

KEEPERS OF THE LAND

Conservation Discovery School Program



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1.0 OVERVIEW

1.1 PROGRAM SUMMARY

In Keepers of the Land we challenge grade 4 students to experience land as a natural source. Through nature observations and activities students discover the ways people used land in the past, see how we use it today, and imagine the future of land use and its conservation. Students will be introduced to the concept of 'ecological footprint' and how it has changed over time. Students will be challenged to consider ways to reduce their ecological footprint.

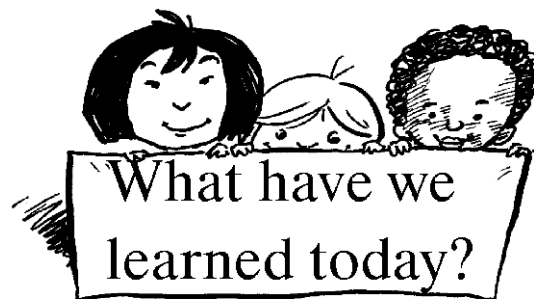
This is a daylong, 3.0 km hike, led by an ASCCA Guide/staff. The program also includes pre and post-visit activities, an onsite teacher in-service, and an ASCCA orientation.

1.2 CONCEPTS AND OBJECTIVES

Through nature observations and activities students will discover the ways people used the land in the past, see how we use it today, and imagine the future of land use conservation.

After participating in this program, students will be able to:

- 1) Identify First Nation's people, farmers, ranchers, and conservationists as groups that have used the Cross Conservation Area and the Foothills.
- 2) Recognize how past and current lifestyles have impacted the environment.
- 3) Recognize that the land has been impacted as a result of changing resource needs and priorities.
- 4) Understand the importance and significance of habitat, ecosystems, and biodiversity at the CCA.
- 5) Understand the term ecological footprint and how their lifestyle affects their footprint.
- 6) Explain the significance of conservation and why it is important.
- 7) Understand the significance of wildlife corridors.
- 8) Think about their lifestyle as having a major impact on the environment and critically think about the decisions that they make everyday.



1.3 CURRICULUM CONNECTIONS – GRADE 4

Social Studies

Outcome 4.1: Alberta: A Sense of the Land

Outcome 4.2: The Stories, Histories and People of Alberta

Outcome 4.3: Alberta: Celebrations and Challenges

Science

Topic A: Waste and Our World

Topic C: Building Devices and Vehicles that Move

Topic E: Plant Growth and Changes

Physical Education

Outdoor Pursuits

Games

Health

Theme 1: Self - Awareness and Acceptance

Theme 4: Body Knowledge and Care

Art

Reflection

Expression

Drama

Music

Listening

Moving

Math

Patterns and Relations (Patterns)

Shape and Space (Measurement)

Shape and Space (Transformations)

Statistics and Probability (Chance and Uncertainty)

