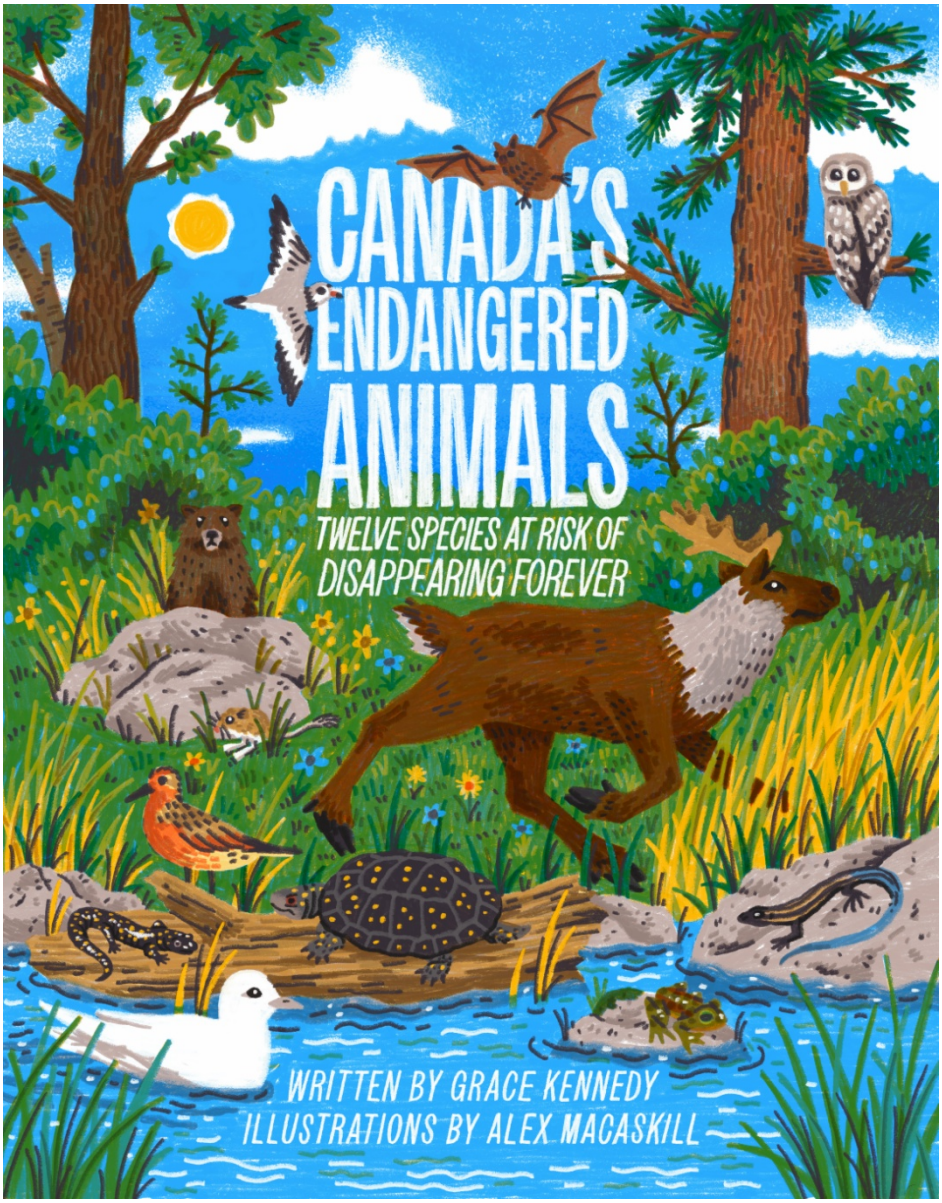
Canada's Endangered Animals

Teacher's Guide



Contents

Introduction

*Canada's Endangered Animals*is primarily intended for students in Grades 3 to 6, but can be used to teach science, language arts, social studies, and math concepts to students of all ages. The book focuses primarily on 12 endangered animals within Canada, and also includes a description of Canada's Species At Risk Act and a section on actions students can undertake on their own to help endangered animals.

