally in an area that may be causing a negative impact on naturally occuring species.

Native species: a plant or animal that naturally occurs in an area.

2. Tell students that Bullfrogs are a type of frog that was introduced to this area about 50 years ago. Ask students if anyone can guess why they were introduced (people hoped to farm Bullfrogs for food but they weren't very popular). Tell students that Bullfrogs are much bigger than the native frogs. Bullfrogs have big appetites and eat lots of native adult frogs, tadpoles, and juvenile turtles.

3. Students will now get a chance to become frogs or (teenage turtles turtles if they wish). Choose two students to be hungry bullfrogs and tell the rest of the students that they will be native frogs. Tell them that they all live in a pond and have to try not get caught by the bullfrogs. The safe zones are the lilypads (inside the hula hoops which should be spaced around the play area). The Bullfrogs cannot eat them when they are on lilypads (they can't be tagged). You can allow 1 or 2 people on a lilypad and it is a good idea to set a time limit for staying on the lilypads (10 seconds works well). If a student is tagged they become bullfrogs and may tag (eat) other frogs. Continue the game until most of the players have been turned into Bullfrogs.

4. Play the game a few times, choosing 2 new players to be Bullfrogs at the start of each round.

5. Discussion: ask students why there were more Bullfrogs than native frogs at the end of each round. Tell students that they can help stop the spread of Bullfrogs in this area by making sure they never move frogs or frog eggs from the pond they are found in.

ASSESSMENT – Asses student's understanding during discussion time.

EXTENSIONS:

Have students create bullfrog posters warning people about the dangers of moving frogs and frog eggs (spawn).

Sing "I Had a Little Bullfrog" (Grades K-3)

MODULE 1: ACTIVITY 3

I Had a Little Bullfrog

(sing to the tune of "I Had a Little Turtle")

I had a little Bullfrog
His name was Slimy Jim
I moved him to a new pond to see how he fit in
He ate up all the tadpoles
He ate up all the flies
And when I took him out he had grown ten times in size
O Bullfrog, Bullfrog, Bullfrog
BC is not your home
Bullfrog, Bullfrog, Bullfrog
Please leave our frogs alone!
1, 2, 3 BWAAA

Image from: www.torontozoo.com

Lyrics by: Olivia Carnrite

Activity 4: Home Sweet Home

Habitat loss is the biggest threat facing amphibians and reptiles. Although many species at risk are protected by provincial and federal legislation, most of this legislation stipulates that the speices themselves cannot be harmed. Legislation surrounding habitat protection is not as clear.

There are many everyday actions that people of all ages can take to protect species at risk. Habitat protection is especially important. Simple activities such as elimiating pesticide and fertilizer use at home, using earth-fiendly cleaners, not littering, remembering to reduce, reuse, and recycle, and conserving water can all have a big impact on the health of local amphibian and reptile populations.

MATERIALS:
PAPER, PENCIL CRAYONS, MARKERS, OR CRAYONS

TIME REQUIRED:
45 MINUTES

AUDIENCE:
GRADES K - 7

OBJECTIVES:

Students will be able to:

- Identify amphibains and reptiles at risk on the South Coast of BC, their predator, and their prey

PROCEDURE:

1. Disscusion: Tell students that habitat loss is the biggest threat to amphibians and reptiles. Ask students where in their area frogs and turtles can be found? (streams by houses, next to roads, in schoolyards, wetlands, backyards). Discuss ways we can help amphibians and reptiles (protect local waterways, don't use pesticides, don't litter, don't move frogs around to different ponds, don't release turlte pets into the wild, conserve water, reduce, reuse, recycle, use rechargeable batteries). Tell students that many frogs spend a considerable amout of their time on land, hiding by day and hunting by night, often far from the water. So it is important that both amphibians and reptiles have a mix of aquatic and terrestrial (land) habitat.

2. Work with students to create an amphibian friendly backyard or schoolyard on a large peice of chart paper or white board. Older students may be able to skip this step and start creating their own habitats on poster board or smaller size paper.

