ROYAL CANADIAN ARMY CADETS

RED STAR

INSTRUCTIONAL GUIDE

SECTION 10

EO C221.01 – PARTICIPATE IN A DISCUSSION ON CANADA'S WILDERNESS CONSERVATION EFFORTS

Total Time: 60 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-702/PG-001, Chapter 4. Specific uses for said resources are identified throughout the Instructional Guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

An interactive lecture was chosen for TP1, TP2, and TP4 to introduce the cadets to wilderness conservation and to generate interest.

An in-class activity was chosen for TP3 as it is an interactive way to provoke thought and stimulate interest among cadets.

INTRODUCTION

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall have developed an appreciation for Canada's wilderness conservation efforts.

IMPORTANCE

It is important for cadets to appreciate the wilderness environment as well as understand the impact they have on it. The environment is very fragile and each cadet should have respect for the land we share. As Army Cadets, there is a need to contribute to efforts which help keep the natural environment's integrity.

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Teaching point 1 **Define and Explain Environmental Terms**

Time: 10 min Method: Interactive Lecture



Explain the following terms.

ENVIRONMENTAL TERMS

Conservation. Conservation is defined as using natural resources (e.g. soil, water, minerals, wildlife, and sunlight) in a way that ensures continued availability for future generations. It includes the preservation, maintenance, usage, restoration, and enhancement of the environment.

Land Ethic. Land ethic is respecting, valuing, and having concern for the natural world.

Ecosystem. An ecosystem is the interaction of living organisms and their environment. Ecosystems include:

- **Abiotic Components.** Physical elements such as water and rocks.
- **Biodiversity.** A composition of communities which have different species. For example, species found in a rainforest will differ from species found in the tundra.
- **Ecosystem Processes.** The engines that make ecosystems work, such as fires, floods, and predation (animals preying on other animals).

Ecological Integrity. Ecosystems have integrity when all components (abiotic, biodiversity, and ecosystem processes) are functioning together. People should enjoy parks without damaging these components.

Natural Resources Canada. Natural Resources Canada (NRCan) is responsible for ensuring proper development of Canada's natural resources, including energy, forests, minerals, and metals. They maintain an up-to-date knowledge base of Canadian land masses and resources.

NRCan is responsible for developing policies and programs to enhance the contribution of the natural resource sector to the economy and to improve the quality of life for all Canadians.

Provincial and National Parks. Provincial and national parks are owned by all Canadians. They are protected from most human development and pollution. The aim of these parks is to promote enjoyment by the public while conserving and enhancing the natural beauty, wildlife, and cultural heritage they contain. These parks are protected by government laws.

The mandate of national parks is to protect lands and waters that represent Canada's natural coast to coast diversity, in a way that restores or maintains ecological integrity, and in a way that allows for visitor activities and appreciation.

Crown Land. Any land that is owned by the federal or provincial government is crown land. Control and authority is placed on the Crown. The amount of crown land varies from province to province. National parks, provincial parks, native reserves, federal military bases, and provincial forests are all various forms of crown land.

Protected Areas. To ensure natural features are safe, areas of land are declared protected. Once declared protected, these areas are subject to numerous laws which help safeguard its interests. There are many protected areas across Canada, such as the Nahanni National Park Reserve of Canada, located in the Northwest Territories.

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CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. What is conservation?

Q2. What are the three components of an ecosystem?

Q3. What is a protected area?

ANTICIPATED ANSWERS

A1. Conservation is defined as using natural resources (e.g. soil, water, minerals, wildlife, sunlight) in a way that ensures continued availability for future generations. It includes the preservation, maintenance, usage, restoration, and enhancement of the environment.

A2. The three components of an ecosystem are abiotic components, biodiversity, and ecosystem processes.

A3. A protected area is an area of land that has been declared protected.

Teaching point 2 **Discuss Human Impact on Park Environments**

Time: 15 min Method: Interactive Lecture



There are many ways cadets can contribute to minimizing the level of human impact on park environments. Though these points are tailored to Parks Canada and national parks, they should be considered for any bivouac site used by cadets.

ECOSYSTEM MANAGEMENT

By working closely with other land management agencies, Parks Canada demonstrates leadership in their goal to develop a better understanding of the relationship between existing land use practices and their effects on the natural environment.

