

# WINTER WALKABOUT

Conservation Discovery School Program



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## 1.0 OVERVIEW

### 1.1 PROGRAM SUMMARY

Through this day-long outdoor program, Grade 1 and 2 students will have the opportunity to explore the Ann & Sandy Cross Conservation Area (ASCCA) in the winter. They will discover that winter is alive, despite how it may look. They will also learn that the plants and animals that remain active in winter have a hard time and should be respected by us. The students will be deputized as "Cross Conservation Officers" with the mission of studying winter for the Head Conservation Officer. Students are encouraged to discover more about 1) animal tracks and signs and 2) snow and plants in winter.

A Cross Conservation Area Educator, either a volunteer or staff member will lead the program. The teacher is responsible for class management and the preparation of their students and parent volunteers. The program alternates between indoor and outdoor activities to allow students to remain warm. Distance traveled during the program is approximately two kilometers.

### 1.2 PROGRAM COMPONENTS

A. Welcome and Orientation Talk (inside Belvedere House, led by ASCCA Educators)

- initiation of students as Cross Conservation Officers
- introduction to Area and the day's learning investigation
- students receive "pet mouse" to place in the best outside location for survival

B. Snow and Plants (led by ASCCA Educators, 1/2 day, rotate classes)

- go under the snow 'blanket' as mice and voles
- examine snow crystals and a snow profile (optional)
- look up, down, and all around for signs of plant life
- measure snow depth and temperatures in different places (optional)

C. Animal Tracks and Signs Walk (led by ASCCA Educators, 1/2 day, rotate classes)

- investigate camouflage and how it assists with winter survival
- examine tracks, compare them to tracking sheets for identification
- explore other signs animals leave (e.g., scat, scratch marks, diggings)
- learn animal track patterns and recreate them in the snow
- discover sounds of winter animals, especially birds

D. On-Site Indoor Units (may be used during warm-up breaks inside, led by teacher or ASCCA Educator)

- read winter stories or native legends
- investigate dead tree display
- create animal tracks with sand boxes
- sketch and write observations of biofacts

E. Wrap Up and Goodbye (outside or in Belvedere House, led by ASCCA Educators)

- wrap-up discussion of the day's discoveries
- remind student to write letters to the Ann & Sandy Cross Conservation Area with the day's discoveries

**1.3 CONCEPTS AND OBJECTIVES**

Concepts

Winter is alive! Many animals are active in winter and leave evidence all around. These animals should be treated with respect as this is the hardest time of year for them. The snow actually helps make things easier for some of animals while others are adapted to deal with winter in other ways (e.g., migration, hibernation). Plants are in a dormant state but also have ways to ensure their survival for spring.

Objectives and Key Points

<u>OBJECTIVES</u>	<u>KEY POINTS</u>
<p>After participating in the program, students should be able to:</p> <p>1) State what plants do to survive winter.</p>	<p>1) Trees pull sap into roots until spring. Buds hold the leaves for next year. Grasses die on top, but roots remain alive in a dormant state. Some plants over winter as green leaves (rosettes) above ground. Seeds lie dormant.</p>
<p>2) Describe the properties of and show the importance of snow to small mammals.</p>	<p>2) Small animals rely on snow as a blanket. The snow insulates the ground, keeping the animals warm. The snow protects the animals that tunnel down to live between the snow and the earth.</p>
<p>3) Classify and describe the three methods animals use to meet their needs in winter. Place a list of Area animals into the appropriate category.</p>	<p>3) They migrate, hibernate or remain active. Red-tail hawks and Mountain Bluebirds migrate. Ground Squirrels hibernate. Coyotes, Weasels, Deer, Mice, Voles and many birds remain active.</p>
<p>4) Identify 3 sets of animal tracks and describe 4 track patterns.</p>	<p>4) Tracks most likely to be seen are deer, elk, weasel, mice, voles, Snowshoe Hares and some birds. Patterns are straight-line walkers, bounders, hoppers and imperfect walkers/pacers.</p>
<p>5) View wildlife properly and state Cross Conservation Area rules for conservation and why we have these rules.</p>	<p>5) View wildlife from a distance and do not disturb or harass them. Sit or stand quietly and try using binoculars. Garbage goes home with visitors and everything else stays. Stay on the trails to minimize impact.</p>

## 1.4 CURRICULUM CONNECTIONS

### GRADE 1:

#### Science

- Seasonal Changes: learn about what happens in nature during winter and spring
- Needs of Plants and Animals: what are their needs and how do they satisfy these needs, and how do they change with the seasons?

#### Mathematics

- Patterns and Relations: pattern identification and length measurements (tracks).
- Number Concepts and Operations: temperature measurements and problem solving

