INVESTIGATING ECOSYSTEMS

A Field Study for Grade 6 Students

FISH CREEK
ENVIRONMENTAL LEARNING CENTRE

www.Fish-Creek.org

CONNECTING PEOPLE WITH PARKS
FISH CREEK
ENVIRONMENTAL
LEARNING CENTRE

Alberta Parks

Introduction

This is a curriculum-connected, full day study with multidisciplinary preparatory and post-visit resources. The intent is to offer a hands-on experience for students that naturally immerses them in the field study components related to the Grade 6 Alberta Elementary Science Curriculum Guiding Question - *In what ways are ecosystems complex?* and the vision of Alberta's Plan for Parks.

Fish Creek Provincial Park is one of Canada's largest urban provincial parks, stretching from the western edge of the city to the Bow River. The park has a strong vision within its visitor services program plan to support and foster environmental and cultural education.

Alberta Parks acknowledges that Fish Creek Provincial Park is part of the traditional territory of Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising Siksika, Piikani and Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda First Nation. The City of Calgary is also home to Metis Nation of Alberta, Region III.

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Facility & Rules

THE FACILITY

The Fish Creek Environmental Learning Centre (13931 Woodpath Road SW) is located at the west end of the park and offers five indoor classrooms, bathroom facilities, an outdoor picnic area, an accessible trail system and an extensive variety of natural ecosystems: an old growth spruce forest, grasslands, riverine forests, a creek and several wetlands as well as disturbed (urban) areas.

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1. Each teacher will be given a classroom to use as a home base for the day's activities.

2. Some equipment for the day's activities will be available at the Park. It is your responsibility to count all equipment and return it at the end of the day. **There is a fee charged for missing or broken equipment.**

3. Washrooms and water fountains are located in the building. There are no vending machines or coffee/tea available.

4. A short orientation (about 15 minutes) will be provided to the entire group upon arrival to welcome and introduce everyone to the park, its rules, the program for the day and what the students may discover outside.

5. A snack break will take place *after* the group orientation. Please ensure that the students are supervised by teachers during this time.

6. Volunteers will have a separate orientation (~10 minutes) on the day of the field trip during student snack break. This will introduce them to the equipment provided, to a map of the activity area (maps provided), to the general flow of the day and answer any questions that they may have.

7. **There are NO indoor activities available. Please bring your own activities and/or DVDs when planning for inclement weather.**

LUNCH BREAK PROCEDURES

Please challenge your class to bring a litter-less lunch to the park for their program.

INSIDE THE BUILDING

Your class may eat inside the facility, within their assigned room.

- Students must be supervised by an adult at all times while they are in the building (including classrooms, washrooms and hallways).
- Classes from other schools and parks staff may be in the facility at the same time as your class(es). Please respect them and keep noise to a minimum, especially in the washrooms and common areas.
- Help us keep the Learning Centre clean. There are garbage and recycling containers in the brown built-in cabinets in each room.

OUTDOOR FACILITIES

There are several picnic tables and a fire pit behind the Fish Creek Environmental Learning Centre. This area is available on a first-come, first-served basis. Plenty of additional picnic tables are available just north of the Learning Centre building about a 2 minute walk up the trail.

- Students must be supervised by an adult at all times.
- Fish Creek Provincial Park is a public park and the facilities in an around the Learning Centre are for everyone to use. Please respect other park users.
- Leave no trace: All garbage, recycling and compost must be put in appropriate bins (outside or in the building)
- **DO NOT FEED OR DISTURB WILDLIFE.**
- If you choose to use the fire pit you must bring your own firewood. **Do not use branches or deadfall from the park.** Have a bucket of water nearby and check that the fire is out before leaving the fire pit area.

Before the Visit

PREPARATION

The following steps and materials will assist you in preparing for your field trip to Fish Creek Provincial Park. Please take the time to review the following pages carefully.

1 Site Visit Teacher Orientation

Attending a teacher orientation prior to your class visit is mandatory and essential for familiarizing yourself with the facilities and the surrounding trails. Returning teachers are not obligated to attend but are welcome. Dates for the teacher orientations will be sent to you via email so you can register for an orientation on a date of your choice.

2 Preparation Checklist

A full, detailed teacher checklist for your field trip preparation is available on the next page.

3 Program Start and End

Program start and end times are flexible to accommodate bus availability and travel distance to the park. In general, programs start between 9:30 - 10:00 am and finish between 1:45 - 2:00 pm.

