GPS Excursion in Fish Creek Provincial Park

An Educational Field Activity for Environmental and Outdoor Education Students

Fish Creek Provincial Park

Telephone: (403) 297-7927
www.fish-creek.org
Fall 2018
Contents

Section I - Curriculum Connections

Section II - Before You Go

1. Class Discussion about the Field Activity

Section III – Your Excursion Day

1. Orienting a map
2. Using a GPS unit
3. Waypoints and control markers
4. Recording control markers, waypoints and marking the map
5. About the activity
6. GPS excursion Questions
7. GPS excursion Answer Key

Section IV – Appendices

1. Appendix A – Access Map to the Fish Creek Environmental Learning Centre
2. Appendix B – Area Map of Shannon Terrace Area
3. Appendix C – Blank Control Marker Sheet
4. Appendix D – GPS Unit Quick Start Guide
Section I: Curriculum Connections

ENVIRONMENTAL AND OUTDOOR EDUCATION
Program of Studies

Overview:

This activity-based course provides opportunities for in-depth practical studies and experiences. This direct approach should appeal to all students, particularly those who learn best from physical involvement. Students will be required to assume many responsibilities for their learning by building personal skills and through assuming responsibility for individual and group welfare. Decision-making skills will be emphasized. These include personal, group and societal decisions and involve students in examining the personal and interpersonal consequences of their actions, as well as the importance of their relationship with the environment.

Strand 1: Outdoor Core
Students will demonstrate basic knowledge, skills and attitudes necessary for safe, comfortable, outdoor experiences in all seasons.

Outcome #4: Students will demonstrate skills in researching, interpreting and applying the information necessary for safe route planning.
   b) Students will develop the skills necessary to interpret and apply route information while en route.

Outcome #5: Students will develop skill in environmentally responsible outdoor activities appropriate to different seasons.
   a) Students will acquire and practice minimum impact outdoor living and travelling skills in the following areas:
      • Trail maintenance techniques (e.g. Avoidance of trail widening)

Strand 2: Environmental Core
Students will demonstrate awareness and appreciation of living things and understanding of basic ecological processes.

Outcome #1: Students will demonstrate knowledge, skills and attitudes regarding the diversity of environments and life forms within those environments.
   a) Students will demonstrate awareness of local and global environments.
   b) Students will recognize that they as individuals are part of a complex global environment and that they both affect and are affected by their environment.

Outcome #2: Students will demonstrate awareness of life interactions within environments and understanding of the interconnectedness of the earth’s systems.
   a) Students will demonstrate skill in identifying interactions and ongoing changes within an environment.
b) Students will demonstrate awareness of linkages between human actions and the earth’s systems.

**Outcome #3:** Students will demonstrate the understanding that environments change over time, by identifying and describing examples of the following concepts:
   a) Students will recognize natural changes in environments.
   b) Students will recognize changes that result from human use of environments.

**Strand 3: Outdoor Expeditions**
Students will demonstrate skill, judgment, confidence and sensitivity through participation in a wide range of environmentally responsible activities in outdoor settings.

**Outcome #1:** Students will demonstrate skill and judgment while participating in outdoor expeditions.
   c) Students will make use of their skills and make reasonable judgments in selecting and carrying out activities relative to their skill levels and the hazards involved.

**Outcome #3:** Students will demonstrate the development of skills in group problem solving, group living and group activities.
   a) Students will demonstrate the development of skills in group decision making and problem solving.
   b) Students will demonstrate skills in group activities in an outdoor setting.

**Outcome #4:** Students will demonstrate positive regard for environments and demonstrate environmentally responsible outdoor judgment and skill in carrying out activities.
   a) Students will develop an esthetic appreciation for the environments they visit.
   b) Students will identify potential impacts of their activities on environments.
   c) Students will select environmentally appropriate approaches to carrying out outdoor activities.

**Strand 4: Commitment to Action**
Students will develop lifestyle strategies that foster contact with the natural world, demonstrate responsibility for local and global environments and encourage living in harmony with others.

**Outcome #2:** Students will demonstrate appreciation of environments through respectful and considerate use of those environments.

