Web of Life

Conservation Discovery School Program

Ann & Sandy Cross Conservation Area

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1.0 OVERVIEW

1.1 PROGRAM SUMMARY

The Web of Life is an activity-based program designed to introduce students to the ecology of the aspen forest. The program includes hands-on activities and a full day 3.5 km hike on the Ann & Sandy Cross Conservation Area. Your field study will be volunteer-assisted. You will be responsible for class management as well as finding parent volunteers to help with the on-site visit. We recommend one parent volunteer per five or six children because we do some activities in smaller groups.

The Web of Life program focuses on the Aspen Parkland community, the inhabitants and their interactions. Students learn that a community is a place where an assemblage of plants and animals live and have their needs met by the common physical habitat. The Aspen Parkland is home to many species of plants and animals which interact with each other and their surroundings in different ways. An interrelationship occurs when two living things affect one another. These can be direct such as predator/prey relationships or indirect like the relationship between Albertans and the equatorial rain forest. All living things depend on the biotic (living) and the abiotic (non-living) factors of their environment.

This program guide includes pre-visit and post-visit activities, as well as descriptions of the on-site activities that relate to communities, specifically the Aspen Parkland. Post visit activities in the student field study guide focus on biodiversity and conservation in general, using the endangered grasslands as an example.

1.2 CONCEPTS AND OBJECTIVES

The goal of the program is to help the students gain an appreciation for nature and natural areas, using the Aspen Parkland forest as an example. The program is ecology-based and teaches students to think of our world as a whole rather than a series of disconnected parts.

After participating in the Web of Life program, most students will be able to:

1) Demonstrate an understanding of the web of life concept and indicate the place of each species.

2) State the human role in the web of life and two or more things we can do to help maintain the web.

3) Define and explain community, habitat, interrelationship, biodiversity, basic needs, and predator-prey relationships.

4) Name and identify seven species found on the land. State one or two facts about each species.

5) Show respect for living things by following the ASCCA guidelines.

6) State three ways to observe wildlife without disturbing them.

1.3 CURRICULUM CONNECTIONS

This program covers relevant topics in the following areas

How do plants and animals interact? (Grade 3)
In what ways do the structures of organisms support survival? (Grade 4)
How does Earth sustain life? (Grade 4)
How are organisms supported by vital biological processes and systems? (Grade 5)

Other connections can be explored as requested

2.0 BACKGROUND – AN INTRODUCTION TO OUR NATURAL HISTORY

2.1 TEACHER BACKGROUND

The Ann & Sandy Cross Conservation Area has been witness to many forms of change since it was first occupied by native hunters and herds of bison. Ranching and farming have all changed the land. What we see here has been repeated everywhere and makes this beautiful and protected site a representative slice of Alberta worthy of our attention and study.

What you will see

This area is 4800 acres of transition zone between the dry prairies and the rugged mountains. Plant and animals from a variety of habitat types are found here. The two major habitats represented are the grasslands and a more treed area associated with the grassland called the Aspen Parkland. Not all grassland is the same. Some is composed of rare native grasses and represents what was once a huge ecosystem in North America. Some grassland is composed of grass brought in by ranchers to increase cattle forage. These are referred to as "introduced". These native grasses are important. Within Canada only 10% of this fescue grassland remains unbroken and between 1 to 5 % remains in Alberta. This conservation area contains 8% native and 46% introduced grasses. The rest is Aspen tree forest interspersed with White Spruce (42%) and some Willow (4%). While the majority of your day will be spent in Aspen forest, the threatened native grassland is focused on in the student booklet to some degree because it provides an excellent example for the concept of biodiversity.

Wildlife

The mixture of aspen forest and grassland allows for a wider variety of birds, mammals, reptiles and amphibians. Elk and deer are very common with moose seen occasionally. Carnivores include coyotes, weasels, fox, black bear, and cougar. There is abundant bird life, including the highest concentration of Red-tailed Hawks in North America. Some of the smaller residents, such as the Deer mice and voles are extremely important to the food chain. And just because you can't see them doesn't mean they aren't there! Some sources indicate that there are millions of spiders and insects per acre of land.

Plants as Players

The Cool Aspen Forest

In this transition zone we call the Cross Conservation Area the two obvious players are the grasslands and the aspen forest. Aspen tend to dominate the cooler, moister north- facing slopes or coulees. Aspen reproduce by both seed and "suckering". Suckers are roots extending from the parent tree. These send up shoots that form genetically identical trees called clones. You can observe these clones in the fall while all members of the clone change colour at the same time. These clones form clumps of Aspen that are surrounded by grassland and give the Parkland its characteristic appearance. *(This area officially begins just north of Red Deer.)* Without controls like fire to kill the suckers, the aspen can take over the grassland. It is estimated that in Alberta, the Northern Aspen Parkland has extended about 200 miles south into the grassland since the local extinction of the bison. Until that time, the natives set fires that killed the aspen and increased the size of the grassland, thereby attracting the herds to those areas. When the fires stopped, the aspen returned. Today, as then, the aspen forest

provides an oasis of shelter, hiding spots, nesting places and food. Many evening and night animals use the grassland for a limited time and retreat into the safety of the forest in daylight.

Aspen Observations

One thing you may immediately notice about the aspen forest is the amount of plant and animal life. During the summer, it is sometimes possible to hear more than 30 different bird calls in one small area. The forest is a nursery for migratory birds. Look for nest holes in dead standing trees. Although the aspen dominates, there is also a lower layer of shrubs.

