



NATURE OF WINTER

Teacher's Pre & Post Trip Information

Grades: K-6

Theme: The local flora and fauna has adapted to life in winter through physical and behavioral adaptations.

Objectives:

- Students will learn about the winter survival strategies of the local fauna.
- Students will learn to observe animals by studying their tracks and scat.
- Students will observe winter animals in their natural habitats.
- Students will learn the behavioral and physical adaptations of animals to survive winter.
- Students will play the role of a migrating bird and learn what the hazards of migrating are.

Learning Plan:

Topics: Signs of animals, habitats, migration, animal adaptations and physiology, natural resources, animal tracking

Student activities: Animal adaptation game, animal tracking, migration game, hiking, experimenting with insulating properties

Learning Area	Goal #	Standard	Level and Benchmark
Science	11	A	1a,c,f 2a,b,d 3a-c,f
	12	B	1a-b 2a-b 3b
	13	A	1b-c 2b
Language Arts	4	A	1a-c 2b-c 3a,c-d
		B	1b, 2b
Social Sciences	17	B	1a-b, 2b
		C	2c
Physical Education	21	A	1a-b, 2a-b, 3a-c
		B	1-3

Vocabulary:

- **Respect** – to honor, to show concern for
- **Preserve** – to keep safe, to save or protect

- **Habitat:** The part of the physical environment in which a plant or animal lives; must include food, water, shelter and adequate space
- **Adaptation:** a behavior, physical feature or other characteristic that helps an animal or plant survive.
- **Hibernation:** An inactive, dormant, sleeplike state, accompanied by a very low body temperature, that certain animals fall into during the winter.
- **Torpor:** The state of lethargy (slowed being) into which some animals fall during the colder months of the year.
- **Migration:** Movement of an animal from one habitat or location to another.

Supplemental Activities:

The following activities are suggestions for use in the classroom before and/or after the school program. Not all are appropriate for all age groups. Feel free to adapt them for your students' abilities.

Research activities:

- How do animals cope with winter? Have students work with partners on an **Animals in Winter** scavenger hunt. Give each team a list of five animals. Have students use class and library resources to locate three pieces of information on each animal:

Does the animal hibernate, enter dormancy, or remain active in winter?

What is the animal's winter habitat?

What are the animal's winter sources of food?

A starter list follows:

Little Brown Bat (hibernates; in a cave or mine; does not need food for winter)

Black Bear (dormant; finds shelter in caves or in roots under fallen trees; stores food as fat for winter)

Meadow Mouse (active; tunnels under snow; eats seeds, roots, and stems)

Striped Skunk (dormant; winters in fields and woods; eats insects, roots, berries, small animals)

Woodchuck (hibernates; burrows below frost line; doesn't need food)

Snowshoe Hare (active; winters in woods and brush; eats bark, buds, own droppings)

(<http://content.scholastic.com/browse/article.jsp?id=11902>)

• Life-Cycle Mobiles

Hibernation or dormancy is only one part of an animal's yearly life cycle. After hibernation, an animal resumes its normal level of activity, including mating and raising its young. Have students each pick a hibernating animal to research. Ask them to find information about their animals' activities throughout the year and write their findings on a separate note card for each season. Guide students through the following steps to show the seasons of their animals' life cycles:

1. Open the top flaps of an empty cracker box, and cut off about 3" from the open end.
2. Poke two holes in the closed end of the box and thread with yarn.
3. Cover each side of the box with construction paper to represent a season, such as white for winter, green for spring, light blue or yellow for summer, and orange for fall.
4. Illustrate each side to show the animal's activities in that season.

5. Attach the note card for each season to the bottom of its corresponding panel with colored yarn.
6. Invite students to present their mobiles to the class, then take them home to share with their families. (<http://www2.scholastic.com/browse/article.jsp?id=3921>)

Science Activities:

• When Food Freezes

When winter's cold temperatures and ice arrive, food becomes scarce for animals in the wild. Reinforce this concept with students through this easy classroom experiment. In advance, fill several ice trays with water and drop a small pineapple chunk into each section. Allow the water to freeze. Then pop out the cubes and give one to each child. Ask students to smell their ice cubes. Can they smell the pineapple? Challenge them to eat the pineapple chunks out of their ice cubes. How difficult is this task? Use this activity to discuss how wintry conditions make it hard for animals to find and get to food. Then explain that, because of the low food supply in winter, hibernating animals eat all summer and fall to fatten their bodies. The stored fat provides fuel to help the animals survive during their winter hibernation, which can last as long as six or seven months. (<http://www2.scholastic.com/browse/article.jsp?id=3921>)

• Conserving Energy

Hibernation not only eliminates the need for winter food-gathering, but also lets an animal conserve its body energy by slowing down its heart rate and breathing. To help illustrate this, set a timer during a rest period and have students take their pulses during a one-minute interval. Ask them to write down the results along with descriptions of their breathing during this time. Then in an open area, have them perform vigorous exercises such as jumping, running, and hopping for several minutes. Afterward, have them sit and take their pulses again. How do the results differ? How does their breathing compare? Does rest or activity require more energy? (<http://www2.scholastic.com/browse/article.jsp?id=3921>)