**Outcome #3:** Students will develop and act on plans that demonstrate responsibility for local and global environments.
   a) Students will recognize and reflect on the impact of their lifestyles on environments.
   b) Students will make responsible choices in selecting from alternative actions that may affect environments.
Section II: Before You Go

1. Class discussion about the Field Activity

Alberta’s Parks and Protected Areas

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. The province’s network of parks and protected areas covers roughly 27,500 square kilometres and includes more than 500 sites. This network helps to ensure that Alberta’s biodiversity is preserved for future generations.

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”.

Provincial parks exist to protect provincially significant natural, historical and cultural features. They contain a range of outdoor recreation, interpretive, and environmental education opportunities, facilities and services so that visitors can explore, learn, understand, and appreciate the natural world.

The following is a list of rules that reflect the Park’s mandate to protect and preserve the natural environment.

Do not feed or disturb wildlife:

Feeding of wildlife is not necessary and is potentially dangerous and is against Park rules. The Park’s ecosystem provides all the food and habitat wildlife requires for their basic needs. Human food does not meet their nutritional requirements and can cause some species to look to humans as a food source. Quietly observe all wildlife from a safe distance.

Leave only footprints:

Take only pictures. Everything in the Park – living and non-living is protected to help preserve the complex living systems that thrive in our provincial parks. Students are welcome to share their discoveries, but must remember to leave everything as they found it. Treat plants, insects, and trees gently to avoid unnecessary injury or damage. Please do not pick plants.

Pets on a leash:

There are no off-leash areas in Alberta’s Parks and Protected Areas. This protects the parks wildlife as well as domestic pets. Please do not bring pets on a field study. They can be distractions for students and pose a health risk for those allergic to pets. Guide Dogs and Assisted Living Dogs are the only animals permitted in Park buildings.

Pitch in:

Litter should be placed in the garbage bins provided or in a pocket. Human litter can be hazardous to Park plants and wildlife.
Fire in its place:
Use only designated fire pits. Open fires are a threat to public safety and Park habitats. The burning of Park vegetation is not permitted. You must bring your own firewood and bucket to extinguish the fire. Water is available in all washroom facilities.

You are not alone:
There will be other school groups and visitors in the park at the same time as you. Be sure to share the trails, do not try to pet or call other people’s dogs, be reasonably quiet and respect the other visitors in the park.

Discussion Checklist:
Here is a checklist of things to discuss at school prior to the field activity day.

_____ Discuss the fact that Fish Creek Provincial Park is not a city park. It is one of many Alberta parks and protected areas.
_____ Discuss the purpose of provincial parks and protected areas. Have the class make a list of behaviours on the field activity day that would show respect for living things and a commitment to their care. Possibilities include:
  • Leave ant hills, nests and rotting logs alone and intact. These are animal homes.
  • Walk carefully around bushes and trees, not through the middle of them.
  • Stay on the trails. When leaving trails to complete program activities walk carefully to avoid crushing small plants and trees.
_____ Discuss the Park rules. These rules reflect the provincial parks mandate to protect and preserve our natural environment.
_____ Discuss outdoor safety. Students need to:
  • Stay with their group at all times, not wander off alone.
  • Not climb trees, fences or railings.
  • Not walk into the creek or onto the ice in winter; be cautious around steep creek banks as they may give way.
_____ Discuss behavioural expectations. Explain that the field activity is another school day, but at a different location. All of the same school rules apply.
_____ Discuss all of the appropriate clothing required for the season and the day’s activities. Mornings in the shady forest are cool. Trails may be muddy and wet. Several layers of clothing, including a water resistant layer and a hat or hood will provide the most comfort. Boots provide more protection than runners and sandals. Warm weather means hats, sunscreen and insect repellent will also be required.
Section III – Your Excursion Day

1. **Orienting a map**

The students must know how to orient a map before attempting to navigate the activity area with a GPS. Failure to correctly orient the map is the frequent reason people experience difficulty following maps.

Orienting a map simple means the map is turned so that “north” on the map is pointing to the compass direction north.

   **OR**

The map is turned in a manner that any landmarks seen on the map match actual landmarks in relation to the map reader’s location. For example, if the creek is behind the map reader, the map should be turned so the creek appears behind the map reader.

