

Lessons in a Backpack





Winter is Coming! Changes in Animals



Description of Lesson

Students learn about the changes that local wildlife go through in the fall to prepare for the winter season through games, demonstrations, and exploration of animal habitat.

Connect with the Georgian Bay Biosphere

www.gbbr.ca (705) 774-0978 education@gbbr.ca

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At a Glance

Grade Level: 2

Learning Environment: Outdoor Classroom or a forested area near the school.

Prep Time: 15 minutes

Length of Lesson: 45 Minutes

Key Vocabulary: Migration, Hibernation

Staffing: 1 educator /5 students

Materials:

1 Pictures: hummingbird, rattlesnake, butterfly, chorus frog, black bear, spotted turtle, snowshoe hare

10 popsicle sticks/student

Pictures: chorus frog, spotted turtle Bucket of cold water 2 Ziploc bags Vegetable shortening 2 Cutouts of Snowshoe Hares (1 brown, 1 white)

Kit available from the NNDSB Resource Centre

Groupings: Whole class, and Small groups

Teaching/Learning Strategies: Game and Field Trip.

Georgian Bay Biosphere: Lesson in a Backpack Program

Lesson Outline

TIME	ACTIVITY	LOCATION	MATERIALS
5 minutes	Intro	Classroom	Pictures: hummingbird, rattlesnake, butterfly, chorus frog, black bear, spotted turtle, snowshoe hare
10 minutes	Scurry Squirrel, Winter's Coming	Schoolyard	10 popsicle sticks/student
5 minutes	Look for Squirrel Homes	Schoolyard	
5 minutes	Vernal Pools	Schoolyard	Pictures: chorus frog, spotted turtle
5 minutes	Fat Black Bears	Schoolyard	Bucket of cold water 2 Ziploc bags Vegetable shortening
5 minutes	Wardrobe Change - Snowshoe Hares	Schoolyard	2 Cutouts of Snowshoe Hares (1 brown, 1 white)
5 minutes	Scurry Squirrel continued	Schoolyard	
5 minutes	Wrap Up	Schoolyard	

Curriculum Expectations Grade 2 Science and Technology

Understanding Life Systems: Growth and Changes in Animals

Overall Expectations

3. Demonstrate an understanding that animals grow and change and have distinct characteristics;

Developing Investigation and Communication Skills

2.5 investigate the ways in which a variety of animals adapt to their environment and/or to changes in their environment, using various methods (e.g., read simple non-fiction texts and Aboriginal stories; observe animal activity in the schoolyard and surrounding areas, and record findings);

Understanding Basic Concepts

3.2 describe an adaptation as a characteristic body part, shape, or behaviour that helps a plant or animal survive in its environment (e.g., some birds migrate to a warmer climate for the winter; the design of a whale's flipper allows the whale to turn, steer, and balance; the cecropia moth has the pattern of a snake's head on its wings: the hypothesis is that this is to frighten its predators away).

Background

In this lesson, students discover the changes that animals go through as the seasons change from fall to winter in order to survive. Specifically, this lesson examines five local animals: the squirrel, the black bear, the western chorus frog, and the snowshoe hare.

The Squirrel

Squirrels do not hibernate and are active throughout the year. In the fall, squirrels are very industrious, gathering and burying hundreds of nuts and seeds in preparation for winter when food is scarce. Important food sources in our area include beechnuts, acorns, and pine nuts. If the nut crop fails, the winter will be a difficult time for squirrels.

Signs that squirrels live the area include middens and dreys. Middens are the gnawed and discarded shells of nuts found at the base of trees. Dreys are squirrels' football-sized nests made of interwoven twigs and leaves, lined with softer moss and grass. They are usually located in the forks of trees against the tree trunk about two-thirds of the way up the tree. As the weather becomes cold, squirrels will often den in hollow trees.

The Black Bear

Getting ready for winter for black bears means eating for 20 hours per day. They need to consume an astounding 20,000 calories per day at this time of year! Beech nuts and acorns are essential fall food, allowing bears to double their weight in less than two months. As the days become shorter and cooler, bears search for a suitable denning site, such as under a tree stump, overturned log, or hole in a hillside. Dens aren't large - just big enough for a bear when curled up. Male black bears wait until the first snowfall before going to their dens.