Shrubs and small aspens often show signs of antler rubbing by elk or deer in the fall. At the ground level you will often see much lusher and taller vegetation than you will ever find on native grassland. These are lush, shade tolerant and moisture loving species unsuited to the harsh realities of the dry prairie. The aspen forest is sheltered and bountiful when compared to the grassland.

Smoking Prairie

Grasslands are typically found on warmer and drier south facing slopes. The 250 species of grass, flowers, shrub and tree we have today evolved under a grueling regime of summer, winter, fire and flood. The same can be said for the birds, mammals, reptiles, insects, spiders, bacteria and fungi that shape the prairie life cycle. Unlike other plants which grow from the tip of their leaves, grass grows from its base. This allows it to grow back quickly after being burnt or grazed. Grass, like aspen, also sends out suckers. This helps create a dense sod that traps water and binds the soil together against erosion.

Grasses are central to interrelationships on the prairies. Grass preserves the soil and traps water so that plants such as wildflowers can germinate. The early sprouting of grass shields other plants from the sun and prevents damage by the elements. All the animals have some reliance on grass for food and habitat.

Grasslands are Endangered

The majority of your field trip work will involve the web of life as found in the aspen forest. We would also like to stress the incredibly important concept of biodiversity as it relates to the fieldtrip experience. Although a lot of this information relates to the word grassland, it is important to remember that the Aspen tree is an integral part of our northern grassland and that they evolved together.

Prairies as Rainforests

The Nature Conservancy's Larry Simpson makes the following observation. “The Grassland could be called the rainforests of the Prairies- except they seem to be disappearing without a whimper. Because native grasses aren't as visible or as dramatic as trees in a rain forest, their disappearance isn't even noticed. If grasses were 40 feet high like a forest and there was only 1% left, and people saw wide open spaces they would become very alarmed. But when fescue grassland is replaced with stubble virtually the same height, no one really notices. Only 1 to 5 % of the Northern Fescue Grassland and 10 to 12% of the Parklands, which are only found in the Prairies, are left. And the Prairies continue to be transformed at a rate of 1/2 of 1% a year as they are paved over, cultivated or overgrazed."

Grain, Prairie & Biodiversity

Let's start by thinking about a field of wheat. There really is only one thing in a field of wheat, and that is wheat. This is called a **monoculture**. Mono means one. Because a field of wheat supports only one thing, and prairie an entire ecosystem of many different plants and animals, the prairie is said to have **biodiversity.** That is, it supports a lot of different kinds of life. Is there some way that wheat and grassland relate? In fact it so happens we may not be able to have wheat without biodiversity. Why? As you are probably aware, all agricultural plants came from wild species. As many crops have become inbred to produce higher yields, these strains have become more susceptible to disease. The only way to provide disease resistance is by crossbreeding to resistant strains **or** wild varieties if they can be found. The problem is that many wild stocks do not exist anymore and many wild wheat types have disappeared from their original ranges. In Greece for example, 95% of the original wheat species are extinct.

Medicine Plants

Biodiversity is also essential for the medical field. In developed countries about 40% of prescription drugs are derived from or have been produced using natural sources. In developing countries 80% of the people rely on traditional medicine which is generally based on wild plants and animals. Compounds extracted from plants, microbes, and animals were involved in developing all of the 20 best-selling drugs in the United States, drugs whose combined sales approached $6 billion in 1988.

As you can see, biodiversity is not just a matter of protecting a few pretty pieces of land. This is one of the reasons that the Ann & Sandy Cross Conservation Area is attempting to reintroduce native prairie and preserve existing segments. And most importantly, why we want you and your class to enjoy learning about it on your trip here.

Welcome to the Ann & Sandy Cross Conservation Area!

3.0 PRE-VISIT ACTIVITIES

3.1 GET INVOLVED, "TAKE ACTION"

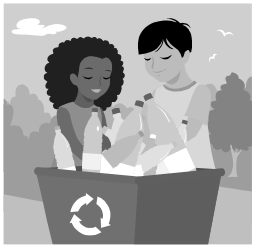
New at Cross Conservation Area! The Ann & Sandy Cross Conservation Area is encouraging youth to take actions that will help protect wildlife and conserve their natural habitats both at the Cross Conservation Area and in their own community.

We wish all students to share their experiences and photos on our website, which could include your visit to the Cross Conservation Area or your own initiatives, from litter-free lunches, building bird boxes or replanting school yards. Let us know any ideas you have for an action plan and we would be happy to promote your successes on our website and provide you with available resources to help make your class' vision a success.

We encourage you to ask your students to envision a way that they can **"Take Action for Wildlife"**.

For more information or ideas for initiatives please visit our Take Action Page!

TELL US ABOUT IT



You made a difference! Let us know what actions you have taken to reduce your Eco Footprint. Send us a paragraph and a couple of pictures and your actions could be highlighted on our website to inspire others!

Send your submissions by email to: info@crossconservation.org.
Note: any pictures sent in should have media consent.

3.2 "PICK A PROJECT" DONATION

Objective

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

Procedure

1)Describe the Cross Conservation Area Donation and its ongoing conservation effort.

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 Donation Program and ask them to Pick a Project they think they would like to financially support.

Sample projects could be: purchasing a class set of magnifying glasses, contributing funds to an ecological study on the area, or purchasing native grass seed for reclamation. Other specific projects will be discussed at the in-service prior to your visit.

3)Some fund-raising options could be:

- Have each child make a small donation ($1) to a collection
- Hold a bake sale or car wash
- Conduct a BOTTLE DRIVE, recycle and contribute to conservation at the same time!
- Sell artwork, poetry, cards made from experiences at the Cross Conservation Area.

4)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 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 here).