Language Arts

1.2 Clarify and Extend

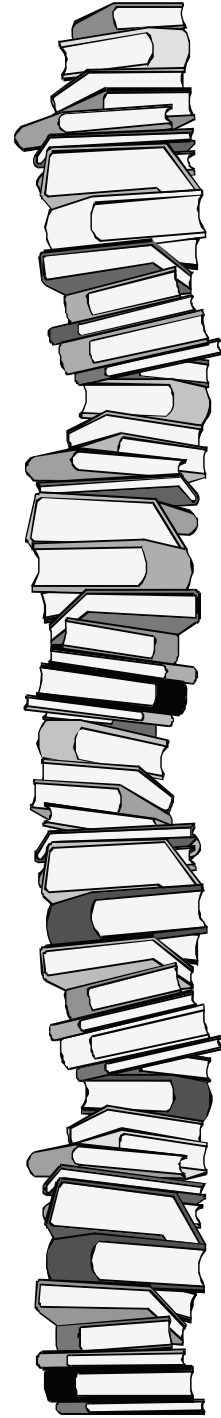
2.1 Use Strategies and Cues

3.1 Plan and Focus

3.2 Select and Process

4.3 Present and Share

5.2 Work within a group



2.0 BACKGROUND

2.1 A SHORT HISTORY OF HUMAN LAND USE IN SOUTHERN ALBERTA

The First Nations people were the first humans to use this area. They relied heavily on the environment, especially the bison, for survival. When the fur traders arrived the lifestyle of the First Nations people began to change. The fur traders introduced the First Nations people to European goods such as glass beads, guns, alcohol, and packaged food, which they later incorporated into their daily life. At the same time, the fur traders began to exploit the bison, ultimately reducing the number of bison, until they were no longer in the area. One of the main reasons for the loss of so many bison was the introduction of firearms. Firearms enabled people to kill more bison, in a shorter period of time, with less effort. The First Nations people were also exposed to many European diseases like Small pox. In time the First Nations people were relocated onto reserves.

European settlement began when the Northwest Mounted Police came west to help control the whiskey trade. The NWMP set up their posts at major trading centers, like Fort Macleod (named for Sandy Cross's maternal grandfather), and Fort Calgary. Shortly after the NWMP had brought law and order to the wild frontier, ranchers arrived. These early settlers were usually from Upper Canada or from the United States, where land was becoming scarce. They came because they felt they needed the civil presence that the NWMP provided. Some of these settlers could not survive the isolation, or the variable weather conditions of the West, and ultimately left the area after a short period of time.

During later years, there was a great push to connect Canada from coast to coast by rail. The railroad arrived in what is now southern Alberta, and with it, an influx of new settlers who had been lured west by land incentives offered by the government. The settlers were interested in ranching and also wanted to establish farms. The availability of land decreased as the number of settlers increased, so there were some disputes about land ownership. People argued over whether or not the government had a right to give land away as an incentive to increase the settlement of the West.

With the development of the fossil fuel industry, Alberta's population continues to grow. Most people live in urban centres and suburbs are expanding. With this expansion comes even more land impacts: roads, air pollution, larger homes, and less green space to name a few.

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.

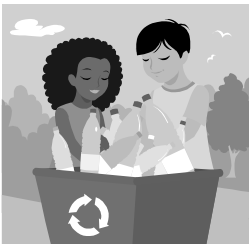
We encourage you to ask your students to envision a way that they can **"Take Action for Wildlife"**.

For more information or ideas for initiatives please visit our [Take Action Page!](#)

A few resources about Eco-Footprint to investigate:

- www.calgary.ca/footprint - A great resource on what the City of Calgary is doing to reduce its Eco-Footprint and what you can do.
- www.footprintnetwork.org/index.php - The Global Footprint Network's comprehensive website for adults to learn more about Eco-Footprint.
- www.royalsaskmuseum.ca/gallery/life_sciences/footprint_mx_2005.swf - A student-friendly site where they can calculate their Eco-Footprint and get suggestions to reduce their Footprint.
- www.calgary.ca/footprint. Join the City of Calgary's Eco-Footprint Club.
- <http://animalssavetheplanet.com/> - Videos of claymation animal show ways to help the planet. Includes more detailed information on Carbon Footprint and Going Green.

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 ASCCA 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 THE LAND AND YOU

Objective

To help students understand that just as people in the past were reliant on the land, we today are still reliant on the land in every aspect of our lives. This reliance has an impact on our environment.



Procedure

1. Ask the students the following questions: Where does your hamburger come from? (The fridge.) Where did it come from before that? (The store.) Before that? (A cow on a ranch.) Before that? (Food for the cow.) Before that? (Energy from the sun in grass.) Continue along this line of questioning until the students realize that all of our food and many other needs are met by the land.
2. Assign each student an everyday item such as a pair of jeans, a radio, or a tuna sandwich. The students will trace their item back to its very beginnings, including how the land was affected by the creation of the object.
3. They can write a descriptive paragraph about it, illustrate a map tracing the path it took to get to their house, write a story from its point of view about where its journey has taken it, or perform a skit explaining the story of its life. Each student will share their discovery with the rest of the class.
4. Discuss ways we can minimize our impact on the land (e.g., refuse, reduce, reuse, recycle). This is a great opportunity to talk about bringing a conserver lunch.

NOTE: Even plastics come from the land. They are petrochemical products, which mean people extract and create them from oil and natural gas found underground. Oil and gas are the remains of ancient sea life which have been transformed by heat and pressure.



