Enjoying Winter with Your Class

Outdoor activities for learning about animals’ adaptations to the snowy season

by Gareth Thomson

Grade levels: 4-5
Subject areas: science, physical education
Key concepts: behavioral and physical adaptations to survive winter
Skills: nature interpretation, winter survival
Location: outdoors in a park or natural area
Time: 1-2 hours, depending on weather

If you live in a northern region where much of the teaching year takes place during the winter, shouldn’t you be prepared to help your students learn to appreciate the winter wonderland? Experiencing the beauty of winter can foster a closer connection with nature year round and give students a sense of stewardship for a local natural area. Taking your class on a winter hike also provides an excellent opportunity for students to marvel at the behavioral and structural adaptations that animals — including humans — have evolved to cope with extreme weather conditions. How better to understand the concept of energy loss and the value of insulation than to succeed at staying warm on a cold winter day?

As Education Director of an environmental organization, part of my job is to prepare outdoor experiences for school groups. The following describes an afternoon that I spent in a provincial park examining animals’ adaptations to winter with students from a local school. These activities could be done in any outdoor area close to your school.

Trip preparation
The word “warmth” can attain almost mystical proportions during a winter hike — and rightly so, for no student who is cold or uncomfortable can learn. Before our trip, the teacher had prepared the class by reviewing the insulating properties of different types of materials and how to dress warmly for a successful outdoor experience: dressing in layers and wearing proper headwear and footwear. The teacher had also ensured that there would be a heated place — in this case, a cabin in a provincial park campground — where students could warm up after the hike. Every winter hike needs a warm place as a base, whether it is a heated building or a school bus.

Mouse microhabitats
After I met the school group at the cabin in the park campground, we began our first activity, Mouse Microhabitats. We handed each student an empty film canister and then filled the canisters with water. The students carried these down the trail about 100 meters
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(30 yards), at which point they were told that each canister represented the body of a deer mouse. Their task was to find a well-insulated place in the forest where the mouse could “sleep” for the next hour without becoming too cold. If the water in the canister froze, that would mean that their mouse had frozen! (At the end of the hike, students retrieved their canisters and measured the temperature of the water, if it had not frozen. We then discussed what natural materials best insulated the “mice.” Everyone agreed that little mouse-fur jackets would be ideal, as the activity had demonstrated that any material that traps air, an excellent insulator in itself, will help animals stay warm.)

Warming up

Did I mention that it was cold? The temperature was minus 15 degrees Celsius (4 degrees Fahrenheit) and the wind was blowing, so we took time out to warm up. We taught the students how to swing their arms like helicopter rotors, using centrifugal force to send warm blood to numb fingertips, and how to wear their hats, scarves, hoods, and mittens to maximize their insulation values. As we walked, we noted the variation in the air temperature (using our thermometer) and the change in the wind chill factor (using our exposed skin!) as the path rose to the crests of hills and fell into low hollows filled with cold air.

We also played Migration Headache, an active game that illustrates what happens to migrating birds when their flyways and habitats are disturbed by human activities (see sidebar). Our student “birds” raced from their winter to their summer habitats and back again, striving to avoid being tagged by a bevy of students who played the role of hazards — from bulldozed swamps to lighted office towers. Amidst the squawking and the bedlam of wildly flapping arms, our cold extremities mysteriously warmed up.

Chickadee huddle and legend

We continued down the trail, pausing to examine recent tree blowdowns and some interesting ice formations around an open stream. We were thrilled when a blizzard of chickadees that we “pssshed” in (that is, we attracted them by making sibilant squeaking noises) turned out to be habituated to humans: they swirled around us and perched on our fingers as they searched for handouts. Although the park rules forbid the feeding of wildlife — with good reason — my environmental educator’s heart was gladdened by the look in the students’ eyes as they felt the touch of those tiny, wild claws.

Migration Headache is a lively game that illustrates the various threats to the survival of migrating birds as their habitats are destroyed or altered by human activities.

Migration Headache Game

1. In an open outdoor area, create a playing area resembling a tiny football field with two “end zones.” Clearly delineate the goal lines by telling students that they are imaginary lines between two objects, such as branches or knapsacks, placed on the ground.

2. Tell students that they will play the role of migrating birds as they travel between their summer and winter habitats (the two end zones). Have them begin by standing in the summer habitat, and ask students to name the kind of bird they have chosen to play.

3. Tell students that in order to succeed they must avoid being caught by players who will represent bird-killing hazards.

4. Ask for a volunteer to be a catcher. Tell students that this catcher represents an early winter storm that kills late migrants.

5. Shout “Go!” and let the students “fly” from the summer to the winter habitat.

6. Gather the students who got caught during that round and tell them that, in the next round, they are to become hazards such as lighted high-rise buildings (which kill many night-migrating birds), a pollution spill in a pond, a human-caused or natural drought, etc.

7. Ask students to migrate from the winter to the summer habitat. You can either continue the game until all birds are tagged or you can replenish the ranks of the successful migrants by moving some birds from the hazards group to the bird group (this move represents reproduction).

8. Conclude by asking the students to suggest ways in which we can help migrating birds.

This activity was adapted from the Project WILD activity of the same name in Project WILD Activity Guide (Canadian Wildlife Federation, 1990).
We then declared it game time and brought out a white bed sheet for playing The One-Second Hunt. The students — playing hungry goshawks — surrounded the sheet, put thumb and forefinger together as pincers, and closed their eyes. We scattered different-colored cutouts of snowshoe hares onto the sheet and then gave the goshawks precisely one second to open their eyes and pounce on a hare. Every goshawk was successful — but not a single white cutout form was captured, a dramatic illustration of the advantage of camouflage.

Next we sat down for a fireside chat, showing pictures of animals and discussing how each deals with winter, from the migrating robin to the hibernating ground squirrel to the color-changing weasel. We finished with another Native legend, the story of how the bear stole the chinook to keep his cave warm, and of the brave girl and her animal friends who conspired to steal the chinook back. As an informal evaluation, I asked the students to tell me the most interesting thing they had learned that day.

Is a winter hike worth all the trouble? Sitting in the cabin with the fire crackling and the low winter sun streaming obliquely through the window and lighting the children’s faces as they wait in anticipation to hear whether the coyote succeeds in stealing the chinook, I’d have to say, yes, a winter experience is certainly worth it!

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References

