

Services from Natural Ecosystems

On any Friday afternoon, long lines of traffic head out of urban centres (Figure 1). Many people head to the cottage, the beach, or the ski trails to get away from the hustle and bustle of their city. They are heading to peaceful places where they can interact with the natural environment. Humans value natural spaces and often go to great lengths to explore them (Figure 2).



Figure 1 On most weekends, people leave cities to experience the natural environment.



Figure 2 People value the beauty and calm of natural ecosystems.



While Tripti and Nico were on their Caribbean vacation, they benefited from being in a natural ecosystem. What is it about natural spaces and wilderness that draws people with such force? What is the value of an old growth forest, a field of wildflowers, or a coral reef? What is the value of a species that is living in the wild and not used directly by humans? Is there harm in replacing a natural ecosystem with farmland or a housing development?

Ecosystem Services and Products

Natural ecosystems provide services to the biosphere and to humans. These services are the benefits that we receive from ecosystems.

Cultural Services

Cultural services are the benefits relating to our enjoyment of the environment. They include the recreational, aesthetic, and spiritual experiences we receive when we interact with our natural surroundings. Humans get great pleasure from being in natural environments. The environment can be enjoyed by people with different interests. You may prefer wilderness backpacking, while your best friend may prefer a stroll on a beach.

Ecotourism is one example of a cultural service provided by ecosystems. Ecotourists engage in environmentally responsible travel to relatively undisturbed natural areas. An ecotourist tries to leave an area the same as he or she found it, leaving nothing behind and taking nothing away. Canada's wilderness areas are a major destination for ecotourists, so ecotourism benefits our economy with minimal negative impacts on our natural ecosystems.  

WRITING TIP

Use Precise Wording

Choose words carefully to describe your observations as accurately as possible. Ask yourself if the words you are using help you to visualize your observation clearly. If your words are vague rather than concrete, your mental picture will be fuzzy rather than clear.

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Ecosystem Products

Humans use products produced by ecosystems. We hunt animals and harvest plants for personal and commercial use (Figure 3). Lakes and oceans supply us with seafood. On a smaller scale, anyone who has gone wild blueberry picking knows the value supplied by these ecosystems. Terrestrial ecosystems are the source of many products, such as medicines, fibres, rubber, and dyes (Table 1).



Figure 3 Humans obtain many food products from the environment, such as (a) fish and (b) wild blueberries. (c) We are also able to obtain materials such as wood.

Table 1 Important Products from Terrestrial Ecosystems

Product	Original source	Use
maple syrup	maple trees	food, sweetener, flavouring
henna, indigo	plant extracts	dyes
latex (rubber) and chicle	assorted tropical trees	hoses, tires, chewing gum, golf balls
acetylsalicylic acid (ASA) (aspirin)	willow tree (original source of salicylic acid)	treats pain, blood thinner
waxes: carnauba, jojoba	carnauba palm leaves, jojoba seeds	commercial wax products, cosmetics, foods, lubricants
vincristine and vinblastine	rosy periwinkle (tropical flowering plant)	treatment of childhood leukemia
digitalis	foxglove (flowering plant)	treatment of heart disorders

Forestry is one of the largest industries and employers in Ontario. It produces over \$11 billion worth of products annually. Some trees are grown on tree farms. However, the industry depends on natural ecosystems for most of its wood and wood fibre products.

Other Ecosystem Services

Ecosystems regulate and maintain many important abiotic and biotic features of the environment. As you learned in Chapter 2, ecosystems cycle water, oxygen, and nutrients through the biosphere.

Ecosystems also help protect us from physical threats. Plant communities, for example, protect the soil from wind and water erosion. Ecosystems act as sponges, absorbing water and then slowly releasing it into the groundwater and surface water. This reduces erosion and protects against flooding. It also filters the water in the process. Ecosystems, such as mangroves, also protect land from storms along coasts, where wave damage erodes the shoreline (Figure 5, on page 61).

Monetary Value of Ecosystem Services

It is difficult to put a monetary value on the beauty of wildlife and wilderness experiences (Figure 4). However, it is possible to estimate the value of many of the ecological services provided by natural ecosystems. The dollar value of cleaning the air and water, moderating climate, and providing paper fibre, medicines, and other products is high. On a global scale, the value of natural terrestrial ecosystems ranges into the trillions of dollars per year!



Figure 4 How do you put an economic value on a natural ecosystem?

Ecosystems provide valuable services that are free and renewable. If maintained in proper health, natural ecosystems will continue to provide these services to us indefinitely and at no cost. We are wise to protect our natural ecosystems.

IN SUMMARY

- Cultural services are benefits we obtain related to our enjoyment of the environment.
- Ecosystems provide us with products such as wood fibre, medicines, and food.
- Ecosystems help protect us from some environmental threats.
- Ecosystems have monetary value, although this is difficult to quantify.

CHECK YOUR LEARNING

1. Identify the ecosystem service(s) that each of the following performs: a river through a wilderness park, water in a reservoir behind a dam, wind, wild blueberries, trees planted in a yard. [K/U](#)
2. Grass is useful. Describe the ecological services that grass performs in a hay field, on a golf course, or along the shoulder of a highway. [K/U](#)
3. Using three examples, explain how your health is influenced by ecosystem services. [K/U](#) [A](#)
4. List several careers that are closely associated with ecosystem services. [A](#)
5. Provide reasons why a renewable service is more valuable than a non-renewable service. [K/U](#)
6. Explain what is incorrect about the following statement: “If we did not have the services provided by natural ecosystems, we could just pay the cost and have them done in some other way.” [A](#)