

**Unit 2**  
**Recreation and The Environment**

**Suggested Time: 17 hours**



## Introductory Comments

There are a great number of activities such as portfolios, journals, newsletters, website postings, etc., that can be integrated throughout this unit and following units. It is not intended that students would do every suggested activity. For example, where it is suggested that students be divided into groups to research and present on a topic, not all students would need to be involved in that activity. Groups could be assigned specific topics to research so that over the course of the unit, all students would have an opportunity to work as a group to research and present of various topics. Teachers could identify the particular activities and projects in which they would like their students to engage and determine a set number of these written activities for each student to engage in over the course of the unit. (Likewise, individual students could be assigned topics to research and then present to the class.) Thus, rather than have every student complete each of the written activities, part of the student's assessment could require that each student/group complete a set number of tasks that could be included in a portfolio/newsletter/website. This could then be compiled for the entire class in the form of a newsletter, website, class display, etc.. Where possible, students should be engaged in at least one long term project or activity throughout the unit or the whole course. This could be an individual or group project.

For topics that contain a great deal of factual information, it would be very helpful for students to use the "mind mapping" technique (refer to Appendix) to help them summarize and consolidate this information. References and suggestions for how students could create the mind map will be made throughout this unit. As students become more proficient with the use of mind maps they should be encouraged to create their own without teacher suggestions. Teachers could have students create one mind map for the entire unit or a series of small maps for discrete sections. It is important that students refer to their notes and text when completing their mind maps to ensure the map is completely accurate (i.e. this is a learning strategy and is not appropriate for use as an assessment technique). Teachers should note that mind maps are most effective when students create them from scratch and when colour and sketches/picture are used along with their written text. In the absence of coloured pencils, etc., teachers could supply students with one of several different coloured highlighters. While individual students would create their own mind maps, the teacher could a "class mind map". Several sheets of large paper or poster board could be posted on the wall. The teacher could add to the class mind map each day as a summary of the day's lesson or at the beginning of the next class as a bridge between the current and previous lesson. Student mind maps could be used in Think-Pair-Share activities in which each student explains their mind map to their partner.

Teachers could use rubrics and/or checklists to assess student products and learning. Refer to Appendix for samples.

## The Wilderness

### Outcomes

*Students will be expected to*

2.01 define wilderness

2.02 identify values/benefits associated with wilderness and wilderness experiences. Include:

- (i) stress reduction
- (ii) provide jobs and benefits to the economy
- (iii) provides exposure to and stimulates interest in environmental issues
- (iv) enrichment of Newfoundland and Labrador culture
- (v) personal spiritual enhancement

2.03 describe the recent changes in nature-based activities in Newfoundland and Labrador

### Elaborations—Strategies for Learning and Teaching

Teachers could have students create their own definition of wilderness based on their experiences and perceptions of what wilderness might be to them. A collective definition could be created and then compare it to other definitions from the text and the Internet.

Teachers could have students generate a list of values and benefits related to wilderness and wilderness experiences. Subsequently, students could be asked to classify the values as related to wilderness or to wilderness experiences. For example, stress reduction as it relates to a wilderness experience has an intrinsic value to an individual. On the other hand, forest harvesting creates jobs and this provides a broader economic value. Many students should be able to draw upon personal experiences related the wilderness.

Teachers could have students complete the Mini Lab Activity “Recreational Activities Assessment Framework for National Parks”.

Teachers could address this outcome using the Land and Sea episode “Celie’s Story” which documents the values and benefits associated with wilderness and wilderness experiences.

Teachers should ensure that students recognize that, for the most part, nature-based activities have shifted from sustenance use to recreational use. Fifty years ago, families used the wilderness to acquire the necessary resources for survival. Today, many people do not need to access nature for the same reasons and as a result, most nature-based activities have a recreational purpose. Students should also consider that the methods of access to nature have changed dramatically. Historically, people walked or used horse-drawn sleds to travel in wilderness areas. Today, motorized all-terrain vehicles have increased the range and frequency of access significantly.

Teachers could have students complete the Mini Lab Activity “Local Participation Rates in Outdoor Activities”

## The Wilderness

### Tasks for Instruction and/or Assessment

#### *Presentation*

- Create the lyrics for a song that communicates the essence of what is meant by the term “wilderness”.
- Paint or sketch a picture that communicates the essence of what is meant by the term “wilderness”.
- Retrieve definitions for the term wilderness using the Internet and compare it to the definitions developed by students. Pay attention to historical definitions as well as definitions from other cultures. Discussion sharing and consensus should be used to formulate a collective definition for “wilderness”.