Even when the map reader is unsure which direction is north from their location, orienting the map can be accomplished by following these steps:

1. Read the legend.
2. Locate where you are currently standing.
3. Find a landmark close to your location (bridge, creek, building, parking lot).
4. Holding the map so the words remain right side up, turn yourself around until what is shown on the map matches actual locations.

   **OR**

5. Turn the map around until what is shown on the map matches the actual landmarks around you.

2. **Using a GPS unit**

Students will be provided with an overview of how to use the GPS unit during their orientation at Fish Creek Provincial Park. A laminated instruction guide will be reviewed with the group and left with the teacher/leader for reference.

3. **Waypoints and control markers**

A waypoint is a reference point or set of coordinates that precisely identify a location. Each waypoint includes latitude and longitude data for that location. Using the pre-programmed waypoints in each GPS unit, students will find their way to 12 locations in and around Shannon Terrace.

At each location they will also find a red and white control marker (see image below), which confirms they have reached the correct waypoint. These markers are approximately 10 cm square and positioned permanently on posts, fences, bridges, or signposts. They may be on any side and at any height so remind students to look all around.
4. Recording control markers, waypoints and marking the map

Record the two letter code from the control marker in the space provided on the “GPS Excursion” activity sheet for each station. These letters do not unscramble a word or phrase, but are merely there for students to record and prove they have located the marker.

Students will also be asked to record the longitude and latitude coordinates of each location on the activity sheet. These coordinates can be found by moving the toggle up or down once while looking at the map screen on the GPS unit. Note that the coordinates students record may not be exactly the same as those listed in the answer key. Coordinates may differ slightly due limited accuracy of the handheld units. Written waypoints should look like this:

\[
\begin{align*}
N 50^\circ 55.660 \\
W 114^\circ 07.923
\end{align*}
\]

Once students have found the marker they must mark that exact location (waypoint) on the map using a pen or pencil. Mark the location using the stop number, such as #1.

5. About the activity

The GPS Excursion in Fish Creek Provincial Park is designed to incorporate key curriculum targets into a fun and challenging outdoor activity. Students should be well prepared to spend the day outdoors as they set out for an educational adventure.

The following pages are the GPS Excursion Activity Questions, as well as the Access and Area Maps to accompany your activity.

It is recommended that each student has a copy of the Activity Questions, Area Map and Blank Control Marker Sheet. Each teacher/leader should have the Activity Answer Key and the Area Map.

*Please print pages 9-19 on letter size paper (8.5” x 11”)*
*Please print map pages 33-34 on legal size paper (8.5” x 14”)*
*Please print one copy of the GPS Unit Quick Start Guide for each student*
6. GPS excursion questions

Stop #1  
Control Marker Code: __________
Waypoint Coordinates: N_________
W_________

Fish Creek wasn’t always a provincial park. In fact, much of the land was privately owned and used as ranch land. When it became a park in 1975, a number of changes had to be made in order to accommodate large numbers of visitors. Look around you and list 4 things that have been added by humans to facilitate the land’s transition to a park.

1.

2.

3.

4.

Do any of these changes have a negative effect on your experience here? If so, which ones and why?
Stop #2
Control Marker Code: ____________
Waypoint Coordinates: N ________
W ________

Suppose you didn’t have a GPS to help you find this marker. How would you describe this location to the next group to help them locate it? Be sure to describe your environment in detail, including types of vegetation, man-made structures, and any distinguishing landmarks.

Stop #3
Control Marker Code: ____________
Waypoint Coordinates: N ________
W ________

Technologies like GPS can help biologists track and record where wildlife is found and how animals like cougars travel. Look to the west and observe the 37th street traffic bridge, which is higher and wider than most other bridges. How might this design help keep wildlife safe when travelling from one habitat to another?

How can GPS be used to determine if the features of this new design are effective or not? How can we tell if animals are using the corridor?
Within this Spruce forest ecosystem, everything is interacting. Look at the large Spruce tree behind the sign post. A woodpecker has chipped away the bark in order to get at insects for food. In what ways might other animals or insects interact with this tree?

Is there any sign that humans have also had interactions with some of the trees around you? What evidence is there?

