

GRADE 1 WINTER NATURE WALK
Animals and How They Survive Winter

OBJECTIVES:

- Observe seasonal changes in schoolyard since fall.
- Learn what happens in winter to animals typically found in the schoolyard. (Migrate, adapt, hibernate.)
- Develop an understanding of how birds and other animals survive cold weather.
- Discover resources available for animals that spend winter in the schoolyard, especially food, water, and shelter.
- Notice changes in resources from fall to winter.
- Explore for tracks, scat, and other signs of animals.



PREPARATION:

Before going out the *grade coordinator* or *class rep should*

- Schedule walk for January or early February, before vacation.
- Fill out and give teachers Upcoming Walk Announcement flyer (available at <http://harrington.lexingtonma.org/BigBackYardWebsite>) as well as copies of sections on pre and post walk talks from this walk guide
- Schedule walk first thing in the morning before other classes come out for recess.
- If possible, go out several days after a new snow so the kids can find more tracks.
- Walk should last about 60 minutes. Don't stay out longer than the comfort level of the children allows.
- Be sure children are dressed appropriately.
- Coordinate with the teacher on what to do if the weather condition is questionable.
- Notify the school nurse of the scheduled walks.



MATERIALS:

- Clipboard and pencil, Winter Walk Observation Report for walk leaders; Common Winter Birds, Animal Tracking and Scat ID sheets.
- 1 set of tongue depressors for each group: food, water, warmth, air, shelter.
- Hand lenses – approximately one for every 2 children.

ACTIVITIES

- Explore the open area, edge areas, and woods, observing and identifying animals, record evidence of animals—tracks and scat—and sources of food, warmth, and shelter.
- Walk leader fills out Winter Walk Observation Report during walk.

PRE-WALK ACTIVITIES: TO BE LED BY THE TEACHER

1. Science connection: Investigating Light and Shadows.
If you are teaching the Investigating Light and Shadows unit, ask if the children have a longer or shorter time to play outside now after school compared to the beginning of the school year. Note that the sun, the source of warmth for the Earth, is lower in the sky and the days are shorter, so the air is cooler.
2. Encourage the children to think about their fall Big Backyard walk. **Ask:** *What did you discover in the fall? What was the weather like? How have these things changed? What do you expect to see now?*
3. Science connection: Organisms.
Review the basic needs of all animals. Ask children to help you to list the things animals need to survive. Post these on chart paper or the board.

Food	Warmth
Water	Air
Shelter	

4. **Ask:** *What animal food sources and shelter did you find in the fall in your Big Backyard? (Berries, nuts, seeds, leaves including grass.) What do you expect to find now? Why might they be different now than in the fall? How have the woods, edge of the marsh, and wet meadow changed? (Water may be frozen; leaves have fallen and flowers have died, nuts and berries may have been eaten already.)*
5. Review the ways in which animals survive over the winter with its low temperatures and limited food and liquid water supplies:
 - a) Migrate.
Animals leave the area and return in the spring.
 - b) Lay eggs and die.
Insects and spiders may do this. (Remember, Charlotte the spider laid eggs and died!) Insects may also overwinter as pupae (cocoons or chrysalises), or even as adults.
 - c) Stay active.
 - d) Hibernate.
Animals' bodies slow down: their body temperature drops, they don't breathe very often and their heart doesn't beat very often. In the fall, animals that hibernate get ready for winter by eating extra food and storing it as body fat. They use this fat for energy while hibernating. **Ask the children:** *Can you name some furry animals that hibernate?* (Many will say bears!) Scientists tell us that there are only three true hibernating mammals of New England: the woodchuck, jumping mouse, and brown bat. Bears, skunks, raccoons, and chipmunks become inactive and "sleep" for part of the winter, but they don't really hibernate. Insects, reptiles and amphibians, all "cold blooded," also live very slowly in the cold.

Hibernation exercise:

- a) Ask the children to breathe as they always do but to count silently every time they take a breath. Have them start when you say "go" and time them for a minute. Usually the count is 15 to 20, but accept whatever they come up with.
- b) Tell them that a woodchuck breathes normally about 30 times a minute, but when it is hibernating it breaths only once every 6 minutes!
- c) Ask children to see how long they can hold their breath. Again time them. Often the best they can do is 45 seconds. This helps them to understand what hibernating means--that an animal's body just slows down.