Essential ingredients include:

- moisture
- food - nightlight to attract insects, flowers that attract insects
- shelter - hiding places like rotting logs, large rocks, wood piles, bushes, compost heap
- no pesticides - no bugs means no frogs!

3. Take the Frog Pledge (pg. 22)

ASSESMENT - Check students' understanding of essential habitat components by assessing their finished habitat drawings.

EXTENSION:

Have students present their habitats to the class. Students must explain why their habitat is frog-friendly. Class could vote on the most frog-friendly habitat.

Turn an area of land (with permission) into a frog-friendly habitat.

(Activity adapted with permission from Langley Environmental Partners Society)

MODULE 1: ACTIVITY 4

Activity 5: Think Globally, Act Locally

The challenges facing amphibians and reptiles may seem overwhelming at times but there are usually actions we can take as individuals that together will help relieve these pressures and educate others. There are some actions that take a big time commitment and others that take very little effort of time to accomplish. Usually we have to weigh the potential effectiveness of possible actions to determine the right steps to take. In this activity, students will consider various actions and potential outcomes to respond to many of the pressures faced by amphibians and reptiles.

MATERIALS:
PAPER, PENCIL, COPIES OF THINK GLOBALLY, ACT LOCALLY CHART, FROG PLEDGE

TIME REQUIRED:
60 MINUTES

AUDIENCE:
GRADES 4 – 7

OBJECTIVES:

Students will be able to:

- Identify the pressures facing amphibians and suggest possible solutions
- List personal actions which could help alleviate some of the issues facing amphibians
- Assess proposed actions on their potential effectiveness and convenience

PROCEDURE:

1. For each pressure listed in this chart, as a class discussion or in small groups, add as many ideas as they can think of to fill in the description of the pressure and personal actions/potential solutions.

2. The last two columns can be filled in at the same time. Students should first evaluate the degree of personal commitment each idea would involve, rating the ideas. Easy, Medium, or Difficult.

3. Then students should evaluate the degree of effectiveness for each idea: Unlikely, Somewhat Likely, Very Likely

4. Become a **Ribbit Ranger** and take the ***Frog Pledge***

ASSESSMENT – Have students compile and rank a list of environmental concerns from most to least important. Prompt students to reflect on their learning by asking questions such as:

- How did you decide the importance of the issues?
- Why might someone else rank them differently?

EXTENSIONS:

Ask students to look at their completed charts and determine whether there are any potential "actions" that they have done in the past, are doing currently or might want to do as a result of evaluating the effectiveness of personal activities to address certain issues. Are there any actions best taken by a group of people, such as the school environmental group?

(Acivity adapted with permision from WildBC of Habitat Conservation Trust Foundation)

NAME: _____

Think Locally, Act Globally Chart

Pressures facing amphibians and reptiles	Description of the pressure	Personal actions/potential solutions	Level of Commitment: Easy, Medium, Hard	Degree of Effectiveness: Unlikely, Somewhat Likely, Very Likely
Loss of habitat and decrease of quality of habitat				
Introduction of invasive/exotic species				
Pollution				
Ultra-violet radiation				
Disease				

(Chart adapted with permision from WildBC of Habitat Conservation Trust Foundation)

The Frog Pledge

(Courtesy of Lori Bartley from Metro Vancouver Parks)

Frogs are awesome
Frogs are cool
Frogs are found right by our school
Frogs share the green where we like to play
Treat frogs nice it's the _____ way!
(name of school)

Image: watercolour painting of a Pacific Water Shrew
by Carrielynn Victor

APPENDICES

Image: watercolour painting of an Oregon Spotted Frog by Carrielynn Victor

APPENDIX

1 Species at Risk Factsheets

Species at Risk Factsheet

Pacific Tailed Frog

(Ascaphus truei)

Appearance: A small frog, adults are most often tan or brown coloured but some may be green, red, or even black. They have grainy looking skin, vertical pupils, and no external tympanum (the round shape that looks like an ear seen on other frogs). They have flat, wide toes on their hind feet which are distinctive from other frogs. The most interesting part of a Tailed frog is its "tail" for which it is named. Only males of this species have a "tail" which is actually an appendage used for fertilizing eggs inside female Tailed frogs. Tailed frog tadpoles have very big sucker-like mouths.

