Biosphère

NATURE Biokit

Environment Canada Environnement Canada

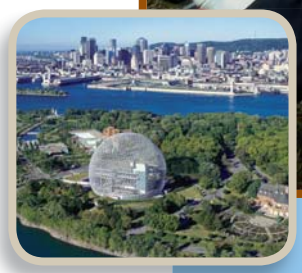
Canada

Exploring Biodiversity

Would you like to go on a unique nature hike?

Do you want to discover or rediscover a natural setting? Environment Canada's Biosphère is offering you this guide to help you in your exploration of Canada's biodiversity.

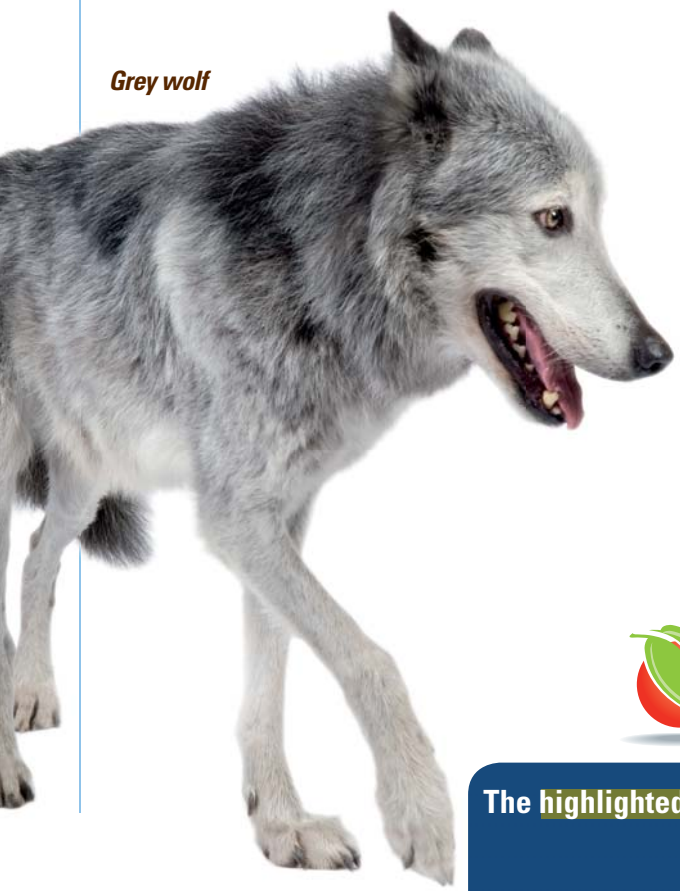
As an environmental museum, the Biosphère encourages individuals to take action and get involved in environmental issues. In addition to presenting exhibits and special events, the Biosphère develops educational and awareness-raising products for a variety of audiences across Canada and is a recognized forum for environmental exchanges.



DID YOU SAY "BIODIVERSITY"?

Outdoors, look closely at the different types of plants, trees, and animals around you. All forms of life and the relationships that exist between them represent biological diversity, or biodiversity.

Humans are part of this biodiversity. We constantly interact with nature and use its riches to fulfill our essential daily needs, such as food and clothing.



Grey wolf

How the BioKit Works

1. Choose a spot in nature you would like to explore.
2. Take along your materials: magnifying glass, binoculars, camera, stopwatch or watch, pocket mirror, blindfold, pencil.
3. Carry out the suggested activities while taking care to respect the environment.
4. Once you are back home, complete your diagnosis.
5. Ready? Set? You're off! Keep your eyes peeled and your ears tuned...

Note:

The Nature BioKit can be used in any type of weather. However, some activities cannot be carried out during winter. They are identified with this symbol.

The highlighted words are defined in the glossary at the end of the document.

The Adventure Starts Right Now!

The Natural Environment

Canada is the second largest country in the world. Because 85% of its population is concentrated in the south of the country, a large part of the territory remains wilderness. How is nature doing in these wild places? What part do we play?

Pay attention to the landscape around you. On the illustration below, check off the elements you see.

Complete this activity as your visit progresses.