How will these human effects have an impact on the way animals and insects interact with those same trees in the future?
Stop #5

Control Marker Code: ___________
Waypoint Coordinates: N ___________
W ___________

When using a GPS to navigate through a forest or locate a geocache, it is important to stay on trails when possible so as not to disturb sensitive ecosystems. Look around at the area behind the post and rail fence and list a few activities that may have caused degradation of the forest.

How have these activities contributed to the esthetics of this area (how it looks)?

What are some ways the park can work to prevent this sort of damage from occurring in the future?

Is there anything that can be done for this area now? Could GPS technology have a role to play?
Stop #6

Control Marker Code: ___________
Waypoint Coordinates: N _________
W_________

The water that flows in front of you is Fish Creek. Its headwaters start in the Rocky Mountains and flow through agricultural lands, protected areas, and towns before reaching Calgary. List 5 ways in which this water may have been used by people before flowing into the Park and specify whether each use affects the creek directly (changing water levels) or indirectly (pesticides leeching into water through groundwater).

<table>
<thead>
<tr>
<th>Water Use</th>
<th>Direct / Indirect and why</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Choose one of these activities and explain how you might make a difference in your daily routine to ensure that water flowing out of Calgary remains safe for those who use it downstream?
Stop #7

Control Marker Code: ___________
Waypoint Coordinates: N__________
W__________

Walk down the hill towards waypoint #8 and stop at the clearing on your right. You are surrounded by two different natural regions, the grassland and the aspen parkland. What features define each ecosystem? (Hint: look at plant species, abiotic conditions, etc.)

<table>
<thead>
<tr>
<th>Grassland</th>
<th>Aspen Parkland</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Which one do you think has more diversity of life and why?

Why do you think diversity is important?

Have the group split into two smaller groups and assign each to an ecosystem. Take a few minutes to look for signs of life to see which one really is more diverse. Look for insects, plants, and evidence of life (scat, hair, footprints, etc). Was your guess correct? List some of the things you found.
Stop #8

Control Marker Code: ___________

Waypoint Coordinates: N__________
W__________

Look around at the fallen trees. These trees might have been knocked down in a windstorm or may have simply died of old age, rotting away from the inside out. Anything that dies in an ecosystem will eventually be recycled. How will these trees get recycled in the forest?

One of the Park’s regulations is no littering. If this hill was covered with human-generated wastes (garbage), would the ecosystem be able to recycle it as well? Why or why not?

How can you reduce your waste footprint when geocaching or using GPS units in the forest?
Stop #9  
Control Marker Code: ___________
Waypoint Coordinates: N__________
W__________

Environments are constantly changing due to shifting seasons, geological transformations, extreme weather, succession or human influences. Examine the creek bank and surrounding area to identify what sorts of changes have occurred in the following areas:

**DO NOT** go too close to the edge of the bank as it is unstable and may collapse into the creek.

<table>
<thead>
<tr>
<th><strong>Creek bed</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Surrounding forests</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Creek banks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Around bench</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
Stop #10

Control Marker Code: ___________
Waypoint Coordinates: N________ W________

Have a look at the creek in front of the marker post. Be careful not to get too close to the edge. The bank where you are located is a relatively steep drop to the water while the shoreline on the opposite side is flat and covered with a great deal of gravel, rock and vegetation. Why the differences from one side of the creek to the other?

Stop #11

Control Marker Code: ___________
Waypoint Coordinates: N________ W________

It is always important to be aware of your surroundings when navigating on trails. While you have been out on the trails today you may have come across hazards—things that can threaten your safety. Thinking back to some of the trails you have been on, what might some of those hazards be?

This trail winds and curves quite a bit. Does that cause any potential safety hazards, whether you are on foot, riding a bicycle or walking a dog?
Stop #12  
Control Marker Code: ___________
Waypoint Coordinates: N_________  
W_________

In the past this area was a barn yard and area used to keep cattle and horses. Explore around the perimeter of the corral fences and examine the grasses on either side of the fence. One you will readily find can grow quite tall, almost a metre (or more), has wide flat blades and loose tassel-like seed heads, this is *Smooth Brome*. This brome is an introduced species, but is the dominant grass in the Park.

How might cattle and horses have been responsible for the introduction of these plants into the fenced area and other areas of the park?

Are there other natural processes that could have helped the spread of this invasive species (Hint: consider how seeds are spread)?
What are three methods that the Park could employ to control and eliminate weeds in this area?

