



Biosphere
URBAN
Bio**kit**
OTTAWA
GATINEAU



Environment
Canada
Biosphere

Environnement
Canada
Biosphère

Canada 

Four Seasons of Fun for the Whole Family!



Exploring biodiversity in Andrew Haydon Park

Photo: © Palvashah Durrani

URBAN ECOSYSTEMS IN CANADA'S CAPITAL REGION



The Biosphere in Montréal

Photo: © Environment Canada

Are you familiar with the animals and plants near your home? How much do you know about the biodiversity in your neighbourhood? To help you explore your surroundings, the Biosphere, environment museum is pleased to present this urban activity.

Environment Canada's Biosphere encourages citizens to take action and get involved in environmental issues. In addition to presenting exhibits and special events, the Biosphere offers educational and awareness-raising activities.

Situated on the edge of the Canadian Shield, the Ottawa-Gatineau region features stunning natural areas like Gatineau Park and the National Capital Greenbelt; the Ottawa, Rideau and Gatineau rivers; and wetlands such as Mer Bleue and the Masson Marshes, as well as numerous parks. Local residents and visitors take advantage of the region's rich natural and cultural heritage.

Biosphere: ec.gc.ca/biosphere



Photo: © James Deboer | Dreamstime.com

Did you notice...

The animal on the cover of this BioKit is the blue-spotted salamander, an elusive species that lives in this region. It was chosen, through a vote, by students from the area. Look around for this salamander: you may also get a glimpse of the yellow-spotted salamander or others that live in the region!

Reconnect with your environment...

How the BioKit Works

1. Choose a nearby park or green space.
2. Gather up your equipment: GPS unit (optional), magnifying glass, binoculars, camera, pocket-size mirror, pencil and clipboard.
3. Step out your front door and consider your surroundings in order to answer the questions on the following two pages.
4. Walk to the park or green space you chose in step one. Once there, continue observing the environment around you (follow along with the questions in the following sections of the BioKit).
5. Upon your return, discuss your outing with friends and family. Explore other BioKits and complementary activities by visiting ec.gc.ca/biotrousses-biokits.

In the electronic version of this document, available on the BioKits website, the highlighted words are hyperlinks to external websites.

Photo: © iStockphoto.com/kaisphoto



As you step out
the door and make your way
to the park, check off the
numbered items in the drawing
as you see them. What role do
they play in your surroundings?
(See the examples below.)

The Urban Environment

By 2020, 90% of Canada's population is expected to live in cities. All of these cities were built in what was once wilderness and are still surrounded by nature, though this may not always be obvious. Are your surroundings welcoming to you and are they nature-friendly?



- ① Trees, plants and flowers (air quality and shelter).
- ② Insects and animals (healthy environment).
- ③ An urban water source (life, health and safety).
- ④ A health clinic (health and well-being).
- ⑤ Green transportation (reduction of greenhouse gases).
- ⑥ A neighbourhood business (local economy).
- ⑦ Objects connected with recycling (sustainable consumption).
- ⑧ A community garden (local food supply and socializing).
- ⑨ A public bench (relaxation and connecting with others).
- ⑩ A public gathering spot (sense of belonging).
- ⑪ An activity area for young people (healthy development and fun).
- ⑫ A cultural location (community pride).
- ⑬ An historic building (city character and tourist attraction).
- ⑭ Urban art (beauty and reflexion).

Name a local place you would take your friends:

It's a Go!

Between your home and the park, did you observe green spaces?

Imagine you are a bee or a squirrel. How do you cross the neighbourhood? Where do you stop to rest or eat?

Wildlife corridors: In cities, the parks, treed walkways, green alleys, flower boxes, balcony planters and gardens can serve as urban wildlife corridors. These environments provide pathways to connect animals and plants with food, shelter and breeding areas.

Park visited: _____

Date: _____

Departure time: _____

Return time: _____

GPS coordinates: _____
(optional)

Photo: © Ron Rowan Photography/Shutterstock.com



WEATHER

Temperature: _____ °C



☐ Sunny



☐ Partly cloudy



☐ Cloudy



☐ Foggy



☐ Rainy



☐ Snowy



☐ Windy

Spring peeper



Photo: © Dave Huth

Eco-friendly tips for urban nature explorers:

- Do not pick **plants** (including flowers, ferns, etc.) during your outing.
- Obey any signs asking you to stay on **pathways**.
- **Leave nature** the way you found it.
- Observe **wild animals** from a distance and do not feed them.
- Put your **trash** in waste containers or take it home with you.