#### *Journal*

- Students could collect stories about “wilderness” adventures for journal writing and inclusion in their portfolio. They could draw on their own experiences or those of family members.
- Write a personal definition for “wilderness”, based on your experiences and perceptions.

#### *Performance*

- Students could then create a visual product (e.g. collage, poster, website) or a written product (e.g. an article for a newsletter, poem, song, short story, etc.) in which they examine the values/benefits associated with wilderness and wilderness experiences. The students could present their work to the class.

### **Conventions used in Resource/Notes column**

ST - Student Text

L&S - Land and Sea Episode

TR - Teacher Resource Package

LSRG - Land and Sea Resource Guide

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 161-163

L&S “Celie’s Story”

LSRG pp. 15-16, 45

ST pp. 164-167

## The Wilderness (continued)

### Outcomes

*Students will be expected to*

2.04 identify factors that have led to changes in nature-based recreation activities.

Include:

- (i) increased access
- (ii) improved transportation
- (iii) advanced technology
- (iv) changing demographics

### Elaborations—Strategies for Learning and Teaching

Teachers should point out to students that increased access to nature-based activities include access through woods roads that have opened up vast tracks of wilderness lands. Improved transportation results from such things as increased ATV use and the introduction of mountain biking. Advanced technologies such as GPS and cell or satellite phones now provide greater security while travelling in wilderness areas. As well, changing demographics indicate fewer young adults now participate in nature-based activities due to emigration and population decline.

Teachers could ask students how many of them utilize modern technologies in the wilderness and to what degree. As well, they could consider the impacts this usage might cause on the environment. Teachers could have students discuss the benefits and/or dangers of the changes that have occurred in nature-based recreational activities. Students could also be asked to speculate on how these changes might impact the local environment 20 years into the future.

Students could make a journal entry in which they reflect on their personal values/beliefs associated with wilderness and wilderness experiences.

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## The Wilderness (continued)

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### Tasks for Instruction and/or Assessment

#### *Journal*

- Describe how government feels about the use of technology in nature based activities
- Reflect on your personal values/beliefs associated with wilderness and wilderness experiences.

#### *Presentation*

- Create a slide show, poster, or collage that shows how nature-based activities have changed over the last 50 years.

#### *Performance*

- Create and perform a skit that shows the changes that have taken place in nature-based activities in the last 50 years.
- Create a timeline that communicates changes in wilderness access, transportation, and the use of alternate technologies as they relate to nature-based activities.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

## Consumptive and Non-consumptive Recreation

### Outcomes

*Students will be expected to*

2.05 define outdoor recreation

2.06 define consumptive and non consumptive recreational activities

2.07 describe environmental impacts of consumptive activities using an example

### Elaborations—Strategies for Learning and Teaching

Teachers could have students brainstorm a list of recreational activities they engage in that are related to use of the land.

As they address the outcomes in this unit, teachers should have students recall the ideas in Unit 1 related to protected areas and protected species. Have students consider the potential impacts of their recreational uses of the environment. Also, have students consider the impacts of various legislation and protection of spaces have on their use of the environment (e.g. quotas, parks, etc.). Throughout this unit, students should continually assess their attitudes and beliefs associated with the various regulations that seek to protect the environment with their needs and wants relative to using the environment to recreational purposes.

To emphasize the variety of outdoor recreational activities people in this province engage in, teachers could use the Land and Sea episode “Fish Enough”.

Teachers could make a list of the various activities that students brainstorm in the previous outcome and then have the students classify them as either consumptive or non-consumptive. For example,

**Consumptive:**

fishing, hunting/trapping, firewood cutting, berry picking, Christmas tree cutting, camping, quad and snowmobile use

**Non consumptive:**

hiking, kayaking, canoeing, camping, photography, mountain biking, bird watching

Students should recognize the varied impacts that consumptive recreational activities have on the environment. Two common examples are:

**Hunting:**

population management  
resource depletion  
wildlife harassment (intentional and unintentional)  
littering/pollution

**Firewood cutting:**

removal of slash on cutovers  
removal of burnt trees from forest fires  
depletion healthy forest stands (unregulated cutting)  
loss of aesthetic value

## Consumptive and Non-consumptive Recreation

### Tasks for Instruction and/or Assessment

#### *Journal*

- What is meant by outdoor recreation? Be sure to include a list of recreational activities that involve using the land.
- What are your personal experiences with a consumptive recreational activity? Were you considerate or aware of the possible environmental impacts? How can you modify the activity or your behaviour to reduce the impact on the environment?
- What are your personal experiences with a non-consumptive recreational activity? Were you considerate or aware of the possible environmental impacts? How can you modify the activity or your behaviour to reduce the impact on the environment?