Using this book, you will be able to engage in the following science-related themes:

- Biodiversity
- Habitats
- Food webs
- Conservation
- Climate change
- Human impact on ecosystems
- Natural changes to ecosystems
- Understanding scientific data

Using this book, you will be able to engage in the following language arts-related themes:

- Vocabulary
- Reading comprehension
- Writing and research
- Text structure and form

Using this book, you will be able to engage in the following social studies-related themes:

- Canadian government
- Canadian geography and maps
- How historical events impact the present
- How people can positively affect the environment

Using this book, you will be able to engage in the following mathematics-related themes:

- Addition and subtraction
- Percentages
- Statistical data

Discussion questions

Canada's Endangered Animals can be read individually or as a group. It can also be read as a whole or in parts (for example, if you want to focus on a particular animal).

The following questions are intended for students of all ages, and can be used either in a verbal discussion or as writing prompts. They are not intended to have a right or wrong answer, but rather promote thoughtful discussion or debate among the class.

Before you read

- What is an endangered animal?
- Why should we care about endangered animals?
- What are some reasons why animals might become endangered?
- How does Canada protect endangered animals? What does that protection mean?

After you read

- Is it important to have laws protecting endangered animals?
- "Endangered" is a legal term in Canada, and not all animals that are at risk are officially endangered in the Species At Risk Act. What problems might result from that system? Is there a better way to protect endangered animals?
- How can we protect animals from invasive species? What are some of the challenges in preventing invasive species from taking over an ecosystem?
- Officials sometimes kill other species that compete with endangered species for habitat or food (for example, the Barred Owl, which competes with the Northern Spotted Owl). Officials also occasionally kill predators to help preserve the populations of endangered prey species (for example, wolves, which eat Gaspésie Caribou). Is it right to kill animals from one species to protect another? Why or why not?
- Is an animal still "wild" if it is kept in captivity, like the Gaspésie Caribou? Is it more important to save a species or to keep an animal free?
- Learning about animals often means disturbing them, which can be bad for endangered species. How should scientists get the data they need without potentially harming the species?
- Who should take a larger role in protecting endangered species: governments, corporations, or individuals? What actions can each of those entities undertake?

Science activities

Canada's Endangered Animals is a book primarily focused on science. This book can help teach students about:

- Biodiversity
- Habitats
- Food chains
- Conservation
- Climate change
- Human impact on ecosystems
- Natural changes to ecosystems
- Understanding scientific data

The following activities are intended to expand on the information presented in *Canada's Endangered Animals*. You can also use the information provided in the book to develop your own lesson plans, discussion topics, or activities.

Do you hear what I hear?

Materials: *Canada's Endangered Animals*, a computer that plays sound, internet access

The Oregon spotted frog has a ribbit that sounds like someone rapidly knocking on a piece of wood, or clicking their tongue in their mouth. The sound is quiet, but carries far underwater.

Discussion: Read the chapter on Oregon Spotted Frogs from *Canada's Endangered Animals*, and ask your students what they think the Oregon Spotted Frog would sounds like.

Apply: Have your students try to create the sound of an Oregon spotted frog call. Then listen to the recording at the link below.

Link: https://collections.lib.utah.edu/ark:/87278/s6000fd8

Reflect and Respond: How close were they to the sound of an actual Oregon spotted frog?

Extension Application (Option 1): Listen to these different calls from Oregon spotted frogs. *Do not share the italicized description of each call beforehand.*

Advertisement call: https://www.californiaherps.com/sounds/rpretiosa2.mp3

Advertisement calls are the most well-known calls of a frog species. They are typically made by a male during the breeding season to establish their territory and attract females. These calls were made by a group of adult males.

Release call: https://www.californiaherps.com/sounds/rpretiosareleaseadult.mp3

Release calls are made when a frog wants something else to let go: for example, a female frog that does not want to mate with a male frog who has grabbed her. This call was made by a male frog that was grabbed by a researcher.

What is different about each call? What do you think the frogs are trying to communicate? Why would frogs need different calls for different reasons? How is that similar to how we communicate?

Extension Application (Option 2): Listen to the different frog calls on the webpage below and see if your students can guess which frog each sound belongs to. *Don't show your students the webpage.* Why do different species have different ways of communicating?

https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/wildlife-conservation/amphibians-reptiles/amphibians-in-b-c/frogs-toads

Extension Application (Option 3): You can find recordings of some other animals in *Canada's Endangered Animals* below. Get your students to guess which animal each call belongs to, or have them discuss what each call might mean.