6. **Say:** *Think about the animals that are active near the school in the winter. Make a list of animals, including birds, you think are active.* Possibilities include squirrels (red, gray, and flying), rabbits, deer, raccoons, skunks, opossums, foxes, rabbits, muskrats, Eastern coyote, and several species of mice. Then there are the birds: the seed-eaters such as chickadees, sparrows, juncoes, blue jays, and cardinals, as well as crows, woodpeckers, hawks and owls. Sometimes even robins are seen in winter flocks. (Journey North wants reports of these in February: www.learner.org/jnorth/tm/robin/AboutSpring.html .)

On your winter walk you will look not only for animals and signs of animals, but for food sources and shelter. Are some animals food for other animals? (Yes.) Do some animals have to hide while they search for food? (Yes, mice often tunnel under grass or snow as they look for food. This way hawks can't see them against the snow.)

7. Discuss proper clothing for a winter walk. Wearing thick layers helps. A hat keeps in heat from your head, (you can lose 1/3 of your body heat through your head and neck!), and mittens keep hands warm. Boots with an extra pair of socks can help too.

NATURE WALK: TO BE LED BY BIG BACKYARD VOLUNTEER

1. Observe changes since fall.

- Walk outside and look slowly around. ***Ask the students:** *How has the schoolyard changed since last fall?* Possible answers include:
 - Air: colder and one can see your breath.
 - Water: frozen.
 - Wildflowers: mostly covered by snow, a few seeds above the snow.
 - Trees: leaves gone.
 - Sun: low in sky, longer shadows, fewer hours of sunlight.
 - Ground: frozen hard and (may be) covered by snow.
 - Wearing warmer winter clothes

2. The Basic Elements Required for Life and How Animals Survive Winter

- ***Ask:** *What do all animals need in order to live?* Using the labeled tongue depressors, discuss food, water, shelter, protection, air and warmth.
- ***Ask:** *What happens to animals if they can not find these basic elements? Have you ever seen an earthworm wearing a snowsuit? A frog on a frozen pond? A mosquito biting you thru your mittens?* Animals either migrate, hibernate, or stay active in order to survive. If not, they die

~ **Migrate:** They travel to other places where the weather is warmer or they can find food. Many birds and some insects (notably monarchs) migrate in the fall. Examples: birds, monarch butterflies

~ **Stay active:** Adaptations take place in their bodies or behavior. Growing thicker fur helps some animals stay warm. Animals that have fur are called mammals. They may gather extra food in the fall and store it, or eat different kinds of food in the winter. Examples: squirrels, crows, mice.

~ **Hibernate:** An animal's body slows down: their body temperature drops, they don't breath very often and their heart doesn't beat very often. In the fall, animals that hibernate get ready for winter by eating extra food and storing it as body fat. They use this fat for energy while hibernating.

***Ask:** *What mammals hibernate?* (Many will say bears!) Scientists tell us that there are only three true hibernating mammals of New England: the woodchuck, jumping mouse, and brown bat. Bears, skunks, raccoons, and chipmunks become inactive and "sleep" for part of the winter, but they don't really hibernate.

~ **Die:** These animals do not have the resources to stay warm and find food. Example: spiders.

- ***Ask:** *What animals are active here now that it is winter? Which have you seen?* Mammals include squirrels, rabbits, deer, raccoons, skunks, opossums, foxes, rabbits, muskrats, Eastern coyote, and several species of mice.
- ***Ask:** *How do the changes of winter affect the birds and other animals that live near the school?* It becomes harder to find food, liquid water and to stay warm.
- ***Ask:** *Where can active animals find these things, especially food, water, and shelter from winter's storms and cold temperatures?*
 - ***Ask:** *What kinds of food might an animal find?* Berries, nuts, seeds, larvae, dead animals, etc.
 - ***Ask:** *What kinds of shelter might an animal find?* Burrows, holes in trees or in the ground, brush piles, nests, etc. Some animals come out of their shelters at night to look for food.

2. Looking for Evidence of What Animals Need to Survive: Exploring the open areas, edge area, along the Administration Building and the woods. Record findings. Remember to reinforce the Patriot Day parade march and freezer tag rules when tracking as found in the Harrington BBY Mantra.