3.4 THE PLOT THICKENS

Objective

Students will measure an outdoor plot and analyze the biodiversity in it according to native or introduced species. They will recognize the impact that introduced species have on native life.

Purpose

1. Find a wooded area on or near your schoolyard.
2. Have the students measure a 5m by 5m plot.
3. Have the students count and identify the species of plants and animals (probably insects or birds) found in their plot.
4. Discuss the following questions: Which species are native to this area? Which aren't? Why were the non-native species introduced? What is their effect? What can you do to help? (Plant native species in your garden and schoolyard.)

3.5 WHERE AM I?

Objective

Students will understand that their home is not just in “a city”, but that it is also part of a natural ecoregion. They will be able to name that ecoregion and describe its native wildlife. This activity provides a natural alternative to locating yourself on the Alberta highway map.

Procedure

1. Examine changes that have been made to the environment such as leveling for roads and houses, construction, and pollution.
2. Ask the students: What plants and animals were found here before humans developed this area? If humans for some reason decided to bulldoze the school and “let nature come back”, what plants and animals might eventually be found here?
3. Have students determine which Natural Region they live in and what plants and animals are found here. The Parkland Natural Region includes the Central parkland, Foothills Parkland, and Peace River Parkland. The Foothills Parkland (Calgary area) is defined as a narrow transitional zone between the Foothills Fescue grassland and the Montane forest of the Southern Rocky Mountains.

Natural Regions of Alberta poster series - Teachers Manual, available from Alberta Environment Protection Resource Library: Rite number 310 0000, then dial 422 2079 for the library. **FREE** and delivered within one to two weeks.

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.
- 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 behaviour.
 - 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. Class heads out on the trail. If there are two classes, one class does the trail in reverse.
- 12:00 p.m. Lunch break at designated spot. **Optional Games.**
- 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 SUMMARY OF ACTIVITIES

| Backwards on Ranchers Trail | Forwards on Ranchers Trail |
|--|--|
| The First Step with both classes (inside) | The First Step with both classes (inside) |
| Landscape I Spy (Hawkpost to Mountain Lookout) | Find A Cure (Paintbrush Sign to Crocus Sign) |
| Want Not, Waste Not (Seed Drill) | Growing A Steak (Crocus Sign) |
| Conserved Lunch (Ranchers/Fescue Junction) | Conserved Lunch (Ranchers/Fescue Junction) |
| Growing A Steak (Crocus Sign) | Want Not, Waste Not (Seed Drill) |
| Find A Cure (Crocus to Paintbrush Sign) | Landscape I Spy (Mountain Lookout to Hawkpost) |
| Conservation Reflection (Paintbrush Sign) | Conservation Reflection (Hawkpost) |