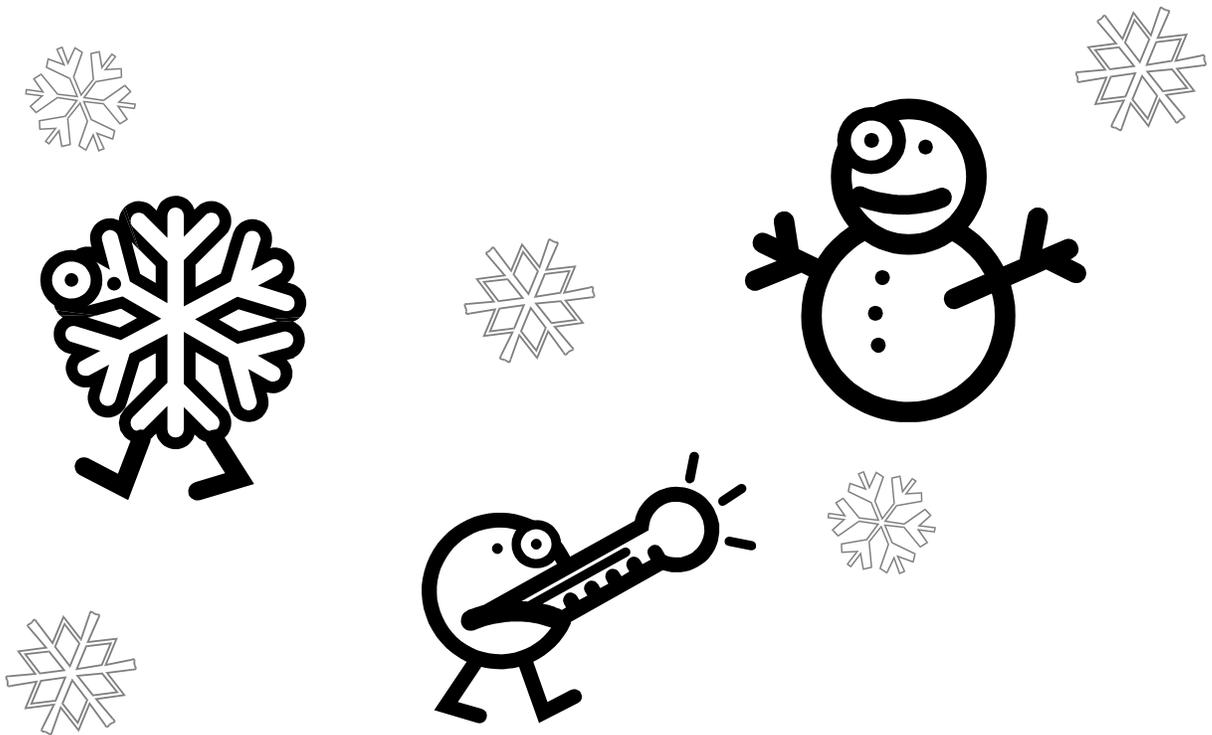
### GRADE 2:

#### Science

- Hot and Cold and Temperatures: looking at air, snow and ground temperatures
- Exploration of Liquids: water as a basic need, water in different forms, snow crystals
- Small Crawling and Flying Animals: exploring the survival strategies of birds, and small mammals

#### Mathematics

- Patterns and Relations: pattern identification and length measurements (tracks).
- Number Concepts and Operations: temperature measurements and problem solving
- Shape and Space: estimating, measuring and comparing track length, width, stride, and straddle.



## 2.0 WINTER BACKGROUND

### A Winter Wonderland

Seasons are the backdrop for changes and life cycles in nature. Winter brings the shortest days, cold temperatures and snow.

In this northern climate plants and animals have adapted to snow and cold in various ways to survive. Some animals avoid the worst of winter by hibernating or migrating. Hibernators prepare for winter by accumulating fat and food reserves and becoming dormant for several months. The most spectacular migrations are done by birds (e.g., geese) and are often long north to south traverses. Most migrations occur because animals cannot find food in their summer habitats, or cannot survive cold temperatures during winter. Other migrations include ones from high mountain elevations to lower elevations (e.g., Big Horn sheep).

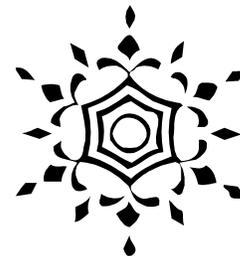
Snow is a mixed blessing. It shelters some plants and animals and hinders food gathering and movement of others. We sometimes call it a snow blanket because the air spaces in the snow insulate the ground, hibernating and active animals, and plants. Therefore the temperature is usually warmer at the ground surface than in the air, and the ground is protected from large temperature fluctuations. Chinooks may cause the exception to this rule and create warmer air temperatures.

Animals like the Snowshoe Hare have adapted large feet to travel on top of the snow. Others like the Meadow vole take advantage of the cover of the snow and warmer temperatures there and tunnel under the snow. Yet others like the Moose have adapted stilt-like legs to walk through the snow. Different snow conditions can make any of these adaptations useless.

Snow has several basic crystalline shapes. Snow crystals are all unique and always changing. Even as snow falls crystals collide and fuse or break apart. After a snowfall, changes in temperature, humidity and the weight of successive snowfalls affect the shape and nature of the snow.

The Parade of Seasons (pg. 13) pre-visit activity identifies some of the changes that winter brings. Relevant background information can also be found with each on-site activity. For a more informative look at winter than can be provided in a few short paragraphs we suggest the following resource. It is one of a series distributed to every elementary school in Alberta by the Recreation, Parks and Wildlife Foundation.

Knee High Nature: Winter in Alberta. Dianne Hayley and Pat Wishart, Published by Knee High Nature (1988) 52080 Range Road, 213 Sherwood Park, Alberta, T8C 1B5.



### 3.0 PRE-VISIT ACTIVITIES

#### 3.1 "PICK A PROJECT"

##### Objective

Students fundraise for a conservation-related project. This will assist students in understanding that they can take positive action in conservation. It will also assist teachers in developing student values with respect to the environment.

##### Procedure

1) Describe the ASCCA and the importance of our role in the preservation of natural areas.