5)This activity is not meant solely as a fund-raiser, but as a means to encourage students to become actively involved in a conservation effort and to enhance the area for future visits.

6)Have the students prepared to make a presentation of their donation to 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. If you make a donation after your visit, we will send you the certificate to your class.

3.3 GOOD BUDDIES

Objective

Students will demonstrate an understanding of the web of life concept and the interaction of all species including humans. This also introduces some species found in the foothills transition zone that they will be visiting.

Procedure

1)Make up several decks of cards on thin cardboard (one deck for every five or six students). See next page for cards.

2)Give each student a card excluding the no buddy card (seal), and have each student find his or her "buddy" from a list of all cards on the blackboard. Have the students holding compatible cards pair up.

3)The "buddies" should research into why they are buddies, answering the following questions: Why do we live together? What advantages do we provide one another? What would happen if one of us wasn't here?

4)The pairs give presentations to the class telling about their relationship.

5)Divide the class into groups of five or six students, and give each group a deck of cards, and give them instructions as to how to play the game.

6)Deal out all cards. Play begins to the left of the dealer and continues in clockwise direction. Each player draws one card from the player to his or her left and tries to

match each card with its partner to make a pair to lay down. The game is over when one player has no cards left. The player with the most correct pairs is the winner.

7)Conclude the activity with a discussion of mutualism, predation/parasitism, commensalism, and ammensalism and decide to which classification the pair belongs. Stress that these are a few examples of interdependence of all elements in ecological systems.

8)An extension of this discussion could involve a discussion about the students relationships to organisms and other people (e.g., friends are mutualistic) as well as the human role in the Web of Life. Questions such as "Who depends on you?" could stimulate discussion. Have students brainstorm about what services (essential and non essential) they need to survive (e.g., doctors, farmers, teachers).

3.4 EVERYONE NEEDS A HOME

Objective

The purpose of this activity is to introduce young students to the idea of animal homes and communities by relating them to their own lives.

Procedure

1)Have students describe in writing or draw a picture of where they live, including a cooking place, a sleeping place, a place where they get water and their neighborhood.

2)Following the completion of their pictures, ask the students about what they described or drew. Ask them about the things they need to live. Explain the concepts of basic survival needs (i.e., food, water, shelter, space).

3)Ask the students how their needs are met. Food from farmers, stores, restaurants. Water from rivers or wells. Mention the inherent relationship between themselves and other humans (water supply workers), animals (habitat loss for development) and plants (fruits, vegetables and grains).

4)Explain the concept of communities to them. Describe different human communities for example (industrial, rural, urban).

5)Have students choose an Albertan animal, and draw a picture of the animal they chose including its home, the place where the animal gets its food and water, and the animal's neighborhood.

6)Have the students talk about their animal and its community and ask these questions: What other animals or plants might be in this community? How would these animals or plants help or hinder your animal's chance of survival? What would happen if a

component of the animal's habitat was taken away? Could that animal live in a park in the City of Calgary?

3.5 LIFE CONNECTION

Objective

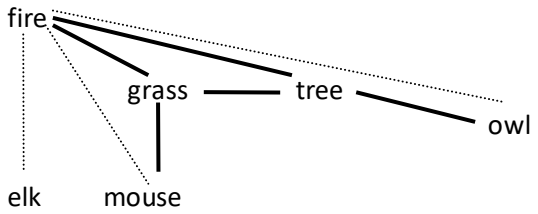
This short activity is intended to introduce students to the concept of a web of life or food chain.

Procedure

1)Have students brainstorm to develop a list of living things or processes which occur in Alberta (e.g., fire, grass, trees, hawks, mice, and elk) and write this anywhere on the chalkboard.

2)Ask students to draw a line connecting two words on the board which interrelate, and be prepared to give a reason and defend their choice. For example, grass depends on fire to prevent the encroachment of trees; a further connection might be mice depend on fire to keep the grass healthy for them to eat.

3)For those connections which have a middle connection (e.g., mice-fire) the line could be a dotted one. For more important and direct connections, a thicker line could be used. For example



4)An extension of this activity could be to make a display of your "Life Connection".

5)For older students, this game could follow the format of the television show "Love Connection". Group students in fours and assign each student an animal or process as described above. Have one student try to find their perfect match from the other three by asking questions related to the survival of the animal.
Questions should not include "What are you?" but could be "Where do you live?" or "What do you do?" When all groups have completed their match, have each group tell the class what animal they are and why they chose their "match", then have them decide whether the match is a good one. An example of groupings could be:

Deer mouse chooses from rosebush, hawk, or fescue grass.
Coyote chooses from moose, ground squirrel, and bear.

3.6 VISUAL VOCABULARY

Objective

This activity will familiarize students with the concepts of interrelationships, communities, and ecological processes and definitions.

Procedure

1)Write ecological terms and processes on the index cards.

2)Divide the class into groups of four. Each group draws one word from the container, looks up the definition using the handout, and decides how to pantomime (or draw in the case of Pictionary) that word. Give groups about five minutes to prepare.

3)Groups take turns miming their word to the class in under one minute.

4)The rest of the class may guess the word being mimed by referring to a handout of the glossary.

5)Groups get one point for having mimed their word successfully and one point for correctly guessing a word.

4.0 ON-SITE VISIT

4.1 A TYPICAL ON-SITE VISIT

9:30 a.m. Your group arrives by bus at the Cross Conservation Area.

- **Please drop off and pick up in the lower parking lot and walk up to Belvedere House.**
- Organize group in orientation area.
- At the beginning of your program please tell the ASCCA volunteer when you need to leave.