It involves an understanding and a partnership among all those whose activities influence the ecological integrity of the park. For example, a cadet corps holding a weekend bivouac FTX may put strain on the environment through daily activities such as setting up shelters, constructing and lighting fires, and disposing of wastes. Other agencies and people also have an impact on this park ecology.

The concept of partnerships is also important since universities, conservation organizations, and the private sector have a lot to contribute towards research and environmental monitoring initiatives within national parks.

SUSTAINABLE DEVELOPMENT

Sustainable development involves meeting the needs of the present without compromising the needs of future generations. It is a way of thinking and acting. It is also a way of ensuring that social, economic, and environmental considerations are integrated into our decisions and our actions. Choices made now will affect choices that people can make for years to come.

The Government of Canada submits a sustainable development strategy (SDS) to Parliament every three years. Once this is approved, Parks Canada develops their SDS which outlines how they will integrate the principles into their policies, programs, legislation, and operations.

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Sustainable development strategies are developed every three years and can be accessed by searching “sustainable development strategy” in the Parks Canada or Environment Canada Website.

ENVIRONMENT CANADA’S PROTECTED AREAS

The purpose of Environment Canada’s protected areas is to preserve rich and diverse populations. The Canadian Wildlife Service (CWS) is a part of Environment Canada. CWS is responsible for the protection and management of migratory birds and nationally significant habitats and endangered species. They also work on other wildlife issues of national and international importance, as they arise.

CWS works with many groups to ensure that areas are protected. There are approximately 11.8 million hectares of protected wildlife habitat – an area more than twice the size of Nova Scotia.

Components of this network include:

- National Wildlife Areas (NWAs),
- Migratory Bird Sanctuaries (MBSs), and
- Marine Wildlife Areas (MWAs).

Most protected areas permit public access and some offer visitor facilities, activities, and services. There may be exhibits, trails, brochures, and viewing stands to help visitors understand their surroundings. Canadian Wildlife Services has prohibited visitation to some protected areas during critical periods such as nesting and moulting (shedding feathers or hair).

To find out more information about Environment Canada’s protected areas, consult the following Websites:

- http://www.cws-scf.ec.gc.ca, or
- http://www.hww.ca/hww2.asp?cid=4&id=231.

LOCAL, REGIONAL, AND GLOBAL CONCERNS

Movement of Exotic Species

Exotic species are also commonly known as invasive species and refer to plants, animals, fungi, or other organisms that have been accidentally or purposefully introduced to an area outside of their origin.

Introductions can be accidental or intentional. The results of these introductions can vary from damaging the habitat to having no effect. A species may be introduced because it appears to be beneficial for the environment or through planting impure seeds. Some species may appear after disasters such as forest fires. Humans may carry some of these species when travelling. Species have been found on vehicles and clothing. This is normally accidental.

Though the majority of introduced plant species do not pose ecological or economic problems, some have become quite harmful in their new habitat. For an introduced species to become an invader, it must arrive, survive, and thrive.

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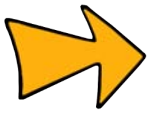

An invasive species: The Zebra Mussel

The zebra mussel, which originated in eastern Europe, is a freshwater mollusc that was accidentally introduced to the Great Lakes. It was discharged in water from ship's ballast tanks in 1986, and has flourished ever since. After being in a favourable environment for about five years, it can reach densities of hundreds of thousands per square metre.

The zebra mussel is a nuisance species and brings with it many concerns. It blocks conduits (water intakes, pipelines, tunnels), corrodes ship hulls, covers wrecks, causes loss of habitat, and changes the performance of ecosystems. There have been a few solutions tried, which have not been very effective. The cost of the invasion can costs millions of dollars each year, mainly for cleaning and control measures.

Air and Water Pollution

Air pollution is a huge environmental concern. The quality of air is an important factor in the quality of life. It is generated by many sources, such as the burning of fossil fuels from industries, transportation, and heating.

Water sources such as lakes, rivers, streams, and runoffs become polluted when feces come into contact with the water. As a rule, a person should be at least 60 m from water before defecating. Animal feces will also pollute water sources.

