

Teacher Resource Booklet

*Companion to CPAWS New Brunswick's
"Watch Your Paws" Biodiversity Conservation
Educational Activities*



Section A. Biodiversity Conservation in New Brunswick Suggested Topics for Discussion or Assignments

Some terms that might be useful to go over with the class:

Species - A group of organisms that look similar and are capable of interbreeding to produce fertile offspring. The Species is the most detailed level of the standard category breakdown of living organisms.

Habitat – “A habitat is more than just a place that wildlife calls home. It’s a space that’s uniquely suited to an animal’s needs through the arrangement of food, water, shelter, and cover. It’s the place that offers appropriate “life range” for young and old alike.”¹

Ecosystem – Consists of a group of living organisms (plants, animals and micro-organisms) interacting among themselves and with the environment in which they live (soil, climate, water and light)². The interactions among many species and their habitats form an ecosystem.



Fisher

Photo courtesy of Gilles Daigle, Communications
New Brunswick image bank

1. What does the word “biodiversity” mean?

Break this word into two parts for the students: “bio” means life and “diversity” is a synonym for variety. Examples: *Every time a species goes extinct, we lose some of our biodiversity;* and *Different ecosystems, such as forests, or oceans, or wetlands, contribute to our province’s biodiversity, by providing the kinds of habitats that many different species can live within.*

2. Why is biodiversity important to New Brunswick? Why is it important to You?

Remind students about some of the reasons why biodiversity is important, which they learned about when the CPAWS Educators came to the class. Write the following categories on the board: Biodiversity belongs; Biodiversity helps us heal ourselves; Biodiversity keeps natural areas together; Biodiversity attracts tourists; Biodiversity helps life to continue on Earth; Biodiversity gives us food and resources; Biodiversity helps preserve cultural diversity.

Ask students to choose one of the categories and draw pictures or write a research report about why biodiversity is important to them, and/or why is it important to New Brunswick.

3. How can we conserve Biodiversity in our province? Classroom discussion - could be followed by assignment or quiz.

In class, brainstorm with students ways that we can help conserve biodiversity in New Brunswick.

Possible answers:

- a) we can establish parks and protected areas in natural areas where many wildlife species live, to make sure wildlife have some places where they will always be able to find habitat that they need;

¹ Hinterland Who’s Who. www.ffdp.ca/hww.asp?id=2&pid=0.

² Natural Resources Canada. http://ecosys.cfl.scf.rncan.gc.ca/def_eco_e.htm

- b) we can provide habitats for wildlife in our backyards and cities by planting trees and shrubs, and keeping green spaces like forest, wetlands and rivers;
- c) we can make sure that we don't disturb the places where wildlife build nests or raise their young (example: some wildlife can be scared off their nests by loud noises);
- d) we can be careful when we are outdoors and not chase or move wildlife;
- e) we can be careful how much paper and other natural resources we use, and make sure to recycle as many products as possible, to control the amount of natural resources that are removed from ecosystems to provide products for us;
- f) we can make sure we reduce pollution as much as possible – conserve energy and water, reduce or eliminate use of toxic chemicals, make sure any toxic chemicals we use don't get released into the environment.

Protected Areas in New Brunswick
(3.1% of the province is in protected areas and parks)

Protected Natural Areas (Provincial Protected Areas)

(middle and right column protected areas are small, between 5 and 700 hectares)

Black River
 Caledonia Gorge
 Canaan Bog
 Canoose Flowage
 Grand Lake Meadows
 Jacquet River Gorge
 Kennedy Lakes
 Loch Alva II
 Mount Carleton Extension
 Spednic Lake

Bay du Vin Island
 Blue Mountain
 Cranberry Lake
 Freeze Lakes
 Glazier Lake
 Gover Mountain
 Hovey Hill
 Little Salmon River
 Little Tomoowa Lake
 Loch Alva I

McCoy Brook
 McManus Hill
 Mount Elizabeth
 Oak Mountain
 Phillipstown
 Point Wolf River Gorge
 St. Croix River Islands
 South Kedgwick River
 Tabusintac
 Wilson Brook

Provincial Parks

Sugarloaf
 Mount Carleton
 De la République
 Mactaquac
 Herring Cove

The Anchorage
 New River Beach
 Parlee Beach
 Murray Beach

Val Comeau (privately managed)
 Hopewell Rocks (privately managed)
 Oak Bay (privately managed)
 Saint Croix (privately managed)

National Parks

Fundy National Park

Kouchibouguac National Park



Section B. Biodiversity at Risk - Suggested Topics for Discussion or Assignment

Elementary School: Have you ever heard of an endangered species? What is an endangered species in danger of? Can you name some endangered species in New Brunswick? Draw a poster or make a diorama of a New Brunswick endangered species and its habitat.