4.3 ON-SITE PROGRAM DESCRIPTIONS



THE FIRST STEP



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| <p>ACTIVITY OBJECTIVE: To introduce students to the concept of ecological footprint and the discussion for the day. Students will have a basic understanding of ecological footprint by looking at basic needs, wastes and other resources.</p> |
| <p>TIME REQUIRED: 15 minutes</p> |
| <p>LEADER: ASCCA Guide</p> |
| <p>MATERIALS NEEDED: Giant Earth, Resource cards</p> |
| <p>BACKGROUND: This program will focus on Ecological Footprint, which we will refer to as Eco Footprint, by looking at three different eras of human populations in the Foothills area: First Nations, Settlers/Ranchers, and Modern Day. According to the Global Footprint Network, Ecological Footprint “is a resource management tool that measures how much land and water area a human population requires to produce the resources it consumes and to absorb its wastes under prevailing technology.” That is, in order to live we need to use resources from the earth. The more resources used and the wastes they produce the larger the Eco Footprint.</p> <p>Determining Eco Footprint involves a series of complex calculations that include food habits, shelter, mobility, goods and services, and wastes produced to generate the number of global acres (or hectares) of productive land needed to support a lifestyle. It also calculates the number of Earths that would be needed to provide enough resources if everyone lived with that lifestyle. For example, the Ecological Footprint of Calgary is 9.86 gha (global hectares) per capita (about the size of 24 football fields), while the earth can sustain 1.9 gha per capita. If everyone in the world lived like Calgarians it would take five Earths to support us.</p> <p>Past and present natural and cultural influences have shaped the landscape around the Cross Conservation Area and surrounding areas. The advance and retreat of glaciers during the Great Glaciation led to the establishment of many native plant and animal species that we see today and conditions for early human settlement. The lifestyle of these human settlements changed dramatically over time, and therefore so has the Ecological Footprint. See Section 2.0 for a more detailed history of human settlement on and around the Area.</p> |
| <p>DIRECTIONS:</p> <ol style="list-style-type: none"> 1. Ask the students what they need to survive (food, water, shelter, and space) and where these come from. Space includes air, a place for shelter, personal space, etc. As students give suggestions, place the laminated cards in the center of the Earth poster. 2. Ask the students what other things they have in their lives but don't necessarily need in order to survive. I.e., cars, technology, air conditioning, school, furniture etc. Place these cards around the center cards overlapping the Earth. 3. Explain that the amount of land and water needed to meet their needs is called Ecological Footprint (Eco Footprint). It also includes any wastes and land to absorb those wastes. Put wastes on the poster. 4. Let the students know that during the program today they will be looking at past and present lifestyles and their coinciding Eco Footprints. We will focus on four significant factors that affect Eco Footprint: food, shelter, transportation and waste. |



FIND A CURE



ACTIVITY DESCRIPTION: Students learn about First Nations people's use of land and the way it relates to Eco Footprint.

TIME REQUIRED: 30 minutes

LEADER: ASCCA Guide

MATERIALS NEEDED: Find a Cure cards, Footprint Comparison Chart

BACKGROUND: Given that the lifestyle of the First Nations people was derived of resources mainly in their natural state and locally sourced it is assumed that they would have a very small Eco Footprint.

Food: The First Nations people relied heavily on the local plants and animals for survival. Most importantly bison was used for food, clothing, and shelter and tribes followed the herds.

Transportation: They travelled on foot, hauling belongings with large dogs until the introduction of the horse by Europeans.

Waste: Little was wasted and many of the resources were made of biodegradable materials such as wood, antlers, shell, or hides. Stone tools and rock formations that were left behind provide the most permanent evidence of their lifestyle.

Shelter: Tipis were portable and made from natural materials such as animal hide, sinew and trees. The only remaining evidence of this shelter was blackened material from fire pits, rings of rocks that held down the tipis and small flattened areas. This evidence was not permanent.

Other: Included blankets, clothing, tools, and weapons such as arrows and spears.

The First Nations people depended on local plants as medicine. Most of the medicine that we have now is produced synthetically; however it was originally derived from plants. There are still many plant species that have not been studied and many may contain medicinal or other properties that are beneficial to humans. Land conservation preserves habitat, helping to maintain diversity of native plant species. The First Nations people needed to be effective Keeper's of the Earth in order to protect these species and their survival.

DIRECTIONS:

1. Have the students imagine how they would survive if they lived on this land thousands of years ago like the First Nations people. Discuss how they met their needs focusing the discussion on food, transportation, shelter and waste, etc.
2. On the Footprint Comparison Chart, have the students fill in 2 of the squares for each of food, transportation, shelter and waste. Discuss how many other squares they would fill in.
3. Show students the artifacts that were found on the Area as an illustration of waste.
4. Divide the students into pairs or groups and give them a Find a Cure card. Each pair/group will have a disease and must find the plant described on the card to cure it. Complete this activity as you travel to the next stop. Once they have found their plant, and know how to cure their disease they can exchange their card for another one.
5. Discuss why it was important for the First Nations people to protect the land.



GROWING A STEAK



ACTIVITY DESCRIPTION: Students will understand the ways early settlers and ranchers used the land and their resulting impacts.

TIME REQUIRED: 20 minutes

LEADER: ASCCA Guide

MATERIALS NEEDED: Growing a Steak Sheets

BACKGROUND:

Unlike the nomadic lifestyle of First Nations people, the Settlers and Ranchers significantly modified the land to create settlements. This involved clearing the land for agriculture and setting up homesteads using mostly local materials. Many settlers brought supplies over from Europe when they immigrated or ordered them from the supply store in the towns. Since the settlers modified the land to fit their lifestyle, their Eco Footprint would be higher than that of the First Nations.