4 Field Trip at a Glance

Group Orientation (15 minutes)	Overview of park rules, safety and behaviour expectations for the day.
Student Snack Break Parent Volunteer Orientation (10-15 minutes)	Overview of program activities for adult volunteers.
Educational Activities	Ecosystem Investigations and Human Use observations in first ecosystem study area.
LUNCH BREAK	
Educational Activities	Ecosystem Investigations and Human Use observations in second ecosystem study area.
Groups return to the Learning Centre for Program Wrap-up	Debrief by staff educator. Final washroom break, head count, and gather personal belongings.

Program Wrap-up should take place at least 15-20 minutes prior to the scheduled bus departure.

TEACHER CHECKLIST: Preparing for Your Day at the Park

Prepare yourself

- ❑ Read the teacher package thoroughly: email aep.fishcreekeducation@gov.ab.ca if you have any questions.
- ❑ Register for and attend a Teacher Orientation date on site before your field trip.
- ❑ Book your bus(ses).
- ❑ Give every driver - including the bus driver - a copy of the route map (found in the Appendix). Make sure all drivers know you are coming to the west end of the park, near Woodbine!
- ❑ Check student health forms, looking for allergies in particular to bee/wasp stings.
- ❑ Bring a first aid kit and a few band aids with each adult.

Prepare the students

- ❑ Discuss how Fish Creek Provincial Park is a wild environment.
  - Do not feed or disturb wildlife: Quietly observe all wildlife from a comfortable distance.
  - Leave only footprints: Share discoveries, but leave everything as they found it.
  - Pitch in: Litter should be placed in the rubbish bins provided or in a pocket.
- ❑ Discuss behavioural expectations. Explain that the field study will be another school day, just at a different place. All the school rules apply.
- ❑ Discuss the purpose of provincial parks and protected areas. Have the class make a list of ways they can show respect for living things during their visit to the park. *Possibilities include:*
  - Stay well back from the banks of Fish Creek.
  - Leave ant hills, nests and rotting logs alone and intact. They are animal homes.
  - Walk with care and mindfulness to minimize your impact.
- ❑ Discuss outdoor safety. Students need to:
  - Stay with an adult all times.
  - Walk, do not run.
  - Keep feet on the ground: no climbing.
  - Leave dead branches on the ground.
- ❑ Discuss what to wear on the field trip
  - Hats, sunscreen, insect repellent.
  - Runners, comfortable boots (no sandals/high heels). Dress in layers and bring extras.
- ❑ Complete some preparatory activities, either the ones in the next section of this package or your own.

Prepare the adults

Please follow the recommended adult to student ratios as outlined in your school board regulations.

- ❑ Provide the following to adult volunteers and review with them: Key Messages, Chaperone Letter, Map.
- ❑ Emphasize the following: there is nowhere to buy anything here, including coffee.
- ❑ Ensure adult volunteers are aware that their role is to lead a small group of students for part of the day and supervise students during lunch period.

FISH CREEK PROVINCIAL PARK: Key Messages

Please review and be sure everyone understands the following information before your visit to the park.

- Our vision: Alberta's parks inspire people to discover, value, protect, and enjoy the natural world and the benefits it provides for current and future generations.

- Alberta Parks acknowledges that Fish Creek Provincial Park is part of the traditional territory of Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising Siksika, Piikani and Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda First Nation. The City of Calgary is also home to Metis Nation of Alberta, Region III.

- Alberta's parks and protected areas belong to all Albertans and contain many different natural landscapes that are home to numerous plant and animal species as well as significant cultural and historic resources. The province's network of parks and protected areas helps to ensure that Alberta's natural and cultural heritage is preserved for future generations.

- There are a wide variety of visitors and users of our parks. Everyone must respect and share the park and its facilities and resources.

- Stay on designated trails while moving through the park and participating in group activities. Staying on designated trails reduces impact to the natural habitats of the park. Please share the trail with other users.

- Feeding wildlife is prohibited. The park's ecosystems provide all the food and habitat wildlife require for their basic needs. Feeding wildlife can cause wildlife to associate humans with food. Quietly observe wildlife from a safe and comfortable distance so as not to disturb them or put them or you at risk.

- Everything in the park – living and non-living is protected. Students are welcome to share their discoveries, but must remember to leave everything as they found it. Do not remove anything natural from the park.

- Litter must be placed in garbage cans or packed out.

- Use only designated fire pits. The collecting and burning of park vegetation is not permitted. You must ensure fires are fully extinguished before leaving them.

