Human Activity and the Environment – Teacher's Kit

Lesson # 1: What is an ecosystem?

Statistics Canada   Statistique Canada

Canadä

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

email at infostats@statcan.gc.ca,

telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following toll-free numbers:

• Statistical Information Service	1-800-263-1136
• National telecommunications device for the hearing impaired	1-800-363-7629
• Fax line	1-877-287-4369

Depository Services Program

• Inquiries line	1-800-635-7943
• Fax line	1-800-565-7757

To access this product

This product, Catalogue no. 16-507-X, is available free in electronic format. To obtain a single issue, visit our website, www.statcan.gc.ca, and browse by "Key resource" > "Publications."

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "About us" > "The agency" > "Providing services to Canadians."

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Standard symbols

The following symbols are used in Statistics Canada publications:

.   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^s 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 *Statistics Act*

E   use with caution

F   too unreliable to be published

*   significantly different from reference category (p < 0.05)

Lesson #1

What is an ecosystem?

Overview

This PowerPoint lesson describes use of the 9 slides in Set #1 and related learning activities to explore the attributes of ecosystems. Using a series of images, learners recognize three key ecosystem attributes. They use these traits to determine whether or not an area portrayed in an image could represent an ecosystem. Learners discover the differences between ecosystems and habitats. Finally, learners examine a provocative image to determine whether it is an ecosystem or habitat.

Audience

- junior high school
- senior high school
- introductory post-secondary

Learning outcomes

- understand the attributes of ecosystems
- understand the importance of studying ecosystems

Curriculum links

- grades 7 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

- PowerPoint slide set #1: What is an ecosystem?
- Statistics Canada publication, *Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada*
- Activity sheet #1: *Explore the attributes*
- Activity sheet #2: *What is an ecosystem?*
- Activity sheet #3: *Is this an ecosystem?*

Instructions

Think about the task

Display or project Slide 1 or provide a provocative image to prompt learner reflection on the question "Is this an ecosystem?"

Guide learners in a discussion of what an ecosystem might be and why it might be important to understand and study ecosystems.

Explore the attributes

Organize learners into small groups and provide each group with a copy of Activity sheet #1: *Explore the attributes*. Display or project Slide 2 and inform learners that it is an image of an ecosystem. Inform learners that their challenge is to identify the attributes that make it an ecosystem.

Remind learners of strategies for making thoughtful observations and encourage learners to record what they observe in the image. Guide learners in using these observations to infer possible attributes of ecosystems.

Invite learners to discuss possibilities with their partner(s) and then share ideas with the class. Record or project learners' suggestions for the attributes.

Identify the attributes

Provide each learner with a copy of Activity sheet #2: *What is an ecosystem?* Inform learners that they will be identifying specific attributes of ecosystems.

Display or project Slide 3 and inform learners that one of the attributes of an ecosystem is that it is a *community of living species*.

It may be helpful to distinguish between *ecological* and *biological.* Remind learners that biological refers to specific organisms and how they function, while ecological refers to the interactions and interrelationships of organisms and their environments.

Guide learners in making observations about each image, then ask learners to select the image that best reflects the attribute. Prompt learners to note their decision on Activity sheet #2: *What is an ecosystem?* Repeat with the additional attributes of an ecosystem (Slides 4 and 5). Inform

learners that some aspects of the attribute may not be immediately apparent in the image. For example, communities of living species include plants, animals and microorganisms. Physical environments include many different abiotic components including air, water, soils, minerals, etc.

Review learner decisions for each image, drawing attention to aspects of the images that clarify each attribute.