#### *Presentation*

- Create a graphic with the word “Recreation” placed in the center. Draw arrows to as many recreational activities as possible that involve using the land (including aquatic ecosystems). Categorize the recreational activities as being consumptive or non-consumptive.
- Create a visual product (e.g. collage, poster, website) or a written product (e.g. an article for a newsletter, poem, song, short story, etc.) to describe the value of a consumptive recreational activity and compare it with the associated environmental impacts of this activity.
- Create the text for a sticker that would be given to either a skidoo user or an ATV user upon purchasing their vehicle. The sticker would include tips that the user could follow to reduce the impact the vehicle may have on the environment.

#### *Performance*

- In a small group, research one of the consumptive activities. Identify the environmental impacts (positive and negative) of the activity. Share your group’s ideas with the class.

#### *Paper and Pencil*

- Create a survey/questionnaire concerning consumptive and non-consumptive use of the environment. Distribute the survey in your school and analyze the results. Report your results to the class.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 164-165

L&S “Fish Enough”

LSRG pp. 17-18, 45

ST p. 166

## Consumptive and Non-consumptive Recreation (continued)

### Outcomes

*Students will be expected to*

2.07 describe environmental impacts of consumptive activities using an example  
(continued)

2.08 describe environmental impacts of non-consumptive activities using an example

### Elaborations—Strategies for Learning and Teaching

These examples highlight two common types of activities of recreational use in our province. Teachers should recognize that this does not limit the possible examples students could use in this particular case. Students could consider fishing, berry picking, and Christmas tree cutting. Further discussion should focus on the severity of the impacts that these activities may or may not have on the environment. Students should keep in mind as well, that not all impacts are necessarily negative. For example, firewood cutting can selectively remove dead or diseased trees, leaving the healthy trees in the forest.

The students could be arranged in groups and assigned one of the consumptive activities. Each group would be responsible for identifying the environmental impacts of the activity. Each group would share their ideas with the class.

Students should recognize the varied impacts that non consumptive recreational activities have on the environment such as:

#### **Canoeing:**

- pollution (littering)
- wildlife harassment (intentional and unintentional)
- damage to shallow water areas

#### **Camping and hiking:**

- littering/pollution
- wildlife harassment (intentional and unintentional)
- potential damage to soils and vegetation (over use)

As with examples of consumptive activities, teachers should not limit the types or numbers of examples used in this discussion.

Further discussion should focus on the severity of the impacts that these activities may or may not have on the environment. Students should keep in mind as well, that not all impacts are necessarily negative. For example, managed camp grounds limit the impacts that camping may have if it were a haphazard activity.

The students could be arranged in groups and assigned one of the non-consumptive activities. Each group would be responsible for identifying the environmental impacts of the activity. Each group would share their ideas with the class.

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## Consumptive and Non-consumptive Recreation (continued)

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### Tasks for Instruction and/or Assessment

#### *Presentation*

- Assume that you are building a cabin along a remote pond or stream. Draw a site plan that incorporates elements of legislation that reduces impacts of the cabin. Review policy on buffer zones (along lakes and streams), waste treatment (septic tanks and tile fields), and access (roads and ATV trails). Research alternate energy technologies to reduce the dependence on generators or being tied to the grid for energy. Also, try to find ways to better harvest wood in the vicinity of the cabin.

#### *Journal*

- Students could make a journal entry in which they discuss their own personal experience with a consumptive recreational activity and whether or not they were considerate or aware of their possible environmental impacts. Students should also consider how they might change the activity to reduce the impact on the environment.

#### *Performance*

- Students could create a collage, poster, brochure, web site, presentation in which they describe the value of a consumptive recreational activity and compare it with the associated environmental impacts of this activity. The students could present their work to the class.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST p. 166

ST p. 166

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**Consumptive and Non-consumptive Recreation (continued)**

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**Outcomes**

*Students will be expected to*

2.09 identify the environmental impacts of cottage/cabin development. Include:

- (i) road access development
- (ii) waste disposal
- (iii) wood harvesting
- (iv) noise pollution
- (v) ATV usage

**Elaborations—Strategies for Learning and Teaching**

Teachers could have students review the regulations that govern the development of a cottage/cabin. These regulations can be accessed through the Department of Environment and Conservation website.