① *forests*	② *farm fields*	③ *plains*
④ *mountains*	⑤ *valleys*	⑥ *lakes*
⑦ *waterways*	⑧ *wetlands*	⑨ *sea*
⑩ *wild animals*	⑪ *flocks and herds*	

☐ ⑨ ☐ ② ☐ ⑪ ☐ ⑥ ☐ ③ ☐ ⑦ ☐ ① ☐ ⑤ ☐ ⑩ ☐ ④ ☐ ⑧

illustration : Louise Catherine Bergeron

Today, We Are Visiting

Place: _____

Date: _____

Departure time: _____

Return time: _____

GPS coordinates: _____
(optional)

Eco-friendly tips for hikers:

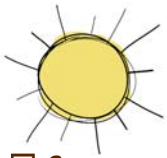
In the wild, each and every one of our actions impacts the species that live there as well as their habitat. Take care to respect nature:

- Move in **silence.**
- Stay **on the paths** so as not to damage vegetation.
- **Avoid** picking plants and flowers.
- Leave nothing behind other than your **footprints.**

Temperature, light and the hour at which you make your "nature" outing will all influence which animals you may get the opportunity to observe. Furthermore, certain flowers open at specific times of the day. The same excursion under different weather conditions or during alternate seasons will offer different opportunities for discovery.

WEATHER

Today's temperature: _____ °C


☐ ***Sunny***


☐ ***Partly cloudy***


☐ ***Cloudy***


☐ ***Rainy***


☐ ***Snowy***


☐ ***Windy***

Eastern chipmunk

Air and Water for Life

Healthy ecosystems provide living creatures with water and clean air—two elements that are essential for biodiversity.

The wind is an efficient mode of transportation for many species! Birds use it to glide almost effortlessly, and seeds and pollen of some plants can be carried by the wind on great distances.

Northern Cardinal, female

YOUR NOSE KNOWS!

The quality of the air we breathe is important for our health and for that of all living species.

You probably live in a town where there are cars, buses, industries, etc. Is the air there the same as it is here? What smells do you associate with nature?

The Whistling Wind

Do you feel the wind on your face?

What role does it play for biodiversity? Need help? Refer to the box on the left to get you started.

SOMEWHERE BETWEEN LAND AND WATER

Wetlands, land soaked with water either permanently or seasonally, are incredible refuges for plants and animals and are essential to many living species. If you spot a wetland during your visit, pay attention to its inhabitants: herons, frogs, ducks, beavers, etc.

Grab a pencil and draw the animals you spotted in the boxes provided within the illustration on page 5.

Wood frog

Wetlands filter millions of litres of water per day, ridding water of more than 90% of its pollutants!

Eco-friendly tips for clean air and water:

- When permitted, try to keep **campfires** to a minimum.
- Opt to explore nature **on foot** whenever possible.
- Do not pour **dirty water** into waterways.
- Be careful not to disturb **riverbanks.**

Plant Diversity

Each natural environment—or ecosystem—is characterized by different vegetation. In Canada we find mountains, forests, prairies, lakes, wetlands, badlands and tundra, just to name a few!

A Rainbow of Colours

Colours in nature change according to the season. Green dominates, especially in summer, but many other colours also exist.
During your visit, locate four colours other than green and identify their owners.

_____ //

_____ //

_____ //

_____ //

Touch but don't look!

Test your knowledge of plant species!
Choose a person and blindfold him or her.
Without picking anything, have him or her touch twigs, needles, bark, etc. Switch roles.
Who recognized more things?

Aspirin was created in 1899 from salicylic acid, a substance found in willow bark. But did you know that bark from the willow was already used in ancient times to relieve pain and lower fevers?

Pretty Fallen Leaves

Continue your hike and look on the ground.
Gather several fallen leaves and compare their shapes, veins, and colours. *Try trading your leaves with someone else's to collect as many varieties as possible.*

A herbarium is a collection of dried plants. After your visit, refer to the following website to learn how to make one.
www.funsci.com/fun3_en/herb/herb.htm

Another Point of View

Roll up a piece of paper to make a telescope.
Now look around you. Do you see something that you hadn't spotted before? Try again later on.

What Is Growing Around Here?

☐ Ferns

☐ Conifers

☐ Grasses

☐ Cacti

☐ Mosses

☐ Deciduous trees

In nature, living organisms are found practically everywhere. Plants, mosses and some algae are easy to spot. ***Which ones grow here?***
Open your eyes wide and try to find them!

☐ Algae

☐ Other flowering plants

☐ Others

The trembling aspen is aptly named. Because its petiole (leaf stem) is long and flat, the smallest breeze makes its leaves tremble.

How many boxes were you able to check off? Keep looking, you may discover new species a little further on.

On the Hunt for Pine Cones!

In Canada, the boreal forest occupies a large territory.

Fun fact!