2) Tell the students you will be visiting this natural area and it is important that it be preserved for future education. Describe our Pick a Project Program and ask them to pick a project they think they would like to financially support.

Sample projects could: purchase a class set of binoculars, magnifying glasses, contribute funds to an ecological study on the area, or purchase native grass seed for reclamation. Other specific projects will be discussed at the inservice prior to your visit.

**Note: This program is entirely optional.**

3) Some fundraising options could be:

- Have each child make a small donation to a collection
- Hold a bake sale or car wash
- Conduct a bottle drive

##### Additional Notes

- For groups that find time or money to be a concern, consider a donation of a service on the visit day. For example, arranging to have the whole class help out with the Ann & Sandy Cross Conservation Area Conservation Area (e.g., cleaning up after themselves before returning to school, picking up garbage on the trail or growing some native plants in the classroom and returning to transplant them at the ASCCA). Check out our Take Action pages on our website.
- This activity is not meant solely as a fundraiser, but as a means to encourage students to become actively involved in a conservation effort and to enhance the ASCCA for future visits.
- Have the students prepare to make a presentation of their fundraising efforts to Cross Conservation Area staff on the visit day. This will give us a chance to personally thank the students. We will give each class a special certificate as a small token of our appreciation.

**3.2 INTRODUCTION TO THE TASK AS CROSS CONSERVATION OFFICERS**

Objectives

To introduce students to the field study and to the task requested of them by the Head Conservation Officer.

Procedure

1) Read the letter from the Head Conservation Officer to the students. Discuss the request and build up their enthusiasm for becoming Cross Conservation Officers and investigating winter. Talk about the importance of being detectives prepared to use their listening and observation skills in this ‘outdoor work’.

**3.3 PARADE OF SEASONS**

Objectives

To discuss seasonal changes to enable the students to see winter as one component of the bigger picture.

Procedure

Have students brainstorm seasonal changes one season at a time and make a list on the blackboard. Have the students draw or write some of these changes in a journal or notebook.

<p><b>SPRING</b></p> <ul style="list-style-type: none"> <li>• Sap travels up from roots</li> <li>• Leaves emerge from buds</li> <li>• Grasses grow from below ground</li> <li>• Early spring flowers</li> <li>• Birds return or fly through</li> <li>• Bears, ground squirrels emerge from dens and burrows</li> </ul>	<p><b>SUMMER</b></p> <ul style="list-style-type: none"> <li>• Mammals lose winter fur</li> <li>• Some birds molt</li> <li>• Migratory birds nest</li> <li>• Insects appear and become food for others</li> <li>• Seeds from last year’s plants grow</li> <li>• Baby animals born</li> </ul>
<p><b>FALL</b></p> <ul style="list-style-type: none"> <li>• Seeds ripen, many collected and stored for winter food</li> <li>• Hibernators fatten up (e.g., frogs, salamanders, bears, snakes, ground squirrels)</li> <li>• Migratory birds and young leave</li> <li>• Insects die off or hide for next year, or lay eggs for next year</li> <li>• Mammals grow thicker fur</li> </ul>	<p><b>WINTER</b></p> <ul style="list-style-type: none"> <li>• Some change colour (e.g., hares, weasels)</li> <li>• Thick winter coat in place</li> <li>• Conserve energy by staying still</li> <li>• Some hibernating</li> <li>• Snow used as a blanket by mice, pheasants, hares</li> <li>• Mice and voles tunnel under snow</li> <li>• Animals eat more to stay active</li> <li>• Use up fat stores</li> <li>• Deer family shed antlers</li> <li>• Many animals die</li> </ul>

### 3.4 PREPARING FOR THE COLD

#### Objectives

Students will discuss ways in which they prepare themselves for the cold.

Students will experiment with insulation and define insulation through words or pictures (This is in preparation for the students learning about ways animals prepare for winter while on site).

#### Procedure

- 1) Brainstorm some ways in which they prepare themselves for cold weather. How do they dress differently in the winter as compared to the summer? How much time do they spend outside? Draw themselves in summer and winter.
- 2) Ask students to brainstorm what they know about insulation. Talk about what insulation is and come up with some examples of insulation.
- 3) Have students compare items from a list of examples of insulation to determine which are warmer from their experience. Pose the question, "Why are some jackets, blankets, mittens, or boots warmer than others?" Introduce the concept of loft, or thickness as a factor in warmth. It is the thickness, and the amount of air trapped in a layer of insulation that determines how much heat can be retained.
- 4) Experiment: Choose different types of insulation and test how effective they are. Use similar containers, jars or vials, filled with packed snow or some ice and wrap insulators around them with elastic bands. Leave for a time and measure or compare melt water from different examples. In this case, the insulator will help keep the cold in so, the less melt water there is, the better the insulator the material is.

### 3.5 SNOW IS WATER

#### Objectives

Students will melt snow and witness that snow is water.

Students will measure snow volume and compare it to the volume of water present when the snow melts.

#### Procedure

- 1) Collect snow outside in a clear container.
- 2) Ask students to predict what will happen if the snow is kept in the warm classroom. Will it melt? What will the snow be after it melts? What is melting?
- 3) Have students predict how much water will be left in the container after the snow melts. Record predictions on the side of the clear container with tape, or a grease pencil (Multiple containers may be required for every student to record a prediction). Snow to water volume ratio is usually 10:1.
- 4) Why does less water result for a given amount of snow? Look at snowflakes and examine all the empty space ( cut out your own snowflakes ). What's in that space? The space between the top of the melted snow and the top of the container shows you how much air was in the snow.

