

Activity: Seasonal Survival

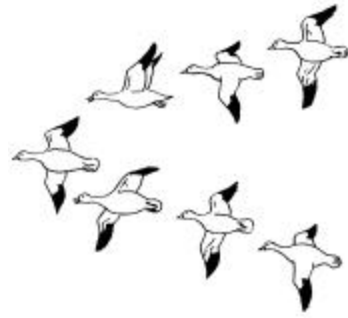
Grade Level: Grade 3

Major Emphasis: Animal Adaptations in the Temperate Zone

Major Curriculum Area: Science/Language Arts

Related Curriculum Areas:

- Refer to Outdoor Education Curriculum Matrix 3-5
- Human Relations
- Physical Education
- Mathematics
- Social Studies



Program Indicator:

The student will observe the adaptation of a plant and an animal which help the organism survive in the temperate zone.

Student Outcomes: The students will:

1. make observations and record data to establish seasonal conditions. **(DL2&4)**
2. observe examples of mammals, birds and insects of the temperate zone and their adaptations to seasonal changes. **(DL3)**
3. role play seasonal adaptations of animals. **(DL3)**
4. use their senses to develop a better understanding of their environment.

Readiness:

1. Introduce vocabulary:

| | | | | |
|------------|-----------|----------|-----------|-----------|
| mammals | groundhog | honeybee | resident | deer |
| adaptation | migrate | sunrise | deciduous | sunset |
| goose | predator | winter | squirrel | hibernate |
| spring | autumn | fox | seasons | forager |
| gypsy moth | summer | | | |

2. Refer to the Third Grade Unified Science Units, “Adaptations of Plants and Animals in Zones” and “Seasons.”
3. Discuss how people make adjustments with the changing of the seasons (i.e. dress).

Materials:

honey bee observation hive
clipboards & pencils
hornets' nest
air thermometer
soil thermometer
water thermometer
Supplements A, B & C

Animal Mounts:

squirrel
deer
groundhog
fox
goose
gypsy moth
honey bee life-style plastomount

Puppets:

squirrel
deer
groundhog
fox
goose
moth
bee

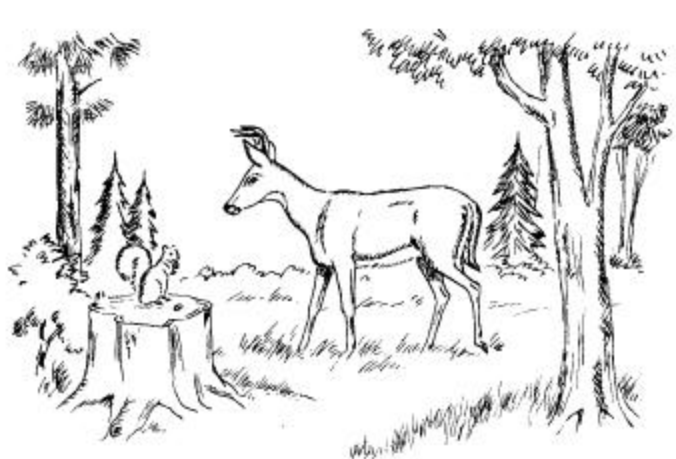
Procedures:

Activity A: Seasonal Survey (DL2&3)

1. Discuss as a group the need for people to adapt to the environment (i.e. seasonal changes). As a population living in the temperate zone, people have to adjust or adapt to the changing seasons. Discuss how we, as humans, are able to make these adjustments to seasonal changes. Examples are:
 - coats in winter
 - shorts in summer
 - air-conditioning in summer
 - heated home in winter
2. Select an outdoor site where students may make seasonal observations.
3. Record information regarding seasonal changes. Use the "Seasonal Survey" sheet to record your findings. (Refer to Supplement A.) Observations should be made regarding weather conditions as well as plant and animal activity.

Activity B: Animals and Seasons (DL2&3)

1. Observe the following animals in their natural habitat (squirrel, deer, groundhog, goose, fox, honey bees and gypsy moth). Work in small groups and have one group observe the mammals and birds while the other group observes the insects.
2. Discuss how these animals have adapted to seasonal changes in terms of food, physical appearance and behavior. (Refer to Supplement B, "Seasonal Adaptation Chart.")



3. Discuss how people have affected the animals just observed. Ask the students how these animals have adapted to the changes people have brought about. Discuss which animals have adapted to the changes well and which ones are having difficulty.

Activity C: Animal Puppets (DL4)

1. Students will select one of the animal puppets. Some may have to work in pairs.
2. Students will complete framed paragraph to prepare themselves for role playing their animal. (Refer to Supplement C, “Role Play Paragraph.”) An example is:

I am a (deer, squirrel, etc.). I live in the (forest, trees, temperate zone). Some of the foods I eat are (nuts, berries, etc.). One of the things I do to survive is (change color, hibernate). People have affected my life by (polluting, cutting down trees, etc.). That is some information about my life as a (deer, squirrel, etc.).