Did you know...

Thanks to the many green spaces, the Ottawa-Gatineau region has good air quality. The little air pollution that the region does experience is mostly from wood smoke and vehicle exhausts.



Inside the Greenbelt

Photo: © National Capital Commission

Park Visit

Did you know...

The Northern Cardinal is a non-migratory bird that you can see year-round in the Ottawa-Gatineau region. It never molts, so you can easily see its brilliant red feathers against the snow.



Northern Cardinal

Photo: © Steve Byland | Dreamstime.com

TAKE A BREATHER!

Take a deep breath and look around you.

What is your first impression?

Talk about what you see with your companions.

CRICK, CRACK, TWEET!

The sounds in our environment affect our well-being.

Close your eyes and listen. Write down the sounds you hear:

From nature:

From human activity:

Circle the sounds you would prefer to hear less often.

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A Certain Something in the Air

Catch the Scent!

The atmosphere is an ocean of gases that we live in and breathe all the time. Describe the odours you can smell in the air:

☐ Fruity? ☐ Floral? ☐ Diesel? ☐ Other: _____

What direction is the wind blowing from?

What did you do to find out?

The atmosphere plays an important role in how our planet functions. It protects us from the sun's rays and regulates our climate, making our survival possible.

SEE ANY CLOUDS IN THE SKY? HOW ARE THEY SHAPED? WHAT DOES THEIR SHAPE TELL YOU?



☐ **Cirrus**: Located high in the sky, cirrus clouds sometimes indicate that rain is coming.

Cloud pictures: © Jacques Pelletier



☐ **Cumulus**: Located low in the sky, these clouds often appear in good weather. In the hot, humid days of summer, they can transform into cumulonimbus clouds.



☐ **Cumulonimbus**: These are large grey clouds, taller than they are wide; in summer, they are a sign of stormy weather.



☐ **Stratus**: Usually sitting fairly low in the sky, stratus clouds often cause grey days and can herald storms or drizzle.

Photo: Photodisc

Eco-friendly tips for clean air:

- **Walk**, take your bicycle, use the Bixi self-serve bicycle, participate in car-pool services, or use public transit.
- **Avoid idling!** Turn off the engine when you are in a stopped car.
- Check the **Air Quality Health Index** when you are planning your next outing.

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Urban Biodiversity



Tree Swallow
Photo: © Mike Leveille

Did you say "biodiversity"?

In urban areas, nature adapts and forms new relationships in and with the environment.

All forms of life and the relationships that exist between them represent biological diversity, also called biodiversity.

Humans are part of this biodiversity.

SHAPE GAZING

Generally speaking, the more species there are, the healthier the environment.

How many different shapes of trees can you find?


☐

☐

☐

☐

☐ **Shrub**
☐ **Other**

Are the trees healthy? Look at the leaves.

Are they spotted, insect-eaten, or yellow?

Did you know...

Over 250 000 trees have been planted in Ottawa and Gatineau since 2006!

Ottawa-Gatineau bursts into colour each spring

with the arrival of tulips, lilacs and trilliums. It is the time for sugar maple delicacies and native plants like strawberries, trout lilies and bloodroots to start flourishing.



Photo: © iStockphoto.com/AYImages

Photo: © Chantal Lepire

Prowling for Lichens

Did you know that the type and amount of lichens growing on tree trunks can tell us about air quality?

Most lichens are sensitive to air quality and deteriorate when air pollution levels are high. Air pollution can worsen health problems like asthma.

Take a look at the tree trunks around you.

Do you see any lichens?

Are there different types?

Lichen : It is a type of partnership (symbiosis) between a fungus and an alga. You can find clumps of lichen on tree trunks and rocks. Sometimes a lichen has various colours.



White trillium

Photo: © National Capital Commission



Lilac

Photo: © Mike Leveille



Yellow trout lily

Photo: © Mike Leveille



Photo: © National Capital Commission

Did you know...