9:45 a.m. Orientation talk given by ASCCA staff or volunteer.
Orientation will:

- Welcome students.
- Introduce them to the Cross Conservation Area.
- Explain area rules and expected behavior.
- Introduce them to the program.
- Accept a Pick a Project donation (if applicable).

10:00 a.m. Snack and bathroom break inside. Teachers divide students into groups.

10:15 a.m. Group 1 sets off on hike.
Group 2 conducts Web of Life activity. (Group 1 does activity at the end of the day)

12:00 p.m. Lunch break at designated shelter.

12:30 p.m. Classes resume investigation.

1:50 p.m. Classes return to building for washroom break and wrap-up talk by ASCCA staff or volunteer.

2:00 p.m. Group heads back to school.

4.2 EDUCATION STATIONS

Please see the attached pages which are reduced versions of the education stations posted on the Chevron Aspen Trail, used by the Web of Life Program. Read them prior to your visit.

4.3 ON-SITE ACTIVITY DESCRIPTIONS

OVERALL DIRECTIONS

When you get to each sign, ask the students questions about the organism featured on the sign. Then read the text to the students or have one of them read it (make sure it is loud enough that they can all hear). Next start the activities. Plan on spending approximately 10-15 minutes at each stop. Teachers and parents are responsible for discipline and gathering the students to listen at each stop.

While Group 1 sets off on hike, Group 2 conducts Web of Life activity.

ACTIVITY #1 – WEB OF LIFE

LEADER: ASCCA Volunteer
MATERIALS NEEDED: Ball of string, plant and animal cards
DIRECTIONS: 1. Give each student a plant or animal card placed behind them on their back. Each student then asks a question a yes/no answer of another student to try to determine what plant or animal card they have. E.g., Do I fly? Am I a meateater? They can move around the group asking questions until they know 'who they are' then flip the card to their front. Continue until all students have guessed their card. **If short on time, skip the Who Am I game and go right to the Web of Life.** 2. In a circle, hold onto one end of the ball of string. Choose a student with an animal or plant in the circle whom you would be connected to because you share the same habitat, are part of its food chain, or are important to that plant or animal and toss the ball of string to them. Make sure it is pulled taut. This student now looks for an animal or plant that they are connected to then tosses the ball to them. Continue until all students are connected to the ball of string. They are now connected in a web of life. 3. Choose one plant or animal in the group and discuss what would happen if this entire species was eliminated from the world. They are no longer connected to the Web of Life so let go of their string. Anyone connected to this plant or animal will feel the web go slack so they can also let go. Eventually, the whole web will collapse. Discuss how this relates to species extinction in nature and why every species is important. 4. If you have extra time, see optional games below.

STOP # 1 -ASPEN SIGN

ACTIVITY #2- MEET A TREE (move down trail to do)

LEADER: ASCCA Volunteer
MATERIALS NEEDED: Blindfolds (optional)
DIRECTIONS: Get the students into pairs. Have one of the students blindfold their partner. The sighted person takes the blind one along the path and introduces him to an aspen tree. Get the blindfolded person meets the tree by touching it all over, smelling, listening to it and so on. When finished, have the sighted one lead the blind person back to the where they started and remove blindfold. The blind person now has to find their special tree. Use a volunteer from the

class to demonstrate to the class. Make sure the students never let go of their blindfolded partner while they are walking. Switch around. Talk to the students about the different senses animals use to find trees. Why do animals need to find certain trees?

BACKGROUND:
Aspen trees play a vital roll in the forest ecosystem. They provide shade for plants and animals, which in turn keeps more moisture in the forest. Aspens are a good source for food, providing buds in the winter for ungulates, and leaves in the spring/summer for insects and other animals. See Trail signs "Welcome to the Aspen Forest"

STOP # 2- WILD ROSE SIGN

ACTIVITY #1- FIND A ROSE

LEADER: ASCCA Volunteer

MATERIALS NEEDED: Rose bush along trail

DIRECTIONS:
Ask the students what they think a rose bush looks like. Why does the rose plant have prickles? Have them look for a rose bush. Discuss how it changes throughout the year and how people change throughout the year too. Also look for signs that the rose is used by animals. Discuss ways they are used by animals including people.

BACKGROUND:
Three rose hips have the same amount of vitamin C as one orange and were used to cure scurvy in settlers after the natives demonstrated these properties to them. However, caution must be used when eating rosehips as the seeds are covered in bristly hairs that can cause "itchy bum syndrome". Rosehips are used frequently in herbal teas. The Wild Rose was named Alberta's flower in 1925 by the school children of Alberta. The prickles on the plant prevent animals from eating the branches.
See Trail signs: "Alberta's Flower"

ACTIVITY #2- ROSES HAVE HIPS!

LEADER: ASCCA Volunteer

MATERIALS NEEDED: Containers of seeds

DIRECTIONS:
Look for a rose hip on a nearby plant. Pass around containers of rosehips and seeds for all to see. Discuss what a rosehip is. Explain to the students that plants cannot move and the importance of seed dispersal for successful second generations. Break the students into group and give them a seed from another plant. Have them answer the three questions: Why would the plant make fruit for other to take away? What method(s) could the plant use to disperse its seeds? If time get the students to present a skit about the plants means of dispersal to the class. Review that wind, water, fire, and animals (through hitchhiking and eating) are means of seed dispersal.