Students in the class, who access cabins on a regular basis, could be asked to share their thoughts and experiences relative to these impacts.

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## Consumptive and Non-consumptive Recreation (continued)

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### Tasks for Instruction and/or Assessment

#### *Performance*

- Students could create a collage, poster, brochure, web site, presentation in which they describe the value of a non-consumptive recreational activity and compare it with the associated environmental impacts of this activity. The students could present their work to the class.
- Students could create a collage, poster, brochure, website, presentation in which they describe the possible environmental impacts that cottages/cabins have on the environment. They could also include methods by which the owner can reduce these impacts. The students could present their work to the class and/or share with local cottage/cabin owners.

#### *Journal*

- Students could make a journal entry in which they discuss their own personal experience with a non-consumptive recreational activity and whether or not they were considerate or aware of their possible environmental impacts. Students should also consider how they might change the activity to reduce the impact on the environment.
- Use the “what? so what? now what?”, format to make a journal entry about the impacts of cottage/cabin development in wilderness areas.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST p. 183

## Ecological Integrity

### Outcomes

*Students will be expected to*

2.10 define ecological integrity

2.11 identify measures used to preserve ecological integrity? Include:

- (iii) establishing protected areas
- (ii) creating legislation that defines environmental use
- (iii) awareness through educational programs

2.12 identify the values of eco-tourism. Include:

- (i) preservation of unique ecosystems
- (ii) protecting bio-diversity
- (iii) gives economic value to protected areas
- (iv) promotes the sustainable use of natural resources

### Elaborations—Strategies for Learning and Teaching

Ecological integrity occurs when ecosystems have their native components intact, including: abiotic components (the physical elements, e.g. water, rocks), bio-diversity (the composition and abundance of species and communities in an ecosystem, e.g. tundra, rainforest and grasslands represent landscape diversity; black bears, brook trout and black spruce represent species diversity) and ecosystem processes (the engines that makes ecosystem work; e.g. fire, flooding, predation).

Teachers should refer back to Unit 1 when addressing these three measures.

Students could explore major government initiatives such as Parks Canada and provincial park services. Teachers could have students research specific government initiatives to preserve ecological integrity and share this with the class in the form of a presentation, poster, pamphlet, etc.. Students could refer to the Parks Canada website or the Protected Areas Association of Newfoundland and Labrador as starting points for research on ecological integrity.

Teachers could have students read and discuss the Enviro-Focus “Monitoring Rock Ptarmigan Numbers on Gros Morne Mountain”.

Teachers could use the Land and Sea episode “Sunday Hunters” which follows the debate over the legislation that was passed allowing hunting on Sundays.

If there are eco-tourism operators in the local area, teachers could invite them to speak to the students on what they perceive as the values of eco-tourism.

While there is no one definition of eco-tourism, most people agree that it refers to a small group travel to natural areas where flora, fauna, and cultural heritage are the main attractions. Also known as environmentally-friendly tourism, aims to minimize any negative impact that might arise from visiting the area, and contributes to the conservation and cultural preservation of the area. Generally, a fundamental aspect of eco-tourism is the promotion of recycling, energy efficiency, water conservation, and creation of economic opportunities for the local communities.

Teachers could have students read and discuss the Enviro-Focus “Monitoring the Effects of Eco-tourism at the Witless Bay Ecological Reserve”.

## Ecological Integrity

### Tasks for Instruction and/or Assessment

#### *Paper and Pencil*

- What is meant by ecological integrity? Be sure to explore what is meant by ecological integrity from the Parks Canada website and identify measures used by Parks Canada to preserve ecological integrity.

#### *Presentation*

- Interview older members of the community about the changes they have observed in nature-based activities since they were young. The results of the interviews could be shared with others via a newsletter, video, webpage, poem, song, drama, etc.
- Hold a class debate on the issue of whether eco-tourism helps protect ecological integrity or not.