Middle School: Write a page (or other assigned length) about an endangered species that lives in New Brunswick, telling why it is endangered and what we need to do or are doing to help protect it.

Or

Write a page (or other assigned length) about an ecosystem that is rare or endangered in New Brunswick, describing why it is endangered, and what we can do, or are doing, to protect that ecosystem and its inhabitants.

Answer: An endangered species is in danger of becoming extinct (no longer existing in the world), or of being extirpated (lost from a certain place, such as a province or country). The following information may also be helpful to you in creating assignments or projects about wildlife or habitats at risk.

Endangered Species in New Brunswick

Species Listed under the New Brunswick *Endangered Species Act*, or Listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Endangered in New Brunswick^{3 4}

Animals

Birds: Eskimo curlew; Piping plover; roseate tern; Red knot; Bald eagle; Harlequin duck; Peregrine falcon

Fish: Atlantic salmon, Inner Bay of Fundy population; porbeagle; white shark; winter skate

Reptile: Leatherback sea turtle

Insects: Maritime ringlet butterfly; Cobblestone tiger beetle

Mammals: Canada lynx; Blue whale; North Atlantic right whale



Canada lynx



Bald eagle

Plants

Anticosti aster
Bathurst aster
Furbish's lousewort
Pinedrops
Pipewort
Quillwort
Gulf of St. Lawrence aster
Twayblade
Butternut tree
Furbish's lousewort

Lichens

Boreal felt lichen

Endangered Ecosystems in New Brunswick

There is no official legislation or list of endangered ecosystems in New Brunswick. The following are examples of ecosystems that are becoming rarer in our province, or are threatened:

Salt marshes (coastal wetlands that are filled and emptied by the tides) – New Brunswick has lost over 65% of the original salt marshes, mainly due to burying, draining or diking for coastal development or farming.

Wildlife that live in salt marshes: permanent residents in the mud of the marsh, such as molluscs and mud worms; land-based wildlife such as short-eared owl, foxes, hawks, mice, shorebirds and insects; marine dwellers such as crabs, spawning fish, young fish, and seasonal migrants, such as breeding ducks. **Way to conserve it** – protect it from development, either by making it a protected area or zoning it as green space in municipal development plans.

³ As of summer, 2010. For more information on these species, or recent updates to the list, please see the New Brunswick government web site: <http://www.qnb.ca/0078/SpeciesAtRisk/index-e.asp>

⁴ As of summer, 2010. For more information or recent updates to the list, go to: <http://www.qnb.ca/0078/SpeciesAtRisk/COSEWIC-e.asp>

St. John River Valley Hardwood Forests – originally located in the richest soil areas in the river valley from Woodstock to Perth and into Maine, most of these forests were cleared for farming, and only 1% of the original land base still has this kind of forest. The forest is known for its combination of sugar maple, beech, white ash, yellow birch, and ironwood, along with butternut and basswood. It is home to plants such as trout lily, red trillium, yellow violet and a large number of rare plants and mosses. **Way to conserve it** – strictly protect it where it still exists on public land; work with landowners to make sure they know how to voluntarily manage it if it is on their land.

Old-growth forests – The amount of old-growth forest in New Brunswick is not tracked, however the provincial government estimates that about 4% of our province's Acadian forests are in the oldest stages of their development. This compares to estimates of approximately 30% to 40% old-growth before our province was settled by Europeans.

Wildlife that live in old forests: marten (member of the weasel family), goshawks, barred owls, flying squirrels, white-breasted nuthatches, Blackburnian warblers. **Ways to conserve it** – make sure some of the best and largest examples are designated as parks or protected areas; make sure that forest management always leaves patches of old forest on the land.