STOP # 3 BEAR SIGN

ACTIVITY # 1- BEARS NEED TREES

LEADER: ASCCA Volunteer
MATERIALS NEEDED: None
DIRECTIONS: Break off into small groups and brainstorm how bears use the forest and trees and what they give back in return. In one large group share answers. Discuss the likelihood of seeing a bear here. Ask how they feel about bears and discuss.
BACKGROUND: A black bear needs 10-15 square miles of space as territory. The Cross Conservation Area is only 3 square miles. Bears can smell food from up to 100 yards away. They are "lazy" and prefer easy meals to hunting; about 90 % of their diet is vegetarian. Bears are not true hibernators. They go into "torpor" which is going into a deep sleep without altering their metabolism. Their bodies use up the energy they stored as fat in the summer. They don't drink water for the whole winter, but can recycle their own urine. Females give birth to two or three cubs and nurse them while they are sleeping. See Trail Sign "A Welcome Refuge".

OPTIONAL ACTIVITY #2- BIG, BIG BEARS

LEADER: ASCCA Volunteer
MATERIALS NEEDED: None
DIRECTIONS: Discuss how much food a large animal like a bear needs to survive and where the food comes from. Figure out how many students it would take to equal weight of bear (250 kg). Get them into groups of however many it would take (e.g., 5-6) and have them make themselves into a bear. Cheer for each other's creations, and then try walking like a bear for awhile. Bears are imperfect walkers and waddle as they walk.

STOP # 4- FOX SIGN

ACTIVITY #1 - LIVING ON THE EDGE

LEADER: ASCCA Volunteer
MATERIALS NEEDED: None
DIRECTIONS: As a large group discuss why a fox would choose to live on the edge of fields and forests.
BACKGROUND: Foxes are omnivores. They must be versatile and use all of their well developed senses to survive. Some features that help the fox be successful nocturnal hunters are: big ears, wet nose and good sense of smell, dark fur coat, small bodies, and quick runners. See Trail Sign "Fox Territory"

OPTIONAL ACTIVITY #2 - FOX FROLIC (a version of Red Light, Green Light)

LEADER: ASCCA Volunteer
MATERIALS NEEDED: None
DIRECTIONS: 1. Line students up facing you, and ask them what a fox eats, (e.g., mice or ground squirrels). The students are foxes and you are their food. 2. Ask what skills a fox needs to hunt (e.g., quiet, stealth, good smell and hearing). They have to hunt you while you are busy grazing on grass. You are turned away from them when you are eating. 3. When you hear something, you turn to face them and point to everyone you see moving. The players that are seen moving are sent back to the starting line and the game continues until one of the foxes reaches you and you are eaten.

STOP # 5 WHITE TAIL DEER SIGN

Note- keep this stop brief as it is almost lunch time! In no time, ask students to think about the signs that animals leave behind and discuss after lunch between Owl and Cougar signs.

ACTIVITY # 1 - DEER SIGNS

LEADER: ASCCA Volunteer
MATERIALS NEEDED: various evidences of deer in forest or in backpack (e.g., antler velvet, elk hair, deer scat)
DIRECTIONS: Discuss deer evidence that can be seen in the forest, pass around props, on route to the lunch stop look for signs of browsing.
BACKGROUND: Deer are herbivores and eat mostly plant matter. They are referred to as “primary consumers”. They help with soil formation by breaking up deadfall with their hooves well they walk and fertilizing the soil with their scat. See Trail Sign: “White Flag for Danger”

LUNCH GAMES/ACTIVITIES-Some ideas

1) Tell the story of the old barn.
2) Camouflage!

STOP # 6 - GREAT HORNED OWL SIGN

ACTIVITY #1- WHOO NEEDS A DEAD TREE

LEADER: ASCCA Volunteer
MATERIALS NEEDED: Dead trees west of sign
DIRECTIONS: Explore the dead trees west of the sign looking for evidence that animals and birds use them.
BACKGROUND: Owls cannot actually move their eyes. To make up for this, owls can move their head 270 degrees in each direction, made possible by a highly developed vascular system and unique bone structure. The Great Horned Owl has a reputation as being the fiercest Alberta owl. It is nocturnal. See Trail Sign "Whooo's There?

ACTIVITY #2 (Optional)

LEADER: ASCCA Volunteer
MATERIALS NEEDED: Biofacts such as owl and hawk feathers, owl pellets, Audubon Owl to demo owl call
DIRECTIONS: Demonstrate how owl feathers are not zipped at the ends compared to a hawk, allowing them to fly very quietly. This is important for an animal that hunts at night. Use owl pellets to discuss what owls eat. This could lead into a game of Frozen Food Chain Tag or Nature's Nutritionist.

ACTIVITY #3- FOOD CHAIN GAMES (play either here or at top of hill)

LEADER: ASCCA Volunteers
MATERIALS NEEDED: Honeycombs for Nature's Nutritionist
DIRECTIONS FOR FROZEN FOOD CHAIN TAG: Like frozen tag, mice run around and owls chase them. When caught the mice freeze and turn into grass, stick arms out and can only be unfrozen by another mouse running underneath their arms. Start with a large habitat and reduce size. To stress the concept of a food pyramid play a second round where all the students that were owls become mice and all the mice are owls. Discuss with the students why this version doesn't work.
DIRECTIONS FOR HAWKS & GROUND SQUIRRELS (or Owl and Mouse): 1. To avoid being seen by hawks, ground squirrels camouflage with the ground. But it is their movement that gives them away. That is, they move when they think that the hawk is not looking at them. 2. Students (Ground Squirrels) stand in a circle with volunteer leader (Hawk) standing in the middle. 3. If the hawk is facing the ground squirrels they need to be very still. But once it turns it's back they can move (wiggle, dance, make faces) so they can get to safety or find food. 4. If a ground squirrel is caught moving by the hawk pointing at them, then they have been eaten and must sit down and be quiet. The last few ground squirrels standing have survived the season without being eaten through their superior survival skills!