- Food and water sources:
 - Larvae in galls and tree bark are food for birds. Oak branches and leaves often have galls. Woodpeckers make holes in trunks to eat larvae in tree bark
 - Dried berries, nuts, seeds, acorns and pine cones. Break open a multiflora rose hip and show children that there is little flesh and mostly hard seeds inside. Birds and other animals eat them in the winter when other food is not available. Their scat is then full of seeds.
 - Look for twigs bitten off at a 45 degree angle by rabbits.
 - Water is found in melting snow, puddles, semi-frozen brook (moving water).
- Shelter:
 - Look for bird and squirrel nests (found in high tree tops).
 - Look for meadow mouse tunnels under the snow, particularly near the edge areas to the right of the woodland path and near to the old Kindergarten storm runoff area. Mice build tunnels and travel under the snow. ***Ask:** *What might happen to them if they were on top of the snow?* They may become lunch for their many predators--hawks, owl, fox.

3. Looking for Evidence of Animals: Tracking

- On a surface of fresh snow, ask children to make footprints of a person:
 - walking.
 - jumping.
 - running.

- *Ask:** *If you didn't see the person making the tracks, what could you tell about the person and how they were moving? One can estimate the size of the person from the size and depth of track, type of boots from the pattern of track, and type of movement from spacing of tracks.*
- If you find animal tracks in the snow, ***Ask:** *What animal might have made the tracks? What evidence makes you think so? Was the animal running, leaping or hopping, or walking? How do you know? Which way was it going? What makes you think that? If possible, look for toes or toenails on the front of the paw print. Follow the tracks. What was the animal doing?*
 - Rabbits and squirrels put their front feet down and then place their rear feet ahead of them as they leap. The front feet make smaller tracks than the back feet in these animals. It can be hard to tell which way these animals are going unless you see their toe prints!
 - Rabbits: Ground leapers put front feet down one at a time. A rabbit's front feet are usually placed one ahead of the other, diagonally.
 - Squirrels: Tree leapers put front feet down side by side together. A squirrel's front feet are usually placed side by side. Their track pattern looks like two exclamation points.
 - Mice: Mouse tracks look like tiny versions of squirrel “exclamation point” tracks, and may have a tail drag line between the tracks.
 - Fox and Coyote versus Dog prints: Dog, fox, and coyote prints look similar except for their size and pattern. All can be found at Harrington. The fox prefers the perimeter of the building's side, extending to the edge area, looping around the backside of the playstructure, and exiting near the black locust grove. The coyote tends to stay near the opening of the aspen grove.
 - ~ Size of print (smallest to largest): dog – fox – coyote
 - ~ Track pattern: The fox follows a near straight line while the coyote is a true straight line. The dog tends to be an every-other left-right pattern.
 - Skunk: Skunks are known to live near the storm drainage area near the old Kindergarten wing. In February, you may be able to smell their presence from the night before. Skunks leave their winter sleep at this time in order to mate, and then return to their slumber. Their tracks involve small feet in a waddling pattern.
 - Harrington Hawk: Look for talon markings in the open and edge areas, where the hawk would prey upon a rabbit or mouse. If you come across rabbit tracks which end in tossed snow, most likely it was scooped up by the hawk. A hawk's tracks can consist of talon marks and light impressions to each side where the wings brushed the snow.

- Raccoon and opossum: These tracks are most likely found in the woods near the brook. Similar in pattern, the raccoon's tracks are larger while the opossum's appear more like a child's handprint (notice how the fifth digit looks like a thumb print).
- Show children pictures of common tracks. Ask them to bend over on all fours and hop or leap like a bunny or squirrel. Challenge them to move their "back" legs around and in front of their "front" (arms) legs as they hop like a rabbit .

4. Looking for Evidence of Animals: Scat and owl pellets.

An animals diet and size can be determined from its scat.

- Look for animal scat. Common scat can be found from rabbit, fox, dog, skunk, squirrel, mouse (in grass tunnels), raccoon*, and coyote,. Children should not touch scat. You may use a stick to see if there are bones or fur, as seen in fox and coyote scat . *Don't do this if raccoon scat is very powdery, as it may contain parasites that can be breathed in.
- Occasionally an owl pellet may be found under a tree. This is usually an oval shaped ball of fur and bones from mice or other small animals. It has been regurgitated from an owl's mouth, so it is not considered scat.