The tulip is not a native plant to Canada, but the National Capital Commission, the official gardener of Canada's Capital, plants close to one million tulips that bloom in the spring.

Hide and Seek!

If you see a bird or a squirrel pass by with a twig, a string, or something else (sometimes unusual) in its mouth or beak, follow it from a distance and, with a little luck, it might lead you right to its nest. Take care and remember, do not disturb the occupants!

A healthy ecosystem

- cleans the air and water;
- produces oxygen;
- traps carbon dioxide gas;
- controls insects and animal pests naturally;
- encourages pollination;
- helps control flooding and erosion;
- produces fertile soil;
- plays an important role in our economy, health and food safety.

These are services that the public would otherwise pay for.

Photo: © Parks Canada, B. Morin



Photo: © iStockphoto.com/imaginewithme

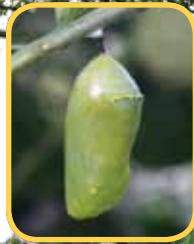


Photo: © iStockphoto.com/PeterJSeager

The Secret Life of Trees

Take a closer look. There could be a nest hiding in that hollow tree trunk! Look closely at treetops too. See any nests made by:

- Squirrels?
- Birds?
- Wasps?

Or any cocoons built by insects?

Look for **animal tracks** in the snow or mud. Notice the different shape and arrangements of pawprints or footprints and follow the trail.



Red squirrel

American Crow

Some key things to look for:

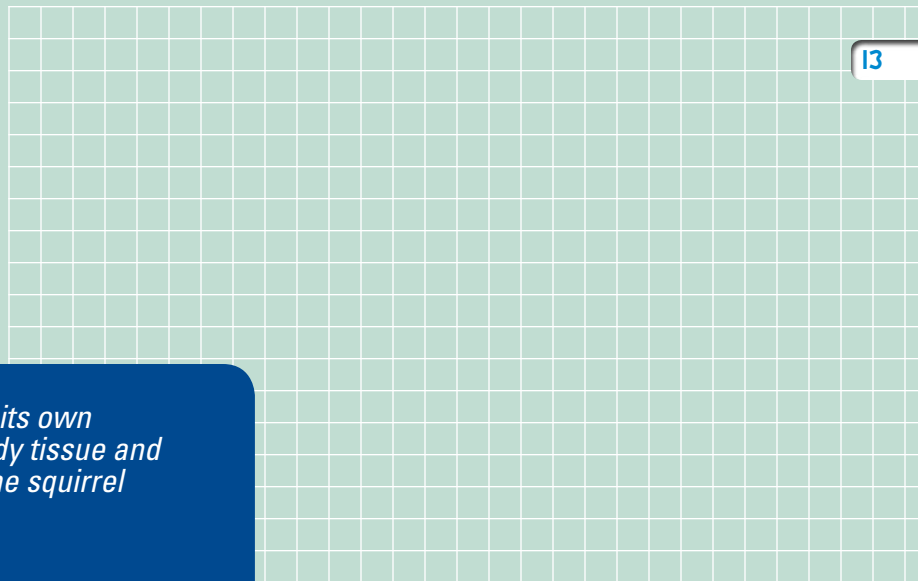
- Does it have two feet or four?
- Are the footsteps close together (maybe indicating a smaller animal) or far apart (a bigger animal)?
- How many toes are there?
- Where are the tracks heading?

Winter... a great season to play the detective

Follow that trail! Try to find other signs of life, like leftover food, scratch marks and dung. What can you see?

Sketch

a picture of the tracks you find so that you can identify them when you get back home.



Did you know that the red squirrel makes its own maple syrup? It bites the bark to get at the woody tissue and lets the sap flow. Once the water evaporates, the squirrel returns to harvest the "syrup"!

Birdsong!

Scientists have discovered that some birds in urban environments have changed their song so that they can be heard over all the human noise!

Close your eyes. Now listen for any birdsong you may hear.