ACTIVITY #4- SYMBIOTIC RELATIONSHIPS- Stop at deer antlers

LEADER: ASCCA Volunteer
MATERIALS NEEDED: Deer antlers
DIRECTIONS: *Background*: Symbiosis is a close ecological relationship between the individuals of two (or more) different species. Sometimes a symbiotic relationship benefits both species, sometimes one species benefits at the other's expense, and in other cases neither species benefits. 1. In a large group, discuss different ways deer use an Aspen tree and what they give back in return. For example, deer rub up against trees to help slough off the antler velvet. The deer gives back to the tree by adding nutrients into the soil through its scat. 2. Allow the kids to go find another example of a symbiotic relationship in their groups.

STOP # 7- COUGAR SIGN

ACTIVITY #1 - COUGAR CALISTHENICS

LEADER: ASCCA Volunteer
MATERIALS NEEDED: Measuring tapes, cougar skull (optional)
DIRECTIONS: Do not tell them how far a cougar can jump, yet. Get them to line up and take turns jumping. Try from standing and squatting positions. Tell them their distance so they can mark it in their booklets. Mark the farthest jump in the class and tell them the distance to write in their booklets. Now walk past their farthest to where a cougar could jump- 20 feet or 6 meters! Discuss why they must be able to jump like this. Cougar Skull: Use cougar skull to show the teeth of the cougar. The sharp teeth (carnassials) on the sides of the jaw are for shearing meat and act like steak knives. More interestingly, they have several small incisors at the front of their jaw used to pluck the hairs off of their prey before they eat the hide. As a cougar will often drag away and cache their prey, hair will be found at the kill site with absence bones etc. Show that the eye sockets face forward. This is very important for a predator as it provides depth perception, thus increasing the likely hood that a pounce is successful.
BACKGROUND: The cougar is considered the top predator on the ASCCA. Although tracks and scat are frequently found, sightings are rare. Cougars usually hunt at dawn and dusk, but can be seen at anytime. See Trail Sign “A Rare Sight”.

STOP # 8- TOP OF HILL (no pages in study guide)

ACTIVITY #1- OH DEER!

ACTIVITY DESCRIPTION: This activity involves playing "OH Deer", taken from Project WILD. Students learn the components of habitat by playing out scenarios as deer and habitat.	
TIME REQ’D: 20 minutes	**LEADER:** ASCCA Volunteer
MATERIALS NEEDED: Tracking sheets and soft nerf-like balls, pencils and activity sheets.	

BACKGROUND:

All animals need habitat to survive. Habitat is the specific arrangement of food, water, shelter, and space that an organism requires. Any individual or population needs enough of each component to survive. Many Foothills Parkland species rely on the Aspen forest as part of their habitat, especially for food and shelter.

Populations fluctuate according to the availability of food, other necessities, and disease in an ecosystem. Wildlife officers collect data and monitor populations. The data they collect helps them make decisions when populations change and may be at risk. They must make difficult decisions trying to maintain the balance between human demand, traditional practices, and conservation of the species and the ecosystem for future generations.

DIRECTIONS:

1. Ask the students to name some of the things that all living things need to survive. Summarize the list that they have made by listing the four basic areas: food, water, shelter, and space.
2. Explain that all the things that deer needs to survive, food, water, shelter and space and that this makes up habitat.
3. Have the students count off in fours. The ones should form one line and the twos, threes and fours should form another line facing the ones. These lines should be about 5-10 meters apart. The ones are the deer and the twos, threes and fours are habitat (food, water, shelter and space). (Have the teacher, or someone else assist by recording the numbers of deer and habitat in each round. These sheets may be used later, back in school, in a graphing exercise.)
4. Explain that you will play a few rounds. In each round, the number ones (deer) need to decide whether they need food, water, shelter or space. The number twos, threes and fours (habitat) also must decide what habitat component they are going to be (food, water, shelter, or space) for that round.
5. Show the symbols for each habitat component to the students. Food - hands over stomach. Water - hands over mouths. Shelter - hands over head. Space -arms stretched out and open.
6. Emphasize that students cannot change their symbol once the round has begun. They will be able to change their symbol only at the beginning of each round.
7. Have them stand 5-10 meters apart facing each other.
8. Get them to turn away from each other and make their symbol for that round. When you say, "Go!" they turn to face each other.
9. Deer find the habitat that matches their symbol and take them back to their side. This demonstrates to students that when an animal is successful and is able to meet its needs, then it can reproduce. If an animal does not find a habitat to match its needs, it dies and becomes part of the habitat. Habitat waits until a deer takes them and if they are not tagged in that round, they remain habitat

10. You can introduce a predator, standing between the two groups at the side with a sponge ball. If the predator hits a deer with the ball the deer returns to habitat.
11. After you have played several rounds, gather the students for a discussion. Discussion questions might include:

- Did anyone find that they were animals more than once?
- Did the number of animals go up after the first round of the game?
- What happened when there were more animals than habitat?
- What things could make habitat endangered?
- What can we do to make sure that habitat is here in the future for deer?

STOP # 9- WHERE DO YOU FIT IN THE PICTURE?

Note -this is meant to be a reflective stop and conclude the day or this stop may be shortened and the conclusion finished in Belvedere House after washroom breaks.

LEADER: ASCCA Volunteer

MATERIALS NEEDED: Web of Life Boards

DIRECTIONS:

Connect the animals and plants in the web created during the day into the web picture.