1) 

2) 

3) 

If a herbicide was applied here to control the invasive weeds, how might it move through the food chain and who would it ultimately affect?
7. GPS excursion answer key

Stop#1  
Control Marker Code: AD  
Waypoint Coordinates: N 50° 55.845'  
W 114° 07.976'

Fish Creek wasn’t always a provincial park. In fact, much of the land was privately owned and used as ranch land. When it became a park in 1975, a number of changes had to be made in order to accommodate large numbers of visitors. Look around you and list 4 things that have been added by humans to facilitate the land's transition to a park.

1. Roads for access into park

2. Power lines for electricity to buildings in park

3. Parking lots

4. Gates to designate areas as “staff only” or to close the park at night.

Do any of these changes have a negative effect on your experience here? If so, which ones and why?

Roads, power lines, gates and parking lot make the Park look less natural and wild and break up the forest and the view. Roads bring in noise from traffic.
Stop #2
Control Marker Code: GH
Waypoint Coordinates: N 50° 55.837’
W 114° 08.055’

Suppose you didn’t have a GPS to help you find this marker. How would you describe this location to the next group to help them locate it? Be sure to describe your environment in detail, including types of vegetation, man-made structures, and any distinguishing landmarks.

- Approximately 50 metres up the paved trail from pedestrian crosswalk
- Small square post in ground on right side of trail
- Located on elevated land
- Large patch of Canada thistle plants on left side of trail
- Mainly deciduous (poplar) trees
- Large poplar on left of trail that is missing a piece of its trunk
- Can see trail junction behind you

Stop #3
Control Marker Code: RY
Waypoint Coordinates: N 50° 55.776’
W 114° 08.221’

Technologies like GPS can help biologists track and record where wildlife is found and how animals like cougars travel. Look to the west and observe the 37th street traffic bridge, which is higher and wider than most other bridges. How might this design help keep wildlife safe when travelling from one habitat to another?

*Wildlife will feel more comfortable crossing under a taller, wider bridge. It creates a safer corridor so animals don’t have to cross over the bridge, possibly getting struck by vehicles. There may be less noise from vehicles to scare away wildlife.*

How can GPS be used to determine if the features of this new design are effective or not? How can we tell if animals are using the corridor?

*GPS collars can be placed on larger mammals like cougars, bobcats or coyotes to track movement patterns and determine if they are moving under the bridge.*
Within this Spruce forest ecosystem, everything is interacting. Look at the large Spruce tree behind the sign post. A woodpecker has chipped away the bark in order to get at insects for food. In what ways might other animals or insects interact with this tree?

- woodpeckers may nest inside the trunk
- insects may live under the bark and feed there
- squirrels may nest in the branches
- other birds may nest in the branches
- mammals may rub against the tree, using it as a “rub” tree
- some animals or birds may eat the spruce needles

Is there any sign that humans have also had interactions with some of the trees around you? What evidence is there?

Some trees have been cut down with chainsaws to clear trails of deadfall.

How will these human effects have an impact on the way animals and insects may interact with those same trees in the future?

- Animals may not be able to nest in a fallen tree.
- Once the tree dies it may not produce food anymore
- A fallen tree may provide a home for insects or animals that wouldn’t live in a standing tree
- Fallen trees will decompose and add nutrients to the soil
When using a GPS to navigate through a forest or locate a geocache, it is important to stay on trails when possible so as not to disturb sensitive ecosystems. Look around at the area behind the post and rail fence and list a few activities that may have caused the degradation of the forest.

Mountain biking and hiking off of the designated trail has caused compaction of the soil, erosion and loss of plant life in the forest.

How have these activities contributed to the esthetics of this area (how it looks)?

There is no underbrush or low-lying vegetation anymore. Dirt paths criss-cross through the trees so it no longer looks natural. The area looks completely barren and unsightly.

What are some ways the park can work to prevent this sort of damage from occurring in the future?

- using signs to close the area to the public
- building a fence to keep the public out of sensitive areas
- educating visitors on the importance of staying on designated trails
- limiting certain activities in areas that can not sustain heavy usage

Is there anything that can be done for this area now? Could GPS technology have a role to play?