5. Identify common mammals, birds, and insects seen on the walk and record discoveries.

- Common mammals may include: Squirrels, dogs, and rabbits.
- Common winter birds may include: Chickadees, blue jays, sparrows, Downy woodpeckers, crows, Canada geese, red-tailed hawks, juncos, starlings, and cardinals.
- On a warm winter day, you may even see flying insects or "snow fleas," an insect-like animal jumping on the snow surface.

Snow Fleas are not fleas at all, but a type of insect called a springtail. They do jump like fleas, thus the name. Snow Fleas are dark blue and about 1/16 inch long. On warm winter days, Snow Fleas will become active and look for food. They may be seen in large numbers, like black pepper, on the snow surface.
(www.fcps.edu/islandcreekes/ecology/snow_flea.htm.)

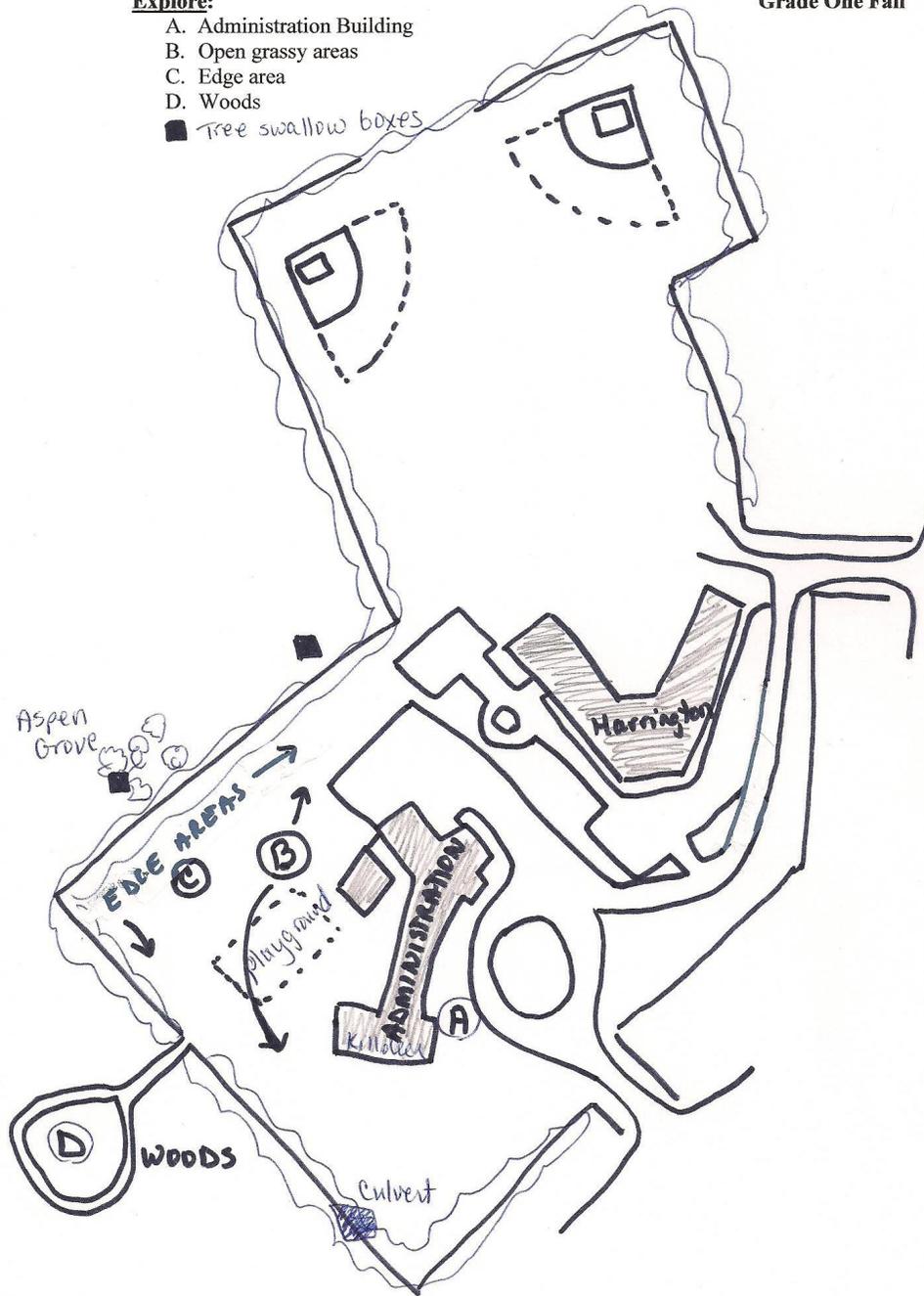
6. Wrap up.