☐ **Downy Woodpecker**
Song: teek-
cheek-cherreek

☐ **Black-capped Chickadee**
Song: chick-a-dee-dee-dee-dee

☐ **Blue Jay**
Song: jeer



Red-winged Blackbird
Song: *konk-la-ree*
Photo: © Mike Leveille

☐ **Red-winged Blackbird**
Song: conk-la-ree

Photo: © Sylvain Deland

Mammals, Reptiles and Friends!

HOW MANY DIFFERENT TYPES OF ANIMALS CAN YOU SEE?

Include pets, street animals, farm animals and wild animals:



Amphibians



Mammals



Fish

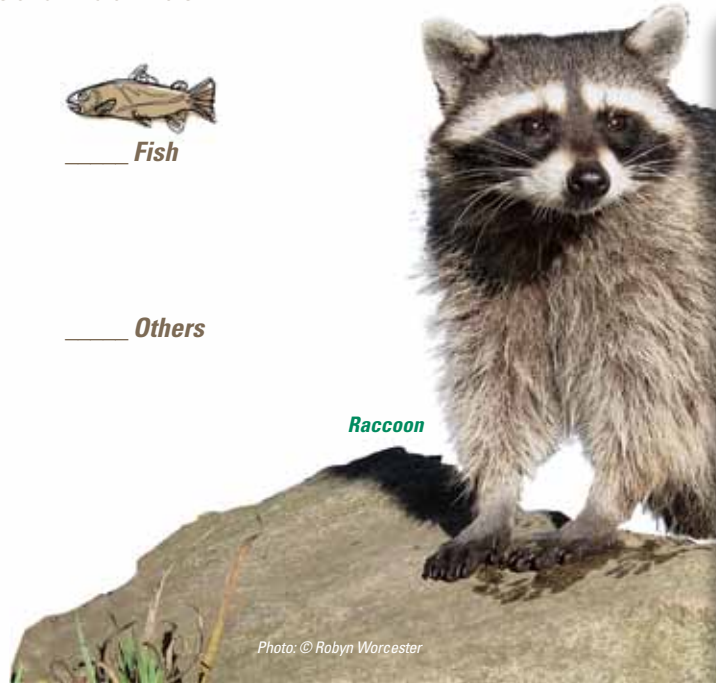


Reptiles



Birds

Others



Raccoon

Photo: © Robyn Worchester

Eco-friendly tips for urban biodiversity:

- Create urban gardens: flower beds and balcony planters.
- Avoid using pesticides: plants and animals are very sensitive to them.
- Grow a butterfly or pollinator garden.
- Join a community organization to help identify local birds and fungi, or to help keep the rivers healthy.

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Jumping spider
Photo: © Henri Goulet

Spiders and millipedes may not be insects, but they still belong to our environmental family!

Insects Are Animals Too!

Scientists have identified up to a million species of insects so far, but estimate that there may be as many as 30 million. Insects differ from other animals by their three pairs of legs. With or without your magnifying glass, scour the ground or search among the flowers for insects. Who knows, you might discover a new species!



☐ Butterflies and caterpillars



☐ Ladybugs and beetles



☐ Bees, wasps and ants



☐ Flies and mosquitoes



☐ Dragonflies and damselflies

☐ Others



Honey bee

Photo: © iStockphoto.com/arlando71

Pollinating Insects:

These insects carry pollen from flower to flower. Bees, wasps, butterflies, beetles, ants and flies are among these beneficial insects.

We owe them credit for over 70% of the food we harvest.

These days, pollinating insects are threatened by:

- loss of habitat;
- use of pesticides;
- competition with other species (often invasive species);
- disease and parasites;
- light pollution.

Ant photos: © iStockphoto.com/Antagain

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Species at Risk in the Region



Butternut tree

Photo: © Mike Leveille

RARE SPECIES

The Canadian Shield and the St. Lawrence Lowlands are two important geographic features that meet at the Eardley Escarpment in Gatineau Park. This long cliff is home to over half of Gatineau Park's at risk and rare species of plants and animals.

Did you know...
80% of the eastern red cedars in Quebec are found on the Eardley Escarpment.



Eastern red-cedar

Photo: © Howard F. Schwartz, Colorado State University, Bugwood.org

Some plants and animals are at risk because their habitats are disappearing or are being split up. When this happens, animals lose their homes, food and places to breed and mate. Pollution, disease, invasive species and climate change can also affect animal and plant populations.