The Western Chorus Frog

Unlike most of our frogs that hibernate at the bottom of ponds where they will never freeze, Western Chorus frogs hibernate in leaf litter on the ground. These frogs, as well as our grey treefrog, spring peeper, and wood frog, are able to survive temperatures of -8°C for periods of more then 2 weeks with a type of natural antifreeze.

In the spring, western chorus frog head to nearby vernal pools to mate and lay their eggs. The defining feature of a vernal pool is that it is usually dry during the summer months. Varying in size, shape and depth, vernal pools fill with water after snowmelt and periods of heavy rain. The wet-dry cycle means fish species cannot survive in vernal pools making them important breeding habitat for many frogs and amphibians, including the western chorus frog.

The Snowshoe Hare

As the autumn days shorten, the snowshoe hare gradually changes his coat from grey-brown to snowy white by replacing its outer guard hairs. Its ability to camouflage gives the snowshoe hare its other name, the "varying hare." Blending in with its surrounding is vital in escaping its many predators including fishers, martens, minks, lynxes, foxes, wolves, domestic cats and dogs, black bears, owls, hawks and eagles.



Part A: Introduction

Ask your students:

What season is it now? What is the next season? As the weather gets colder, how do we change our behaviour? Do animals change their behaviour for winter? Do they change how they look? Do they change where they live?

Use large pictures of hummingbird, snake, butterfly, chorus frog, black bear, spotted turtle and snowshoe hare as examples of migration, hibernation and colour/coat change.

Some animals change how they behave in winter. Example red squirrel- Change how they behave- begin to store food in fall. Ask what a squirrel eats- nuts, mushrooms, berries, and bird seed.

Part B. Look For a Squirrel Home

Discuss: Squirrels also change where they live. Most squirrels spend summer living in leafy nests at the tops of trees called dreys. In the winter, they will likely move into a hollow tree. Why would a hollow tree be a better place to spend winter? Have students look for evidence of dreys and hollow trees, as well as feeding middens.

Part C. Vernal Pools

Stop at vernal pool. Hold up large picture of a chorus frog. Have students imagine that it is a warm spring day in April. Chorus frogs would come to this pool to lay eggs. As the weather gets warmer, what will happen to the eggs? Change to tadpole and then adult. Spend summer hopping around eating insects. How does their behaviour change in autumn? They must hibernate. Students can role play getting down deep into the leaf litter.

Part D. Fat Black Bears

Where could a bear hibernate? Look for a root tip up in area. A bear needs to eat 20 hours a

Did you Know?

In this area we commonly see only two different species of tree squirrels—the eastern grey squirrel and the red squirrel. What about the black ones?

Eastern grey squirrels commonly come in two colours - grey and black! Black is the most common colour in the northern part its range, which is why we see more black than grey squirrels here.



A vernal pool like this one is created by spring melt waters pooling in depressions in the forest.

day in autumn to gain about 20,000 calories a day. The fat layer helps them survive until spring. Do "blubber" demonstration- shortening within double Ziplock bag, one student puts hand in liner plastic, place both hands in ice water. Which stays warmer?

A leafy bed helps a bear stay warm too. Blanket several students with leaves to demonstrate the insulation potential of leaves.

Part E. Wardrobe Change - Snowshoe Hares

Time for a wardrobe change.

Create or use the existing cut outs of a white snowshoe hare and brown snowshoe hare. Place them off the trail ahead of time, or get ahead of students to hide them. Watch your footprints in the snow!

Have students look for both cut outs. Students will spot the white one easily. Discuss how the snowshoe hare changes its coat gradually.



Complete Activity #1

Go back to where the students hid their "squirrel food" and see how many can find 10 again. Discuss how squirrels sometimes will also forget - those acorns or pine cones may become new trees for more food.

Wrap-Up:

Just like people change how they behave and dress to suit our environment so do animals.

Back at School:

As a class, decide on an imaginary habitat that has two seasons. Have the students brainstorm the characteristics of this habitat. Remember to include words to describe the weather, types of plants, and availability of water. Have students create an imaginary animal that is adapted to both seasons in this imaginary habitat.

Making a Cultural Connection

The people who live on the land must adapt to the changing seasons as well.

Read "Frozen Land" by Jan Reynolds to your students. This children's book explores the life of a young girl Inuit named Kenalogak. Her family builds an igloo, hunts, fishes, and makes very warm clothes out of animal skin to survive the cold winter.