After identifying each attribute, guide learners in considering other examples of the attribute. Encourage students to consider different types of ecosystems (e.g., forest, cropland, wetland) and determine what examples of each of the attributes might be found in each. Learners may record additional examples on Activity sheet #2: *What is an ecosystem?*
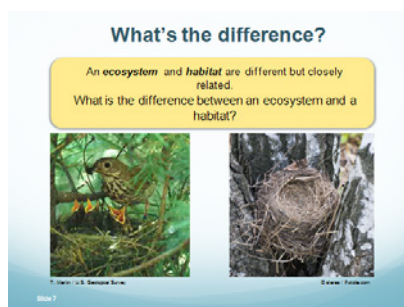
Apply the attributes

Display or project Slide 6 and inform learners that their next task is to consider all of the attributes to determine if an area is an ecosystem.

Guide learners in making observations and identifying the appropriate attributes. Learners may use Activity sheet #3: *Is this an ecosystem?* to guide and record their decisions.
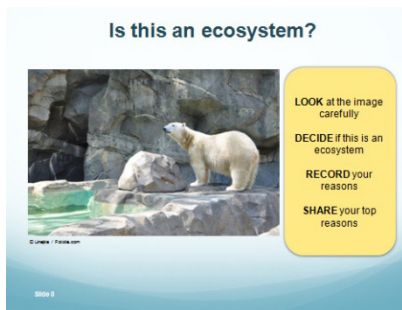
Explore the differences

Display or project Slide 7. Encourage learners to identify what they observe in each of the images. Prompt learners to identify which of the attributes of an ecosystem is present or absent in each of the images. Learners may use Activity sheet #3: *Is this an ecosystem?* to guide and record their decisions.

Ask learners to identify which characteristics distinguish ecosystems from habitat. Prompt learners to share ideas on the most significant differences between an ecosystem and a habitat. Encourage learners to record their ideas. Invite learners to discuss possibilities with a partner and then share ideas with the class.

Inform learners that ecosystems include all the interactions between all the living species and the non-living and environmental factors, while a habitat is an area occupied by a certain species.

Re-examine the image

Display or project the provocative image that was used to introduce the activity (Slide 8). Ask learners to reflect on their initial thoughts: given what they now know about the attributes of ecosystems, is this an ecosystem?

Encourage learners to carefully observe the image and to decide if this is an ecosystem, keeping in mind each of the three attributes. Learners may use Activity sheet #3: *Is this an Ecosystem?* to guide and record their decisions. Invite learners to share their ideas with the class.

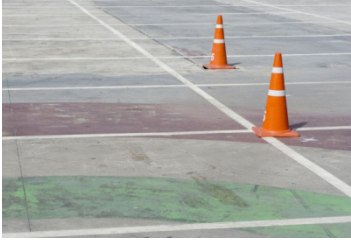Conclude by posing the question: "Why might it be important to understand and study ecosystems?"

Activity sheet #1

Explore the attributes

Observations	Inferences about ecosystem attributes
Attributes of ecosystems All ecosystems will have…	

Activity sheet #2

What is an ecosystem?

Attributes of an ecosystem	Image 1	Image 2	Additional examples of the attribute
Ecosystems are **communities of living species**… ☐ 1 ☐ 2	 © chbaum / Fotolia.com	 © sommai / Fotolia.com	
Ecosystems are communities of living species, **together with their environment**… ☐ 1 ☐ 2	 © simonjohnsen / Fotolia.com	 © sithikorn / Fotolia.com	
Ecosystems are communities of living species, together with their environment, **that interact and function as a unit**. ☐ 1 ☐ 2	 © JGade / Fotolia.com	 © Not Rich Ritchie / Fotolia.com	

Activity sheet #3

Is this an ecosystem?

Observations *(What do I see or not see in the image that is interesting or useful?)*	Ecosystem attributes (the attribute that is related to the observation)		
	present	*attribute*	*missing*
		communities of living species	
		with their environment	
		functioning as a unit	
		communities of living species	
		with their environment	
		functioning as a unit	
		communities of living species	
		with their environment	
		functioning as a unit	
		communities of living species	
		with their environment	
		functioning as a unit	
		communities of living species	
		with their environment	
		functioning as a unit	

My decision is that this ☐ is ☐ is not an ecosystem.

The three most powerful reasons supporting this decision are:

1.

2.

3.