#### *Performance*

- Students could create an educational program to preserve the ecological integrity of their local area. This could be placed on a website, distributed to local organizations, or shared with the general public.
- Develop a slide presentation, poster or collage which describes the types of eco-tourism that occurs in or near your community.
- Create a brochure that describes what is meant by eco-tourism and the types of eco-tourism that occurs in or near your community.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 133-134, 170

ST pp. 127-133

L&S “Sunday Hunters”

LSRG pp. 21-22, 45

ST pp. 172-179

## Wilderness Access

### Outcomes

*Students will be expected to*

- 2.13 identify routes of access to Newfoundland and Labrador wilderness.  
Include:
- (i) Newfoundland and Labrador Trailway (former railway)
  - (ii) access roads (forest, mining, hydro)
  - (iii) power corridors
  - (iv) developed trailways (East Coast Trail, Garnish - Point Rosie ATV Trail)
  - (v) river systems
  - (vi) air
  - (vii) seasonal access (frozen lakes)
- 2.14 identify the environmental impacts of routes of access to Newfoundland and Labrador wilderness.  
Include:
- (i) increased access
  - (ii) increased hunting pressures
  - (iii) fragmentation of habitat
  - (iv) damage to stream habitat due to improper stream crossing
  - (v) potential increase for forest fires

### Elaborations—Strategies for Learning and Teaching

Teachers could use a map of the province to indicate the various land- and water-based routes. Students could use a colour coded system to indicate these routes on a map. Teachers could use the Internet to access maps of the Newfoundland Trailway as well as maps of the various protected areas in Newfoundland and Labrador.

When discussing access, teachers should look at the environmental impacts of much easier access to wilderness areas. Also, have students consider the impact of restricted access in provincial and natural parks. Ask students “how does restricting access to one area impact another area?” (e.g. areas adjacent to parks will have more people using them because they cannot access areas of park.)

Teachers could have students do the Mini-Lab Activity “ATV Tires: Surface Area and Ground Pressure” as part of the coverage of this outcome.

## Wilderness Access

### Tasks for Instruction and/or Assessment

#### *Presentation*

- Using a copy of a local topographic map, draw the different routes that access the wilderness from your community. Use different colours to represent different modes of access. Then they could assess the long term impact these access routes may have on the ecosystem.

#### *Performance*

- Using a copy of a local topographic map, draw the different community-based trails in your community. Use different colours to represent different modes of travel.
- Walk along a section of a community trail or a traditional access trail and document the environmental impacts that can be attributed to access (e.g. erosions, trash, indiscriminate cutting). Record the information in a table or on a sketch map.
- Interview older members of your community about the impacts they have observed in their local area that has resulted from improved access. The results of the interviews could be shared with others via a newsletter, video, webpage, poem, song, drama, etc.. Record your reflections from the interview.

#### *Journal*

- Make a journal entry reflecting on the impact the changes in access to the environment have made in your area.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 182-212

ST pp. 182-212

## Wilderness Access (continued)

### Outcomes

*Students will be expected to*

- 2.15 identify the environmental impacts related to modes of access to the NL wilderness. Include:
- (i) mechanized
  - (ii) non-mechanized

- 2.16 examine the issues related to one or more wilderness access routes in your local area in terms of their potential impacts

### Elaborations—Strategies for Learning and Teaching

Mechanized includes ATV's, personal watercraft and snowmobile. Non-mechanized would include kayaking, canoeing and hiking. Kayak and canoeing would have minimal impact. Hiking would have the greatest impact and is covered in the text. The Core lab, soil compaction should be done at this point.

Teachers could have students complete the Mini-Lab Activity "Impact of Snow Compaction on Underlying Soil and Vegetation"

Teachers could have students discuss the potential impacts that improve access that their local wilderness might have. Access routes could include ATV trails, walking trails, woods roads, hydro lines, etc.

In addition to local concerns, students could also examine the following:

- Bay du Nord wilderness area
- The "Big Steady" – Main River
- Snowmobile access through national parks

Teachers should have students complete the **Core Lab: "Soil Compaction and Water Percolation Rates"**.

## Wilderness Access (continued)

### Tasks for Instruction and/or Assessment

#### *Presentation*

- Hold a class debate on the issue of whether mechanized access to wilderness areas should be banned.

#### *Portfolio*

- Assess the potential impact of increased access to your local wilderness area.

#### *Performance*

- Design an investigation to study the amount of impact the various access routes and modes are having on wilderness in your area.
- Create a slide show, poster, or collage that shows the effects of the different modes of access has on the wilderness.
- Write a letter to the editor of your local newspaper, outline your views or concerns about the ways people access wilderness areas.