GPS can be used to map and categorize this area as sensitive and in need of restoration. Once identified, anyone carrying out the restoration of the area (planting shrubs or trees) can use the GPS coordinates to locate it.
Stop #6

Waypoint Coordinates: N 50° 55.661’ W 114° 07.580’

The water that flows in front of you is Fish Creek. Its headwaters start in the Rocky Mountains and flow through agricultural lands, protected areas, and towns before reaching Calgary. List 5 ways that this water may have been used by people before flowing into the Park and specify whether each use could affect the creek directly (changing water levels) or indirectly (pesticides leaching into creek through groundwater) and how.

<table>
<thead>
<tr>
<th>Water Use</th>
<th>Direct / Indirect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation for crops</td>
<td>Both - can lower water levels and leach chemicals</td>
</tr>
<tr>
<td>Residential use (laundry, dishes, drinking)</td>
<td>Indirect – chemicals that go down the drain can end up back in the water table</td>
</tr>
<tr>
<td>Livestock watering</td>
<td>Direct – livestock can pollute water with manure and erode the banks.</td>
</tr>
<tr>
<td>Tourism – e.g. Rafting, canoeing</td>
<td>Indirect – may effect nesting birds along river banks</td>
</tr>
<tr>
<td>Recreational – e.g. fishing</td>
<td>Direct – overfishing could reduce numbers of important fish species</td>
</tr>
</tbody>
</table>

Choose one of these activities and explain how you might make a difference in your daily routine to ensure that water flowing out of Calgary remains safe for those who use it downstream?

- **Irrigation**: The more water used upstream can cause shortages downstream of Calgary.
- **Residential Use**: Chemicals used by others can contaminate drinking water downstream
- **Livestock**: People could possibly get sick from drinking contaminated water, E coli for example
- **Tourism**: Less river-nesting birds for people to bird watch further along
- **Recreational**: May have bans on catching certain fish species if there numbers have decreased
Walk down the hill towards waypoint #8 and stop at the clearing on your right. You are surrounded by two different natural regions, the grassland and the aspen parkland. What features define each ecosystem? (Hint: look at plant species, abiotic conditions, etc.)

<table>
<thead>
<tr>
<th>Grassland</th>
<th>Aspen Parkland</th>
</tr>
</thead>
<tbody>
<tr>
<td>No trees</td>
<td>Mostly aspen trees</td>
</tr>
<tr>
<td>Only grass growing, not much variety in plants</td>
<td>Many varieties of plants, shrubs, grasses</td>
</tr>
<tr>
<td>Exposed to sun and heat</td>
<td>Well shaded and cool</td>
</tr>
<tr>
<td>Less places for animals to live</td>
<td>More diverse habitat for animals</td>
</tr>
</tbody>
</table>

Which one do you think has more diversity of life and why?

Aspen Parkland – different habitat, more tolerable climate, more plants growing.

Why do you think diversity is important?

Diversity within an ecosystem means more variation in habitat so more species can exist, more food resources, and a better chance of survival. For example, if only one plant species grew here and an insect ate only that plant, the entire ecosystem would be destroyed by that insect.

Have the group split into two smaller groups and assign each to an ecosystem. Take a few minutes to look for signs of life to see which one really is more diverse. Look for insects, plants, and evidence of life (scat, hair, footprints, etc). Was your guess correct? List a few of the things you found.

Yes or No.

Insects, birds, grasses, trees, shrubs, flowers, footprints, chewed off branches.
Stop #8  
Control Marker Code: KJ  
Waypoint Coordinates: 
N 50° 55.602'  
W 114° 07.496'

Look around at the fallen trees. These trees might have been knocked down in a windstorm or may have simply died of old age, rotting away from the inside out. Anything that dies in an ecosystem will eventually be recycled. How will these trees get recycled in the forest?

_A newly fallen tree may become a home for many insects or animals. Over time, the tree is broken down and decomposed. In moist conditions, this process typically works faster than in dry conditions. Once bacteria, fungus and insects have broken down the decaying tree into small enough pieces, it becomes humus on the forest floor. Humus eventually turns into nutrient rich top soil. That new soil then feeds young plants in the surrounding area as they grow._

_Trees may also become fuel in a forest fire, which can restore the habitat and food sources for wildlife._

One of the Park’s regulations is no littering. If this hill was covered with human-generated wastes (garbage), would the ecosystem be able to recycle it as well? Why or why not?