**4.0 ON-SITE VISIT**

**4.1 A TYPICAL ON-SITE VISIT**

- 9:30 a.m. Your group arrives by bus.
  - Walk to Belvedere House from lower parking lot.
  - Organize group in orientation area.
  
- 9:45 a.m. Orientation talk given by ASCCA Educator. Orientation will:
  - Welcome students.
  - Familiarize them with animals and/or signs they may see and which animals they won't see and why.
    - Introduce them to the program. Make them "Conservation Officers" for the day.
    - Explain Cross Conservation Area rules and expected behavior.
    - Divide students into two groups, if applicable.
    - Accept a Pick a Project donation, if applicable.
  
- 10:00 a.m. Snack inside.
  
- 10:15 a.m. Each group heads outside and hides their mice.
  
- 10:30 a.m. Groups head out for their investigations. One class will go with the ASCCA Educator to do Animal Tracks and Signs and the other class will go with another ASCCA Educator to do Plants and Snow.
  
- 12:00 p.m. Lunch break back in building. Optional Games or Activities.
  
- 12:45 p.m. Groups re-embark on outside activities, switching investigations.
  
- 1:50 p.m. Groups return to building for washroom break and wrap-up talk by ASCCA Educators
  
- 2:00 p.m. Groups head back to school.

**NOTE** - If weather is inclement, groups can alternate inside and outside to stay warm. This will lessen the overall amount of time to do activities. Some activities may need to be cut from the program if this is the case.

**4.2 ROTATIONAL SCHEDULE**

<b>INVESTIGATIONS A &amp; B- SNOW AND PLANTS</b>	<b>INVESTIGATION C- ANIMAL TRACKS AND SIGNS</b>
<b>A1. Snow Blanket</b>	<b>C1. Track Patterns</b>
<b>A2. Six- sided Magic</b>	<b>C2. Animals Have Been Here</b>
<b>A3. How Cold is it Out There (optional)</b>	<b>C3. I Spy Weasels and Hares</b>
<b>B1. Look Up, Down, and All Around</b>	

**4.3 ON-SITE PROGRAM DESCRIPTIONS**

*Orientation Activity:*

Using laminated pictures of various animals, students determine if which ones migrate, hibernate or stay active during winter.

*Introduction Activity:*

Students examine freezing properties of liquids and determine the best place to hide a film canister full of water (their pet mouse) to keep it warm for several hours.

Note: Previsions will be made for days with no snow or extreme weather. These will be discussed at the teacher inservice.

**INVESTIGATION A & B - SNOW AND PLANTS**

*Investigation Focus:*

Students explore the properties of snow and ways snow affects plant and animal life in the winter.

*Investigation Objectives:*

Students will explore snow crystals and may dig a snow pit to observe differences in the snow layers. Students will observe differences in snow accumulation and temperatures in various locations. Students will come to appreciate snow as an insulating layer. Students will find evidence of how plants survive winter.

*Time Required:*

60-90 minutes

*Description:*

The snow investigation starts with the team of Cross Conservation Officers experiencing life beneath the snow blanket from plant and animal perspectives. They will also hike to an area of undisturbed snow to make specific observations about snow and air temperatures. Students will look more closely at snow crystals and at the profile of snow layers (optional).

*Activities in Snow Section:*

- A 1. Snow Blanket
- A 2. Six-Sided Magic
- A 3. How Cold is it Out There? (snow permitting)
- B 1. Look Up, Down and All Around

*Optional Games / Activities: (use at any time)*

Make Snow Angels (outside)

Nature Alphabet - Students can be challenged to think of something natural beginning with each letter of the alphabet. (inside or outside)

Winter Fun Hunt - Students look for scavenger hunt items and mark them off throughout the day (outside)



<p><b>INVESTIGATION:</b> A) SNOW</p>	<p><b>ACTIVITY TITLE:</b> A1- SNOW BLANKET</p>
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**ACTIVITY DESCRIPTION:**  
Students will understand how snow affects the survival of animals and experience life under a blanket of snow.

**TIME REQUIRED:** 15-30 minutes **LEADER:** ASCCA Educator

**MATERIALS NEEDED:**  
Snow blanket (parachute), comparison sheet of mice and voles

**BACKGROUND:**  
Snow provides insulation and protection from predators for many animals in the winter, especially mice and voles. The air trapped in snow insulates the ground so that the temperature below the snow is warmer than the air temperature. However, in the Foothills region chinooks occasionally create the opposite effect. Nonetheless, mice and voles use the snow to hide under and they create elaborate tunnels under the snow. You can often find the holes in the snow which lead into their tunnel system.

Meadow voles create networks of tunnels leading from their nests to toilet areas, food storage and food sources. The vole will store a great deal of food sorted by seed type. The Mandan Indians who lived in Alberta and the USA called the vole the Bean Mouse and they would raid the voles' food caches! Voles will actually chew off the grasses to create the trails, which are then used by other creatures like the mice. The voles also create the breathing holes, which we see on the surface and do not necessarily have tracks around them. Voles are neater than mice as they have separate toilet areas. Vole toilet areas are often at the cross-roads of tunnels. Mice will use their nests as toilets and as a result will often have several nests within their home range. Not all their nests are underground-they will often use old bird nests. In winter, mice will combine nests for extra warmth. Mice tracks can often be told from vole tracks by their tail drag marks. Mice are nocturnal so you are more likely to scare up a vole in the day than a mouse. Mice do not stay under the snow as much as voles do. Nests of both voles and mice are not just for rearing young but are used throughout the year by both males and females.