Forests along Restigouche River. Roberta Clowater photo.

Estuaries – Estuaries are the places where rivers flow into the ocean, where fresh and saltwater mix to provide rich habitats for a wide variety of fish, birds, mammals and bottom-dwelling crustaceans and invertebrates. Rivers pick up pollutants such as nitrogen from various sources (fish farms, agricultural fertilizer run-off, sewage outfalls, fish plant effluent) as the water flows out to the ocean, making estuaries a collection point for all of this pollution. An overload of nitrogen causes blooms of algae to grow, which use up oxygen as they decompose, choking out other native plant and animal life. New Brunswick estuaries highly impacted by nitrogen pollution include Cocagne, Bouctouche, Baie Ste-Anne, Lemèque, and L'Etang Inlet.

Ways to conserve it – protected areas; urban green spaces; wide tree buffers along streams and rivers; limit amount of discharge from pulp mills, industrial farms, sewage treatment and fish plants.

Inner Bay of Fundy Atlantic Salmon Rivers – The population of wild Atlantic salmon that live in rivers surrounding the inner Bay of Fundy is listed an endangered species in Canada. Many of the rivers that empty into the inner Bay of Fundy have dams or causeways which interfere with the free flow of water and salmon, or have been otherwise developed. These rivers include Big Salmon, Crooked Creek, Petitcodiac and Alma Rivers. **Ways to conserve them:** remove barriers if possible, establish wide tree buffer zones along rivers and streams, establish protected areas around headwaters.

Section C. Watch Your Paws – How to Act Responsibly in Nature

1. How can we behave responsibly while in nature?

Ask students to find a creative way (posters, photos, collage, poems, essays, article in school newspaper) to describe how they behaved the last time they were in a natural area (in a park, the woods, on a river or lake, a trail near their home, at the seashore).

What kinds of things did they do to help conserve the nature around them? (Hints for things to do: pick up litter, take photos of things they enjoy, stay on the trail, make sure campfires are totally out before leaving, enjoy wildlife at a distance, and learn about the plants and animals they are seeing).

What kinds of things did they do in the past that they won't do again? (Hints for things not to do: littering, scaring / chasing wildlife, breaking branches or bark off trees, pulling up plants, making too much noise).

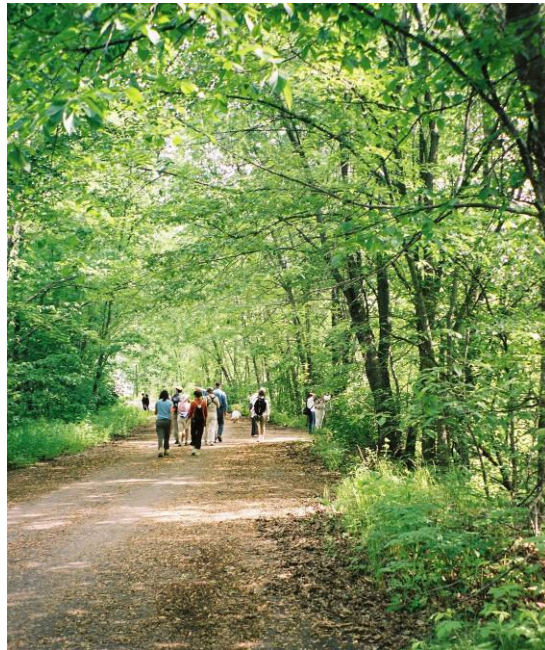
Ask students to organize an exhibit in the school of their projects, to help raise awareness outside their classroom.

Additional Resources for Teachers

Please visit the CPAWS Southern Alberta chapter web site for free teacher resources that describe a wide range of other biodiversity and conservation activities that can be used in class:

(http://www.cpaws-southernalberta.org/education/edu_resources.php#top).

Please ask CPAWS NB if you would like more advice on how to change activities to highlight New Brunswick areas and issues. The resources on the CPAWS Southern Alberta website are available in English only.



Walking in the Grand Lake Protected Natural Area

Roberta Clowater photo.



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For more information, please visit our web site:

www.cpawsnb.org

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