Alberta Alberta Parks

PRE-FIELD TRIP ACTIVITIES

Preparatory activities will enhance your students experience and learning at the park.

Vocabulary

RESOURCE: Appendix p. A1
Review science vocabulary with the class. This could be done in any number of ways:

- Have students create a rap or new lyrics for a popular song using vocabulary
- Play Vocabulary Bingo. You call out the definitions and students have the words on their Bingo sheets.

Ecosystems - Natural Regions

RESOURCE: Appendix p. A2
Alberta is home to six major ecosystem types called "Natural Regions". Students will research what defines each of these ecosystems and what makes it complex. This will lead to inquiries about what they wonder about ecosystems. The following are a few great resources to start with:

Natural Regions & Subregions of Alberta - https://open.alberta.ca/publications/9781460113622

Nature Alberta - https://naturealberta.ca/ecosystems/

Alberta Biodiversity Monitoring Institute - https://abmi.ca/home/biodiversity/biodiversity-in-alberta.html

Canadian Parks and Wilderness Society - https://cpaws-southernalberta.org/bring-nature-home/bnh-teachers/?_

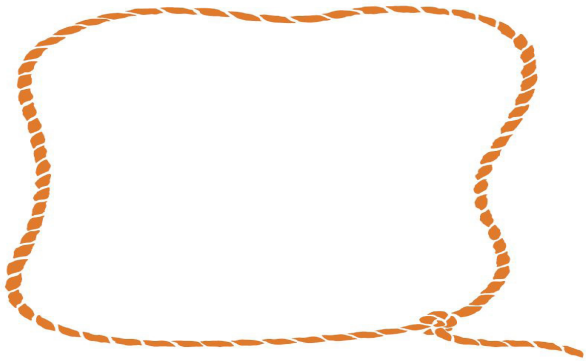
My Schoolyard Ecosystem

RESOURCE: Appendix p. A4
Students will explore and collect data in their schoolyard as an introduction to collecting data on their field trip. You can develop a data set you would like students to collect or you can use the data sheet provided.

Break your class into working groups of students and have them collect data from different areas of the school grounds. Even if the terrain is uniformly the same it will give them some experience and practice for when they are in the park. Data to consider for collection:

- Temperatures - 2m. above ground, ground level
- Light - Sunny, partly sunny, shaded
- Wind - strong, moderate, light, gusty
- Evidence of Wildlife in a defined area (Quadrat or circle) - insects, spiders, tracks, scat
- Plants/plant types present
-

You will need thermometers for students to take temperatures. You will also need lengths of rope for each group to create a study circle or square (quadrat). These should be at least 9 - 12 metres long. In the field students should be instructed to lay the rope out as a circle or a square and the measurements of temperature, light, wind, evidence of wildlife and plants are all collected from within the study rope area.



Your Day At the Park

FIELD TRIP ACTIVITY SUMMARY

The following outdoor field trip activities are curriculum-connected and intended to connect learning in an experiential way to the natural world.

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1 Ecosystem Investigations

Completed in small, adult volunteer led groups for half the day.

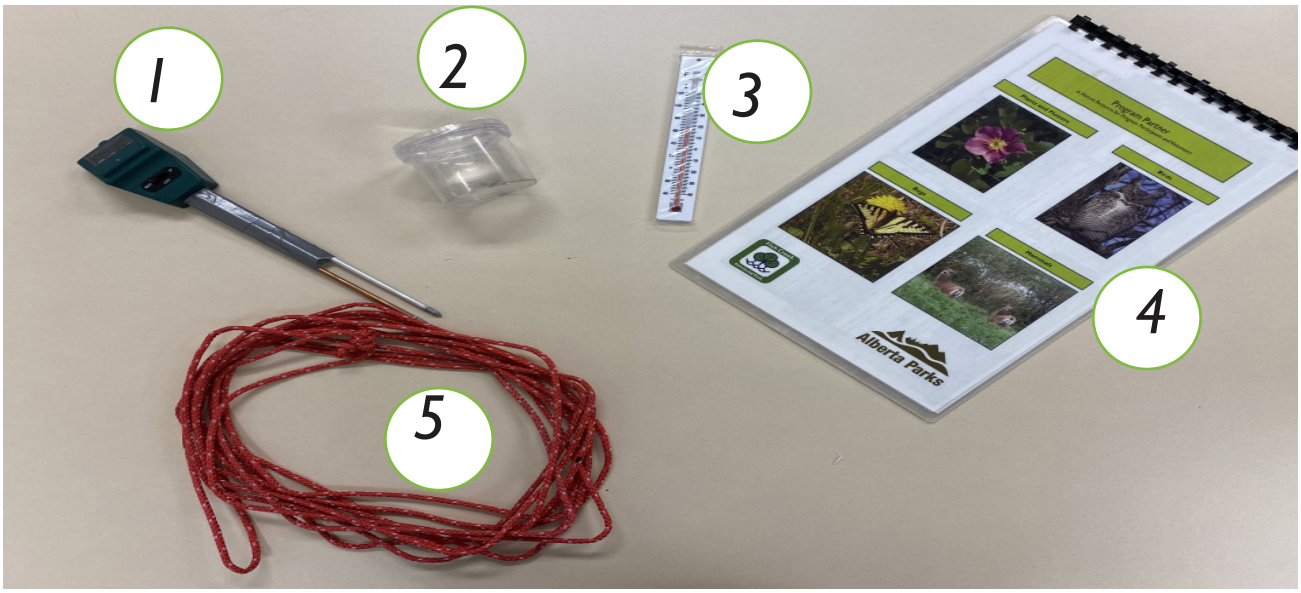
Activity Summary: Student groups will explore and collect data on the biotic and abiotic characteristics of a Spruce Forest Ecosystem and a Grassland ecosystem using a variety of equipment. One ecosystem will be explored in the morning and the second in the afternoon.