- DIRECTIONS:**
1. Lay out the parachute. Briefly explain that it represents a layer of snow. Let the students know that they are expected to get small and imagine what it would be like to live under the snow blanket! Participation should be optional (not to create stress for the claustrophobic) and you will need to use your parent helpers to hold up the corners of the parachute while you do your tunnel tour.
  2. Have a mini-imagery exercise to facilitate shrinking and then lead your 'mice and voles' under the snow blanket.
  3. Once everyone is under huddle together and sees how warm it is- this is another way mice and voles survive.
  4. Next lead them on a tunnel tour of the ground under the blanket. Stop at a food supply and at a toilet area if you dare!
  5. Lead them out of the snow blanket being sure to look around carefully for predators first!
  6. Have everyone sit or kneel holding the edge of the 'snow blanket'. Create ripples by shaking it and remind kids this is the snow layer. Have 2 or 3 kids crawl underneath as if they were mice. Have one student be the weasel or coyote and crawl around on top looking for signs of life beneath. If they find a mouse they should touch him or her and that mouse has been caught and must come out. Give everyone a turn.

<p><b>INVESTIGATION:</b> A) SNOW</p>	<p><b>ACTIVITY TITLE:</b> A2 -SIX-SIDED MAGIC</p>
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<p><b>ACTIVITY DESCRIPTION:</b> Students investigate snow and individual crystals and appreciate the unique beauty of individual snowflakes. They will also understand that many crystals start out with six sides but may not have this many when the students see them. They will discover seven main types of snow crystals and investigate snow layers in a profile, if possible.</p>	
<p><b>TIME REQUIRED:</b> 15-30 minutes</p>	<p><b>LEADER:</b> ASCCA Educator</p>
<p><b>MATERIALS NEEDED:</b> Snow catchers, picture of seven snow types, and a shovel for snow profile (optional)</p>	
<p><b>BACKGROUND:</b> Snow crystals come in seven basic forms and the crystal shapes have six sides (see picture in prop kit). Snowflakes are made of a combination of snow crystals. No two flakes are alike as each one is made up of millions of parts- in this sense they are like people- we should not expect to find two snowflakes the same just as we would not expect to find two people the same. Snow crystals are not solid and the air in and between crystals is what gives snow its insulating properties. Snow is not really white! It is actually clear as ice and acts like a prism to reflect all the colours of the rainbow. Our eyes see this as white. The snow layer/profile is an ever-changing story. Temperature, humidity, and accumulation of snow change the crystals. After warm periods notice that most snow looks like little balls, because the crystals melted and re-froze. If the snow layer is too deep animals such as deer will have a hard time getting around. But on the other hand the deep snow protects roots and seeds from cold and hides seeds from birds and mammals. If a hard crust forms mice and voles may suffocate (unable to create ventilation holes), but other animals such as hare and grouse may find it easier to travel on top of the snow.</p>	
<p><b>DIRECTIONS:</b></p> <ol style="list-style-type: none"> <li>1. Act out the various snow crystal shapes with the students to familiarize them with the seven types.</li> <li>2. Provide each student with a black paper snow catcher. Try not to let the catchers warm up.</li> <li>3. Have the children catch a few snowflakes on the catcher or if it is not snowing try to scoop up some reasonably fresh crystals from the ground.</li> <li>4. Examine the flakes and, weather conditions permitting, discuss and describe one or more crystals.</li> <li>5. Discuss how flakes change when they bump into each other or the ground or begin to melt or join together. Show them the picture of the seven types of crystals and see if they can classify their crystals into one of the categories.</li> <li>6. <u>Optional</u>: Gather everyone together and dig out a snow pit using the shovel. Try to get a sheer side and examine the snow layers visible in the snow. Discuss how this tells us a story about the types of snow we've had and what happened with our weather.</li> </ol>	

<p><b>ACTIVITY DESCRIPTION:</b> Students will investigate temperatures in various locations and determine the warmest places for animals to live.</p>
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<b>INVESTIGATION:</b> A) SNOW		<b>ACTIVITY TITLE:</b> A3- HOW COLD IS IT OUT THERE? (Optional: if time and weather permits)	
<b>TIME REQUIRED:</b> 15-30 minutes		<b>LEADER:</b> ASCCA Educator	
<b>MATERIALS NEEDED:</b> Thermometers, photocopies of snow chart and white board markers			
<b>BACKGROUND:</b> A reasonable amount of snow (6-inches/ 15 cm), not only insulates the ground from extreme freezing temperatures but also protects it against temperature fluctuations. Even a 1-2 degree difference will be enough to enable a tiny animal to make use of the snow as a blanket. The snow blanket also protects plant roots and hibernating animals. Temperature results may vary depending on the amount and quality of snow, and the air temperature. Try this experiment in a few different locations with varying snow levels.			
<b>DIRECTIONS:</b> Note: For this activity, have the groups set out the thermometers, do another activity, and then come back to finish so that the thermometers have time to register to the outside temperatures.  <ol style="list-style-type: none"> <li>1. Discuss how thermometers are used to measure temperatures and point out temperatures above, below and at 0 degrees Celcius. With the entire group demonstrate how and where to take temperatures.</li> <li>2. Give each group a thermometer and have each group measure one of following: <ul style="list-style-type: none"> <li>• Air temperature</li> <li>• Snow surface temperature</li> <li>• Middle of snow pack temperature</li> <li>• Bottom of snow pack or ground level temperature</li> <li>• A location they think will be warmest</li> </ul> </li> <li>3. Break off into groups of 5-6 with a parent/teacher in each group and have the individual groups find the temperature reading of one of the designated places (eg. air, snow surface, and ground layer temperatures). Usually, the ground layer will be at a warmer temperature than the surface and air temperature. Dig a hole in the snow for the thermometers to avoid breaking them.</li> <li>4. Discuss activity results with the entire group. Do the students understand that snow acts as an insulator? Ask the children if they were a small animal, where would they go to stay warm? Why? Ask them why snow is sometimes called a blanket. How might this blanket affect the plants under it? This leads into the plant section.</li> </ol> <p>Students should find that it is actually warmer at ground level therefore confirming what was discovered in the previous snow blanket activity. On Chinook days, it might be the reverse: colder under the snow and warmer above.</p>			