Greenhouse Gas Emissions

(Adapted from *The Climate is Changing our National Parks*, Parks Canada, Government of Canada).

The Earth's climate changes through natural processes, but also as a result of greenhouse gas (GHG) emissions.

There has been an increase in global temperature over the last 100 years. The effects of climate change are evident on a local to a global scale. Sea levels are rising, polar ice is melting and weather is becoming less predictable.

Parks Canada is trying to reduce the GHG impacts of its operations and activities, by:

- reducing the size, fuel use, and GHG emissions of its passenger cars and light trucks;
- improving the energy-efficiency of its buildings and facilities; and
- increasing the use of renewable energy technologies.

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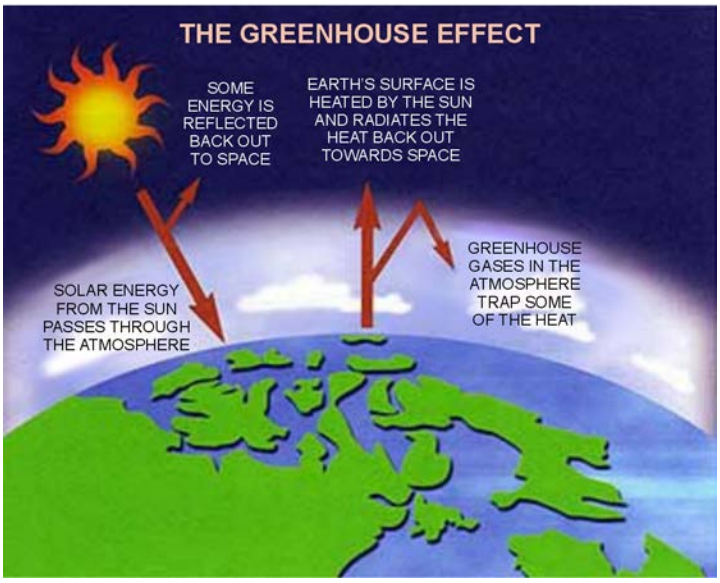

Parks Canada, 2007, The Climate is Changing our National Parks. Copyright 2007 by Government of Canada. Retrieved 21 March 2007, from http://www.pc.gc.ca/docs/v-g/ie-ei/cc/climate_e.asp

Figure 1 The Greenhouse Effect

Solid Waste Management

Everything carried into a site should be carried out. Park communities are no exception. Collectively, park residences and commercial establishments such as restaurants and hotels generate huge volumes of garbage and food waste.

Bears are a huge concern directly related to waste management. Bear-proof management of garbage is essential for the safety of people and the protection of bears and other wildlife.

Efforts to reduce, reuse, and recycle go a long way to cutting down on the amount of garbage generated. This helps reduce the consumption of valuable resources and the need for valuable land to be converted to landfills.

Wastewater Management

There will always be some leftover water, either from cooking or bathing. Never dispose of wastewater close to a stream. If it must be done, carry the water at least 60 m away from streams or lakes. Dishwater should be strained and scattered.

Water Conservation

Drinking contaminated water can be very serious. When camping, conserve whatever water you have and seek a reliable source as soon as possible.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. A sustainable development strategy is planned and implemented how often?

Q2. Approximately how much area is designated as protected wildlife habitats?

Q3. What are the local, regional, and global concerns?

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ANTICIPATED ANSWERS

A1. A sustainable development strategy is planned for and implemented for three years.

A2. Approximately 11.8 million hectares of land is declared as protected wildlife habitat.

A3. The local, regional, and global concerns are movement of exotic species, air and water pollution, greenhouse gas emissions, solid waste management, wastewater management, and water conservation.

Teaching point 3 **Conduct a Conservation Activity**

Time: 15 min Method: In-Class Activity

ACTIVITY

OBJECTIVE

The objective of this activity is to brainstorm environmental efforts in which the cadets can participate to help conserve the environment.

RESOURCES

- One sheet of flipchart paper per group;
- Tape; and
- A marker.

ACTIVITY LAYOUT

N/A.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of a maximum of six.

