

## Human Activity and the Environment – Teacher's Kit

### Case study #1: Thousand Islands National Park case study



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- |                |  |
|----------------|--|
| .              | not available for any reference period   |
| ..             | not available for a specific reference period  |
| ...            | not applicable   |
| 0              | true zero or a value rounded to zero   |
| 0 <sup>s</sup> | value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded |
| P              | preliminary  |
| r              | revised  |
| X              | suppressed to meet the confidentiality requirements of the <i>Statistics Act</i>                                   |
| E              | use with caution   |
| F              | too unreliable to be published   |
| *              | significantly different from reference category ( $p < 0.05$ )   |

# Case study #1

## Thousand Islands National Park case study

### Instructor's overview

This case study of the Thousand Islands Ecosystem and Thousand Islands National Park area consists of three related components and supporting learning materials.

First, learners use data and information from the Statistics Canada publication, *Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada* (MEGS) to create summary profiles of each of the two areas, highlighting significant similarities, differences, and relationships between the two areas.

Next, learners explore and assess pressures on the Thousand Islands Ecosystem and Thousand Islands National Park area. Learners also identify pressures not examined in the [MEGS publication](#).

Finally, learners write a letter to Parks Canada recommending sustainable, desirable and feasible actions and strategies designed to provide recreational opportunities for Canadians while also protecting the park's ecological integrity.

This case study directs learners to respond to a number of questions; these questions can be used solely for learner understanding and not be assessed, or they can be developed as discreet assignments. This case study may be used independently or in combination with the other teaching and learning activities from the "What is the value of an ecosystem?" resource.

### Audience

- senior high school
- introductory post-secondary

### Learning outcomes

- understand key similarities, differences, and relationships between the Thousand Islands Ecosystem and the Thousand Islands National Park area
- understand pressures on the Thousand Islands Ecosystem and the Thousand Islands National Park environment
- understand Parks Canada objectives for the Thousand Islands National Park environment

## Curriculum links

- grades 10 to 12 geography (ecosystems, geographic change), social studies (economics), biology (ecosystems and change), science, economics (accounting, valuation methods)
- post-secondary geography (ecosystems), environmental science (ecosystem accounting, ecosystem change)

## Learning materials

- Statistics Canada publication, *Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada* (MEGS)
- Case study activity sheet #1: *Describing the areas*
- Case study activity sheet #2: *Pressures affecting ecosystem goods and services*
- Case study activity sheet #3: *Meeting the objectives*
- Case study assessment support #1: *Assessing recommendations*

## Thousand Islands National Park case study

### Learner instructions

Imagine you are a consultant hired by Parks Canada to recommend strategies to help Parks Canada and other partners protect the park's ecological integrity.

In preparing your strategies you will undertake three tasks:

1. Examine data and information from the Statistics Canada publication, *Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada* (MEGS) and create summary profiles of each of the two areas, highlighting significant characteristics and relationships.
2. Identify and assess the pressures on the Thousand Islands Ecosystem and Thousand Islands National Park.
3. Prepare a letter to Parks Canada describing sustainable, desirable and feasible actions and strategies designed to help protect the park's ecological integrity.

### Learning materials

- Statistics Canada publication, *Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada* (MEGS)
- Case study activity sheet #1: *Describing the areas*
- Case study activity sheet #2: *Pressures affecting ecosystem goods and services*
- Case study activity sheet #3: *Meeting the objectives*
- Case study assessment support #1: *Assessing recommendations*

### Situating and describing the areas

The first component of this case study is to develop summary profiles of the Thousand Islands Ecosystem and the Thousand Islands National Park area. These summary profiles will be based upon descriptive characteristics and relationships between each of the two areas, as well as inferences about potential significance.

First, examine the data and maps from Section 4, pages 61 to 77 of the [MEGS publication](#). Using Case study activity sheet #1: *Describing the areas*, identify characteristics that help describe the Thousand Islands Ecosystem and the Thousand Islands National Park area.