#### *Journal*

- Use the “what? so what? now what?” format to create a journal entry about your views on the impacts of mechanized access to wilderness areas.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 189-212

TR pp. 138-140, 144: BLM 7-4

**Core Lab:** “Soil Compaction and Water Percolation Rates”, pp. 210-212

## Hunting, Fishing and Conservation

### Outcomes

*Students will be expected to*

2.17 identify the role of hunting/fishing in conservation.

Include:

- (i) the role of conservancy
- (ii) population control through hunting/fishing
- (iii) funding source for conservation efforts

2.18 distinguish between small game and big game hunting in terms of:

- (i) species hunted
- (ii) hunting methods
- (iii) management methods
- (iv) regulations

2.19 describe the impacts of small game hunting in terms of:

- (i) economic
- (ii) social/cultural
- (iii) environmental

### Elaborations—Strategies for Learning and Teaching

Teachers could refer to the websites of Duck Unlimited, the Nature Conservancy of Canada and Parks Canada for more information on conservation and conservation areas.

Students could investigate the process by which conservation officials determine the size of a population and how many licenses should be issued. This could be shared with the class.

Teachers could conduct a classroom survey of students to have them identify locally hunted species and methods of hunting. The provincial Hunting and Trapping Guide would highlight the differences between small game and big game as well as the regulations for hunting them. It is available online at the Department of Environment and Conservation website or may be obtained at any location where small game licenses are sold.

Students could be divided into groups with each group responsible to determine the impacts of hunting a specific small game animal. Students could look at the impacts from the economic (e.g., equipment sales), cultural/social (e.g., recreation or source of food), and environmental (e.g., population dynamics) perspectives. Impacts both locally and provincially could be investigated. The results of this investigation could be shared with the rest of the class and with the local community.

Teachers could have students read and discuss the Enviro-Focus “How to Avoid Snaring a Newfoundland Martin”.

As a journal activity, students could write about their personal views on hunting in general. Some will undoubtedly disagree and he/she may wish to share their views. The entry could be added to their portfolio.

## Hunting, Fishing and Conservation

### Tasks for Instruction and/or Assessment

#### *Presentation*

- Research how one of the following NGOs (e.g., Atlantic Salmon Federation, Ducks Unlimited, and Nature Conservatory of Canada) contribute to conservation projects that improve hunting and fishing. Present your findings in a visual format (collage, poster, multimedia) or a written format (newspaper article, poem, song, short story).
- Using a copy of the Provincial Government's Hunting and Trapping Guide, identify the following: provincially hunted species, methods of hunting/trapping, and regulations. Use a table to present this information.
- Determine the impacts of hunting a specific small game animal. Include local, provincial, economic, cultural, and environmental impacts. Present your findings to the class.
- Consider the statement, "All hunting should be made illegal." Choose one side of this issue and debate it with a fellow student that has the opposing viewpoint.

#### *Journal*

- What are your personal views on hunting?

#### *Performance*

- Create a slide show, poster, or collage to describe the impacts of small game hunting in your area.
- Create a newspaper article or audio-visual presentation to describe the impacts of small game hunting in your area.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 213-216

ST pp. 216-241

ST pp. 216-220

## Hunting, Fishing and Conservation (continued)

### Outcomes

*Students will be expected to*

2.20 describe the impacts of big game hunting in terms of:

- (i) economics
- (ii) social/cultural
- (iii) environmental

2.21 identify the factors considered when setting big game hunting quotas.  
Include:

- (i) population estimate
- (ii) productivity
- (iii) poaching and crippling loss
- (iv) natural mortality
- (v) desired change
- (vi) hunter success

### Elaborations—Strategies for Learning and Teaching

Teachers should ensure that students recognize that the impacts of big game hunting are broad and far reaching for our province. Teachers should focus the discussion on the three major categories economic (e.g., tourism, outfitting camps, equipment sales), social/cultural (e.g. recreation, source of food), and environmental (e.g., population dynamics, management). Students may easily identify obvious impacts such as the economic benefits like jobs, outfitting, and sales of licenses, equipment, and gasoline. Social impacts may include aboriginal hunting traditions, historical practices for winter meat supplementation, and recreational practices. Teachers could use the Land and Sea episode “Eskimo Caribou Hunt” to help provide students with a perspective of the importance of such practices in aboriginal communities. Further to this, teachers could ask students why and where the moose were introduced to the island of Newfoundland. Students should also realize that hunting contributes significantly to big game population management. Through careful population analysis and license distribution, big game populations are kept in a healthy condition.

Teachers could use the Land and Sea episode “Managing our Moose” when addressing this outcome. This episode traces the rise of the moose population on the island of Newfoundland and examines the issues related to managing this population.