Little brown bat: https://soundcloud.com/soundsofyourpark/little-brown-bat-calls-banff-national-park-alberta-canada (audio altered so it is audible to people)

Gaspésie caribou: https://www.uaf.edu/news/archives/news-archives-2002-2010/featured/05/reindeer/sound.php

Vancouver Island marmot: https://www.facebook.com/reel/1803135706974556

Northern spotted owl: https://macaulaylibrary.org/asset/56949

Red knot: https://macaulaylibrary.org/asset/609630859

Piping plover: https://macaulaylibrary.org/asset/348314451

Ivory gull: https://macaulaylibrary.org/asset/138245

Oregon spotted frog: https://www.californiaherps.com/frogs/pages/r.pretiosa.sounds.html

Eastern tiger salamander: https://www.youtube.com/watch?v=A4-QXjz2NFY

Make a habitat

Materials:*Canada's Endangered Animals*, cardboard pieces (large enough to form a base), plasticine or another modeling clay

Every animal requires a habitat that meets its needs. The habitat needs to have food for it to eat, as well as the right environment for it to survive. Your students will create a model of a habitat for one of the animals in *Canada's Endangered Animals.*

Discussion: Pick one animal from the book and talk to your students about what it needs to survive. What kind of food does it eat? Does it need water to live in, or is it happier in the trees? What kind of things would make it hard for that animal to survive?

Apply: Have your students create a model of what they think that animal's environment should look like. Remind them that it should include access to food, as well as appropriate environmental elements (like caves for bats or ponds for salamanders).

Use the cardboard as a base for their model, and have them build their habitat on top using plasticine or another kind of modeling material.

Reflect and Respond: Have your students pair up and talk about what they included in their model and why. Talk about what would happen if certain parts of their habitat disappeared or were changed.

Extension Application: Have your students add one threat to their modeled habitat. Maybe it's a road in their turtle habitat, a deer in their caribou habitat, or some beach toys in their piping plover habitat. Then, have them partner up and talk about what they could do to fix those threats, or make them less severe.

Tag: it's a threat!

Materials:*Canada's Endangered Animals*, a large space such as a gym or field, pinnies, items to represent food (e.g. beanbags), items to represent habitat (e.g. cones)

Food webs are intricate systems that keep our ecosystems in balance – but it can be easy to disturb them if one species in the system is removed. Your students will model a simplified version of the food web changes that have affected the Five-Lined Skink through a game of intense tag.

Discussion: Read the chapter on Five-Lined Skinks in *Canada's Endangered Animals*. Why were larger predators pushed out of their territory? What effect did this have on smaller predators like raccoons, and their prey, the Five-Linked Skink?

Preparation: Place the bean bags throughout your open space. Feel free to disperse them unevenly throughout the space. Place cones in three different corners of the space.

Divide your class into three uneven groups: Five-Lined Skinks, Raccoons, and Coyotes. There should be more Five-Lined Skinks than Raccoons, and more Raccoons than Coyotes. (In a class of 25, there could be 13 Skinks, eight Raccoons, and four Coyotes.) Give each group a different colour pinny.

Rules: Each species begins the game at its "habitat" corner. When the game begins, each species must go out and find food. Skinks must collect the bean bags scattered throughout the space. Raccoons will try to tag the Skinks, and the Coyotes will try to tag the Raccoons.

When a Skink or Raccoon is tagged, they are "out" and must stand to the side. However, they can rejoin the game if a member of their species "eats" and then returns to their habitat. (For Skinks, this means they collect a bean bag and return to their habitat. For Raccoons, this means they have tagged a Skink and then return to their habitat.)

Part way through the game (and before all Raccoons are eliminated), remove the Coyotes from the play area. Skinks and Raccoons play as before. The eliminated Coyotes can now join the Raccoons as that population increases.

The game is over when all the Skinks are dead, or when you feel your class is tired out.

Notes:

- As a teacher, ensure you are throwing the bean bags back into the play area after they have been collected. (For added complexity, create periods of scarcity and periods of plenty by returning more or less food to the play area.)

- If students are staying at their habitat and not searching for food, you can tag players out due to starvation.

Reflect and Respond: Talk about the challenges faced by the difference species in the food web. What was the main challenge for the Raccoons, the Skinks, and the Coyotes? What could be done to make things easier one species, and how would that affect the food web as a whole?

If the game failed (i.e. the Raccoons or the Skinks were eliminated before the Coyotes were removed), discuss what elements in a real food web might lead to that outcome. If the Raccoons eat all the Skinks while they still have predators, what will happen to the Raccoons? Why might Skinks be unable to get enough food to sustain their populations?