2 Human Use

Completed in small, adult volunteer led groups for half the day.

Activity Summary: Students will record their observations on built elements in the park and human use and impact in relation to the ecosystems of the park. These observations will be made and recorded throughout the day.
The observations and records they make will be used back at school to discuss the role of parks and human use and how to balance them.

Be sure to divide each class into smaller groups and assign an adult volunteer to each group.



PROGRAM EQUIPMENT

The Learning Centre will provide your groups with the following equipment and resources to utilize during your visit.

1 Soil Moisture - Light- pH Meter

Soil probe for testing moisture levels. Probe is inserted to indicated depth and readings taken. Light meter to test intensity of daylight. Photocell is pointed to sky and reading taken.

2 Bug Box

To capture and get a close-up look and insects and spiders.

3 Air Thermometer

To record the required air temperature readings.

4 Park Partner ID Guide

Identification guide for plants, insects, birds and mammals common to the park. It includes descriptions and pictures.

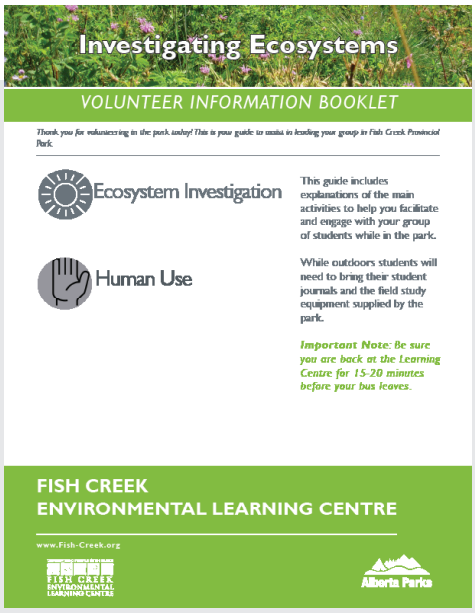
All equipment must be returned prior to departure.
PLEASE NOTE: There is an additional fee for broken or missing equipment.

5 Study Area Rope

Used by students to lay out in a square pattern to act as a boundary for the ecosystem studies and data collection.

INFORMATION BOOKLETS

The Learning Centre will provide your adult volunteers with an information booklet to help guide them on the outdoor exploratory activities which they will lead their smaller group of students on.



These booklets will have activity specific information that will support adult volunteers in guiding students learning through the various activities of the field study.

Important Notes:

- By providing laminated copies, we hope to reduce the amount of wasted paper.
- These resources are specifically developed for use in Fish Creek Provincial Park within Alberta Parks programs.
- We greatly appreciate all feedback to strengthen our resources; please let us know if you have any recommended changes.

After Your Field Study

POST TRIP ACTIVITIES

In addition to a class discussion about trip highlights and favourite activities, students may need class time to complete student journals or to share information about their discoveries.

Exploring the Data

RESOURCE: Student Journal

Students will compile all of the data collected by the entire class. This data will then be used to create a variety of graphs or charts on the various categories explored during the field trip. Students can then look for patterns and defining elements of ecosystems explored.

Connections

RESOURCE: Student Journal

How are students connected to the ecosystems studied in the park? Can students identify connections between people and the ecosystems they studied?

