

The Wheel of Life



Activity 3

Materials: A Wheel of Life image, Species icons photocopied and cut individually, Species-at-risk images

Wheel of life image available online

Location: Indoors

Time Required: 30 minutes

Summary:

The teacher assembles the New Brunswick Wheel of Life and students learn about the diversity of species, also called biodiversity.

Learning Objectives:

Students will:

1. begin to understand New Brunswick's species diversity.
2. learn about the wheel, or web, of life in NB.

Level: Higher Grades

Background Information:



In the province of New Brunswick, there are estimated to be over 33,000 native species, with many species yet to be discovered. This is only an estimate of the province's species diversity. Species-at-risk are those parts of this biodiversity that are in danger of being lost. **The Wheel of Life** activity looks at **all the kinds of organisms** that are currently known in our province. It is fascinating to consider that the living things that people know best, such as plants, mammals, fish and birds, make up less than 7% of all the species in the province!

Few people realize that fungi (**decomposers**) and insects (**consumers or decomposers**) are the groups with the largest number of species. Without them, the earth would be buried deep in old leaves, dead plants and animal carcasses. Insects and fungi, along with bacteria, break down dead plants and animals into their basic components. Like these **decomposers**, many other species have important, but not always obvious, roles to play in an ecosystem.

There are over 33,000 wild species in New Brunswick. The **Wheel of Life** divides these species into a pie chart configuration to give an idea of the actual species diversity. The species range from familiar animals, plants and insects, such as deer, trees and butterflies, to more obscure species, such as fungi and beetles. The wild terrestrial species in the province are distributed in the 8 categories below. This list does not include marine species such as lobster and cod:

1. 7 reptile species
2. 16 amphibian species



Curriculum Concepts

Students can apply the information contained in this activity to:

Classify New Brunswick species in different groups.

Understand the difference between species and individuals

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3. 49 species of freshwater fish
 4. 59 species of mammals
 5. 391 species of birds
 6. 3,800 species of fungi
 7. 4,557 plants and other plant-like species, including
 - 470 species of mosses
 - 2,500 species of algae
 - 1,587 species of vascular plants
 8. 24,000 species of invertebrates (insects and other creatures lacking a spinal column), including 80 species of butterflies

The total number of terrestrial species in New Brunswick is approximately 33,000. Major characteristics of each group and some representative species are listed below:

1. **Reptiles:** have scaly skin; breathe through lungs; lay eggs (snakes, turtles)
2. **Amphibians:** have moist skin; live in or near water and damp places; lay eggs; young have gills while adults have lungs or breathe through their skin (frogs, salamanders)
3. **Fish:** live in water; some have scales; lay eggs; breathe through gills (trout, Threespine, Stickleback)
4. **Mammals:** have fur or hair; breathe through lungs; young are born live, not hatched, and drink milk from their mothers (deer, mouse)
5. **Birds:** have feathers; most are able to fly; lay eggs and breathe through lungs;
6. **Fungi:** absorb food from dead matter, reproduce by spores rather than seeds (mushrooms, yeast)
7. **Plants and plant-like species:** most have leaves or leaf-like structures, produce seeds (as in flowering plants), or have seed-like structures (spores as in ferns); most make their own food using sunlight, carbon dioxide, and water (photosynthesis in plants such as dandelions, grasses, mosses and trees)
8. **Invertebrates:** animals lacking a backbone (insects, spiders, centipedes, worms, slugs, sow bugs, freshwater shellfish)

Activity:

1. Explain the background information (i.e. biodiversity) to students.
2. Explain the difference between **species** and **individuals**. A helpful illustration of this point is a bird example. Robins and Blue Jays are separate species, each made up of individual Robins and Blue Jays. As it turns out, Robins and Blue Jays are both species of birds. What children are being asked to determine later in the activity is how many different species there are (how many types of birds, for example), rather than the actual number of Robins or Blue Jays.
3. Explain that scientists like to put species into groups. One way to start a discussion on this topic would be to ask what the advantages of grouping species might be. Ask students to brainstorm what different groups of species are listed in the background information (plants and plant-like species, fungi, mammals, amphibians, reptiles, invertebrates, birds, freshwater fish) and to compare and contrast each group. To get the exact group titles, a few creative prompts from the teacher may be required.

4. As students name each group, place the corresponding group icons on the board in a row. Then ask students to arrange the icons in order of the number (abundance) of species per group. Students can vote for the most abundant icon by a show of hands.

5. Ask students to give examples for each group. Present the Species-at-Risk List and Fact Sheet information to the class and ask the students to classify each species under an icon. You can supplement examples with species that are not at risk.



6. Take out the **Wheel of Life** and explain that each pie piece represents the percentage of each category of species in New Brunswick. **To create an additional display for the class, a large Wheel of Life could be made and displayed on the classroom wall.** (larger version of the Wheel of life available as a pdf online)

7. Ask the students to guess how many wild species there are in New Brunswick. Write the total number of species on the board and the number of species per group as listed in the background information. Discuss the following with the class:

Visualize the Wheel of Life as a bicycle or car wheel. You need all the components of the wheel to make the wheel turn. If something is broken or missing from the wheel, it will not turn well. Imagine that the wheel represents an ecosystem and the parts of the wheel represent the parts that make up an ecosystem, or biodiversity. If there is a species-at-risk in the ecosystem, it's as if part of the wheel, for example a spoke, is broken. The wheel can still turn with a broken spoke, but not as well. Similarly, the ecosystem is still there, but there is a problem causing the species to become at risk. If a few more of the wheel parts break, eventually it won't turn at all. It takes all sorts of species in an ecosystem to make it function well. As more and more species become at risk in an ecosystem, the whole ecosystem may change until it no longer has its original biodiversity. Species-at-risk are often indicators that something is seriously wrong with an ecosystem and something must be done to fix the problem.