Language arts activities

Non-fiction books are a great way to bring different parts of the curriculum together. *Canada's Endangered Animals* can show students how non-fiction can be used to transmit information, as well as engage in the following:

- Vocabulary
- Reading comprehension
- Writing and research
- Text structure and form

The following activities are intended to expand on the information presented in *Canada's Endangered Animals*. You can also use the information provided in the book to develop your own lesson plans, discussion topics, or activities.

Word search and crossword

What you'll need: *Canada's Endangered Animals*, graph paper, pencils

Discussion: Have students read the glossary at the back of *Canada's Endangered Animals*. What words are new to them? What words did they already know?

Apply: Have students choose 20 words from the glossary, and use those words to build their own crossword. They should follow the following steps:

1. Begin writing words in a criss-cross pattern on a sheet of paper. Words should either go across the page or down the page. Each word should connect with at least one other word that has a shared letter. *Hint: using graph paper can make it easier for students to make their crosswords neat and tidy.*
2. Make a note of which words go across, and which go down. (The number should be roughly equal.) Number each across word, starting from one. Number each down word starting from one.
3. Create a list of clues, with each clue corresponding to a different word. Students can create their own clues for the words, or use the definition in the book's glossary.
4. Show the completed crossword to the teacher for approval.
5. Once approved, create a blank version on a new sheet of paper, drawing boxes for each letter, and labeling the first letter of each word with its corresponding number.
6. Hand the empty crossword to a partner to complete.

Alternate Activity: For students in younger grades, have them complete the word search on the following page. An answer key is provided.

CANADA'S ENDANGERED ANIMALS

Word Search

D N B C A S P E C S D E
K R I O N G V O P T C A
E M O S G I V E A O D N
L L D U S H C U S X E D
H A I A G I S Y K I R R
A V V C E H S P O N E O
B N E S H T T A T X G T
I M R T E E C G T T N A
T P S M U H N I I S A D
A I I A M I N L I T D E
T R T O M C T L C K N R
F E Y R T A R S E N E P

BIODIVERSITY
DROUGHT
ECOSYSTEM
ENDANGERED
EXTINCT
GILLS
HABITAT
INVASIVE
LICHEN
PREDATOR
SPECIES
TOXIN

CANADA'S ENDANGERED ANIMALS

Answer Key

BIODIVERSITY ENDANGERED HABITAT PREDATOR

DROUGHT EXTINCT INVASIVE SPECIES

ECOSYSTEM GILLS LICHEN TOXIN

Wanted posters

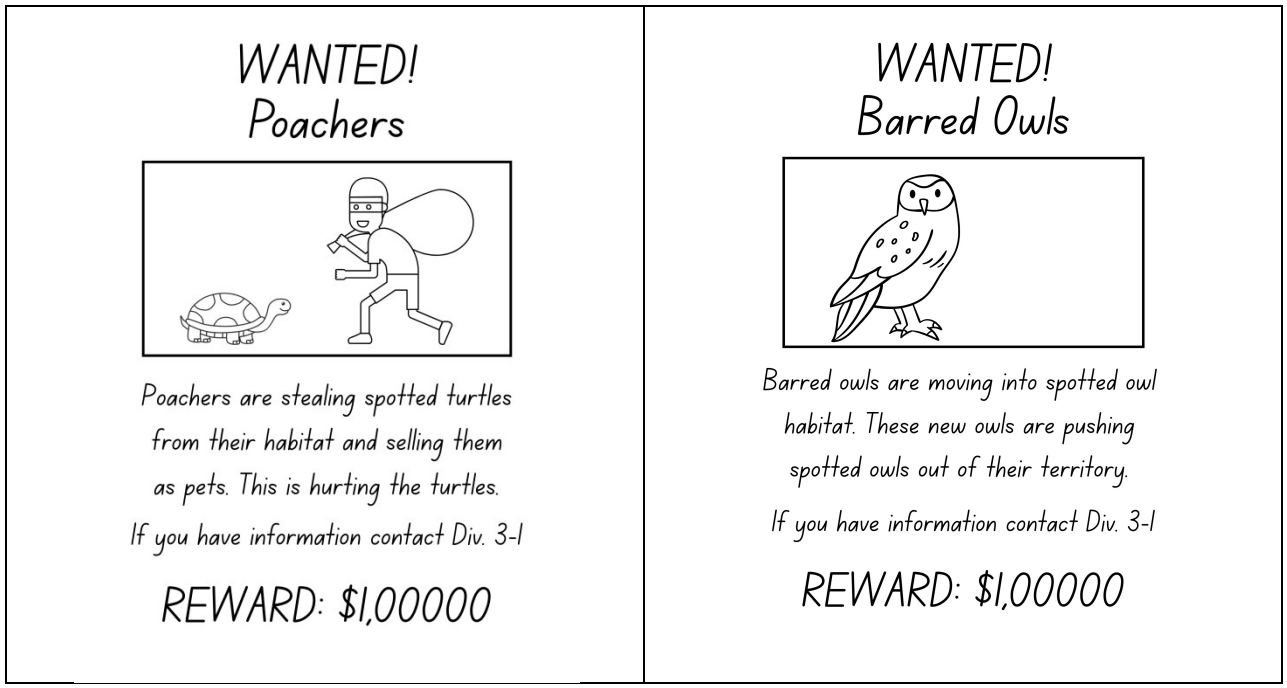
Materials: *Canada's Endangered Animals*, poster board, markers or other colouring tools