Do you know how to tell the difference between a fir and a spruce tree? Roll the needles between your fingers. Are they round or flat? Round needles belong to spruces and flat needles to firs.

Quickly! Who will be the first one to find pine cones?
If you do, you can be sure that conifers are not far away…

The 138 species of trees indigenous to Canada have at least 40 known medical or pharmaceutical uses. They are also used to make rayon, cellophane, glue, and turpentine.

Amateur Mycologist


Sylvain Deland

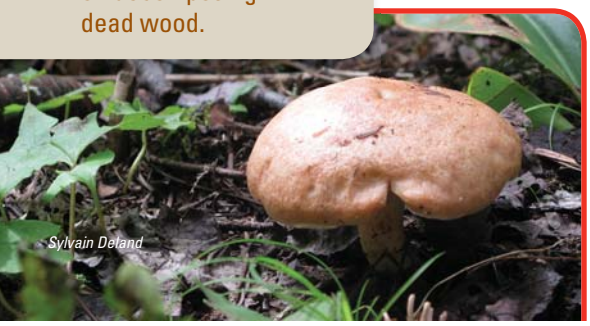
GET OUT YOUR STOPWATCH!

Ready? **You have three minutes to find as many differently shaped mushrooms as you can.** But do not touch them! Even if several wild mushrooms are edible, some of them are toxic…so be careful!

Each mushroom species is unique. Take your mirror, bend down, and look under a mushroom cap. Are there gills, folds, or tiny tubes? That is where the spores are found that are used in reproduction.


Sylvain Deland

Clue:
Mushrooms grow in damp places, on the ground, on tree trunks, on decomposing dead wood.


Sylvain Deland

Amadou is an extract from tinder fungus, a parasitic fungus that grows on trees, and has been used in lighting fires since prehistoric times.

Carnivorous Plants in Sight!

When we think of carnivorous plants, we often think of tropical regions.

Think again!

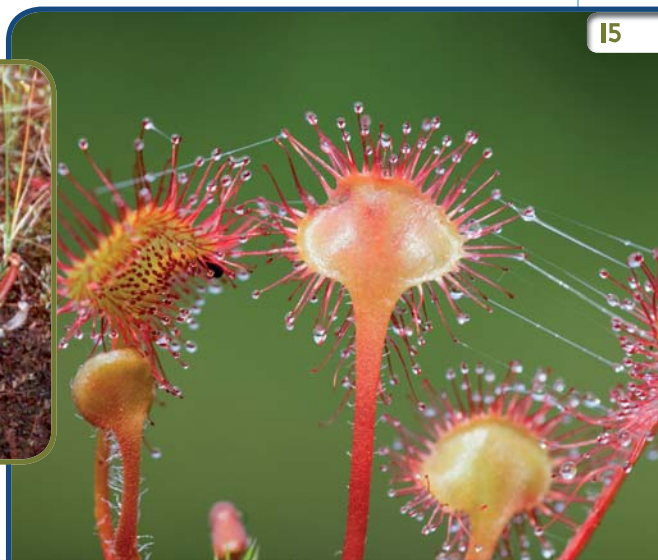
There are carnivorous plants even in Canada, often in bogs. ***Will you be lucky enough to find some?***


Pitcher plant


Common butterwort


Courtesy of SCAPI

Horned bladderwort


Roundleaf sundew

Animal Diversity

Canada is a major refuge for biodiversity. Approximately 140,000 species of living, land and aquatic organisms exist in the country, half of which are still to be recorded.

Young Boreal Owl

EXPLORERS: ON YOUR MARKS!

Look closely around you. Animals leave traces when they move about: tracks on the ground, torn bark, paths, droppings or urine, clumps of fur, feathers, wood shavings, etc.

Work together to find at least four signs:

_____

_____

_____

_____

3, 2, 1… action!

You spotted a few animals? Bravo!

Now have each person choose a wild animal that he or she likes and, one by one, imitate its movements and behaviour so that the others can guess what it is.

Photo Contest

Now that your eyes have had some practice, consider taking pictures of the species that intrigue you. Once back home, use an identification guide or visit the websites suggested at the end of this BioKit to try to identify them. Who knows, one of them may end up on our website!

Red fox

Pileated Woodpecker

It is a well-known fact that woodpeckers make holes in trees.

But did you know that many other animals take advantage of these holes when making their nests, like owls, bats, squirrels, and even some ducks?

Most mammals give birth in the spring. It is a very sensitive time for animals. Take care and be respectful, just as during all other times of the year…

Open Your Eyes!