Food: Most of the settlers' food came from crops they grew and the domesticated animals they raised. Local food sources such as deer, pheasants, rabbits and berries supplemented their diet when possible. Some important staples such as salt were imported and much time was spent growing, harvesting, preparing and storing food.

Transportation: The settlers travelled mostly on foot or by horse drawn carriage before the establishment of the Pacific Railway in 1883.

Shelter: Houses were made out of wood and stone where these were available or sod where they were not and were fit with windows and doors. House size increased as settlers became more established on the land.

Waste: Little was wasted – wool was used to make clothes, lard to make candles and soap, and feathers for pillows. Much was reused and many of the materials were biodegradable. However, many antique materials from this time still exist, such as furniture, machinery etc.

Other: Extra possessions may have included instruments, tools, furniture or a few keepsakes. A settler's motto: *Eat it up, Wear it out, Make it do, Or go without.*

Brome grass was first planted by the settlers as winter feed for cattle. Early ranchers ranged their cattle on government land. Later, crops were grown to feed to livestock. This increases the Eco Footprint as it uses a lot of energy, water and land to grow crops for a meat-based diet.

DIRECTIONS:

1. Point out the two different types of grasses, Smooth Brome and Rough Fescue and why Brome is here. Have the students find and identify both.
2. Ask the students about the lifestyle of the settlers, especially where they got their food.
3. Have the students brainstorm what steps the settlers would have taken to make a steak. Emphasize that the settlers' diet consisted mainly of fried pork, boiled potatoes, and soups.
4. Give each group a task sheet and allow time to come up with actions for their tasks. Students can then perform these according to the Grow A Steak task timeline. Discuss why Eco Footprint would be larger for a meat-based rather than plant-based diet.
5. On the Footprint Comparison Chart, have the students fill out 4 squares each of food, shelter, transportation, and waste. Discuss how many 'other' spaces to fill in.
6. Along the way, have students look for past signs of settlers and ranchers, such as the corral, the binder, the seed drill, and fences.



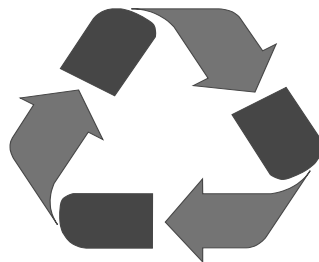
WANT NOT, WASTE NOT RELAY



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| <p>ACTIVITY DESCRIPTION: Students will understand how their choices contribute to waste through a relay race.</p> |
| <p>TIME REQUIRED: 30 minutes</p> |
| <p>LEADER: ASCCA Guide</p> |
| <p>MATERIALS NEEDED: Station Markers, Waste Signs</p> |
| <p>BACKGROUND: The more resources we use, the more waste that we generate through their production, transportation, and disposal processes. Certain materials take significant amounts of energy to produce and are not absorbed by the Earth, therefore increasing Eco Footprint. The seed drill and binder along the Ranchers Trail are examples of waste from the settlers and ranching era. With new technology, the efficiency and speed of machinery increased tremendously over the past few hundreds of years, allowing larger areas to be farmed with fewer people. A seed drill could drill many seeds at a time into the soil and binders helped bind bunches of stalks. When no longer needed or functioning properly however these were abandoned and now sit as waste. The materials that products are made of can affect what happens to them at the end of their life. Under the perfect conditions, materials would return to the Earth in their natural state without creating pollution. However, this can take a lot of time: 3-5 weeks for a banana peel; 20-30 years for hard plastic; 200-400 for aluminum cans; 1000s-1,000,000s of years for glass bottles. Some materials can be recycled into new products but this takes energy and can create waste too. Students can reduce their Eco Footprint by buying items with little to no packaging, composting, reducing what they buy, and recycling what they can.</p> |
| <p>DIRECTIONS: This activity looks generally at waste as a component of Eco Footprint and can be incorporated into the discussion of the settlers or modern day eras.</p> <ol style="list-style-type: none"> 1. Set out the materials for the relay. Assign parents to each station. 2. Explain the rules and demonstrate the relay. 3. Divide the class into 2 teams and have each team choose a name. These teams will race for the team title of the least wasteful. 4. Two teams line up to race. Only one student from each team will go through the relay at a time. START: The first student picks out a waste card and runs to the number associated with the card. The higher the number the more wasteful the action and the further they have to run. Once the person has finished the relay the next person in line starts. STATION 0: Go to the back of the line as this action requires no energy and produces no waste. STATION 1: Run to sign # 1. This action requires some energy and produces some waste. STATION 2: Run to sign #2. This action requires moderate amount of energy and produces waste. STATION 3: Run to sign #3. This action requires a lot of energy and produces a lot of waste. LAST RACER: The game ends once everyone has had a turn. The first team to finish is the winner. 5. Brainstorm ways to reduce waste. 6. Discuss the materials that the settlers used compared to modern day materials. |