3. Students will role play using the framed paragraph.

Summary: To end this activity, ask the following questions:

1. What animals live in the temperate zone?
2. What are some of the ways animals adapt to this environment?
3. How have people affected the quality of animal life?

Follow-Up:

1. Complete the “Animal and Seasons” work sheet. Refer to Supplement D. **(DL3)**
2. Make a diorama of an animal during a season. **(DL2&5)**
3. Pick an animal and write a report to share with the class. **(DL2)**
4. Develop a paragraph from the “Seasonal Survey” sheet. **(DL2)**
5. Make a puppet of an animal in the temperate zone. **(DL5)**

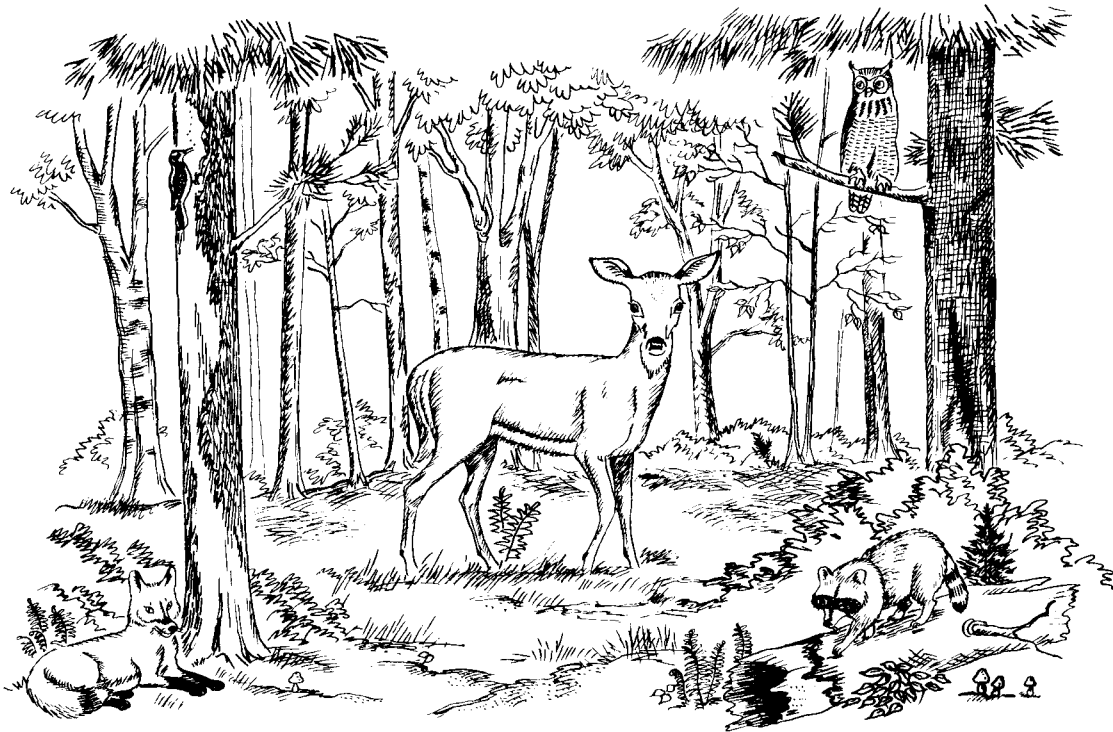
Extension Activities:

1. Observe the changes your pet goes through to adapt to seasonal changes.
2. Write a paragraph about your favorite season.
3. Refer to NatureScope: Incredible Insects, “How Insects are Adapted to Survive,” pp.35-44.
4. Refer to NatureScope: Birds, Birds, Birds, “How Birds Have Adapted to Living in Their Habitats,” pp. 26-42, 44-49 and “People and Birds,” pp. 50-51, 53-56.
5. Refer to NatureScope: Amazing Mammals, “How Camouflage Helps Some Cats Survive,” pp. 18-19,23.

Teacher Resources:

Books:

- *A Golden Guide to Birds, Zim, Herbert, 599 ZIM.
- *A Golden Guide to Mammals, Zim, Herbert, 599 ZIM.
- *Mammals, A Guide to Familiar American Species, Zim, Herbert & Hoffmeister, Donald, 599 ZIM.
- *Mammals of Pennsylvania, Douthett, J. Kenneth, Heppenstall, Caroline & Guilday, John, 599 DOU.
- *NatureScope: Amazing Mammals, National Wildlife Federation.
- *NatureScope: Birds, Birds, Birds, National Wildlife Federation.
- *NatureScope: Incredible Insects, National Wildlife Federation.
- *North American Wildlife, Reader's Digest Association, Inc., 599 NOR.
- *The Audubon Society Field Guide to North American Mammals, Knopf, Inc., 599 WHI.
- *Waterfowl, Chesapeake Bay Reading Series, U.S. Fish and Wildlife Service, 1991.