Body size: 2.2 to 5.1 cm (females larger)

Favourite Foods: Tadpoles eat algae, small insects and pollen grains. Adult frogs eat small insects, snails, and other invertebrates. They are unable to use their tongues to catch their meals like other frogs do because of the way their tongues are attached in their mouths. They must sit and wait patiently for food to come to them and then use their mouths to gobble up their meal.

Range/distribution: Pacific Tailed frogs are found in mountainous areas along the Coast of BC.

Call: tailed frogs do not call, they are considered voiceless.

COSEWIC Status: Special Concern
BC Status: Blue List

Biology: Tailed frogs spend up to four years metamorphosing into adults, which is the main reason they need year-round access to stream habitats. These frogs do not become sexually mature for approximately three years after completing metamorphosis. Tailed frogs mate in the fall in streams, with females only mating every second year. Females then wait to lay their eggs until the summer. Eggs are attached to underwater stones in quiet areas of streams until tadpoles emerge about six weeks later.

Habitat: These frogs need cool, fast-flowing streams surrounded by mature forests to thrive. Adult Tailed frogs have also been found in wet sites away from streams in surrounding forests.

Threats: Human activities, deforestation in particular, are the primary threats to Tailed frogs. Deforestation close to stream habitat can cause poor water quality, stream warming from lack of tree cover, and change the flow of water in the stream.

Information for the factsheet was compiled from: The BC Frogwatch Program (http://www.env.gov.bc.ca/wld/frogwatch/publications/factsheets/frogs/tailed.htm) and SCCP Factsheets (http://www.geog.ubc.ca/biodiversity/factsheets/pdf/Ascaphus_truei.pdf)

Fun Fact

Tailed frogs are considered to be the most primitive frog in the world. They are also one of the longest lived frogs in the world - living from 15 - 20 years!

Species at Risk Factsheet

Pacific Giant Salamander

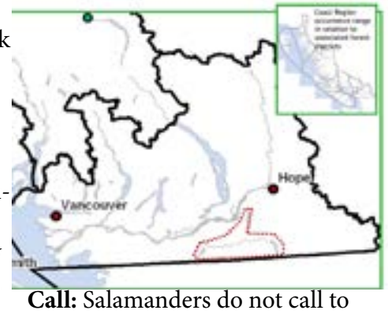
(Diacamptodon tenebrosus)

Appearance: When fully grown this is the largest salamander in BC. Adults have a stout body, with a large head and bulky legs. They have smooth skin that can be a dark brown to dark grey with a distinctive dark mottling (in most cases) that covers their upper body. The underside of the salamander is a pale grey or cream colour. Salamander larvae are totally aquatic and resemble tadpoles at first until they develop bushy reddish-brown gills.

Body size: 30 - 35 cm including the tail

Favourite Foods: These "giant" amphibians have big appetites! They eat insects, slugs, snails, worms, shrews, mice, and other amphibians. Larval salamanders eat anything they can catch including aquatic insects, small fish, tadpoles, and other larval salamanders.

Range/distribution: Pacific Giant Salamanders have a very limited range in BC. The entire Canadian population lives within the Chilliwack River valley with some in adjacent watersheds.



Call: Salamanders do not call to attract mates.

COSEWIC Status: Threatened
BC Status: Red List, Identified Wildlife

Biology: Despite their size Pacific Giant Salamanders are elusive creatures. In their terrestrial form they spend most of their time hiding under logs and rocks, only coming out at night to search for food. They are believed to breed between May and October, laying 135 - 200 eggs in underwater nests. Female salamanders are believed to tend their nests for approximately 6 months until the eggs hatch.Some Pacific Giant Salamanders stay in an aquatic form retaining many features of their larval stage (these are called neotenes) while others become terrestrial losing their gills and developing lungs.

Habitat: These giant amphibians need mature forests with lots of woody debris on the forest floor to hide under. Terrestrial forms also need access to cool mountain streams. The larvae and neotenes live in cool, clear, fast-flowing creeks and streams. the streams need to have pool areas and places for the salamanders to hide such as sand, boulders, logs and overhanging banks.