You are now seasoned explorers. Carefully turn over a stone or piece of wood on the ground. With your magnifying glass, look at it closely. What little crawling creatures do you see? Check them off on the illustration; you can even draw in some that are missing. Remember to carefully replace the log or stone as you found it.

Spiders produce silk that is stronger than steel of equal width.

Warning! Species at Risk

Some wild animal and plant species in particular have been disturbed, partially by human presence. Over 30 animal species have even completely disappeared from the country. Here are a few examples of animals that are species at risk. ***If you are lucky enough to see one, take a picture of it!***

Monarch butterfly

Wood turtle

Short-eared Owl

Woodland caribou

Northern Leopard frog

(excluding Eastern population)

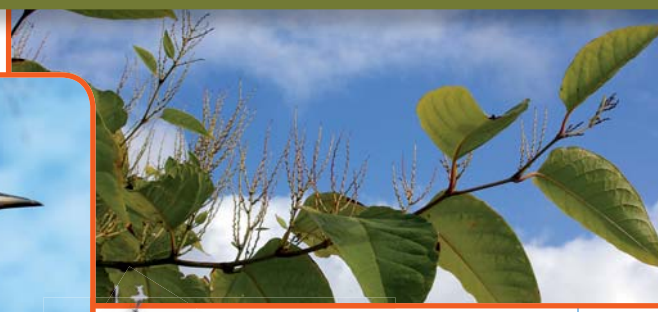
In Canada, over 500 wild species are disappearing from the country, some more rapidly than others. To protect them, the Government of Canada passed the *Species at Risk Act* ***(www.registrelep.gc.ca)***

Beware, Invaders Present!

Do you know the following species? Did you come across them during your hike?

Norway rat

European Starling



Japanese knotweed

Emerald ash borer

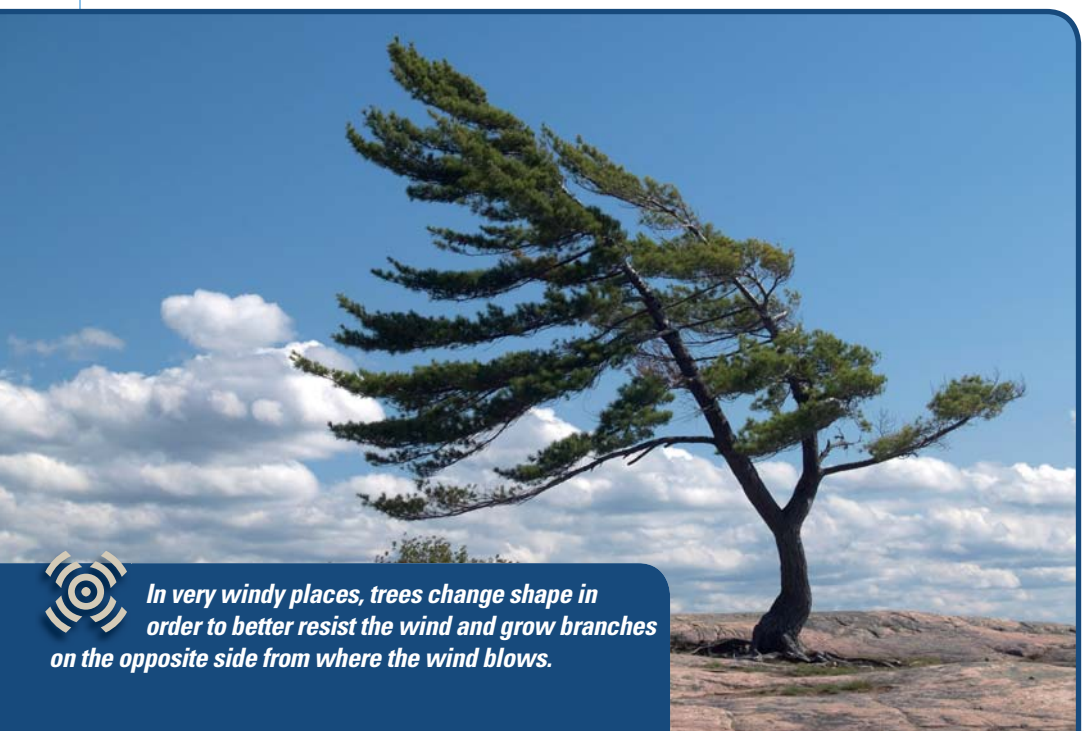
photo : Klaus Bolte, CFS-SCF, NRCan-RNCan

These are exotic invasive species! Native to other continents such as Europe or Asia, exotic species are often imported by humans. Some of them are invasive and represent a real threat to indigenous species because they tend to replace them. Competition is fierce!