• Temperature Experiment

While the average body temperature for a mammal is 99°F, a hibernating animal's temperature drops to around 43°F. This is less than half the normal temperature and only 11 degrees above freezing! The lower temperature reduces the amount of energy an animal must use to keep warm. To demonstrate, half-fill a plastic shoe box with warm water and have students measure the temperature using a thermometer. Have them stir in one ice cube at a time and take a temperature reading after each addition, until the water reaches 43°F. Then invite children to place their hands in the water to experience the body temperature of a hibernating animal. Do they think they could sleep comfortably at this temperature? (<http://www2.scholastic.com/browse/article.jsp?id=3921>)

Art Activities:

• All living things behave differently during each season. In this activity, students will draw pictures of how different living things look or behave during different seasons. Place two boxes at the center. In one box, place cards with the names and pictures of the different seasons. In the other box, place pictures of animals, people, and trees. The students will pick one card from each box, a season card and a living thing card. The students can then draw a picture of how this item looks, acts, etc. in that season. (<http://www.calvertnet.k12.md.us/schools/chespax/animalwinter.htm>)

Math:

• **Graphing:** Students see many animals every day. The students can create a weeklong graph on the types of animal they see outside. Have the students draw a picture of the animals they see. Then have them place it on the graph in the proper position.

• Hibernation Clocks

How do animals know when it's time to end their winter's hibernation? Scientists believe that animals may have internal clocks that arouse them when the weather becomes warmer. Invite children to solve simple word problems with a unique hibernation calendar-clock. To prepare, label each of 12 note cards with a different month. Attach January next to the 1 on a large class clock. Then attach February next to 2, and so on, until each clock number is represented by a month. Begin by pointing the minute hand to 12, then move the hour hand from one number to the next. Each time, ask students to name the hour and the corresponding month. When they have a clear understanding of how each clock number corresponds to a month of the year, present the word problems below. Let students use the classroom hibernation clock to solve them individually, then review and discuss their answers as a class.

1. January is at 1:00. At which number on the hibernation clock is November? (*11:00*)
2. Bear slept from 9:00 to 3:00 on the clock. During which months did Bear sleep? (*September, October, November, December, January, February, March*)
3. Squirrel gathered food from 6:00 to 10:00. Name the months that Squirrel spent preparing for winter. (*June, July, August, September, October*)
4. Groundhog slept from November to February. At what time on the hibernation clock did Groundhog wake up? (*2:00*)
5. Bat went into a cave to hibernate at 10:00 and woke up at 4:00. How many months did Bat hibernate? (*six months*)
6. Raccoon slept from 10:00 to 1:00. Then Raccoon slept from 2:00 to 5:00. How many total months did Raccoon hibernate? (*six months*)
(<http://www.calvertnet.k12.md.us/schools/chespax/animalwinter.htm>)

Suggested Readings:

• **Animal's In Winter** by Henrietta Bancroft

Davie's brightly colored paintings bring the revised text to life through the realistic portrayal of animals, birds, and butterflies in their natural habitats. In addition, the diagrams of the woodchuck's underground tunnels and illustrations showing a pika and bats asleep in their winter burrow and cave provide concrete examples of the term "hibernation." This brief, simple introduction to animal survival in winter contains just enough facts to satisfy youngsters' curiosity, and the attractive format makes learning fun. (Grades K-1)

• **Animals Prepare for Winter (How and Why)** by Elaine Pascoe

Describes some of the ways such different creatures as terns, chipmunks, bears, toads, weasels, and praying mantises survive the winter.

• **Big Tracks, Little Tracks: Following Animal Prints** by Millicent Selsam

Does a cat use his claws when he walks? How does a rabbit run? What does a skunk smell like? Find out the answers in this classic text that teaches young readers how to track animals by finding footprints and other clues. Marlene Donnelly's lovely illustrations and Millicent Selsam's

gentle text make this a perfect first book for children with a budding interest in animals and nature. Included is a new Find Out More page with lots of hands-on activities. (Grades K-2)

- Brian's Winter by Gary Paulsen*

At the conclusion of *Hatchet* (Macmillan, 1987), Brian Robeson is rescued after surviving a plane crash and summer alone in the north Canadian woods. Now, in this second sequel, Paulsen shows what would have happened if the 13-year-old boy had been forced to endure the harsh winter. For a brief time, Brian lives in relative luxury, living off the contents of the recently recovered survival pack, which included a gun for hunting. Then, his freeze-dried food runs out and his rifle fails, and he realizes how careless and complacent he has become. Suddenly aware of the changing seasons, he works frantically to winterize his shelter, fashion warmer clothes from animal skins, and construct a more powerful bow and arrow. (Grades 5-9)

- Keep Looking by Millicent Selsam and Joyce Hunt

In your backyard, there are a number of animals that are active throughout the winter. This book with medium level text has wonderful pictures that could tell the entire story. (Grades K-2)

- What Do Animals Do in Winter? By Melvin and Gilda Berger

This book explains four different ways animals survive in the winter and gives examples of animals that behave each way. (Grades 2-4)

Additional Resources:

DNR Education Website: <http://dnr.state.il.us/lands/education/index.htm>

- Educational supplements (CD-ROMs for students and teachers, educational trunks, posters, books, etc.)
- ENTICE workshop schedule
- Project WET, Project WILD, and Project Learning Tree
- Contests and grants

Audubon Illinois Wildlife Series Display Boards

- Butterflies and Moths
- Amazing Bats
- Illinois Owls

See www.champaigncountyaudubon.org for a list of resources for loan housed at the Education Center at the Homer Lake Forest Preserve.

**Available for loan from the Education Center at Homer Lake Forest Preserve. We have many more items in addition to those listed – please call 896-2455 for more information.*