The following aspects may be useful to address:

- location and area
- population
- notable geographic features
- types of EGS
- use of EGS
- value of EGS.

Additional aspects or characteristics from the report or other online sources may also be useful in developing these descriptions.

Each description should be supported by quantifiable measures or data identified in the [MEGS publication](#) or other online resources. For example, the size of the Thousand Islands Ecosystem and the Thousand Islands National Park might be compared using measures of area such as km<sup>2</sup>, or biological diversity might be explored by identifying the number of species of birds that live in each area. This information should be recorded in the 'Thousand Islands Ecosystem' and the 'Thousand Islands National Park' columns on the Case study activity sheet #1: *Describing the areas* chart.

Use this descriptive information to compare and identify relationships that might exist between the two areas. The following questions might be useful in determining relationships:

- Does one area benefit from the other in any way?
- Does one area negatively impact the other in any way?
- Do the two areas rely upon each other in any way?

Next, explain the significance of key identified characteristics, comparisons and relationships. For example, the small size of the park compared to the population living in the ecosystem might result in heavy pressures on the park from visitor traffic. These inferences should be recorded in the 'Significance' column on the Case study activity sheet #1: *Describing the areas* chart.

Finally, create a summary profile for each of the two areas. Each summary profile should use the descriptions and related data recorded on the Case study activity sheet #1: *Describing the areas* chart.

## Assessing the pressures

The second component of this case study is exploring and assessing the pressures on the Thousand Islands Ecosystem and the Thousand Islands National Park area.

First, analyze the maps and data from Section 4 (pages 63 to 70) of the [MEGS publication](#) that detail the pressures on the Thousand Islands Ecosystem and the Thousand Islands National Park area. Review the following indicators of the quality and productivity of ecosystems from

Section 3 of the report (pages 24 to 60), to determine whether any might contain data that could be used to describe the pressures and changes in each area:

- land cover change
- landscape modification
- ecosystem service potential
- biomass extraction.

Search for and review online sources to identify other sources of information regarding pressures on this ecosystem.

Using these different sources of information, consider what pressures and changes might be occurring in the Thousand Islands Ecosystem and Thousand Islands National Park. Finally, consider how these changes might affect the provision of EGS and whether they result in a positive or negative impact on EGS values. For example, changes in population might result in more park visitors, which could increase the value of recreational services, but could also decrease other EGS provided by the park. Record relevant and important information in the designated columns of Case study activity sheet #2: *Pressures affecting EGS*.

Finally, respond to the following questions:

- Which pressures might have the most significant impacts on the Ecosystem and the National Park? Are these two areas affected differently by these pressures?
- How might the impacts on the value of EGS be quantified? Suggest feasible monetary or non-monetary valuation measures that could be used to estimate changes in EGS.

## Developing recommendations

Your final task is to prepare a letter to Parks Canada with recommendations of sustainable, desirable and feasible actions and strategies designed to help Parks Canada achieve the two objectives developed for the Thousand Islands National Park area:

1. providing recreational opportunities for Canadians
2. preserving and protecting the fragile resources of the park.

Meeting these objectives may be challenging given that “protecting the park’s ecological integrity must be pursued on a scale larger than the park itself since environmental stressors come both from within and outside the park boundaries” (page 63 of the [MEGS publication](#)).

First, determine which pressures and ecosystem changes may be complicating or challenging Parks Canada’s objectives. Reflect on the changes and the impacts on EGS identified in the second component of this case study and identify which are most responsible for complicating or challenging Parks Canada’s objectives. Note these on Case study activity sheet #3: *Meeting the objectives*.

After identifying which issues are most responsible for complicating or challenging Parks Canada's objectives, develop strategies to mitigate the challenge and meet the objective. Additionally, identify measures that could be used to evaluate the success of the recommended strategies.

These strategies should be directly related to the objectives. Use the criteria of sustainable, desirable and feasible to assess the strategies to determine which may be best:

- Sustainable: Can this strategy continue over time given the resources that it may require?
- Desirable: Is this strategy needed and/or wanted by members of the community or by people knowledgeable in that field?
- Feasible: Does the strategy draw upon existing and usable techniques, technologies and research? Is the idea 'doable'?