Students review and compare the information they collected on built elements and human use and impact on park ecosystems. Students can debate the ratings of positive/negative they assigned to various elements and discuss human use and impacts on the ecosystem health of the park.

Complexities Posters

RESOURCE: Student Journal

How are the ecosystems studied complex? What are some of the complex relationships observed or seen in the data collected?

Students can create webs to show relationships observed or considered to exist from their research for the ecosystems studied. These they make into posters that can be displayed in the classroom.

Appendix

PROGRAM VOCABULARY

Abiotic features - refers to the physical and/or chemical features including soil, rock, air sun, water, temperature, climate.

Biological diversity - or biodiversity means the variability among living organisms from all sources including, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems (from the Alberta Biodiversity Monitoring Institute www.abmi.ca).

Biotic features - refer to all things that are alive or at one time were alive (includes dead things).

Decomposer - An organism that feeds (to gain energy and nutrients) on material that had once been alive.

Ecosystem - A network or system of interdependent living (biotic) and non-living (abiotic) things.

Fauna - The animal life of a region (or time).

Flora - The plant life of a region (or time).

Invasive species - a species capable of asserting itself in communities where it did not naturally occur; usually a species not native to the area (from the Alberta Biodiversity Monitoring Institute www.abmi.ca).

Niche - all of the relationships that exist between an organism and its environment, how an organism lives, an organism's role in the environment.

pH - A value on a scale of 1 - 14 that gives a measure of the acidity or alkalinity of a medium (a reading of 7 is Neutral, lower than 7 is Acidic, higher than 7 is Alkaline or Basic).

Species - a group of organisms that are morphologically similar and are capable of interbreeding and producing viable offspring

ECOSYSTEMS - NATURAL REGIONS OF ALBERTA

Have students research to discover the characteristics of Alberta's six major ecosystems (Natural Regions) and complete the chart on the next page.

Characteristics to be researched and defined include:

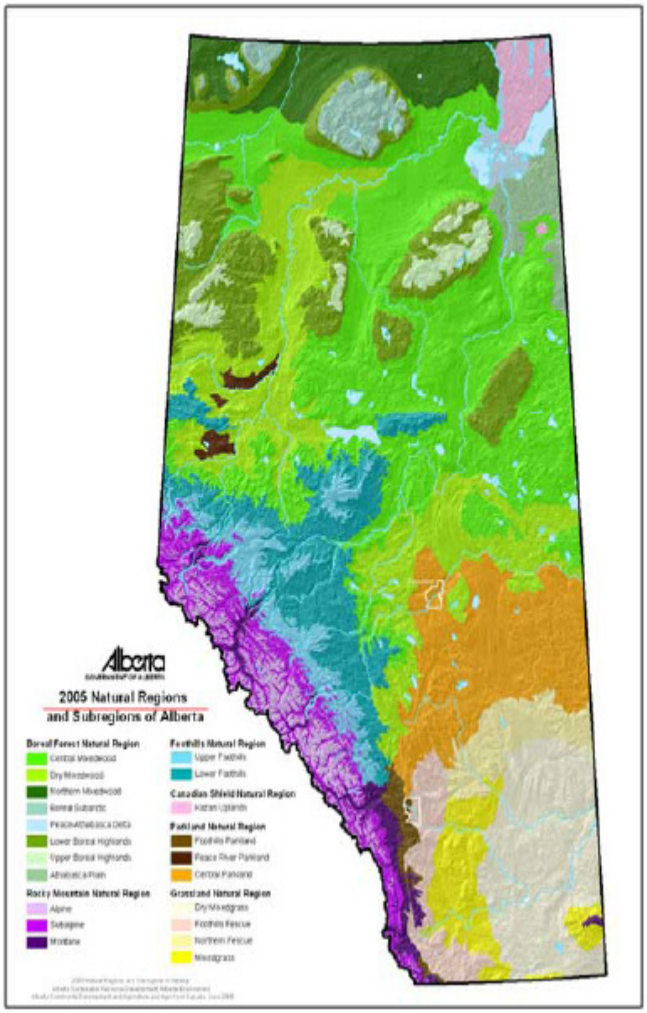
Geographic location in the province - north, south, east, west. Where in relation to the other ecosystems?

Landscape features of note - High mountain peaks, dry plains, major systems of hills, broad river valleys, etc.

Climate features - warm and dry, cool, more precipitation, wind, long hot summers, long cold winters, etc.