Students could be divided into groups with each group responsible to determine the impacts of hunting a specific big game animal. Students could look at this from the economic, cultural, and environmental impacts. Impacts both locally and provincially could be investigated. The results of this investigation could be shared with the rest of the class and with the local community.

Teachers should have students complete the **Core Lab: “Moose Population Census”**

Think-Pair-Share: Students could be asked to decide which of these factors is the most important in determining the quota for a particular area and then share it with a partner. The students could then be asked to tell the class some interesting point that their partner raised.

## Hunting, Fishing and Conservation (continued)

### Tasks for Instruction and/or Assessment

#### *Presentation*

- Determine the impacts of hunting a specific big game animal. Include local, provincial, economic, cultural, and environmental impacts. Present your findings to the class.
- Consider the statement, “All hunting should be made illegal.” Choose one side of this issue and debate it with a student that has the opposing viewpoint.

#### *Journal*

- What are your personal views on hunting?

#### *Performance*

- Create a slide show, poster, or collage to describe the impacts of big game hunting in your area.
- Create an artistic performance to describe the impacts of big game hunting in your area.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 221-233

L&S “Eskimo Caribou Hunt”

L&S “Managing our Moose”

LSRG pp. 19-20, 23-24, 45

ST pp. 228-229

**Core Lab:** “Moose Population  
“Census, pp. 223-226

TR pp. 158-164: BLM 8-1, 8-2,  
8-4

## Hunting, Fishing and Conservation (continued)

### Outcomes

*Students will be expected to*

2.22 discuss ecological impacts that coyotes have on moose and caribou populations

2.23 identify ecological impacts of species introduction.

Include:

- (i) source of meat
- (ii) unfilled niches
- (iii) recreational hunting of small game and big game
- (iv) inter-specific competition
- (v) population explosion
- (vi) excessive browsing and big game hunting

### Elaborations—Strategies for Learning and Teaching

Teachers should ensure students recognize that coyotes represent the first winter predator for moose and caribou in many years. As a result, predation pressures have been increased due to the presence of this new predator. They could also consider the potential increase in competition by the coyotes for small game predators like fox and lynx. Teachers could invite individuals from the department of Environment and Conservation to talk about the impact that coyotes are having in the student's local area and in the province in general.

Teachers could refer to STSE 1-3, in Science 2200, "Direct Impacts of Biodiversity Loss" as supplementary material.

Students could review various media reports of coyote predation in their local area or in the province and evaluate how serious their impact is on moose and caribou populations. Students could include copies of newspaper or Internet articles in their portfolios along with a summary/commentary.

Teachers could have students read and discuss the Enviro-Focus "Coyotes in Newfoundland: Ecosystem Impact" as they address this outcome.

Teachers should discuss and relate both the positive and negative impacts of species introduction.

Two specific examples for Newfoundland and Labrador are (1) Moose and the impact of their browsing on balsam fir and, (2) Red squirrels and the impact of feeding on softwood cones on forest regrowth. Students could make journal entries in which they discuss the positive and negative impacts of species introduction and in particular, how they personally are affected or feel about the introduction.

Teachers could have students think about the potential impacts an introduced species could have on an ecosystem in their area.

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## Hunting, Fishing and Conservation (continued)

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### Tasks for Instruction and/or Assessment

#### *Performance*

- You have been successful in a land draw to develop a cabin lot. The lot is located adjacent to a lake and is inaccessible by road. Through research, find out what potential impacts the following might have on the lake: construction of an access road, disposal of human waste, and domestic harvesting of wood to meet personal needs (construction, firewood). Present your findings in a visual format (collage, poster, multimedia) or a written format (newspaper article, poem, song, short story).
- Create a brochure that describes the impacts of species introduction to an ecosystem.
- Students could investigate the possibility and potential impacts of reintroducing the wolf to Newfoundland and Labrador to control the coyote. The results of this research could be communicated to the class via multimedia presentation or poster session.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 234-236

ST pp. 216, 221, 234-236, 238

## Hunting, Fishing and Conservation (continued)

### Outcomes

*Students will be expected to*

- 2.24 list common recreational fish species in Newfoundland and Labrador. Include:
- (i) Trout (brook and brown)
  - (ii) Atlantic salmon
  - (iii) Northern pike, Lake trout and Artic Char (in Labrador)
- 2.25 recognize the contribution of recreational fishing (fresh water) to Newfoundland and Labrador
- 2.26 identify the branches of government that regulate the inland fishery. Include:
- (i) Department of Fisheries and Oceans (Federal)
  - (ii) Environment and Conservation (Provincial)
- 2.27 identify the responsibilities of each branch of government that regulate the inland fishery

### Elaborations—Strategies for Learning and Teaching

Teachers could extend this list to include other species common to local areas. For example, arctic char in Labrador, rainbow trout in Bay D’Espoir, etc.