Threats: This species is very sensitive to human activities. Habitat loss particularly deforestation and alteration of steam habitat and quality pose the greatest risk to Pacific Giants.

Information for the factsheet was compiled from: The BC Frogwatch Program (http://www.env.gov.bc.ca/wld/frogwatch/publications/factsheets/salamanders/giant.htm) and SCCP Factsheets (http://www.geog.ubc.ca/biodiversity/factsheets/pdf/Dicamptodon_tenebrosis.pdf)

Fun Fact

One of the few salamander species who can vocalize - Pacific Giants may "growl" or "chirp" when threatened.

Species at Risk Factsheet

Oregon Spotted Frog

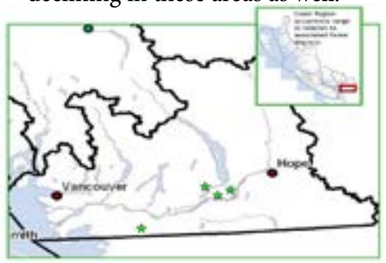
(Rana pretiosa)

Appearance: This is a medium-sized frog. Adults can be reddish-brown to tan or olive with light centred black spots. Juveniles are usually olive green or light brown. They have a light-coloured stripe that goes from the upper lip to the shoulder. Oregon Spotted frogs have a rusty orange colouration instead of the bright red of Red-legged frogs. They have eyes that appear to be turned upward and the males have a "nuptial pad" on their thumbs to assist in gripping females during breeding. Tadpoles have tails that are twice the length of their bodies.

Body size: 6 - 9 cm

Favourite Foods: Adults mostly eat beetles, flies, spiders, and other invertebrates. They sit and wait for their meal, jump towards their prey and trap it with their long, sticky tongues. Tadpoles eat algae.

Range/distribution: This frog is endangered in BC and was thought to be extinct in the province until four small distinct populations were found in the Fraser Valley. The entire population in BC is believed to contain only 300 breeding adults. The Oregon Spotted Frog can also be found in the US, in Washington and Oregon, but populations are declining in these areas as well.



Call: Short, fast clicks that can be mimicked by clicking your tongue on the roof of your mouth.

COSEWIC Status: Endangered
BC Status: Red List

Biology: These frogs are mostly aquatic and will dive to the bottom of their watery homes when startled. Males assemble in breeding ponds in early spring where they call day and night to attract a mate. Female frogs lay their eggs in large communal egg masses of 700 - 1500 eggs. Tadpoles appear from 10 to 21 days later and take four months to metamorphose. Their eggs are very fragile and have high mortality rates. The frogs that survive the egg and juvenile stage can take up to 6 years to reach maturity. There lifespan is estimated at eight years.

Habitat: Oregon Spotted Frogs are mostly aquatic so they need year round access to large permanent bodies of water such as lakes and warm-water marshes. The side channels of wetlands, sloughs, and other temporary pools are also significant habitats.

Threats: Habitat loss due to development, agricultural land conversion, and alterations to marshlands are the main reason for Oregon Spotted Frog population decline in the South Coast and the Pacific Northwest.

Information for the factsheet was compiled from: The BC Frogwatch Program (http://www.env.gov.bc.ca/wld/frogwatch/publications/factsheets/frogs/oregon-spotted.htm), SCCP Factsheets (http://www.geog.ubc.ca/biodiversity/factsheets/pdf/Rana_pretiosa.pdf) and Wildlife Preservation Canada (http://wildlifepreservation.ca/species-in-need/canadian-species/oregon-spotted-frog/)

Fun Fact

Oregon Spotted frogs are one of a few frog species that will eat juvenile toads and data shows that they prey on juvenile Western toadlets. True toads are usually an unappealing meal due to their poison producing glands.