Read the following quotation:
Today we've talked about the web of life. This web is about how all birds, mammals, plants, insects, and spiders, live together and connect together like the strands of the spider's web. We looked at the rose, coyote, black bear, owl, cougar, deer, and of course, spider. Do a lot of animals live here? There are a lot more than you might think. You'd have to come back many times to see them all. There are literally 100's of different kinds.

Ask them to share with you the best part about their day and what they learned, etc. Share with them what you learned from them. Tell them a story about your experiences, or read a story from a book. Sketch the view. Just relax and take it easy for a few minutes. Return to Belvedere House via the gravel path.

BACKGROUND:
See Trail Sign "Where Do You Fit in the Picture?"

Forests, Grasslands and Climate Change

Climate change happens when certain gases, like carbon dioxide (CO_2), build up in the atmosphere and cause the Earth's temperature to rise. This can lead to unusual weather patterns, like stronger storms, floods, heatwaves, and long periods of drought.

Plants can help slow down climate change by taking in CO_2 from the air through a process called photosynthesis, which helps reduce the amount of these gases in the atmosphere.

An acre of trees can absorb about five tons CO_2 each year An acre of grassland can absorb about two tons of CO_2 each year.

The Ann & Sandy Cross Conservation Area has 4800 acres. About half of the area is grassland, and half is forest.

Question 1 – how many acres are grassland and how many are forest?

Answer – about 2400 acres of grassland and 2400 acres of forest

Question 2 – how many tons of CO_2 are captured by the ASCCA's grasslands per year?

Answer – 2400 x 2 = about 4800 tons of CO_2 each year

Question 3 – how many tons of CO_2 are captured by the ASCCA's forests per year?

Answer – 2400 x 5 = about 12,000 tons of CO_2 each year

Question 4 – how much CO_2 is captured by the ASCCA in total?

Answer – 12,000 + 4800 = 16,800 tons of CO_2 each year

Calgary emits 16 million tons of CO_2 each year. Globally, about 37 billion tons of CO_2 are released each year.

The earth's plants help to absorb half of the world's CO_2.

The rest stays in the atmosphere and contributes to climate change.

Protecting forests and grasslands and reducing emissions can help to solve this problem.

5.0 POST VISIT ACTIVITIES

5.1 FIELD STUDY GUIDE COMPLETION

Objective

Students will recall their field study and the concepts they learned. They will complete their guides and be encouraged to take them home to complete the explorer sections on their own.

Procedure

1)Complete on-site activities in the field study guide. Use the questions to tie into other discussions such as, "What did they like the most, least? What were their impressions before and after the study? What did they learn?"

2)Complete the post visit activities in the guides (e.g., the ones relating to biodiversity).

3)Encourage them to take the guides home to use/complete on their own.

4)Refer students to the weight of a black bear. Recall how many of them equaled one bear (500 lb or 250 kg). Ask children to work out what percentage of a bear's weight they weigh. Most students will be <1/5 the weight of a bear, ask them what size their home range would be if they were a 100 lb bear. A bear's home range is 10-15 square miles. (The Ann & Sandy Cross Conservation Area is 3 square miles). Explain that a human's home range is much larger than our homes because all our food is produced by someone else, and if we had to go out and find our own food we would need much more space, too.

5.2 STUDENTS CAN KEY!

Objective

The students will understand how to identify things by using a dichotomous key.

Procedure

1)Explain the process of elimination in classifying any organism, and let the students look at how a key works.

2)As a class exercise, have the students make a key of the people in their class on the chalkboard. You may use identifiers such as clothing or hair color as long as the children are advised that these identifiers have no bearing on other characteristics of the individual.

3)Have students work individually or in small groups. Give each group several pictures of plants or animals and assign them to develop a key starting with the group and

branching down to individual animals, pasting or drawing each animal that corresponds to that branch.

Allow children to make up their own distinctions (e.g., flies, walks) related to what is most important to them.

4)Have the groups share their keys with the class, and discuss the different distinctions each group used. Have children consider how another culture or isolated region may use different distinctions. If you lived in the North Pole you wouldn't need to separate lizards from bears, if you only ate plants, perhaps you wouldn't classify animals beyond dangerous and non dangerous.

5.3 DREAM HOME OR NIGHTMARE?

Objective

Students will use literary skills to discover the place of humans in the web of life, and that not all our choices are appropriate.

Procedure

1)Have students choose words from each of the three columns below to describe the kind of place in which they would like to live. They may choose as many of the words as they like but only one location. Add words as you see fit.

2)Have students write a paragraph or story that describes the place they would like to live.

3)Ask the students to describe ways their dream home and lifestyle would impact on the environment. Answer these questions specifically: How would they impact on the nearby water, soil, animals, plants, and air.

5.4 STUDENT STORY TELLING

Objective

Students will use literary skills to demonstrate what they have learned about communities.

Procedure

1)Form a circle with your class and have them create a story about their field study by letting each person take a turn at adding one or two sentences to the story. You may want to tape this story to play it back at the end of the year.

or

2)Write out a short nature story about interrelationships with some nouns and verbs left out. Give a copy to each student and ask them to fill in the blanks using the information they learned on their field study.

or

3)Another variation of this activity is the party game in which people list nouns, adjectives and verbs in the order they are missing, and then use these words to fill in the blanks and create an unusual story.

5.5 EARTH GAME

Objective

Students will theorize what would happen to everything if one element of the web is taken away.

Procedure

1)Draw a large circle about two meters in diameter on some paper. Colour or label it "Earth".

2)Have students list elements they think are needed for life on earth and print them on cardboard discs.