In Canada, approximately 5% of mammal species and 27% of vascular plant species are exotic species.

Extreme Nature

Certain plants have an amazing ability to adapt. They do not hesitate to take root in any and all environments, even unfriendly ones that are windy, cold or dark.



In very windy places, trees change shape in order to better resist the wind and grow branches on the opposite side from where the wind blows.

Surprise your hiking buddies by finding something around you that seems unusual:
a deformed tree, a plant growing on a boulder, something growing under a log.

In order to reproduce, some species need their environment to be shaken up. For example, the cones of the jack pine open and release their seeds only after the heat of a fire opens the cones.

Unexpected Stop

Natural areas are more and more fragmented because of human activities. And yet, plants and animals need uninterrupted areas of natural environments —or wildlife corridors—to allow them easy access to food, shelter and breeding areas. Unfortunately, the construction of roads, buildings and utilities contribute to the disappearance of natural habitats and corridors.

During your trip home,
take a look at the natural elements along the road.
Could an animal easily get to your house?
Is there a wildlife corridor?

End of the Visit

Eco-friendly tips **to preserve biodiversity:**

- Watch wild animals from a distance and **do not feed** them.
- Be particularly careful not to bother the animals during **mating, nesting,** and **birthing** periods.
- When in nature, keep pets **on a leash.**
- Create spaces for different species of **birds, plants** and **insects** by providing them with sources of food and shelter.

Cougar

Your hike is coming to an end.
Take a moment to discuss your visit and your impressions regarding biodiversity.
In your opinion, what will become of this natural area in 10, 20, 50, or 100 years?

Talk about what actions you can take to preserve biodiversity.

To learn more about the topics brought up in the BioKit, consult the websites suggested at the end of this BioKit and search out local organizations and projects on biodiversity.

My Diagnosis

Natural Environment:

You just finished taking a hike that was rich in discoveries! Keep them fresh in your mind.

Complete a diagnosis of your visit by filling in the following information.

You can easily complete it on the BioKits website and compare your results with others! Visitors to the site can also build their EcoProfile.

Curious? Follow the link: www.ec.gc.ca/biotrousses-biokits

Check the boxes that apply	Excellent!	Pretty good…	Several things must be improved
General impression regarding the location visited	☐	☐	☐
Animal diversity	☐	☐	☐
Plant diversity	☐	☐	☐
Presence of wetlands	☐	☐	☐
Existence of wildlife corridors between your home and area visited	☐	☐	☐
Existence of protected area(s) with limited access	☐	☐	☐
Presence of a waterway, pond or lake	☐	☐	☐
	Low	Moderate	High
Signs of human disturbance: visible pollutants, dumping, clearcutting, etc.	☐	☐	☐
Presence of invasive species	☐	☐	☐
Number of roads with car traffic, snowmobile or ATV trails crossed during the hike	☐	☐	☐

Where are most of your check marks in the list above?

Porcini

This will give you a good general idea of how well the area is doing in the conservation and protection of biodiversity. The thought of taking action in the "wilderness" may seem overwhelming at first; here are a few suggestions to get you started.

Recommendations

Enjoy this environment and help preserve threatened species in the area by adopting sound outdoor ethics.

Encourage friends, family and community members to follow your lead.

Take pictures of points of interest like animal gathering areas or patches of flowering plants. Try to revisit these places and see how they change over the years by comparing the pictures.

You can also become more familiar with the species in the region and join a wildlife survey to report on birds, frogs, or plants in the area.

Many heads are better than one! Talk to people about your concerns; they might join your improvement efforts.

Learn to identify any alien invasive species. Record and report them; if possible, help organize an event to remove them!

Think Back on Your Outing

Back Home

Create a keepsake of your excursion by making a drawing, story, poem, photo, collage, or other souvenir.

Downy Woodpecker

Don't forget to identify the species you took pictures of. Borrow an identification guide from the library or consult a website, several are suggested at the end of this BioKit.

Definitions

Algae:
a simple, rootless organism that usually grows in freshwater or saltwater and is capable of photosynthesis. The largest and most complex are referred to as seaweeds.

Badlands:
barren, scoured lands eroded by water and wind. They tend to occur in arid or semiarid regions such as southern Alberta.