Teachers should ensure that students realize that recreational fishing contributes greatly to the economy of Newfoundland and Labrador. More apparent, are the cultural connections that Newfoundland and Labrador has had to the recreational fishery. For example, prior to its demise, the Newfoundland and Labrador railway established a special train run called “The Trouterman’s Special” on the May 24th weekend.

Teachers can refer to the websites of Fisheries and Oceans Canada as well as the Department of Environment and Conservation for more information on policies, practices and mandates of these government agencies. Students could research the changes that each branch of government has made to fishery regulations over the years.

## Hunting, Fishing and Conservation (continued)

### Tasks for Instruction and/or Assessment

#### *Performance*

- Students could conduct a survey to determine how important the recreational fishery is to their community and estimate the economic impact of the recreational fishery to their community. The results of this survey could be shared with the class and included in their portfolio.
- Create a poster describing the following aspects of a recreational fish (e.g. salmon, char, brook trout, and northern pike): biology, fishing techniques, fishing season, catch limit, management strategies, recipes, and folklore.
- Conduct a survey to determine how important the recreational fishery is to your community. Estimate the economic impact of the recreational fishery to your community. Present the results of the survey in a table or electronic spread sheet.
- Create a slideshow, poster, or collage that describes the contribution of recreational fishing in your area.
- Design a flow chart that indicates the areas of responsibilities for each branch of government as it relates to the regulation of the inland fishery in the province and across Canada.

#### *Presentation*

- Research the recreational fish common to your area. Which is the most popular fish? Explain why. Present your findings to the class.

#### *Paper and Pencil*

- Create a fact sheet that identifies the branch or branches of government responsible for regulating recreational fishery.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST pp. 237-238

ST p. 237

ST p. 237

ST p. 237

## Hunting, Fishing and Conservation (continued)

### Outcomes

*Students will be expected to*

- 2.28 identify the factors that affect inland fish populations. Include:
- (i) road construction
  - (ii) herbicide and insecticide spraying
  - (iii) resource development (mining, forestry)
- 2.29 identify career opportunities related to outdoor recreation

### Elaborations—Strategies for Learning and Teaching

Students could then partner and share their thoughts using a think-pair-share approach. Teachers could invite students to continue the discussion as a whole class activity.

Students could research specific places in Newfoundland and Labrador in which inland fish populations were affected by various human activities. The Department of Environment and Conservation website contains information about various permits and regulations related to issues that affect inland water areas.

Students could develop a list of the careers they encountered as they studied this unit. Teachers should highlight some of the nontraditional careers that are associated with outdoor recreation. For example, ecotourism guide, manager/owner of an outfitter camp, public relations/marketing, etc.. Individual or small groups of students could research a career from their list. Students could conduct comparisons among the careers in terms of academic requirements, salary, location, satisfaction, post secondary institutions that offer the program, etc.

Teachers could have students refer to the Career Spotlight “Scientist: Fisheries and Oceans Canada (Dave Reddin)” as an example of a science-related occupation. Teachers could point out that there are numerous science-related occupations involved in managing outdoor recreation activities that are related to both consumptive and non-consumptive uses of the environment.

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## Hunting, Fishing and Conservation (continued)

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### Tasks for Instruction and/or Assessment

#### *Paper and Pencil*

- Select a career associated with outdoor recreation and through interview and other means of research, produce a one-page fact sheet on that career. The fact sheet should include the following subtitles: required education, duties or roles, salary scale, and job satisfaction.

#### *Performance*

- Create a collage that shows the factors that affect inland fish populations.
- Conduct a survey of people who engage in recreational fishing in your local community to determine their understanding of the factors that affect inland fish populations. Which factor do they consider most important? Least important? Present your findings to class.
- Create a brochure or write a letter to a newspaper that describes the most serious factors that are impacting inland fish populations in your area.

### Resources/Notes

<http://www.ed.gov.nl.ca/edu/k12/curriculum/documents/science/highschool.html>

ST p. 288

ST pp. 243-244