**INVESTIGATION B - PLANTS***Investigation Focus:*

Many plants are alive in the winter and there is evidence of this life all around us. Plants also have ways to ensure their survival over the winter.

*Investigation Objectives:*

Students will search for signs of plant life looking at various levels (high in trees, at eye level, at snow level, under the snow).

Students will discover that light can get through the snow to the plants at ground level.

Students will come to appreciate that many plants are alive in winter.

*Time Required:*

30 minutes

*Description:*

The plant investigation begins with the group reviewing what they know about plant life in the winter. With this information fresh in their minds, Cross Conservation Officers will set off to search for signs of plant life by looking high, low and all around.

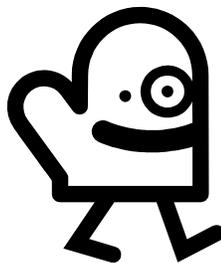
*Activities in Plant Section:*

B 1. Look Up, Down and All Around

*Optional Games / Activities: (Use any time)*

Be a Bud - Lead the group through a year in the life of a tree / plant. Using your entire bodies act out the stages of life (e.g., be a bud in winter, grow in spring, swing arms to simulate trees in the summer breeze, leaves get tired in autumn, and finally fall when the wind blows them down). This activity can be done inside or outside.

Make Friends With a Tree - Blindfolded, students will be lead by a partner and introduced to a tree which they will get to know using their senses of touch, hearing and smell. With the blindfold off students will try to go back and identify their tree friend. Remind them that their friend is not dead but sleeping for the winter! This activity should be done outside.



**INVESTIGATION:**  
B) PLANTS

**ACTIVITY TITLE:**  
B1 - LOOK UP, DOWN, AND  
ALL AROUND

**ACTIVITY DESCRIPTION:**

Students examine trees and shrubs for signs of life by looking up at the trees and branches, down at ground level, below the snow and all around the snow. Leaf buds, shoots, seeds and green leaves will all be explored.

**TIME REQUIRED:** 30 minutes

**LEADER:** ASCCA Educator

**MATERIALS NEEDED:**

Whisk brooms, Spruce tree and the Chickadee story

**BACKGROUND:**

Plants are annual, biennial or perennial. Annuals survive over winter only as seeds; the rest of the plant dies in the fall. Biennial plants spend their first winter as a small, ground-hugging rosette of green leaves. In their second year of life they die in the fall leaving seeds to continue on in the spring. Perennials prepare for winter by dying back to underground rootstalks and survive the winter under the snow layer. Bark is both a protective shield as well as an insulator protecting the tree or shrub all year. In winter the sap has moved from the branches to the roots.

Buds hold next year's leaves and can be likened to a waterproof sleeping bag as they keep the leaves warm and dry until they are ready to swell and burst open. Animals, such as deer and hares, rely on buds as a source of food over the winter.

Leaves cannot stay on trees all year long as they would require water from the roots all year to replace the water lost to the air by the leaves (evapotranspiration). Since the roots cannot get water in the winter, the leaves cannot remain or else the tree would die of dehydration. Spruce (an evergreen) has the ability to hold onto their leaves in the winter, unlike the deciduous trees. The evergreen tree needles have a hard waxy coating to prevent water loss. The needle's small size also prevents water loss from their surface unlike the larger leaves of the deciduous trees.

**DIRECTIONS:**

1. Select a suitable site, preferably where there are either deciduous and evergreen shrubs or trees. Ask the class if they think the plants are dead now that winter is here. Ask them how plants survive the cold and how do we know there will be life again in the spring?
2. Split up into groups and have each group search for evidence of life in plants. Remind them the activity is called "Look Up, Down and All Around"!
3. Have them look carefully all around and use the whisk brooms to look below the snow at the ground level. Point out evidence of animal use, like browsed branches, and have them look around for other signs.
4. Remind everyone that treating nature with respect is very important. Do not break branches or destroy anything. Leave seeds behind to germinate in spring. Brush away snow carefully when looking for plants below the snow. Replace everything as you found it. These are the most important conservation messages of the program.
5. Gather everyone together and have the groups share their findings. Be sure to cover buds as sleeping bags for next year's leaves, seeds as packages of energy with next year's new plants and the green leaves as plants hiding under the snow ready to grow in spring.
6. Get the students to Be A Bud and do the actions as you narrate.
7. Optional: read The Spruce tree and the Chickadee.

**INVESTIGATION C - ANIMAL TRACKS AND SIGNS***Investigation Focus:*

Some animals are alive and active in the winter and there is evidence of that life all around us. There is also evidence of other animals left from the summer.