Channel darter

Illustration: © New York State Department of Environmental Conservation



Blanding's turtle

Photo: © USFWS



Snapping turtle

Photo: © National Capital Commission



Little brown bat

Photo: © iStockphoto.com/-AZ-



Common Nighthawk

Photo: © Gary Kramer/USFWS



Photos: © Palvashah Durrani

Ecopassages!

These are walkways or tunnels that humans have built under or over highways, to allow animals to cross them safely. For example, you can find eco-passages under Terry Fox Drive in Kanata.

Due to their similar colours, the **juniper hairstreak** can hide, or camouflage itself, in the eastern red-cedar (also called the red juniper), on which this butterfly's larvae feed.



Photo: © Megan McCarty

Find the Invader



Wild Turkey

Photo: © iStockphoto.com/Saddako

Did you know...

The native Wild Turkey disappeared from southern Ontario in the early 1900s. The turkeys were successfully reintroduced to this area in the mid-1980s, and have continued to expand their range ever since.

INVASIVE ALIEN SPECIES

Brought into a region either accidentally or on purpose, these plant and animal species are a major threat to biodiversity and are very difficult to control.

Which of the following are considered an invasive alien species in the Ottawa-Gatineau region?



a) Garlic mustard

Photo: © David Cappaert, Michigan State University, Bugwood.org



b) Common carp

Photo: © Duane Raver, US Fish and Wildlife Service, Bugwood.org



c) Red-eared slider
(popular pet shop variety!)

Photo: © Greg Hume



d) Reed canary grass

Photo: © Richard Old, XID Services, Inc., Bugwood.org



e) Emerald ash borer

Photo: © Klaus Bolte, CFS-SCF, NRCan-RNCan

[Answer: All of them!]

Moving in! Look around you.

Now imagine this is your new home. How will you adapt? How will you eat, drink, sleep, stay warm and stay safe in this new environment? Share your ideas with the other people in your group.



The Slack Sand Dune

Photo: © Palvashah Durrani



Photo: © Biodiversity Conservancy International

The Slack Sand Dune

This unique ecosystem is a "leftover" from the last Ice Age 10 000 years ago! To protect its native plants and animals, volunteers are working to restore the dunes to their natural state.

Did you know...

The ghost tiger beetle still calls the Slack Sand Dune home. This beetle, which has disappeared from other sites in Canada, relies on the sand to stay camouflaged and safe from predators.



Photo: © Henri Goulet

Water, Water Everywhere!

The Rideau and Gatineau rivers meet up with the Ottawa River in the heart of the National Capital Region. All kinds of aquatic plants and animals make their home in these rivers, including 14 types of mussels, many types of fish, muskrats, turtles and waterfowl (such as ducks).

A Drippy Adventure!

Find out where you are on the map. Imagine you are a lonely drop of water. How are you going to get from where you are to a river, in order to join all the other water droplets? Once you are in the river, where do you go?

Draw your path on the map.



Did you know...

The name of the Ottawa river comes from the Algonquin term "adawe," "to trade." This was the name given to the people who controlled the trade of the river.

Map: © Department of Natural Resources Canada

Wetlands

Wetlands are areas that are wet all year long or just seasonally.

Did you know...

Canada has a quarter of the world's wetlands!

Photo: © National Capital Commission

Wetlands are important because they:

- Provide homes and food for many types of plants and animals, including thousands of migratory birds.
- Act like sponges: they soak up extra water from heavy rains or snowmelt and release it slowly, reducing floodings.
- Remove pollution from water.



Photo: © CREDDO

The city of Gatineau's Green Fund is helping to rehabilitate McLaurin Bay.



Photo: © Mike Leveille

Visit the Macoun Marsh in the Beechwood Cemetery in Ottawa to learn about biodiversity year-round!

The Mer Bleue in the city of Ottawa

Urban Landscapes

HEAD FOR THE HILLS

Over time, humans have transformed the natural landscape. Look for some high ground in the park, and divide what you see into groups:

Natural features:

hills, waterways, fields, forests and lakes

Structures and signs of human activity:

roads, power lines, buildings, industrial sites, church steeples, green roofs (totally or partially covered with vegetation)

Do you see any wildlife corridors that animals could use to move from place to place in the city?