Something is hurting Canada's endangered animals, and it's up to your students to track down what it is!

Discussion: Have your students read a chapter of *Canada's Endangered Animals*. What threats are facing that animal? Why are those things a threat?

Apply: Have your students create a poster outlining what the threat they identified. Students should be able to identify a threat, what animal it is affecting, and how it is harming that animal. The poster should include a picture of the problem, as well as a description of the threat. A reward can be included for fun if desired.

Two examples are below.



Place the posters around the school or your classroom.

Reflect and Respond: After the posters are up, discuss how the posters are helping people understanding endangered animals. What information are people getting from the posters? Will it help them become more engaged citizens? Will it make them more likely to protect endangered animals?

Text features in action

Materials: *Canada's Endangered Animals,* text features definition chart (provided below), paper, pens or pencils

Background knowledge: Students should have an awareness of how text features (headings, figures, pictures, sidebar definitions) improve the readability of complex text.

Discussion: Ask students to look at one chapter in *Canada's Endangered Animals*. What do they notice about the structure and layout of information? How are things grouped? Do they know what particular features of texts are called?

Experience: Explain to students about the importance of text features:

From Adrienne Gear's *Powerful Readers*: "Unlike fiction, where the majority of information is communicated through words in the main body of text, nonfiction uses a variety of forms to help the reader access the information. These text features serve two purposes: to help organize information and to provide information. Headings, tables of contents, and special fonts all help the reader locate information, directing readers' attention to important ideas. Some text features, such as pictures, diagrams, charts, and graphs, provide a visual representation of information to help the reader access information more easily and comprehend important ideas. They are there to enhance the readers' experience with the text. The ability to navigate text features can be connected directly to determining importance, as text features are one of the clues readers use to help them separate important information from unimportant information. Headings give the reader clues about the purpose of a certain section. Special fonts draw the reader's attention to important words or ideas. Glossaries provide the reader with definitions for important words or concepts. Quite often, the author will repeat important information found in the main body of a text within or alongside a text feature designed to enhance the reader's understanding of that idea. In short, text features are a reader's best friend and should not be ignored."

Here are some examples from *Powerful Readers*:

- Picture
- Table of Contents
- Map
- Fact Box
- Glossary
- Label
- Title
- Special Font

Apply: Create a definition chart for students to look up the definitions of the terms (you could provide them all or reduce to specific ones), and then analyze examples in *Canada's Endangered Animals*. Students should work in pairs. Provide a photocopy of one animal per group and one copy of the glossary section.

Example:

Term	Definition	Example from Text
Title		
Heading		
Picture		
Special font		
Map		
Fact box		
Glossary		

Analyze: After the students have completed the definitions and identified examples from their animal from *Canada's Endangered Animals,* come back together as a class and discuss. What did you notice about text features during your search? Were some more commonly used than others? Why do you think some features are used more often than others?

Reflect and Respond: Choose one text feature from *Canada's Endangered Animals*. How did the text feature help communicate information to you? Was it an organizational feature or an informational feature? If the author chose a different feature, how would that change your understanding of the topic?

Extension Application: Textbook page

Ask students to research an endangered species in Canada not included in *Canada's Endangered Animals*. Students can use the SARA species search to identify endangered species in the country. (The search is available online here: https://species-registry.canada.ca/index-en.html#/species?sortBy=commonNameSort&sortDirection=asc&pageSize=10.) Each species page will include official COSWEIC reports they can use in their research, if desired. Students should also use other methods of research, such as internet searches and non-fiction books.