Species at Risk Factsheet

Western Toad

(Anaxyrus boreas)

Appearance: The Western Toad has a stocky build, and short, powerful legs. Toads have dry, warty skin and a characteristic oval-shaped gland behind their eyes called a parotoid gland (this gland emits a mildly toxic substance). Adults can be brown, green, or tan and some have a light stripe down their backs. Their hind feet have thorny projections that are used for burrowing and adult males possess dark coloured nuptial pads on their thumbs. Adults have gold flecked eyes with horizontal, oval pupils.

Body size: 6 - 12.5 cm

Range/distribution: Western Toads have a wide range in BC.

Favourite Foods: Western Toads are eat a large variety of food including flying insects, ants, beetles, sowbugs, crayfish, spiders, centipedes, slugs, and earthworms. Tadpoles eat mostly algae .

Call: twittering sound usually made if grasped by another male or a predator.

COSEWIC Status: Special Concern
BC Stuatus: Blue List, Identified Wildlife

Biology: Adult Western toads gather at breeding ponds in early spring. Females lay eggs in long chains (vs clusters like frogs do), and tadpoles hatch quickly (3 to 12 days depending on water temperature). By summer's end tadpoles transform into toadlets that migrate by the hundreds or thousands away from the water into moist grasslands or forests. Adults also leave breeding areas after breeding has occurred, staying in warm, moist areas. Adults are mostly nocturnal and spend a large portion of the year (from November to April depending on the temperature) hibernating.

Habitat: Western Toads need three distinct habitats: breeding ponds, upland summer habitats and overwintering areas. They have large territories of up to 7 km wide. They prefer breeding ponds with shallow, sandy bottoms. Their summer habitats can be forests or grasslands but they prefer moist areas with lots of places to burrow. They usually overwinter in underground burrows.

Threats: Due to the migration patterns of adults and toadlets they are very susceptible to habitat loss. Road building on migration routes and loss of forest and wetland habitats are starting to have a negative impact on toad populations, particularly in heavily populated South Coast areas.

Information for the factsheet was compiled from: The BC Frogwatch Program (http://www.env.gov.bc.ca/wld/frogwatch/publications/factsheets/frogs/western-toad.htm) and SCCP Factsheets (http://www.geog.ubc.ca/biodiversity/factsheets/pdf/Anaxyrus_boreas.pdf)

Fun Fact

All male toads have a "Bidder's organ" that allows them to develop an ovary and in effect become female under the right conditions. Just like the all male dinosaurs in the movie Jurassic Park!

Species at Risk Factsheet

Western Painted Turtle

(Chrysemys picta) Population 1

Appearance: The carapace (upper shell) of adults is smooth, olive-green to dark brown. The head, neck, legs, and tail, have yellow stripes "painted" on them. The plastron (bottom shell) is red or orange sometimes with a black and yellow branching pattern. Males have very long claws and thicker tails than females.

Body size (shell diameter): Hatchlings 2-2.5 cm, Juveniles 10 cm, Mature adults 25 cm

Range/distribution: The Western Painted Turtle is separated into 2 different populations in BC. Population 1 is in the South Coast region and population 2 is located in the southern interior.

Favourite Foods: Young turtles are voracious carnivores, eating tadpoles, frogs, a variety of insects, and snails. As turtles mature they snack on plant matter as well, including algae and aquatic plants.

Call: Turtles do not call and lack vocal chords; however, they have been known to make hissing noises when scared.

COSEWIC Status: Endangered
BC Status: Red List

Biology: The Western Painted turtle is the only freshwater turtle in BC. Eggs and juvenile turtles face very high mortality rates due to predators seeking out the shallow, underground nests. Adults do not reach maturity until 4 -5 years for males and 7 - 9 years for felmales. Painted turtles begin their coutrship in May. Females can lay 6-18 oval shaped eggs. Hatchlings emerge from eggs in September but young turtles stay hdden in their nests until the following Spring.

Habitat: Western Painted Turtles live in and around the edges of shallow lakes, ponds, ditches, and slow-moving streams. "Painters" need areas for nesting, feeding, basking, shelter from predators, and hibernation. Nesting habitat is usually a patch of bare, dry soil that is south-facing and approximately 150 metres from aquatic habitats.