Seasonal Survey Observation Sheet

Date: _____

Sunrise: _____

Sunset: _____

Daylight Hours: _____



Group Name: _____

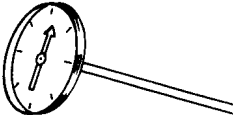
Air Temperature: _____

Soil Temperature: _____

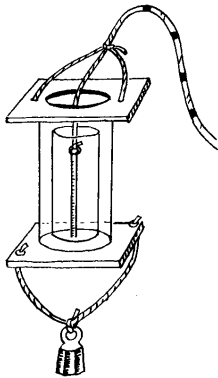
Water Temperature: _____



Air Thermometer



Soil Thermometer



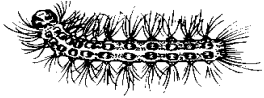


Water Thermometer



Observe and Record:

- ❶ Are there leaves on deciduous trees? _____
- ❷ What color are the leaves? _____
- ❸ What is the condition of the soil? _____
- ❹ What color are the grasses and weeds? _____
- ❺ Are new plants beginning to grow? _____
- ❻ What animals can you observe? _____
- ❼ Are there buds at the ends of tree branches? _____
- ❽ Can you find seeds on some plants? _____
- ❾ Did you find any insects? _____
- ❿ What season do you think it is? _____


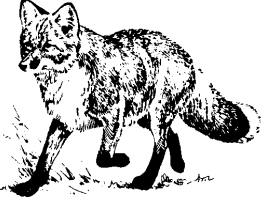
Seasonal Adaptation Chart

| Animal | Fall | Winter | Spring |
|---|---|---|--|
| <p>Groundhog or Woodchuck (mammal - hibernator)</p>  | <ul style="list-style-type: none"> - feeds heavily on vegetation to build thick insulating fat layer - eats clover, grasses, alfalfa, soybeans, corn, vegetables, honeysuckle & fruit (especially apples and pears) - grizzled brown fur | <ul style="list-style-type: none"> - digs underground burrows with several chambers (5 feet deep x 30 feet long) - several may curt up in one den for warmth - body temperature falls from 97° F. to less than 40° F.; breathing slows to 1 breath every 6 minutes; and heartbeat drops from over 100 beats per minute to 4 during hibernation | <ul style="list-style-type: none"> - eats clover, grasses, alfalfa & dandelions - found in pastures, meadows, old fields & woods - emerges on February 2 (Groundhog Day) - mating is the only time two adults will share a burrow - young are born blind and naked; eyes open in 1 month - uses sharp teeth as weapons - teeth never stop growing and if top and bottom teeth don't meet, they can curl around, penetrate the skull & kill the animal |
| <p>Canada Goose (bird - migrator)</p>  | <ul style="list-style-type: none"> - migrates from Canada to as far south as Mexico - brownish body, black head, long black neck & white check patch | <ul style="list-style-type: none"> - eats aquatic plants, grain, grasses & bread - lives around ponds, coastal waters, agricultural fields & golf courses - estimated 537,000 over winter in Maryland and Delaware | <ul style="list-style-type: none"> - migrates back to Canada in energy efficient V formation - only one set of young per year - mates for life - breeding of Mid-Atlantic population is in the Tundra Zone of Quebec - nests on dry ground near water in Canada |
| <p>Gypsy Moth (insect)</p>  | <ul style="list-style-type: none"> - female adults lay egg mass on trees, buildings, campers, picnic tables, etc. - adult females are poor flyers | <ul style="list-style-type: none"> - over winter as eggs (eggs are dormant) - introduced from Europe in 1860's as an alternative source of silk products | <ul style="list-style-type: none"> - larva stage feeds heavily on deciduous trees, especially oaks |