Consider using Case study assessment support #1: *Assessing recommendations* for self-assessment of the recommendations and letter.



# Case study activity sheet #1

## Describing the areas

<b>Aspects</b> (e.g., location, size, types of EGS...)	<b>Thousand Islands National Park</b> What data can be used to describe this aspect?	<b>Thousand Islands Ecosystem</b> What data can be used to describe this aspect?	<b>Comparisons</b> What differences, similarities, and relationships exist between the two areas?	<b>Significance</b> Why is this important and notable?

## Case study activity sheet #2

### Pressures affecting ecosystem goods and services

Pressures	Thousand Islands Ecosystem		Thousand Islands National Park	
	Changes What changes are occurring as a result of this pressure?	Impacts What impacts might these changes have on EGS provided by this area?	Changes What changes are occurring as a result of this pressure?	Impacts What impacts might these changes have on EGS provided by this area?

### Case study activity sheet #3

#### Meeting the objectives

Parks Canada objectives	Changes and impacts	Possible mitigation strategies	Assessing the strategies	
			Rating	Criteria
Providing recreational opportunities for Canadians			<input type="checkbox"/> low	<i>Sustainable</i>
			<input type="checkbox"/> medium	
			<input type="checkbox"/> high	
			<input type="checkbox"/> low	<i>Desirable</i>
			<input type="checkbox"/> medium	
			<input type="checkbox"/> high	
	<input type="checkbox"/> low	<i>Feasible</i>		
	<input type="checkbox"/> medium			
	<input type="checkbox"/> high			
Preserving and protecting the fragile resources of the park			<input type="checkbox"/> low	<i>Sustainable</i>
			<input type="checkbox"/> medium	
			<input type="checkbox"/> high	
			<input type="checkbox"/> low	<i>Desirable</i>
			<input type="checkbox"/> medium	
			<input type="checkbox"/> high	
	<input type="checkbox"/> low	<i>Feasible</i>		
	<input type="checkbox"/> medium			
	<input type="checkbox"/> high			
			<input type="checkbox"/> low	<i>Sustainable</i>
			<input type="checkbox"/> medium	
			<input type="checkbox"/> high	
			<input type="checkbox"/> low	<i>Desirable</i>
			<input type="checkbox"/> medium	
			<input type="checkbox"/> high	
	<input type="checkbox"/> low	<i>Feasible</i>		
	<input type="checkbox"/> medium			
	<input type="checkbox"/> high			

- *Sustainable*: Can this strategy or proposal continue over time given the resources that it may require?
- *Desirable*: Is this strategy needed and/or wanted by members of the community or by people knowledgeable in that field?
- *Feasible*: Does the proposal draw upon existing and usable techniques, technologies, and research? Is the idea 'doable'?

## Case study assessment support #1

### Assessing recommendations

	Outstanding	Very good	Competent	Satisfactory	In-progress
Plausible recommendations	Recommendations are highly plausible and highly justifiable in light of the criteria and evidence provided.	Recommendations are clearly plausible and justifiable in light of the criteria and the evidence provided.	Recommendations are plausible and adequately justifiable in light of the criteria and the evidence provided.	Recommendations are somewhat plausible but barely justifiable given the criteria and evidence provided.	Recommendations are implausible and not justifiable given the criteria and evidence provided.
Detailed recommendations	Recommendations are highly detailed and include thorough description of obvious and non-obvious strategies to meet Parks Canada objectives.	Recommendations are detailed and include thorough description of obvious and some non-obvious strategies to meet Parks Canada objectives.	Recommendations are adequately detailed and include adequate description of obvious and some non-obvious strategies to meet Parks Canada objectives.	Recommendations are somewhat detailed and include basic description of obvious strategies to meet Parks Canada objectives.	Recommendations are not detailed. Recommended strategies are not related to Parks Canada objectives.