Threats: Like Western Toads, Painted Turtles need several different types of habitat to thrive. Draining and filling of wetlands and road building next to key habitat areas are major threats to this species. Invasive grasses are limiting the availability of nesting sites. Turtles can be accidently killed by people who are fishing.

Information for the factsheet was compiled from: The BC Frogwatch Program (http://www.env.gov.bc.ca/wld/frogwatch/publications/factsheets/frogs/red-legged.htm) and SCCP Factsheets (http://www.geog.ubc.ca/biodiversity/factsheets/pdf/Chrysemys_picta_pop1.pdf)

Fun Fact

A turtle egg develops through the summer months and warmer nests create more female turtles than cooler nests which produce more male turtles.

Species at Risk Factsheet

Northern Red-Legged Frog

(Rana aurora)

Appearance: Northern Red-legged frogs come in a wide range of colours and patterns depending on the time of year, age, and geographic location. Their skin can be anywhere from tan, olive and grey, to reddish-brown on the tops of their bodies with the back and sides having differing amounts of small dark flecks. They also have a dark eye mask and gold coloured eyes. As these frogs mature the reddish colour they are named for becomes more prominent along the underside of their bodies and particularly on their hind legs.

Body size: 4-8 cm, females up to 10 cm

Favourite Foods: Adult frogs eat a large variety of insects and other invertebrates. Tadpoles eat green algae found in their aquatic homes.

Call: males emit a faint stuttering sound from up to 1 metre under water.

COSEWIC Status: Special Concern
BC Status: Blue List, Identified Wildlife

Range/distribution: These frogs are big travelers and have the widest distribution of any frog family. In BC, they are found mainly in areas of the South Coast, including the mainland coast, Fraser Valley, and parts of Vancouver Island. Their range extends south to California.

Biology: These frogs generally hibernate from mid October to mid February. Breeding season occurs from February to April. Eggs hatch and become tadpoles over 11-14 weeks beginning in May and finishing in September. Red-legged frogs have very tough eggs. The eggs are able to survive temperatures as low as 4C and as high as 21C, this is the largest temperature range for any North American frog.

Habitat: They are found in and around shallow ponds, around the edges of lakes, in slow-moving streams and in wetlands. Adult Red-legged frogs can travel very far into the forested areas that surround their watery breeding habitats.

Threats: The biggest threat to this species is the loss of wetland habitat due to urban development. Red-legged frogs are also affected by forestry activities. Bullfrogs prey on Red-Legged frog adults and tadpoles causing a population decline. Fertilizer and pesticide use in neighbouring agricultural areas can cause high death (mortality) rates in frog populations.

Information for the factsheet was compiled from: The BC Frogwatch Program (http://www.env.gov.bc.ca/wld/frogwatch/publications/factsheets/frogs/red-legged.htm) and SCCP Factsheets (http://www.geog.ubc.ca/biodiversity/factsheets/pdf/Rana_aurora.pdf)

Fun Fact

Red-legged frogs were once so abundant that they were harvested in the tens of thousands as a food source in the US Pacific North West until the late 1800's.

APPENDIX

2 Curriculum Connections

The following is a list of some of the BC Prescribed Learning Outcomes that are met by the activities in this guidebook:

Grade K: It is expected that students will:
- Use the five senses to make observations [Processes and Skills of Science
- Describe features of local plants and animals [Life Science: Characteristics of Living Things]
- Compare common animals [Life Science: Characteristics of Living Things]

Grade 1: It is expected that students will:
- Classify objects, events, and organisms [Processes and Skills of Science
- Describe the basic needs of local plants and animals [Life Science: Needs of Living Things]
- Describe how the basic needs of plants and animals are met in their environment [Life Science: Needs of Living Things]

Grade 2: It is expected that students will:
- Classify familiar animals according to similarities and differences in appearance, behaviour, and life cycles [Life Science: Animal Growth and Change- Describe ways in which animals are important to other living things and the environment [Life Science: Animal Growth and Changes]
- Explain why air, water, and soil are important for living things [Earth and Space Science: Air, Water, and Soil]

Grade 3: It is expected that students will:
- Classify familiar animals according to their similarities and differences in appearance, behaviour and life cycles [Life Science: Animal Growth and Changes]