Photo: © iStockphoto.com/mackay_ch

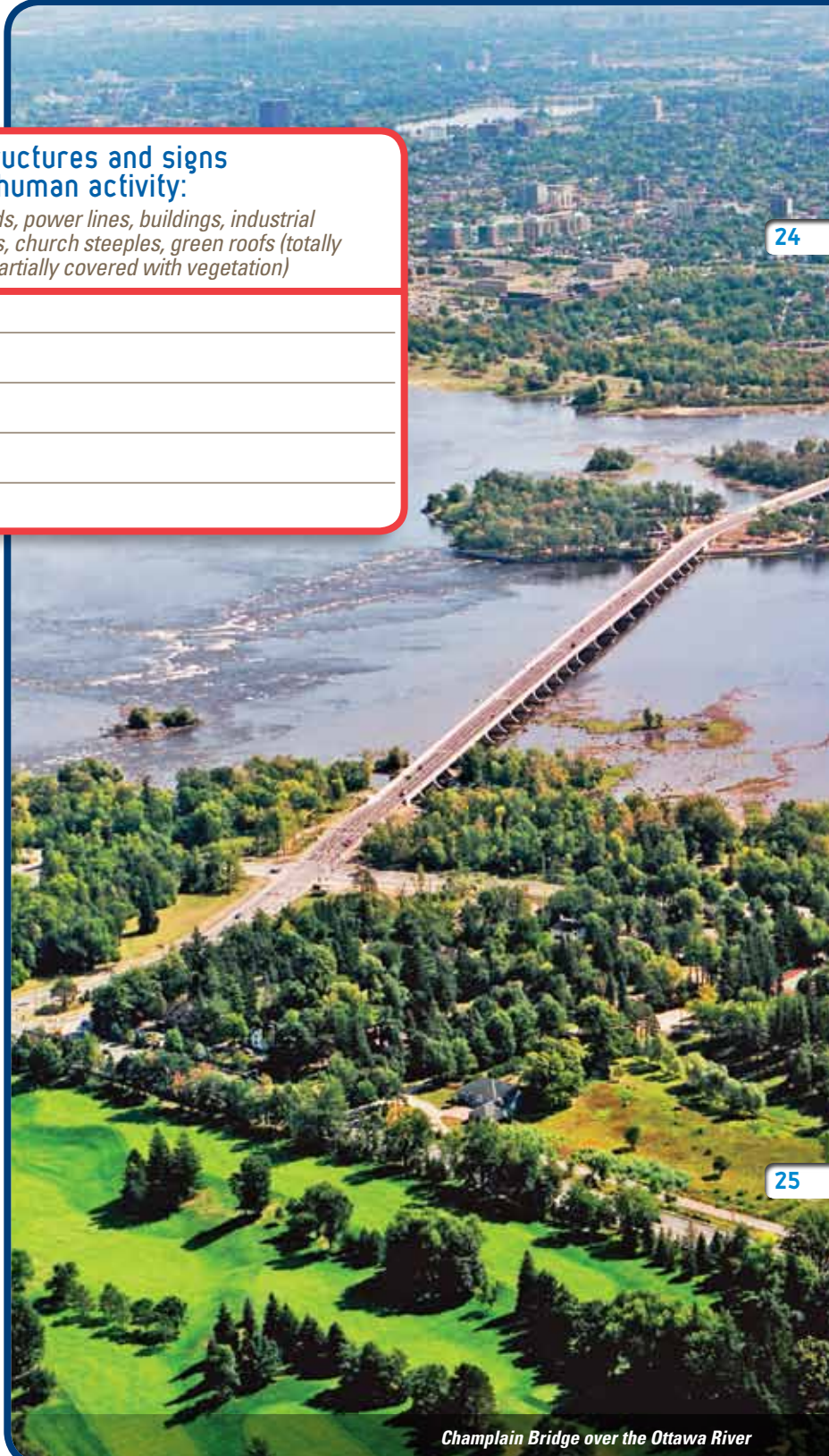
A DIFFERENT ANGLE!

Sometimes, just looking at something from a different angle can lead to surprising discoveries.