3)Let students take turns tossing their circles into the "earth". When everyone has had a turn, collect the circles that fell outside the earth. Ask the students to tell what would happen to our earth if this element were suddenly removed.

4)Discuss the additive or subtractive effects of losing several different elements at once.

5.6 PREDICTION / PREDACTION

Objective

Students will use inference and predictive reasoning in developing a vision for the natural communities around them, and realize that they can play a part in preserving their natural areas.

Procedure

1)Recall the location, wildlife, habitat, and communities at the Ann & Sandy Cross Conservation Area.

2)Have groups of students draw or describe the Ann & Sandy Cross Conservation Area in 1850, 1900, 1950 and 1993. Have each group present their description to the class.

3)Show your students a map of the Calgary area and point out the Cross Conservation Area's proximity to the city. If possible, a series of historical maps from your library could illustrate the growth of the city and assist the students in their predictions.

4)Ask students to think of things which may occur to change the area (e.g., Calgary encroachment will eliminate wildlife access to the area, and increase the introduction of non-native species). If students are able to understand, explain the concept of fragmentation and the associated degeneration of small natural areas by edge effects. This can be shown using simple mathematics, the smaller the park is, the greater the proportion of "edge" area to "inside" area, and the greater the opportunity for invasion of the area by aggressive non-native plant species from outside.

5)Have students draw or describe what they think it will look like in 20 years or even 200 years.

6)Ask students if they can see any threats to the area that they could prevent by becoming involved. Involvement could include volunteering for the area, researching and writing a letter to the editor of a newspaper to educate the public, writing a letter to an M.L.A. or M.P., or becoming more involved with the Nature Conservancy of Canada or other conservation organizations.

7)An extension of this activity is "Improving Wildlife Habitat in the Community" found on page 204 of Project Wild. This activity allows students to make decisions in planning their own hypothetical habitat improvement project.

6.0 OTHER RESOURCES

6.1 GLOSSARY

ABIOTIC: A non-living factor in an environment (i.e. light, water, temperature)

AESTIVATION: Dormancy of an animal, usually to escape heat.

AMMENSALISM: A relationship between two species in which one is affected negatively and the other is unaffected either positively or negatively.

BIOMASS: Mass of living organisms.

BIOME: An ecosystem of a large geographic area in which plants are of one formation and for which climate sets the limits.

BIOSPHERE: The part of the earth's crust, water and atmosphere in which living organisms can survive.

BIOTIC: A factor or process which is biological in nature or results from a living organism.

BROADLEAF: A term for a plant with wide bladed leaves generally refers to flowering plants in contrast to conifers or grasses.

BROOD: The offspring of a bird or mammal.

BROWSE: Brushy plants utilized by deer, elk, or cattle as feed, typically feeding on the twigs, leaves, and bark.

CARNIVORE: A meat eater.

CARRION: The bodies of dead animals usually in a state of decay.

CLONE: Asexually produced offspring of a common ancestor (i.e. Aspen).

COMMENSALISM: A relationship between two species in which one benefits without affecting the other positively or negatively.

COMMUNITY: A group of different organisms which all rely on the same physical habitat to meet their needs.

COMPETITION: An interaction between two species in which both require the same limited resource. Interspecific competition occurs between two different species. Intraspecific competition occurs between two individuals of the same species.

CONIFER:	A plant that bears its seed in cones; usually refers to needleleaf trees; some conifers do not have needles (Yew & Larch in winter).
CONSERVATION:	The protection of natural resources.
CONSUMER:	Herbivores and carnivores that consume energy and transform it into biomass. A Primary Consumer is an organism that eats plants (i.e. squirrel). A Secondary Consumer is an organism that eats animals that eat plants (i.e. weasel). A Tertiary Consumer is an organism that eats animals which eats secondary consumers (i.e. hawk).
CREPUSCULAR:	Active at dawn and dusk.
DECIDUOUS:	Falling off at maturity; usually refers to trees which drop their leaves each year. May also refer to antlers which are lost.
DECOMPOSER:	Organisms that convert dead organic material into inorganic materials.
DIURNAL:	Active during the day.
ECOSYSTEM:	All living things and their environment in an area linked together by energy and nutrient flow.
FOOD CHAIN:	The representation of the flow of energy through consumer levels.
FOOD WEB:	An interlocking pattern of food chains.
GRASSLAND:	A vegetative community in which grasses are the most conspicuous members.
GUILD:	A set of coexisting species which share a common resource.
HABITAT:	The arrangement of food, water, shelter and space suitable to an animal's needs.
HERBIVORE:	A plant eater.
HIBERNATION:	A dormancy stage when an animal reduces its metabolism.
INSECTIVORE:	An insect eater.
INTERACTION:	The relationship of one organism to another.
LIFE CYCLE:	The continuous sequence of changes undergone by an organism in changing from one form to another in its lifetime.

MUTUALISM:	A relationship between two species in which both benefit and both incur costs.
NICHE:	The role, function or place of an organism.
NOCTURNAL:	Active at night.
OMNIVORE:	An animal which eats both plants and animals.
PARASITISM:	A relationship between two species in which one benefits (the parasite) and one incurs a cost (the host).
PREDATOR:	An animal that kills and eats other animals.
PREY:	Animals that are killed and eaten by other animals.
PRIMARY PRODUCER	Green plants which are able to make their own food from simple organic substances.
SCAVENGER:	An organism that feeds on refuse or carrion. (Coyote & Beetle).
SYMPATRIC:	A group of different species which live in the same region.
WEB OF LIFE:	The concept that every living thing interrelates with others so if we alter one organism we alter all others. (See food web).
WILDLIFE:	Animals which are not tamed.