Vegetation features - dominated by grasses, mixed forest, conifer forest, wetlands, peatland, etc.

Human Use/Impact features - agriculture, ranching, mining, recreation, oil and gas exploration, forestry, etc.



ECOSYSTEMS - NATURAL REGIONS OF ALBERTA - STUDENT WORKSHEET

ECOSYSTEMS NATURAL REGIONS	GEOGRAPHIC LOCATION	LANDSCAPE FEATURES	CLIMATE FEATURES	VEGETATION FEATURES	MAJOR HUMAN USES/IMPACTS
CANADIAN SHIELD					
BOREAL					
PARKLAND					
ROCKY MOUNTAIN					
FOOTHILLS					
GRASSLANDS					

MY SCHOOLYARD ECOSYSTEM - STUDENT WORKSHEET

TEMPERATURES:
Use a thermometer to record the temperature at 2 metres above the ground (hold the thermometer over your head) and at ground level. Hold the thermometer in the spot for the count of 100 and then take the reading.

Temp. at 2m above Ground:

Temp. at Ground Level:

LIGHT:
Describe the level of light in your study area. Is it full, sun, partly sunny/open, full shade.

WIND:
Describe the wind in your study area. Is it light, moderate, strong, gusty?

What impact would the wind have on the plants and animals?

EVIDENCE OF WILDLIFE:
What evidence of animals and insects did you find in your study area? Do you know what animals or insects the evidence left behind is from?

PLANTS/PLANT TYPES
What types of plants did you find in your study area?

What percentage of each type of plants did you observe?

INVESTIGATING ECOSYSTEMS

A Field Study for Grade 6 Students

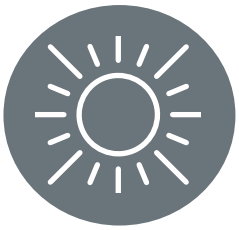
STUDENT JOURNAL

www.Fish-Creek.org

Alberta Parks

Name: _____

Date: _____



ECOSYSTEM INVESTIGATIONS

You are going to explore and collect information on two different ecosystems in the park today. One will be a forest area and the other a grassland area. You will use a variety of equipment to measure different features or elements. You will also have to make keen observations and recordings on the different plants and animals you see evidence of.

Once in the study ecosystem your group will lay out the Study Area Rope and using the equipment provided collect the information requested from within the rope boundary and record it in the following pages as completely as possible.

Abiotic Features - Non-living Features

Temperature - Using the thermometer measure the temperature at the two required levels. Be sure to leave the thermometer for the count of 100 to obtain an accurate reading.

	GRASSLANDS	FOREST
AIR TEMP. (° C) 2 METRES ABOVE THE GROUND		
AIR TEMP. (° C) GROUND LEVEL		

Light - Using the Light-Moisture-pH meter set the switch to "Light" and point the photocell towards the sky and record the reading 0 - 2000 (Candle power).

GRASSLANDS (0 - 2000 Candle Power)	**FOREST** (0 - 2000 Candle Power)

Moisture - Using the Light-Moisture-pH meter set the switch to "Moisture" and insert the probes into the soil and record the moisture level from 1 - 10 (Dry - Wet).

GRASSLANDS **Dry - Wet (1 - 10)**	**FOREST** **Dry - Wet (1 - 10)**

Take three separate readings in three different locations within the study rope and record the average of the three readings.

Wind - Is the presence of wind in the area strong - moderate - light, gusty, cold, warm? Describe the impact the wind would have on the plants and animals of the study area?

GRASSLANDS - Wind **Strong- Moderate - Light, impact**	**FOREST - Wind** **Strong- Moderate - Light, impact**

Biotic Features - Living Features

Evidence of Wildlife - Lay out the study area rope roughly in a square shape off the trail. Look carefully over the entire area for any evidence of animals, insects and spiders. Record all evidence you find in the squares below. You may use symbols to record various pieces of evidence such as tracks, scat, burrows, insects, spiders, etc. and describe them in the chart along with your detailed area sketch.

GRASSLAND	SYMBOL	DESCRIPTION

FOREST	SYMBOL	DESCRIPTION

What was the most common/numerous animal/insect sign you found in each ecosystem?

What was the most unique or surprising sign you found in each ecosystem?

What was your favourite find?

Plant Complexity Pie Charts - Within your rope study area identify the various types of plants and estimate the total cover of each type. Create a pie chart to represent the coverage percentages.