*Investigation Objectives:*

- Students will search for signs of animal life in forests and in fields.
- Students will use effective animal observation techniques.
- Students will get the opportunity to create their own winter animal survival story.
- Students will share discoveries that they make.
- Students will come to appreciate that animals are alive and active and will be able to identify signs of animal life and activity.

*Time Required:*

90 minutes in total

*Description:*

The Animal Investigation begins at Belvedere House. It takes the form of a search and discovery hike. As they leave Belvedere House, stops will be made at appropriate places to introduce animal tracks and signs to the students. They will learn about track patterns and have the chance to recreate the patterns. They will break into groups and do their own exploring. The Area Educator will help them to identify the signs and tracks they see. Lastly, they will listen for common sounds of winter animals, especially birds.

*Activities in this Unit:*

- C 1. Track Patterns
- C 2. Animals Have Been Here
- C 3. I Spy Weasels and Hares
- C 4. Sounds of Winter

*Optional Games / Activities: (Use anytime)*

Track Scenarios - Using the four track pattern examples students take turns creating track patterns in the snow for others to guess 'whodunit'. Use track sheet and track molds for ideas and shapes of tracks and patterns. (outside)

Track Casts - Students can examine the various tracks of animals that live on the ASCCA.

Furry Bear Wakes Up – Students role play as the bear as volunteer reads the story.

<p><b>INVESTIGATION:</b> C) ANIMAL TRACKS AND SIGNS</p>	<p><b>ACTIVITY TITLE:</b> C1 - TRACK PATTERNS</p>
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**ACTIVITY DESCRIPTION:**

Animals move with characteristic styles leaving distinctive patterns of tracks. Students will be introduced to the four track patterns and how to distinguish one from another. They will try to mimic each characteristic style of movement and view their patterns in the snow. They will then use this newfound knowledge on any other tracks they see.

**TIME REQUIRED:** 20 minutes

**LEADER:** ASCCA Educator

**MATERIALS NEEDED:**

Laminated illustrations of the four track patterns, track comparison sheet.

**BACKGROUND:**

All animal tracks can be divided into 4 patterns:

*Bounders* like weasels and voles

*Hoppers* like mice, hares and squirrels

*Straight line walkers* like deer, dogs, cats and horses

*Pacers or imperfect walkers* like people, bears, porcupines, beaver (e.g., wide bodied creatures)

To learn more about tracks it is important to take note of more than the track itself. We should also be looking at the overall pattern, size of tracks and distance between tracks. The first piece of information we should gather is the pattern. Most tracking keys require you to identify the pattern and then work through other features.

**Signs to look for include:** animal droppings, birds nests, wasp nests, rubbings on trees, holes in trees, chewed branches or bark, signs of digging, bark beetle tunnels, galls, fur, bones, and actual animals.

**Tracks to look for include:** deer, elk, coyote, cougar, weasels, mice and voles, hares, birds.

Of the 90 mammals in Alberta 1/3 remain active in winter and of the 300+ birds in Alberta 1/10 are active. These animals survive by growing thicker fur, staying still more than usual, taking cover in cold windy weather, eating more, using built up fat reserves, storing food in fall, and fluffing up feathers.

**Ways we can help include:** not disturbing them by chasing them and forcing them to use up their extra energy, not disturbing their homes or resting places, set up and maintain bird feeders, give them their space and respect them as living beings. 25% of the active animals will die over a winter.

**DIRECTIONS:**

1. Show students the pictures of the 4 patterns and briefly describe each one.
2. Have students practice moving like animals trying to show each of the four patterns, one at a time in the snow. If there is no snow, practice anyway it's fun! They can even join a partner and, with their hands on their partner's shoulders, try to coordinate four legs instead of two.
3. Give a track pattern sheet to each group, have them decide on which animal to use and practice moving that way. Have each group present and get other students to guess what pattern they are making.
4. As you walk to the next activity find at least one track pattern and have the students figure out what the pattern is and who left it.

<b>INVESTIGATION:</b> C) ANIMAL TRACKS AND SIGNS	<b>ACTIVITY TITLE:</b> C2 - ANIMALS HAVE BEEN HERE
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<b>ACTIVITY DESCRIPTION:</b> Students become detectives and search for evidence of animals at the Cross Conservation Area to discover who lives here in winter and what the signs tell about their survival.	
<b>TIME REQUIRED:</b> 40 minutes	<b>LEADER:</b> ASCCA Educator
<b>MATERIALS NEEDED:</b> Hula-hoops, tracking guide sheets, animal tracks, track stamps.	
<b>BACKGROUND:</b> <p><b>Signs to look for include:</b> animal droppings, birds nests, wasp nests, rubbings on trees, holes in trees, chewed branches or bark, signs of digging, bark beetle tunnels, galls, fur, bones, and actual animals.</p> <p><b>Tracks to look for include:</b> deer, elk, coyote, cougar, weasels, mice and voles, hares, birds.</p> <p>Of the 90 mammals in Alberta 1/3 remain active in winter and of the 300+ birds in Alberta 1/10 are active. These animals survive by growing thicker fur, staying still more than usual, taking cover in cold windy weather, eating more, using built up fat reserves, storing food in fall, and fluffing up feathers.</p> <p><b>Ways we can help include:</b> not disturbing them by chasing them and forcing them to use up their extra energy, not disturbing their homes or resting places, set up and <u>maintain</u> bird feeders, give them their space and respect them as living beings. <u>25% of the active animals will die over a winter.</u></p>	
<b>DIRECTIONS:</b> <ol style="list-style-type: none"> <li>1. Play "I Spy" with the students as you walk the first part of the trail. Point out different animal tracks and signs that you know to be there. You may want to use one set of tracks as an example of how to measure for identification and/or have some special animal evidences pre-marked for the group to view.</li> <li>2. Divide children into groups of 5-6 with a teacher/parent heading up each group. Provide each leader with a hula-hoop, and tracking guide sheets.</li> <li>3. Groups spread out and look for tracks or animal signs. Instruct children to walk carefully to avoid disturbing tracks. When tracks or signs are found they can throw a hula-hoop over them as a marker.</li> <li>4. Identify tracks found by using track patterns and the guide sheet. Measure the tracks and look for the number of toes, claw marks and tail drags. When an animal sign is found have the students try to deduce who left it. Encourage them to ask questions regarding 'whodunit'.</li> <li>5. Regroup and share good examples with the class returning to the one special track or sign per small group. Discuss how these animals survive in the tough conditions of winter and ways that we can help them. Volunteers can clarify any incorrect responses although the emphasis should not be on perfection but rather on encouraging the students to make good guesses.</li> <li>6. Choose several track stamps to demonstrate how each new snowfall is like pages of a book and animal tracks are a story left behind. Stamp the tracks into an area of fresh snow as you tell a story. Give each group several stamps (usually 1 predator and 1-2 prey) and have the students take turns to make up their own story in the snow, or create one together.</li> </ol>	