- Take out your pocket-size mirror and walk backwards. Does the landscape look any different?
- Bend over and look back through your legs, to see everything around you upside down. Describe what you see.
- What is your favourite point of interest? Ask your fellow biodiversity explorers to guess what they think your favourite is.



Photo: © iStockphoto.com/borchee



Champlain Bridge over the Ottawa River

Photo: © National Capital Commission

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Green Spaces

The Ottawa-Gatineau region is full of magnificent green spaces, from wooded areas and parks to the National Capital Greenbelt and Gatineau Park.

As you leave

Before leaving your chosen park or green space, close your eyes and feel the environment around you. Is it warm? Cool? Wet? Dry? Sunny? Shady?

Now cross the street or parking lot, and close your eyes again. Does it feel any different?

Green Spaces

- cool the urban environment;
- slow the water runoff from rainfall and snowmelt;
- provide habitats and wildlife corridors for animals and plants;
- are places to relax and have fun.

Did you know...

There are more than 300 kilometres of recreational paths in the Capital region to walk, cycle and roller blade, linking superb natural areas, parks and attractions!

Photo: © iStockphoto.com/gbh007



View from King Mountain, Gatineau Park

Photo: © iStockphoto.com/VargaJones



The Greenbelt

Photo: © National Capital Commission



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Bingo on the go!

On your way home, try to find the following sources of food, shelter and water that help form urban wildlife corridors between the park and your home. If you can complete a line, you have a bingo!

Photo: © iStockphoto.com/maybefalse



Bird feeder

Photo: © iStockphoto.com/PrairieArtProject



Tree cavity

Photo: © Palvashah Durrani



Water feature

Photo: © iStockphoto.com/SteveByland



Vegetable garden

Photo: © iStockphoto.com/Maica



Bushes

Photo: © Palvashah Durrani



Tree-lined street

Photo: © iStockphoto.com/charrongolf



Green alley

Photo: © Baty Arnaud, Alex Hartunian



Berries

Photo: © iStockphoto.com/igorr1



Balcony garden

Photo: © iStockphoto.com/HeikeRau

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Living with our Wild Neighbours



Photo: © Craig Koppie, USFWS

Peregrine Falcons living in the urban areas nest on tall buildings.

Check out the [falcon cam](#) at the Ottawa Delta City Centre!

We have changed the environment around us. We clear land to build homes, farms and places to shop and work. Some animals and plants have adapted to live with us in an urban setting.



Photo: © Ann Dacres

Some plants will grow out of any small space or crack.

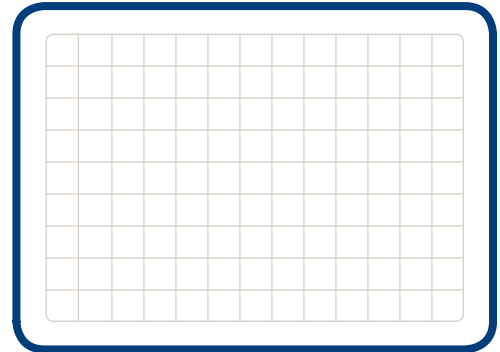


Photo: © iStockphoto.com/PapaBear

Deers and other animals use rail and power line corridors as pathways at night.

URBAN GROWTH!

Find a plant growing in an unusual spot. What does this plant need to survive in the urban jungle? Draw it in the box below!



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Photos: © George Peck

The Chimney Swift once nested in large hollow trees in old forests, but when those forests were cleared, it started using chimneys and other similar structures instead. Fortunately, this bird only needs them during the spring and summer when we are not using our fireplaces.



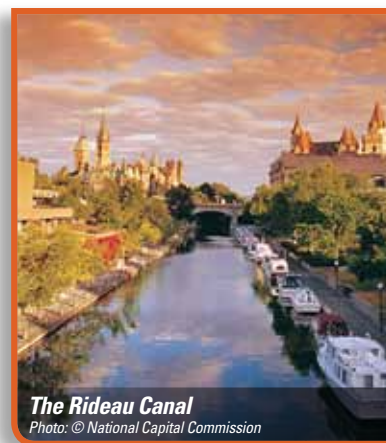
Who are your wild neighbours?

