A Spaceship for Species

Activity 3

Summary:
The idea of saving species by sending them on a spaceship to another planet will teach students about the importance of New Brunswick's biodiversity.

Learning Objectives:
Students will:

1. learn about New Brunswick's biodiversity.

2. understand the importance of protecting New Brunswick's biodiversity.

Materials: ▪ 7 species icons (black images symbolizing a species group like birds, fish, etc.)

▪ 2 to 3 photos or sketches of each group

▪ magnets or tape for attaching images

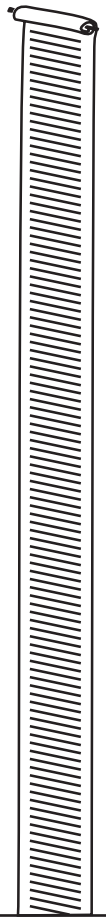
▪ scrolls representing the number of species per group

Location: Indoors

Time Required: 40 minutes

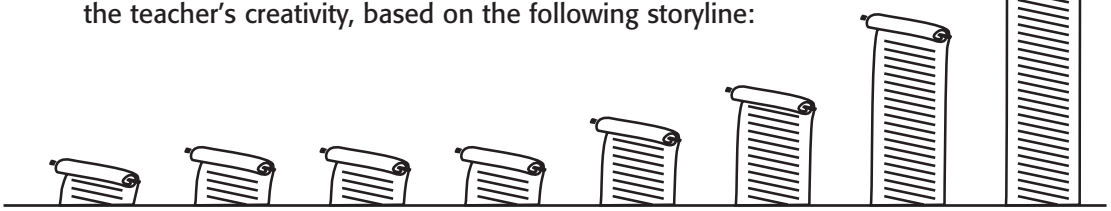
Background Information:

In the province of New Brunswick, there are estimated to be over 33,000 native species, with many species yet to be discovered. It is fascinating to consider that the life forms that are best known and appreciated, such as plants, mammals, fish, and birds, make up less than 7% of all the species in the province!



Activity:

1. Review the concept of biodiversity from the last activity and from previous background information.
2. Prepare to illustrate biodiversity in the province by either making scrolls that will unfurl, or drawing sample scrolls on the blackboard. Refer to point number 7 in this activity description to prepare. The scrolls should be proportioned somewhat like the image below, either as a bar graph or as pieces of paper. There needs to be a scroll for each of the 8 major groups of organisms. At the start of the activity, do not label the illustrations until later.
3. Make up a story about saving species from extinction by placing them on a spaceship. The story could also use the story of Noah's Ark, or be left to the teacher's creativity, based on the following storyline:



Curriculum Links:

Identify questions to investigate the types of plants and/or animals in a local habitat, and the conditions under which they live.

Make observations and collect information related to local habitats and their associated populations of plants and animals.

Relate habitat loss to the endangerment or extinction of plants and animals.

Imagine yourself living in a province much different from the one that is your home today. The oceans are dark and gloomy and hold little life. The land is brown and dry and there are few organisms that are still healthy. The species in this province are few in number, and are considered endangered. You and a group of your friends realize that if you don't do something soon, all the species living on the land, in the sea, and in the air will die and become extinct.

Your group makes a plan to create a powerful spaceship that will transport these endangered species and yourselves into space. You hope that somewhere in space you can find a better place to live.

Your team of builders begins work on the largest spaceship ever known. The dimensions of the spaceship are huge. The vessel is designed to hold a male and a female of every known species in New Brunswick. To transport these creatures you must design a habitat for those plants and animals that live in salt and fresh water, as well as those that live on land. Finally, after many years, your "Spaceship for Species" is complete. You want to begin to load the species, but first you ask the group what organisms should be on board.

4. Ask the students to list the major groups of organisms found in NB and give at least 2 characteristics for each group. Alternatively, have 8 students come to the front of the class and have each student represent one of the 8 major groups of organisms (see list below). Give each student a group name card (bird, fish, reptile, etc.). Identify each of the groups by asking students to name the characteristics of the group. Use the species icons provided or photo or illustration from each group, to help students understand what the group represents. Examples of the characteristics of each terrestrial (land) group are given 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)

If you used the second option, the children can now sit down.

5. Using several photos from each group (2 or more examples for each group), ask

the students to place the organism into the correct group. For example, a robin would be placed with the birds and a tree would be placed with the plants. Pictures can be found in magazines or calendars.

6. Place the pictures on the blackboard and ask the students to vote for the group with the most species. Be sure to explain the difference between individuals and species. A helpful illustration is birds. Robins and Blue Jays are separate species. Children are being asked how many different species there are (how many types of birds for example), rather than the number of individual robins.

7. Ask the students to guess how many terrestrial species (species living on land or in freshwater) there are in New Brunswick. Write the total number of species on the board and the number of species per group, as shown below:

The total number of wild species in New Brunswick is approx. 33,000

1. 7 reptile species
2. 16 amphibian species
3. 49 species of inland 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

8. Unroll each scroll, or label chalkboard illustration representing the list of species per group, on the board. This is an excellent way to show how many species are in each group.

Discussion:

Ask the students the following questions:

- Did the number of invertebrates surprise you?
- What would happen if we lost some animals or plants, such as bees or flowers?
- What would happen if we let species at risk disappear?
- Why is it important to protect species-at-risk?

Species-at-risk are part of New Brunswick's biodiversity and natural heritage. They need our help to survive. Use some of the supporting material in this kit to help explain the concept of species-at-risk.

Variations:

1. Have students paint or draw what they imagine the Spaceship for Species would look like.