**4.4 OPTIONAL GAMES**

These active games can be played at lunch, or any other time during the day outside.

**DUCKS IN THE WATER**Objectives

This game will demonstrate to students that animals need a place to live. Students should also understand that animals must meet their needs (food, water, shelter and space) in these places. Some animals migrate to meet their needs in the winter.

Procedure

- 1) Discuss why ducks, geese and other birds migrate (i.e., to find food).
- 2) Set up two rope ponds. Have children pretend to be ducks on a pond. When winter comes, it is time to fly south. Ducks fly to the roped off area. When winter comes to an end they fly back north to their nesting grounds. Stay facing north and lay eggs and raise young. Then when fall comes they face south toward the roped off area and fly south again.
- 3) Repeat a few years back and forth, then adjust the habitat area in the south. A wetland was drained to make room for houses or factories. When the ducks arrive there is not enough room for them all and some will die. Less return to the north that year. Those who cannot fit in the habitat should stand to the side. Likewise adjust the northern habitat so that it gets smaller.
- 4) Repeat. Discuss at end.

**COYOTE CATCH**Objective

This game will help students understand that animals need food for energy to survive and stay warm.

Procedures

- 1) Explain to students that we all need food to stay alive. We use energy from food to keep warm. In the winter we put on more clothes to help keep warm. Animals may grow thicker fur and huddle together in winter but they still need energy from food to stay warm and alive.
- 2) Arrange the hula hoops and food chips in the playing area. Place the food chips in 2-3 of the hoops and leave the rest of the hoops empty.
- 3) Tell students that they are going to be mice. Explain their task to them. They must gather one food chip from the food cache (hula-hoop with food chips in it or a roped off area) and make it to their nest (empty hula-hoop) where they will be safe and warm. They can only gather one chip at a time and can go back and forth to get more food chips. The more food the better their chances of survival.
- 4) A few students will be coyotes and in each round they must catch 3 mice to stay alive. When they tag a mouse they send the mouse to the sidelines after taking the food chip from the mouse. When the mice are standing in a hula-hoop they are safe as they are under the snow or in a tunnel. If a round ends with a stand-off between a coyote and a safe mouse they both die.
- 5) You can play out various scenarios. For instance, what happens when there are as many coyotes as mice?

## 5.0 POST-VISIT ACTIVITIES

### 5.1 SHARING THE EXPERIENCE

#### Objectives

Students will share the significant things they learned using cooperative artistic skills. They can present their favorite newfound knowledge as drawings, paintings, charts, etc.

Students will prepare letters to the Head Conservation officer at the Ann & Sandy Cross Conservation Area.

#### Procedure

1a) In the investigation groups used while at the conservation area, students produce favorite or significant drawings, charts, sightings, and things they learned, to be included in a collective display to share with the entire class.

b) Students individually "show and tell" their components of the collective displays orally to the rest of the class. Invite special guests to these presentations (librarian, principal, secretary, parents, and other students).

2a) Review with the students their mission as Cross Conservation Officers and the request for information about winter at the conservation area.

b) Review or introduce a format for letter writing appropriate to the student's experience.

c) Challenge the students to fulfill their roles as Cross Conservation Officers and write letters explaining what they learned about winter.

### 5.2 TRACK TALES

#### Objectives

Students will draw conclusions from tracks in their school yard.

Students will see boot prints as evidence of human presence and activity.

Students will create track scenarios in the classroom.

#### Procedure

1) Take the students out into a snow-covered area in the school yard and look at prints, or tracks, left by other students. Be detectives and find out what information the tracks can reveal. Look at track direction, size, depth, age, and over tracking. Attempt to deduce who might have made the tracks and what they might have been doing.

2) Back in the classroom, have students trace their footprints and cut out multiple copies using scrap paper. Challenge groups of students to set up track scenarios then have other students try to figure out what happened.

3) Invite students to share experience they have had with animal tracks. Have they seen tracks made by their pets? Wild animal tracks? Where and in what circumstances?

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