CONSERVER LUNCH

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| <p>ACTIVITY DESCRIPTION: Before lunch, reflect on how their lunch directly impacts Eco Footprint. The group will consider some alternatives to the containers that they brought their lunches in.</p> |
| <p>TIME REQUIRED: 10 minutes. 30 minutes for Lunch</p> |
| <p>LEADER: ASCCA Guide or Teacher</p> |
| <p>MATERIALS NEEDED: Lunches and the Conserver Point Sheet</p> |
| <p>BACKGROUND: Nature is always reusing and recycling things. Anything that nature makes can breakdown, meaning that natural things are biodegradable. Sometimes before things are recycled they can be reused by other animals or plants.</p> <ul style="list-style-type: none"> • Some animals use feathers of birds to provide insulation for their homes. Dead trees provide food and shelter for a variety of organisms. These are only two examples of the many ways that nature reuses materials. • Technology has given people convenient items that do not readily breakdown because there are no decomposers that use the discarded items. Pre-packaged and processed foods are becoming more commonplace in society. Although these products are convenient for us, they are having significant impacts on the environment. • As consumers we must think about each and every choice that we make and what effect it has on the environment in both the short and long term. |
| <p>DIRECTIONS:</p> <p>Before lunch begins, have the students take out their lunch and place it in front of them. The Area Guide or teacher can use the Conserver Lunch Sheet (CLS) to determine how many reusable and recyclable items the group has in their lunches.</p> <ol style="list-style-type: none"> 1. Using the CLS ask the group to raise their hands for each item they have in their lunch. 2. At the end of the list ask the students to recall how many times they raised their hand. Based on this number, use the back of the CLS to see what Conserver category each student falls into. That is their personal conserver score. 3. Ask the students what reusable or recyclable items they could bring next time to have a more Conserver lunch. Conserver lunches include: reusable food containers (for drinks, foods, snacks, lunch bags), reusable cutlery, whole fruits without packaging, and cloth napkins. <p style="text-align: center;">Follow-up this activity at school with a weekly class rating and phone in your results to us. We'd love to hear from you!</p> |





LANDSCAPE I SPY



ACTIVITY DESCRIPTION: Students identify how the land is used today and how it affects Eco Footprint by focusing on food, transportation, shelter and waste.

TIME REQUIRED: 25 minutes

LEADER: ASCCA Guide

MATERIALS NEEDED: Landscape I Spy Sheets, Footprint Comparison Chart

BACKGROUND: Humans have had great influence over this land. This is especially apparent in the past 50 years as globally the human Footprint increased 2.5 times between 1961 and 2001. Calgary's Footprint is the highest in the country - about 24 football fields in size. If everyone lived like Calgarians we do we would need five Earths to support us.

Food: Much of our modern day food takes significant amounts of energy and resources to produce. In fact, the average meal has travelled 1200 miles (1920 kms) to get to our plate. The more processed and packaged the food is the more resources and land that are needed to produce it. Eating local, organically produced food and eating less meat are ways to reduce our Eco Footprint.