- Walk back to the school.
- Give the Winter Walk Observation Report to the teacher.

Explore:

- A. Administration Building
- B. Open grassy areas
- C. Edge area
- D. Woods
- Tree swallow boxes

Grade One Fall



**POST-WALK CURRICULUM INTEGRATION OPPORTUNITIES: TO
BE CHOSEN AND LED BY THE TEACHER**

1. Language Arts connection: Non-fiction writing.
Encourage children to talk about how difficult it is for birds and other animals to manage to find food, shelter and warmth in the winter in Lexington. Make a class list of food sources, shelters, and signs of animals they found on their Big Backyard walk. Ask children to write an illustrated account of what they saw on their walk. Have them use words on the list.
2. Art and Science connection.
Collect pictures of local animals in winter from magazines, or use children's artwork, to make a mural of the schoolyard. Have children draw the habitats near the school. Be sure that the habitat includes food sources and shelters. Ask children to put the pictures of the animals on the mural in the correct habitat.
3. Language Arts connection: Non-fiction reading.
Go to the library and read books about animals in winter. Some good selections:
 - a) Arnosky, Jim. Mousekin's Woodland Home.
 - b) Bancroft, Henrietta. Animals in Winter. (Let's-Read-and-Find-Out Science 1) (Paperback).
 - c) **Brett, Jan. The Mitten. (Putnam, 1989 ISBN 039921920X. Grades PreK and up.) Owned by Harrington's BBY.**
 - d) Bunting, Eve. Red Fox Running. (Clarion, 1993 ISBN 0395797233. Grades PreK and up.)
 - e) Dendy, Leslie A. Tracks, Scats and Signs.
 - f) **Every Autumn Comes the Bear. (Putnam, 1993 ISBN 0399225080. Grades PreK and up.) Located in Harrington library.**
 - g) Johnson, Jinny. Animal Tracks and Signs: Over 400 Animals from Big Cats to Backyard Birds.
 - h) Lewis, Rob. Henrietta's First Winter. (Farrar, 1990 ISBN 0374329516. Grades PreK and up.)
 - i) Miller, Edna, Mousekin's Woodland Sleepers.
 - j) San Souci, Daniel. North Country Night. (Doubleday, 1990 ISBN 038541319X. Grades PreK and up.)
 - k) Selsam, Millicent Ellis. Big Tracks, Little Tracks: Following Animal Prints (Revised).
 - l) Yolen, Jane. Owl Moon. (Philomel, 1987 ISBN 0399214577. Grades K and up.)

Walk Leaders—Winter Walk Observation Report
(Please give to teacher after walk.)

ANIMALS SEEN /ANIMAL ACTIVITIES:

ANIMAL EVIDENCE:

HABITAT - FOOD SOURCES:

HABITAT - SHELTER:

Things that interested the children and questions they asked:

NATURE WALK EVALUATION
(Please leave in Big Backyard Room)

Walk Leader: _____

Grade and Teacher: _____ **Date:** _____

Children in Group: _____

1. What parts of the walk interested the children the most? (check all that apply)

Animal tracks	Animal signs	The woods
Scat	Holes in ground or trees	The wet meadow
Seeds and nuts	Seeing animals	Edge area
Galls	Identifying birds	Nests

Other: _____

2. What parts were not successful? (check all that apply)

Animal tracks	Animal signs	The woods
Scat	Holes in ground or trees	The wet meadow
Seeds and nuts	Seeing animals	Edge area
Galls	Identifying birds	Nests

Other: _____

3. This walk was: (circle one) TOO LONG JUST RIGHT TOO SHORT

4. The children seemed adequately prepared: (circle one) YES NO

5. This was a good working group: (circle one) YES NO

6. I felt adequately prepared to lead this walk: (circle one) YES NO

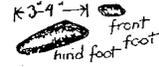
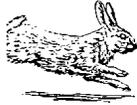
Other comments or suggestions:

A Beginner's Handbook of Winter Tracks & Signs

FOOT PRINTS SCAT TRACKS OTHER SIGNS & NOTES



WHITE-TAILED DEER



COTTONTAIL RABBIT

Ground jumpers usually put front feet down one after the other.