_No, because human waste is often made from unnatural materials (plastics, styrofoam) that cannot be broken down by natural processes. Human garbage may never decay and can become harmful to wildlife and the environment, continuing to build up overtime._

How can you reduce your waste footprint when geocaching or using GPS units in the forest?

- Use digital caches that can be accessed on the internet.
- Do not leave waste behind when out on the trails
- Picking up garbage you find on the trails
**Stop # 9**

Control Marker Code: **XY**

Waypoint Coordinates: **N 50° 55.613’**

**W 114° 07.413’**

Environments are constantly changing due to shifting seasons, geological transformations, extreme weather, succession or human influences. Examine the creek bank and surrounding area to identify what sorts of changes have occurred in the following areas:

**DO NOT** go too close to the edge of the bank as it is unstable and may collapse into the creek.

<table>
<thead>
<tr>
<th><strong>Creek bed</strong></th>
<th><em>Erosion, debris from floods left behind, flow path of creek has changed, rocks may have been carried downstream and built up in low-flow areas.</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surrounding forests</strong></td>
<td><em>Trees have fallen due to old age and/or severe weather like wind; trees have leaves in summer season.</em></td>
</tr>
<tr>
<td><strong>Creek banks</strong></td>
<td><em>Highly eroded due to flooding and high foot traffic/bike trails.</em></td>
</tr>
<tr>
<td><strong>Around bench</strong></td>
<td><em>Plants have stopped growing due to heavy human use, gravel from trail has dispersed to sides because of people walking on it over time, trees may have been cut down to accommodate building of bench.</em></td>
</tr>
</tbody>
</table>
Stop #10  
Control Marker Code: DF  
Waypoint Coordinates:  
N 50° 55.765'  
W 114° 07.403'

Have a look at the creek in front of the marker post. Be careful not to get too close to the edge. The bank where you are located is a relatively steep drop to the water while the shoreline on the opposite side is flat and covered with a great deal of gravel, rock and vegetation.

Why the differences from one side of the creek to the other?

- As water flows in creeks and river in meanders, twisting and turning across the land. As it flows water on the outside of the curves flows faster and erodes or cuts into the banks more carrying away materials. This can create steep cut banks along the shoreline.
- The inside of the curves sees the water flowing at a slower rate and because of this, materials are dropped or deposited creating point bars.
- The large trees laying on the point bar here are from flooding in past years that saw a great deal of debris getting washed downstream during high water events.
Stop #11
Control Marker Code: RA
Waypoint Coordinates: N 50° 55.718’
W 114° 07.538’

It is always important to be aware of your surroundings when navigating on trails. While you have been out on the trails today you may have come across hazards – things that can threaten your safety. Thinking back to some of the trails you have been on, what might some of those hazards be?

Tree roots, fallen trees, weather, other trail users, dogs, muddy trails, tree branches, thistles, stinging nettle, stinging insects, getting lost, injury.

This trail winds and curves quite a bit. Does that cause any potential safety hazards, whether you are on foot, riding a bicycle or walking a dog?

People coming around a corner on a bike or rollerblades too quickly could cause an accident.

How can you prepare to deal with these possible hazards before heading out on the trails?

- Look at maps before hand to determine trails and routes
- Have a first aid kit with you at all times and know how to use it
- Carry a phone in case of emergency and know who to call – take note of emergency locator numbers (neon marker) on each map sign.
- Be alert when on the trail, always listening and looking at your surroundings
- Don’t spend too much time staring down at the GPS – keep your eyes on the trail, looking up, down and to the sides as often as possible

Stop #12
Control Marker Code: RI
Waypoint Coordinates: N 50° 55.711’
W 114° 07.672’

In the past this area was a barn yard and area used to keep cattle and horses. Explore around the perimeter of the corral fences and examine the grasses on either side of the fence. One you will readily find can grow quite tall, almost a metre (or more), has wide flat blades and loose tassel-like seed heads, this is Smooth Brome. This brome is an introduced species, but is the dominant grass in the Park.
How might cattle and horses have been responsible for the introduction of these plants into the fenced area and other areas of the park?