Grassland

Plant Type -%

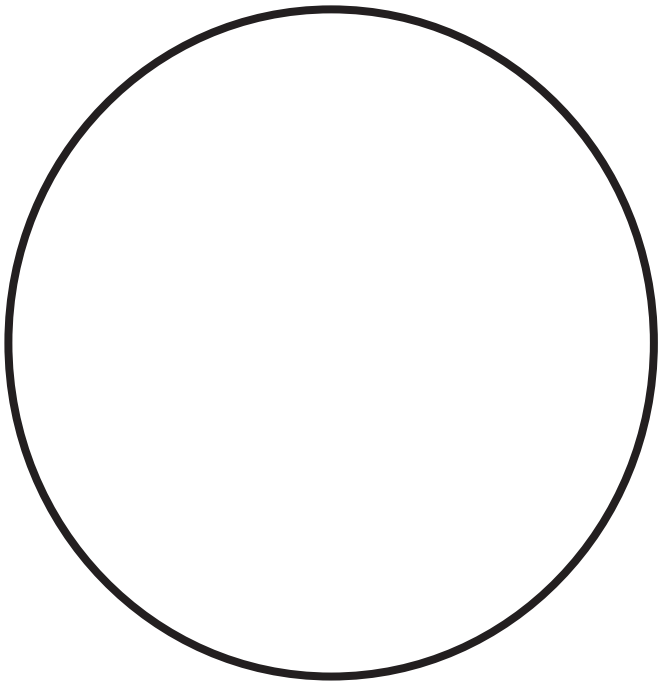
Trees - _____

Shrubs - _____

Flowering Plants - _____

Grasses - _____

Moss - _____



Forest

Plant Type -%

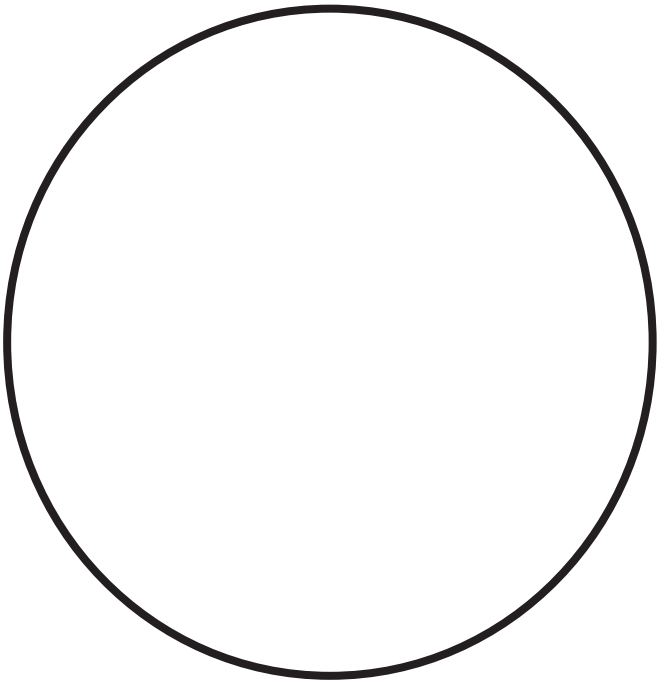
Trees - _____

Shrubs - _____

Flowering Plants - _____

Grasses - _____

Moss - _____



HUMAN USE

Parks are for people and for protecting nature. While exploring the park today you will see and use a lot of stuff that was built in the park for people to be able to access and use the park. Things like pathways, roads, buildings, signs and more. You will also see evidence of people who have been in the park before you or at the same time as you, things like footprints, litter, dogs, noise.

In the chart below you will record all the things you observe that relate to humans and human use of the park. You are also going to decide if they are positive or negative for the park.

BUILT OR CONSTRUCTED ELEMENTS	EVIDENCE OF HUMAN USE	POSITIVE (+)	NEGATIVE (-)

Dear Adult Volunteer,

Thank you for volunteering for a field trip to Fish Creek Provincial Park! This excursion allows students to explore, discover and learn in one of the largest urban parks in North America.

Here are a few tips that may help you enjoy your visit:

- Pack a hearty and healthy lunch (snacks and water too!). There are no vending machines or stores on-site to purchase food.
- Please dress appropriately for the weather. We will run our programs rain, snow or sunshine
- Ensure that you are aware of what part of Fish Creek the program is taking place. We host educational programs at the WEST end (near Woodbine).

Our staff will be available throughout the day to ensure that you and your group have a safe and educational experience in the park.

You are not expected to be a naturalist or history expert, but a positive attitude goes a long way!

Thank you again, we are very excited to see you in the park soon.