Black walnut opened by gray squirrel.

GRAY SQUIRREL

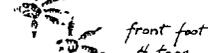
Jumping animals which live in trees usually use front feet together.



Opened by red squirrel.

RED SQUIRREL

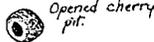
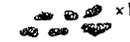
photo -> feeding station
Front feet tend to be together.



MEADOW MOUSE or VOLE

Typical vole pattern -

Pattern of vole burrows under snow.



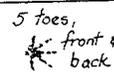
Opened cherry pit.

DEER MOUSE

leaps

Sometimes toe and/or Tail marks show.

slow run

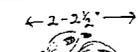


SHREW

tail dragging

much variety

Shrew Trails no wider than 1 1/4"



Dog family - fox, coyote, wolf & dog - Toe nails show. 4 toes, front feet larger than rear.

Fox

running

walking



walking

Dog



PHEASANT



Cat family - no claw marks. 4 toe marks, roundish prints.



CAT



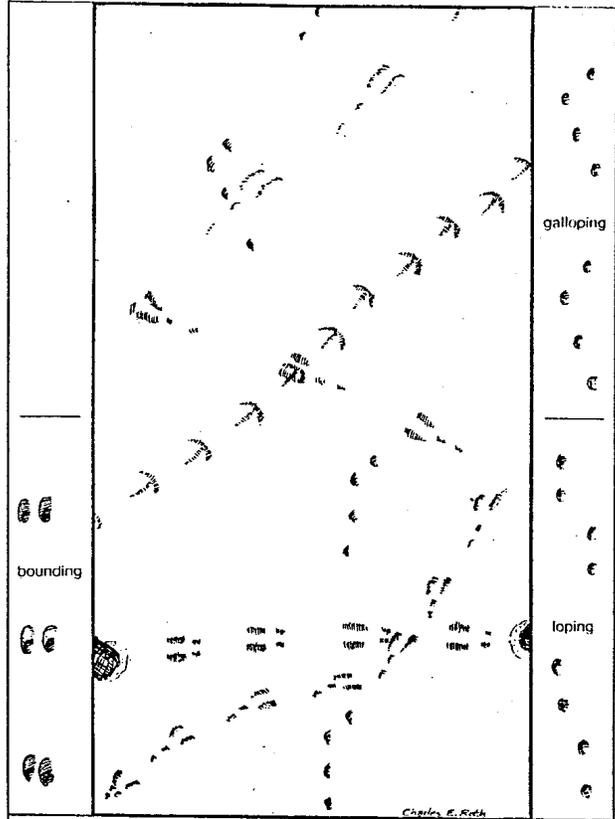
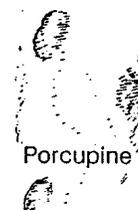
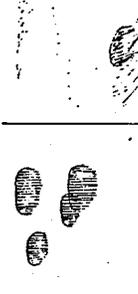
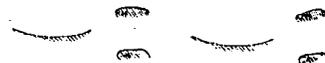
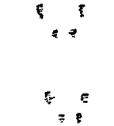
STARLING

REMEMBER. Tracks are variable and depend on the weather and ground conditions. Use your head as well as your eyes and see what you can find.

Snow Script

Can you tell what is happening in the center panel?

WILD IN MASSACHUSETTS SUPPLEMENT 2 WINTER 1986-7

 Opossum		 Summer  Winter
 Porcupine		Ruffed Grouse 
 Weasel		Raccoon 
 Rabbit or Hare		 Fox
 White-Footed Mouse	 Shrew	 Squirrel

Rabbit is moving from left to right. It spots an approaching fox and zigzags to avoid capture. Later a squirrel crosses between trees. After the chase, a ruffed grouse strolls through, crossing the rabbit tracks.

Charles E. Rich