Transportation: Energy consumption accounts for 62% of Calgary's Eco Footprint and includes activities that use energy and contribute to climate change, such as heating, lighting and transportation. We can reduce our Eco Footprint by using alternative modes of transportation, carpooling, working and shopping close to home, and buying fuel efficient vehicles.

Waste: In Calgary, 80% of waste materials end up in landfills while only 20% is recycled. The City of Calgary has a plan to reverse that by 2020 but there are things students can do to lower the Eco Footprint, including the 5 R's: reduce, repair, refuse, reuse, and recycle.

Shelter: Houses and buildings and the energy to manufacture and operate these contribute to Eco Footprint. Communities can build smaller, more energy- efficient homes using green construction to reduce the Footprint. At home, students can replace incandescent bulbs with compact fluorescents, and turn off lights and machines such as computers when not using them.

Other: Includes clothing, furniture, technology, toys, etc.

DIRECTIONS:

1. Remind students of the things they need or use in their lives as we discussed in the introduction.
2. Have the students look at the landscape around them and search for the items on the Landscape I Spy sheets. They may struggle to find some items.
3. Discuss why it was difficult to find some of the items, such as food. Explain that many of the resources we use come from far away, therefore increasing our Eco Footprint.
4. On their Footprint Comparison Chart, have the students fill in all of the food, transportation, shelter and waste squares. They can fill in the squares labeled 'other' to show the other resources we use that contribute to Footprint.
5. Brainstorm things they can do to reduce their Footprint, focusing on food, transportation, shelter and waste. Suggest things that they have already done to reduce their Footprint: taking a bus to the Area, hiking along the trail, not using paper today, using outhouses at lunch time, conserver lunches etc.
6. As you walk to the next stop, ask students to suggest other ways they could travel to reduce Eco Footprint and pretend to travel that way as you move along the trail. For example, if someone suggests biking, then make the motion of biking as you walk. Switch the motion several times along the way.

CONSERVATION REFLECTION

ACTIVITY DESCRIPTION: Students will reflect on what they learned and what actions they can take in the future.

TIME REQUIRED: 10 minutes

LEADER: ASCCA Guide

MATERIALS NEEDED: Quote, Thinking Caps

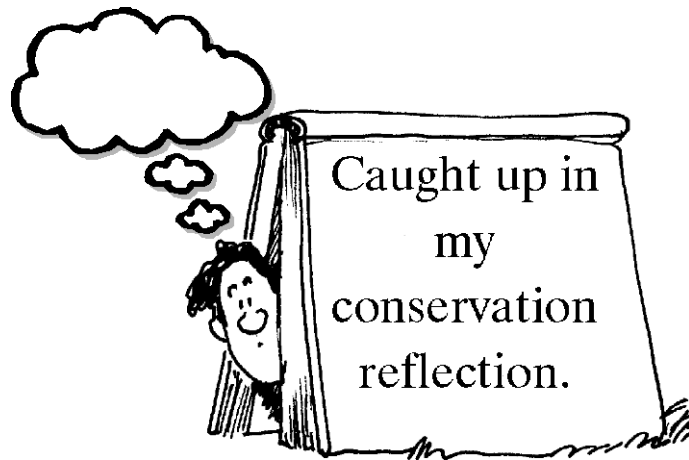
BACKGROUND: This program is filled with a variety of information. It is essential to reflect on this information and how you relate to it personally in order for it to be meaningful.

DIRECTIONS:

1. **Read the spaceship quote.**
Discuss how this quote relates to the actions of all the groups who have used the land.
2. Ask the students to think of one thing they did for the earth today and what they could do tomorrow.

Some ideas:

- Garbage free day
- Conserver lunch
- Staying on the trails
- Learning about the environment
- Caring about animals, flowers and bugs today



5.0 POST-VISIT ACTIVITIES

5.1 PHOTO ALBUM

Objective

Students will assemble a visual representation of the many ways they use the land.

Procedure

- 1) Have the students collect photographs, magazine pictures, or drawings of themselves or people like them using the land in a variety of ways. They could be direct ways, like water skiing, gardening, or hiking, or they could be indirect ways like reading a book (paper comes from trees), riding a bicycle (made of metal from the earth), or taking medicine (many medicines are directly from plant extracts). Include captions of different land uses.
- 2) Assemble the pictures in a photo album style book titled “Our Class’s Land Use”.