_Horse and cattle feed (hay) may have consisted of brome grass and other invasive weeds. The weeds may have been distributed through manure or on their hooves as well. Because the animals would have trampled the existing native vegetation in the corrals, the weeds had perfect growing conditions._

Are there other natural processes that could have helped the spread of this invasive species (Hint: consider how seeds are spread)?

_Floods, wind, or even fire may have helped the weeds spread by seed throughout the valley. Wildlife such as deer or ground squirrels could have spread seeds as well. Insects will have pollinated the flowers helping plants to grow._

Could humans have contributed to the spread of invasive weeds as well? How?

_Humans could have planted the seeds directly, accidentally carried weeds in farm machinery from one location to another, and livestock or domesticated pets may have transferred seeds._

What are three methods that the Park could employ to control and eliminate weeds in this area?

1) **Mechanical, mowing and pulling**

2) **Chemical, applying herbicides**

3) **Biological, using insects, funguses or bacteria to destroy the weeds**

If a herbicide was applied here to control the invasive weeds, how might it move through the food chain?

_Sprayed onto plants – leaches into groundwater or creek – effects fish and amphibian populations – predators consume contaminated fish and chemicals accumulate in those predators_ 

OR

_Sprayed onto plants – plants are eaten by herbivores – herbivores are eaten by predators_
Section IV: Appendices

1. Appendix A – Access Map to the Fish Creek Environmental Learning Centre

2. Appendix B – Map of Shannon Terrace Area

3. Appendix C – Blank Control Marker Sheet

4. Appendix D – GPS Unit Quick Start Guide
GPS Excursion in Fish Creek Provincial Park

13931 Woodpath Road S.W., Calgary, Alberta T2W 5R6
Phone: (403) 297-7827  Fax: (403) 297-7849

ACCESS MAP
Fish Creek Environmental Learning Centre

Directions:
Take Anderson Road West to 37th Street S.W. Head south on 37th Street S.W. to 130th Avenue S.W. (Second set of lights on 37th Street S.W.). Turn left onto 130th Avenue S.W. and then take your first right onto Woodpath Road S.W. Drive straight ahead into the Park and continue to the bottom of the hill. The Environmental Learning Centre is on the right hand side (watch for signs).

NOTE:
- Park speed limit is 30 km/hr.
- Please park in the picnic area and walk to the Centre along the paved path.
- Do not leave valuables in your vehicle.
FISH CREEK PROVINCIAL PARK

Provincial parks exist to protect significant natural, historical and cultural features and to provide recreational opportunities to enjoy these features.

Alberta’s parks are protected by the Alberta Parks Act to help keep them healthy and vibrant.

Do not feed or disturb wildlife. Feeding wildlife, including birds, is not necessary and is potentially dangerous. Quietly observe all wildlife from a comfortable distance.

Leave only footprints. Everything in the Park – living and non-living – is protected to help preserve the complex living system that thrives in Fish Creek Provincial Park. Leave everything as it is found.

Pets on a leash. There are no off-leash areas in any of Alberta’s provincial parks. This protects Park wildlife as well as domestic pets.

Pitch in. Litter should be placed in the rubbish bins provided or in a pocket. Human litter is hazardous to Park plants and wildlife.

Fire in its place. Use only designated fire pits. Open fires are a threat to public safety and Park habitats. The burning of Park vegetation is not permitted.

Speed limit in the Park is 30 km/hour.

SAFETY TIPS

STAY ON THE OFFICIAL PARK TRAILS: those with a paved or shale surface. All the control markers are visible from these trails.

Send Orienteering participants onto the course in groups no smaller than 3 people. If there is an accident, this leaves someone with the injured person while the third person goes for help.

Watch carefully for hazards such as uneven ground, holes, tree roots and stumps. Around the creek, watch for eroded banks and thin ice.

Avoid touching stinging nettle. This plant can cause a skin irritation that may last several hours.

CONTROL CARD

1. Junction of roads.

2. Edge of clearing.

3. Top of curve.

4. Trail junction.

5. End of culvert.


7. Trail junction.

8. Top of hill.


10. Past two large stumps

11. Creek side of trail.

12. Fence post by pasture.