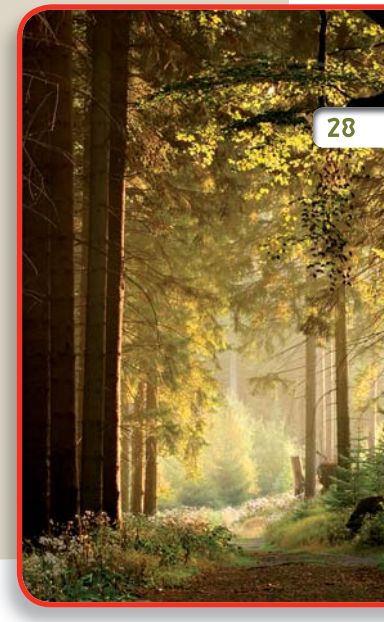
Boreal forest:
the largest vegetation area in Canada. It consists mainly of conifers but includes certain hardwoods in its southern range.

Grass:
plant that is often characterized by narrow leaves that grow from the base. Cereals and lawn grasses are popular examples.

Habitat:
natural environment where a living organism lives, grows and reproduces.

Indigenous species:
a species that lives or grows naturally in a region without having been introduced there.

Moss:
small, carpet-like plant that has no roots, stems or leaves. It is particularly well-adapted to damp environments.



Polar bear

Clearcutting:
forest exploitation method where most or all trees in a harvest area are cut down.

Conifer:
tree characterized by needle-shaped or scale-like leaves, cones, and a resinous secretion.

Deciduous tree:
tree that bears leaves which are shed annually.

Ecosystem:
biological community made up of interacting organisms and their surrounding environment.

Exotic species:
species not native to the environment in which it lives.

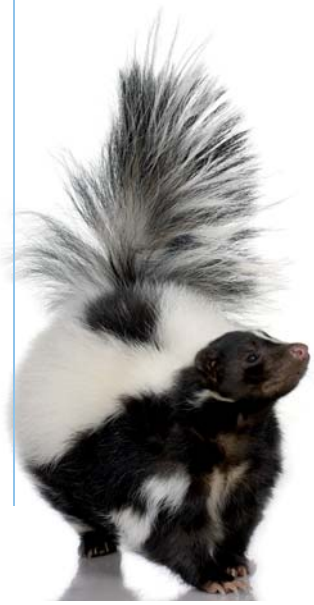
Species at risk:
a species listed by the Committee on the Status of Endangered Wildlife in Canada as extirpated, endangered, threatened, or of special concern.

Spore:
reproductive material of many plant species.

Vascular plant:
higher plant bearing stems, roots, and leaves with tissues that conduct water and nutrients throughout the plant.

Wetland:
land submerged under water or temporarily or permanently soaked with water. It is characterized by the presence of plants adapted to water-saturated soils.

For More Information



BIODIVERSITY IN GENERAL

www.cbin.ec.gc.ca
www.ecozones.ca
www.ec.gc.ca/EnviroZine
www.cbd.int
www.pc.gc.ca

CLEAN AIR

www.ec.gc.ca/air

CANADA'S FLORA AND FAUNA

www.hww.ca
www.nature.ca/plnt
www.ec.gc.ca/nature/Default.asp?lang=En&n=C5EDD32E-1
www.cwf-fcf.org/en
www.cbif.gc.ca
www.cfs.nrcan.gc.ca

WATER IN CANADA

www.ec.gc.ca/eau-water

SPECIES AT RISK

www.cosewic.gc.ca
www.registrelep.gc.ca

INVASIVE SPECIES

www.hww.ca/hww2.asp?id=220
www.ec.gc.ca/eee-ias/Default.asp?lang=En&n=C4637128-1
www.invasivespecies.gc.ca

WETLANDS

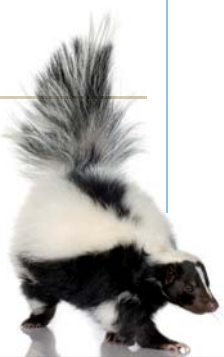
www.ducks.ca

ACTIONS FOR THE ENVIRONMENT

www.ec.gc.ca/education

OUTDOOR ETHICS

www.leavenotrace.ca



Striped skunk

Biosphère
Environment Museum
Musée de l'environnement

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www.ec.gc.ca/biosphere

Did you know that several other BioKits exist ?
Visit the BioKits website to download them, provide comments from your excursions and build your "EcoProfile"! www.ec.gc.ca/biotrousses-biokits

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