Who is the most unusual wild neighbour to visit your urban environment?

What are one positive and one negative thing about having wild neighbours?



Photo: © iStockphoto.com/LUGO



The Rideau Canal
Photo: © National Capital Commission

Downtown, the Canal is full of fish like largemouth bass and bluegills. You might even see a muskie!

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Did you know...

Sometimes, animals can adapt too well to an urban environment. For example, Canada Geese are attracted to waterfront parks and golf courses, where they have access to food and shelter and are safe from their main predators like the fox. They multiply too fast for the environment, and their overpopulation and droppings create problems.

Remember not to feed any wild animals, including Canada Geese.

Urban Environment: My Diagnosis

Now that you have gathered an abundance of observations, use them to reach your own diagnosis about the health of your urban environment by filling in the chart opposite.

This diagnosis can be printed from the [BioKits website](#) and be used for other park visits.

Check the boxes that apply

Excellent!

Not bad but...

Things must improve!

Trees, bushes, balcony planters and gardens providing a biological corridor between your home and the park

☐
☐
☐

First impression of the park

☐
☐
☐

Surrounding sounds

☐
☐
☐

Air quality

☐
☐
☐

Biodiversity: plants and trees

☐
☐
☐

Biodiversity: animals

☐
☐
☐

Presence of pollinators

☐
☐
☐

Invasive plant control

☐
☐
☐

Waterways, ponds, lakes or wetlands

☐
☐
☐


Mer Bleue

Photo: © National Capital Commission

Recommendation:

Enjoy your environment and help preserve threatened species in your area.

Choose one thing you would like to improve and think up a possible solution.

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



Black swallowtail caterpillar

Photo: © iStockphoto.com/arlando71

Encourage Biodiversity

Now it is your turn

to promote biodiversity!

If you have access to a yard or just a balcony, you can take action!

What actions will you take?

Legend

Website for Ottawa

Website for Gatineau

Take part in your city's composting program.



Photo: © iStockphoto.com/cotesebastien



Photo: © Palvashah Durrani

Support local agriculture, organic when possible.



Photo: © Mtruchon | Dreamstime.com

Consider installing a bird feeder in your yard.



Photo: © iStockphoto.com/cstar55

Naturalize your garden or a community space: grow native species to provide food and shelter for wild animals.



Photo: © iStockphoto.com/gunnargren

Care for your lawn in an environmentally friendly way.



Photo: © Alisonh29 | Dreamstime.com

Grow vegetables in a community garden, a yard or containers.

It is estimated that several million birds fall prey to cats each year in Canada. To help make your neighbourhood more bird-friendly:

- Consider keeping your cat indoors, particularly from dawn until dusk.
- Place a colourful collar around your cat's neck.
- Set up safe birdhouses and feeders that cats cannot easily reach.
- Promptly report any stray or feral cats.
- Turn off any unneeded lights at night.

Learn about vulnerable species and how you can help them.

Participate in community tree-planting and shoreline restoration projects.

Photo: © iStockphoto.com/ermingut

Photo: © iStockphoto.com/webSubstance



Think Back on Your Outing

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Back Home

Commit your excursion to memory by creating a drawing, story, poem or collage.

Biodiversity at Your Doorstep

For your next expedition, choose one of the following places where you can further discover the region's unique biodiversity!

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Cycling on the shores of the Ottawa River

Photo: © iStockphoto.com/Orchidpoet

PRODUCTION TEAM

The Ottawa-Gatineau Urban BioKit is an adaptation of the Urban BioKit.

*Production: **Biosphere, Environment Canada***

*Coordination and editing: **Etienne Angers and Ann Dacres***

*Research and writing: **Palvashah Duranni***

*Triptych photo on cover: © **National Capital Commission***

*Blue-spotted salamander photo on cover: © **Michieldewit | Dreamstime.com***

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Organizations represented on the Ottawa-Gatineau

Urban BioKit steering committee:

Friends of Gatineau Park

City of Ottawa

Ville de Gatineau

Parks Canada Agency

St-Laurent Academy, grade 6 and 7 classes 2011–2012

Explore other BioKits and complementary activities by visiting ec.gc.ca/biotrousses-biokits.

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