5.2 TIMELINE

Objective

Students will learn some specific events in Alberta’s history and create a class timeline.

Procedure

Discuss with the students some important events in Alberta’s history. You may want to include the arrival of the NWMP, treaties with the First Nations, the first ranchers and farmers, the arrival of the Railway, the establishment of the City of Calgary or the lives of significant political figures.

- 1) Have each student research a particular event and write a short paragraph about it, including the year it happened and an illustration.
- 2) Arrange the students’ work in chronological order along a big timeline and display it in the school where it can be appreciated by everyone.

5.3 GHOST DIARY

Objective

Students will compare how the land is today with how it was at some point in the past in a creative writing exercise.

Procedure

- 1) Have each student choose a person described in activity 5.2, or have them imagine an explorer 150 years ago.
- 2) Have them write a diary entry as if they were the ghost of their long-ago person returning to Alberta. How was the land changed?



6.0 OTHER RESOURCES

6.1 GLOSSARY

| | |
|-----------------------|---|
| ABIOTIC: | A non-living factor in an environment. (Examples light, water, temperature) |
| AGRICULTURE: | The process of planting and harvesting crops. |
| ARCHAEOLOGIST: | A scientist who studies things, which were made or used by early people. |
| ARTIFACT: | Object modified by early people. |
| BIODEGRADABLE: | Things that can be broken down by organisms in the environment. |
| BIODIVERSITY: | The diversity of living things. |
| BIOTIC: | A factor or process, which is biological in nature or results from a living organism. |
| COMPETITION: | An interaction between two species in which both require the same limited resource. <i>Interspecific</i> competition occurs between two different species. <i>Intraspecific</i> occurs between two individuals of the same species. |
| CONSERVATION: | The protection of natural resources. |
| CORRIDORS: | A walkway for wildlife. They provide a route to travel that has good habitat, good cover and is big enough to pass through without being noticed by predators. |
| DECOMPOSER: | Organisms that convert dead organic matter into inorganic matter. |
| ECOLOGICAL FOOTPRINT: | A resource management tool that measures how much land and water area a human population requires to produce the resources it consumes and to absorb its wastes under prevailing technology. |
| ENCROACH: | Go beyond proper or usual limits. |
| ENVIRONMENT: | Our surroundings. Our environment can be small (the room we are in) or it can be very large (the Earth). |
| FARMER: | A person who raises crops or animals on a farm. |
| FOOTHILLS: | Hills at the base of a mountain range. |

| | |
|-------------------------|--|
| GRASSLAND: | A vegetative community in which grasses are the most conspicuous members. |
| HOMESTEAD: | A house with outbuildings, a farm. |
| HUMUS: | Decaying remains of dead organisms; partly decomposed organic matter that was once living or was produced by a living thing. |
| IRRIGATION: | Artificial application of water to grow crops. |
| LITTER: | Refuse, especially paper, discarded on the ground. |
| MICRO - ORGANISMS: | Microscopic single or multi-celled organisms such as bacteria, fungi and algae. |
| NATURAL RESOURCES: | Materials found in nature that are useful to people or necessary to their survival. (Examples water, trees, land) |
| NON-RENEWABLE RESOURCE: | A natural resource that is not replaced by natural cycles at the same rate they are used. |
| RANCHER: | A person who operates a large farm to graze and raise cattle, sheep, or horses in large numbers. |
| RECYCLE: | To process waste materials into something useful. |
| REDUCE: | To use fewer consumables and create less waste. |
| RENEWABLE RESOURCE: | A natural resource that is replaced by natural cycles at least at the same rate it is used. |
| REUSE: | To use a product over and over without changing it. |
| SETTLER: | A person who takes up residence in a new region. |
| SODBUSTER: | A prairie farmer, especially one of the early homesteaders. |
| WASTE: | Products left over from producing or using resources. |
| WEB OF LIFE: | The concept that every living thing interrelates with others so if we alter one organism we alter all others. |
| WILDLIFE: | Animals which are not domesticated or tamed. |

6.2 SPONSORS

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