Warmest regards,

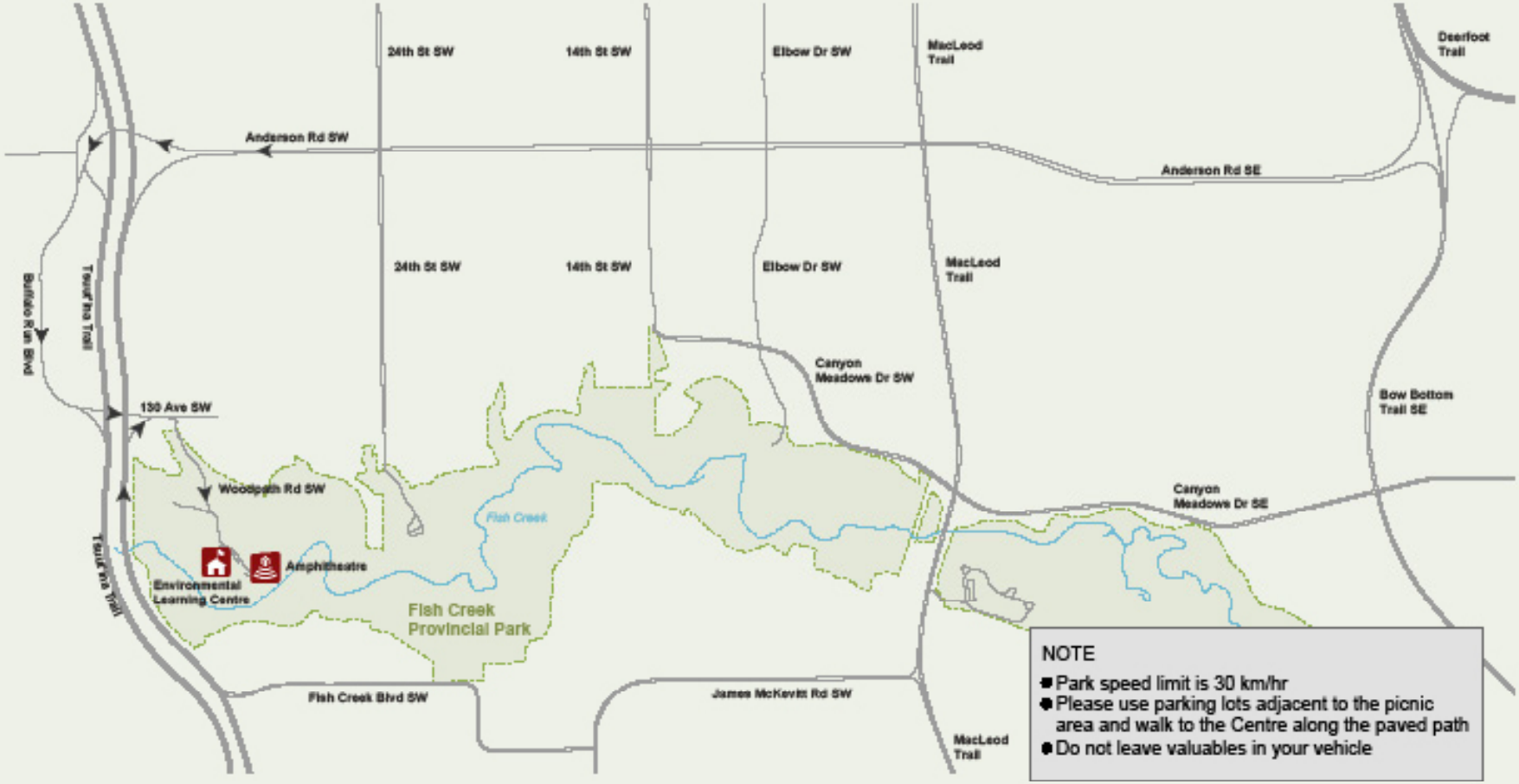
Environmental Education Team

CONNECTING PEOPLE WITH PARKS
FISH CREEK ENVIRONMENTAL

Alberta Parks

Access Map - Fish Creek Environmental Learning Centre

13931 Woodpath Road SW, Calgary, Alberta



DIRECTIONS

From Anderson Rd SW heading west:

- Follow signs to Tsuut'ina Trail and follow exit onto Buffalo Run Blvd

From south of 130 Ave SW on northbound Tsuut'ina Trail:

- Take the 130 Ave SW exit and keep right at top of ramp onto eastbound 130 Ave SW