2. Allow five minutes for the cadets to brainstorm, writing their responses on flipchart paper. Ask the cadets about the environmental efforts they take to help conserve the environment:

    - at home;
    - at school; and
    - in the field.



Following the principles of Leave No Trace camping is a key step in environmental conservation.

3. Tape each group’s flipchart paper on a wall or in a place visible to all the cadets.

4. Discuss the points that the cadets brainstormed.

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Some points may not be easy to implement; however, there are always small steps that cadets can take to ensure that people enjoy the environment for years to come.

SAFETY

N/A.

CONFIRMATION OF TEACHING POINT 3

The cadets' participation in the in-class activity will serve as the confirmation of this TP.

Teaching point 4 **Discuss the Duties of Park Conservation Officials**

Time: 10 min Method: Interactive Lecture

DUTIES OF PARK CONSERVATION OFFICIALS

Study, Monitor, and Manage Ecosystems

Park conservation officials ideally have an education in natural science or natural resource management. Their knowledge is used to collect scientific information, assess the condition of heritage resources, and monitor ecological integrity. They contribute to the preparation of management plans and play a direct role in implementing ecosystem management plans. This involves research, monitoring wildlife, capturing animals, and relocating them in rare instances when they pose a public safety hazard.

Serve as Public Spokespersons

Park conservation officials are normally well trained and educated. They are great advocates for the public. It is their duty to keep the public informed about park issues, and to deliver public safety programs. Through public education and awareness, visitors understand their role in park conservation and accident prevention.

Conduct Search and Rescue Operations

Park conservation officials are trained in first aid and rescue procedures. They respond when people are lost, injured, or endangered. Park conservation officials are responsible for providing search and rescue missions and evacuations in all kinds of terrain and environmental conditions. They implement avalanche control, fire prevention, wildlife/human safety measures, and safety inspections. Cooperation with police, provincial conservation officers, and other resource management and enforcement agencies is a vital key.

Maintain Public Safety

Park conservation officials assess the risks involved from visitor activities. This includes monitoring environmental hazards and reducing incidents through public education and awareness.

Enforce Park-Specific Laws and Regulations

Each park has a set of rules for the public to abide by. Park conservation officials ensure that these rules are being followed, and impose penalties to those who disobey.

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For more information about on the duties of park officials, visit Parks Canada's Website at http://www.pc.gc.ca/agen/empl/itm3-/emp3a2_e.asp.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS

Q1. Ideally, what type of education do park officials have?

Q2. How do park officials serve the public?

Q3. What types of search and rescue procedures do park officials implement?

ANTICIPATED ANSWERS

A1. Ideally, park officials are educated in natural science or natural resource management.

A2. Park officials serve the public through public education and awareness, visitors understand the role of park officials in park conservation and accident prevention.

A3. Park officials implement avalanche control, fire prevention, wildlife/human safety measures, and safety inspections.

END OF LESSON CONFIRMATION

QUESTIONS

Q1. What are provincial and national parks?

Q2. What is Parks Canada doing to try to reduce the GHG impacts of its operations and activities?

Q3. What are the duties of park conservation officials?

ANTICIPATED ANSWERS

A1. Provincial and national parks are owned by all Canadians. They are protected from most human development and pollution. The aim of these parks is to promote enjoyment by the public while conserving and enhancing the natural beauty, wildlife, and cultural heritage they contain. These parks are protected by government laws.

A2. Parks Canada is trying to reduce the GHG impacts of its operations and activities by:

- reducing the size, fuel use, and GHG emissions of its passenger cars and light trucks;
- improving the energy efficiency of its buildings and facilities; and
- increasing the use of renewable energy technologies.

A3. Park conservation officials are responsible for studying, monitoring and managing ecosystems, serving as public spokespersons, conducting search and rescue operations, maintaining public safety and enforcing park-specific laws and regulations.

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CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

N/A.

CLOSING STATEMENT

There are small steps that everyone can take to help conserve the environment. Protecting the environment is everyone's responsibility. When cadets are in the field, conservation should be a key factor when making decisions that could affect the environment.

INSTRUCTOR NOTES/REMARKS

This lesson may be delivered by a guest speaker. The guest speaker should present park-specific duties for which they are responsible, while stressing the importance of conserving the environment.

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