Students should research with the following questions in mind:

- What species is it?
- Where is it located?
- Where is it in the food chain?
- How would they describe it, physically?
- Are there any special features or traits that make it unique?
- Why is it endangered?
- What is being done to protect that species?

Once their research is complete, they can use their understanding of text features and create their own book page to organize the information. Students can look to *Canada's Endangered Animals* for inspiration, or other non-fiction books.

Lesson provided courtesy of Rylie Matson.

Social studies and math activities

Canada's Endangered Animals can be used to help cement certain social studies and math concepts for students of all grade levels.

Social Studies – Canadian government: Canada protects endangered animals through the Species At Risk Act. The act was established in its current form in 2002, and passed through government as Bill C-5. (History of SARA is available online here: https://www.canada.ca/en/environment-climate-change/services/species-risk-act-accord-funding.html.) You can use SARA as an example when explaining how bills are passed in Canada.

Social Studies –geography: *Canada's Endangered Animals* includes a map showing where each endangered animal can be found in Canada. The map can be used as an independent tool to help students understand the country's different biomes. It can also be used to discuss urban development near wild spaces. (Are endangered animals more likely to be found near human development?)

Social Studies – history:*Canada's Endangered Animals* includes a number of examples of past events influencing current events. For example, Piping Plovers being hunted for their feathers has contributed to population declines today. Teachers can use those examples as jumping off points for discussions around the impact of historical events.

Social Studies – civic activism: Teachers can use *Canada's Endangered Animals* as an example of how people can positively affect their community and environment, through examples in text of scientists and researchers protecting animals, or by reviewing the "How Can I Help?" section.

Math – addition/subtraction/percentages: Each chapter of *Canada's Endangered Animals* includes a population estimate. These numbers can be used to practice math problems, or talk about how we might infer numbers from textual information.

Math – statistical data: Numbers have to come from somewhere. Students can read through *Canada's Endangered Animals* to learn some of the ways researchers can get numerical data about animals. Discussions can include some of the challenges in getting data in science, such as population numbers. Students can also create their own charts or graphs using data in *Canada's Endangered Animals*.

Resources

Below is a list of online resources to help students learn more about endangered animals in Canada, including those not found in *Canada's Endangered Animals*.

Canada's Species At Risk Act: The federal government's Species At Risk Act creates rules about how people in Canada can interact with endangered animals. Students can learn more about the Act in *Canada's Endangered Animals*. They can do an online search of the species covered by Canada's Species At Risk Act, as well as animals being considered for inclusion in the Act. Most species pages include photos of the animals, as well as scientific reports, location information, and more.

https://species-registry.canada.ca/index-en.html#/species?sortBy=commonNameSort&sortDirection=asc&pageSize=10

Great for: understanding Canadian government and endangered species

Citizen Science Projects: Students can get involved in real science by participating in citizen science initiatives. The federal government has a list of citizen science initiatives, which can be filtered by location. Get your students engaging in hands-on science and help save endangered animals. NOTE: Some citizen science initiatives will be more student-friendly than others.

https://science.gc.ca/site/science/en/citizen-science-portal

Great for: learning how to do practical science

Build a Bat Box: Schools can help save Little Brown Bats and other bat species in their area by building a bat box. Bat boxes can be used as summer maternity roots for many bat species. Lessons can begin by discussing whether the school property has everything bats need before building a bat box. Bat box instructions are available through a number of local bat-focused organizations, including Community Bat Programs of BC, the Alberta Community Bat Program, and Bat Conservation International.

https://bcbats.ca/bat-boxes/

https://www.albertabats.ca/bathouses/

https://www.batcon.org/about-bats/bat-house-guidelines/

Great for: hands-on skills and practical environmentalism

Don't be a stranger!

Grace Kennedy is available for in-person and virtual classroom visits. She can talk about the content in *Canada's Endangered Animals*, as well as the craft of writing. Contact her at gracekennwrites@gmail.com or check out her website: https://gracekennedywrites.ca/.

Additional resources related to *Canada's Endangered Animals* and other books will be available online: https://gracekennedywrites.ca/guides/.

For more information on how to order classroom copies of *Canada's Endangered Animals*, contact Nimbus Publishing by emailing customerservice@nimbus.ca or calling 1-800-646-2879.

You can also visit the *Canada's Endangered Animals* page on their website: https://nimbus.ca/store/canadas-endangered-animalstwelve-species-at-risk-of-disappearing-forever.html.