APPENDIX 2

- Explain why air, water, and soil are important for living things [Earth and Space Science: Air, Water, and Soil]

Grade 4: It is expected that students will:
- Ask questions that foster investigations and explorations relevant to the content [Processes and Skills of Science]
- Compare the structures and behaviours of local animals and plants in different habitats and communities [Life Science: Habitats and Communities]
- Determine how personal choices and actions have environmental consequences [Life Science: Habitats and Communities]

Grade 5: It is expected that students will:
- Describe potential environmental impacts of using BC's living and non-living resources [Earth and Space Science: Renewable and Non-renewable Resources]

Grade 6: It is expected that students will:
- Analyse how different organisms adapt to their environments [Life Science: Diversity of Life]

Grade 7: It is expected that students will:
- Describe organisms in terms of their roles as part of interconnected food webs, populations, communities, and ecosystems [Life Science: Ecosystems]
- Determine the limiting factors, biotic and abiotic, for local ecosystems [Life Science: Ecosystems]
- Evaluate human impacts on local ecosystems [Life Science: Ecosystems]

Appendix

3 Resources for Species at Risk Education

Additional Resources

Amphibian, Reptile and Wetland Activites

Brie Stewart Koval, Terra. **"The Frog Files."** Ecological Monitoring and Assesment Network Co-ordination Office.
http://www.naturewatch.ca/english/frogwatch/curriculum/junior_guide_k6.pdf

MacDonald, Neala. **"Amphibial Pursuits: Frogwatch Teachers' Guide to Frogs as Indicators of Ecosystem Health."** © 2002 Nature Canada. **www.naturecanada.ca**

"Turtle Conservation Curriculum." © 2013 Adopt-A-Pond - The Toronto Zoo.
www.torontozoo.com/adoptapond

"Wetland Curriculum Resource." © 2013 Adopt-A-Pond - The Toronto Zoo.
www.torontozoo.com/adoptapond

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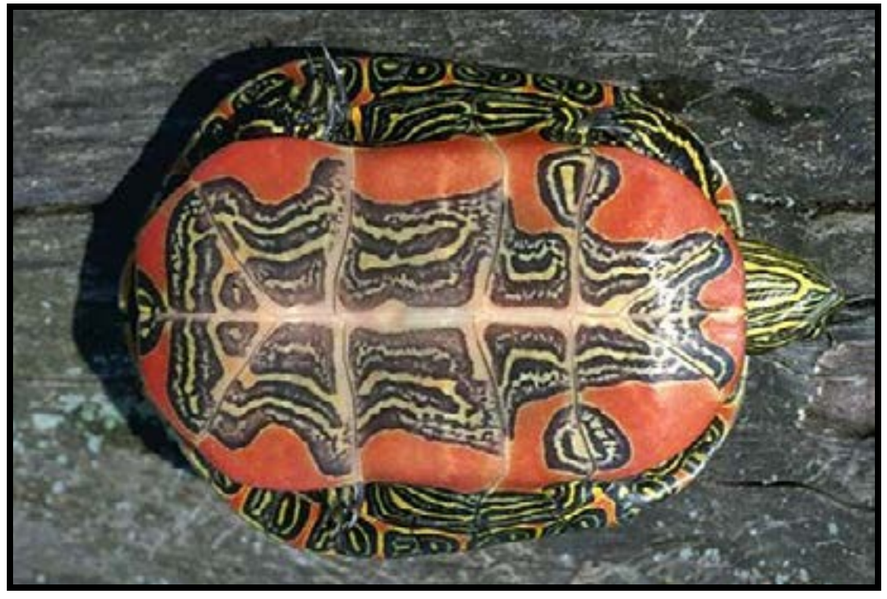
Oregon Spotted Frog. Wildlife Preservation Canada.
http://wildlifepreservation.ca/species-in-need/canadian-species/oregon-spotted-frog/

South Coast Conservation Program. **www.sccp.ca**

WildBC of Habitat Conservation Trust Foundation. **wildbc.org**



Appendix 3