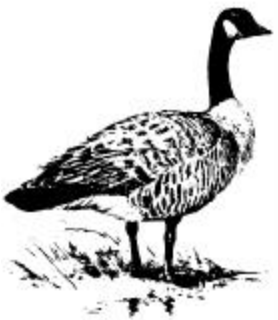
Seasonal Adaptation Chart

| Animal | Fall | Winter | Spring |
|--|--|--|--|
| <p>Squirrel - Red and Gray (mammal - active forager)</p>  | <ul style="list-style-type: none"> - busily buries nuts and seeds to eat during winter - favorite food trees are hickory, serviceberry, beech, oak, maple, spruce & elm - other foods include wheat, corn, fungus & amanita mushrooms (deadly to man) - will migrate for food if area is over populated | <ul style="list-style-type: none"> - heavy winter fur - forgets where food is buried, but can smell nuts even through 1 foot of snow (dig caches) - sleeps in nests to stay warm and conserve energy - wraps tail around body for extra warmth while sleeping - mates in mid-winter | <ul style="list-style-type: none"> - eats eggs and small birds - eats insects and tree buds - builds separate summer nests (drays) that are looser and cooler than dens - young are born in spring, usually in tree nests - born with eyes closed for 5 weeks |
| <p>Deer - White Tail</p>  <p>(mammal - active forager)</p> | <ul style="list-style-type: none"> - mating (rutting) in late fall - velvet dies on antlers that become bone hard weapons (velvet is "rubbed" off on trees) - eats fruits (especially apples), nuts & farm crops (corn, oats, soybean & buckwheat) - the mainstay food source for Indians and pioneers - hunted for sport and to keep steady balance between food supply and animal numbers (large numbers starved to death prior to current hunting regulations and lists) | <ul style="list-style-type: none"> - cluster together in "deer yard" (this tramples down snow and uncovers mosses and grass) - clustering also allow deer to stay warm - main foods include evergreens, mosses and buds - movement is limited to conserve energy - heavy fur insulate - fur colors are deeper tone than summer (grizzled gray/brown to deep blue/gray) - hair is hollow with trapped air space for extra insulation - will starve to death instead of migrating (usually fawns) - antlers loosen and fall off - cutting of patches of forest (clear cuts) allow for large quantities of young woody plants to start (Mast); main source of winter food | <ul style="list-style-type: none"> - fur turns reddish tan and lighter weight - young are born in late spring - born with eyes open - young have spotted coats for camouflage - antler growth starts on males (1 year old) - antlers covered with "velvet" (live skin richly supplied with blood vessels) - antlers very sensitive at this stage - eats clover (favorite) - are drawn to "salt blocks" set out for cattle to provide minerals for balanced diet - size of antlers or number of points are not a sign of age - found in woods, meadows, fields & swamps |

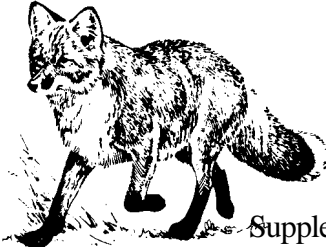
Seasonal Adaptation Chart

| Animal | Fall | Winter | Spring |
|--|---|--|--|
| <p>Honey Bees (insect - social insect)</p>  | <ul style="list-style-type: none"> - high water requirement to change pollen to liquid and to cool hive - pollen source is weeds - make up 90 percent of all pollinating insects | <ul style="list-style-type: none"> - low water requirement (no flying) - eats honey and sugar water (need 30 to 40 lbs. per hive) - cluster together for warmth at temperatures below 50° F. (have been known to survive 40° F. and below) - body temperature within cluster varies from 68° F. to 90° F. regardless of outside temperature - brood rearing stops | <ul style="list-style-type: none"> - female bees (queen and workers) develop from fertilized eggs - male bees (drones) develop from unfertilized eggs - high water requirement to change pollen to liquid and to cool hive - pollen needed to feed brood - swarms occur to eliminate over population - pollen source is mainly tulip poplar trees, locust trees and clover |
| <p>Red Fox (mammal - active predator)</p>  | <ul style="list-style-type: none"> - dens abandoned when families disperse - young leave den at 4 months (males will go up to 150 miles or more away) - feed on vegetation, corn, apples, cherries, grapes, acorns & insects (especially grasshoppers) | <ul style="list-style-type: none"> - den established after mating - den well marked with excavated earth - cache mound` here food is buried - feeds on birds, invertebrates and mammals (especially mice and rabbits) - food not consumed is cached - adults rarely den up; curl up in open with tail wrapped around nose and foot pads - blood pressure and circulation change, pumping more blood to paws, tail, nose and ears to prevent frostbite | <ul style="list-style-type: none"> - young born in separate maternity den (usually sparse ground cover on top of earth mound) - young feed on meat predigested by mother and regurgitated - feeds on vegetation, berries, grasses and animals |

Animal Puppets Framed Paragraph



I am a _____ . I live
 in the _____ . Some of the
 foods I eat are _____
 _____ . One of the things
 I do to survive is _____ . People have
 affected my life by _____
 _____ . That is
 some information about my life as a _____
 _____ .



Animals and Seasons

Observe the animals pictured below. After learning about how they adapt to the different seasons, write a one sentence description about what each animal is doing in one of the seasons. *Circle the season chosen:*

Fall

Winter

Spring









