Welcome to the Ecosystem Services Edition of the Natural Inquirer!

Have you ever heard the term "ecosystem services?" Can you imagine what ecosystem services might be?

Ecosystem services are provided by healthy natural areas just because they are healthy natural areas. Ecosystem services are valued by people, even if people do not always think about where these services come from. Examples include clean air, clean water, beautiful landscapes, healthy soil, places for wildlife to live, minerals, and even places to do outdoor activities. Even pollination is considered an ecosystem service because pollination is important to the production of food.

Ecosystem services are important because they provide goods and services that are vital to human health and quality of life. Ecosystem services are life-support systems for plants, animals, and humans worldwide. Some ecosystem services are called "public goods" because they are available to everyone (such as clean air). The process of waste decomposition and carbon storage are more examples of ecosystem services.

Scientists have studied ecosystems for a long time. The concept of ecosystem services, however, is relatively new. The identification of ecosystem services allows scientists to let people know that ecosystems are important to everyone. Some people value ecosystem services for the wildlife they support, while others may have greater appreciation for services such as food or energy production. Everyone benefits from ecosystem services, and the prosperity of humans, past, present, and future, is dependent upon healthy ecosystems.

Although it is difficult to put a price on clean air, for example, scientists have begun to look at the monetary value of ecosystem services. When the monetary value of ecosystem services is not known, the ecosystem may be destroyed in favor of something on which we can place a price. For example, when a forest is destroyed so a building can be built, the forest no longer provides the ecosystem service of holding carbon, providing homes for songbirds, or cleaning the air. By identifying and placing a value on ecosystem services, people are able to make better decisions.

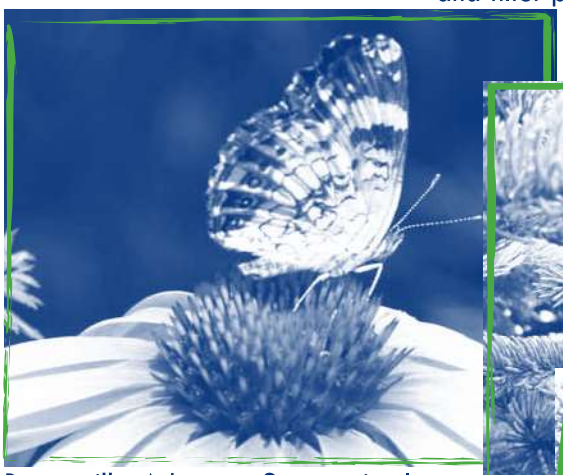
In this edition of the *Natural Inquirer*, you will learn new and different things about ecosystem services. Then you can look around you and identify the services being provided to you and your community by the natural world!

What are Ecosystem services?

Resurrection Bay, Alaska: Bare rock provides a place for animals to bask in the sun.

Marsh west of Jekyll Island, Georgia: Wetlands provide habitat for many animals and filter pollutants from the water.

Ben Eighe National Nature Reserve, Scotland: Natural resources provide areas for people to enjoy the outdoors.



Bentonville, Arkansas: Some animals, including some insects, birds, and bats, are pollinators. Pollination is essential for the reproduction of fruits, vegetables, and flowers.

Berkeley Springs, West Virginia: Trees act as umbrellas by catching rain drops. This decreases the amount or slows the rate of water reaching the ground, and helps to reduce soil erosion and flooding.

Near Salzburg, Austria: Forests provide many ecosystem services. They provide homes for animals and plants, resources for people, help to reduce the impact of global climate change, clean the air, and provide clean water.

Hard Labor Creek State Park, Georgia: Decaying leaf litter helps to build the soil and provides a home for animals. Animals, such as snakes, are part of a healthy ecosystem.

Holgate Glacier, Aialik Bay, Alaska: Glaciers provide a continual source of fresh water. Scientists study glaciers for clues about Earth's natural history.

What is Geography?

Geography is the study of Earth, its land, and its **inhabitants**. A geographer studies places where life is found and the way living beings interact with their Earth home. In this *Natural Inquirer*, you will learn about how geographers study ecosystems as special places and how people, other animals, and plants interact with and gain value from ecosystems.

Scientists with the United States Geological Survey, or USGS, often use satellites to study geographic questions on Earth. Satellites continually orbit Earth, collecting information about our planet (**figure 1**). For example, USGS scientists use information from satellites to track the dates that leaves unfold in spring and fall off of trees in autumn. This helps them to identify how changes in an area's climate affect the growth of trees. Information from satellites has also been used to create a map that shows the types of ecosystems found in the United States. This map will help scientists better understand the types and values of the ecosystem services provided.

Glossary

inhabitant (in **hab** uh tent): One who occupies a particular area.

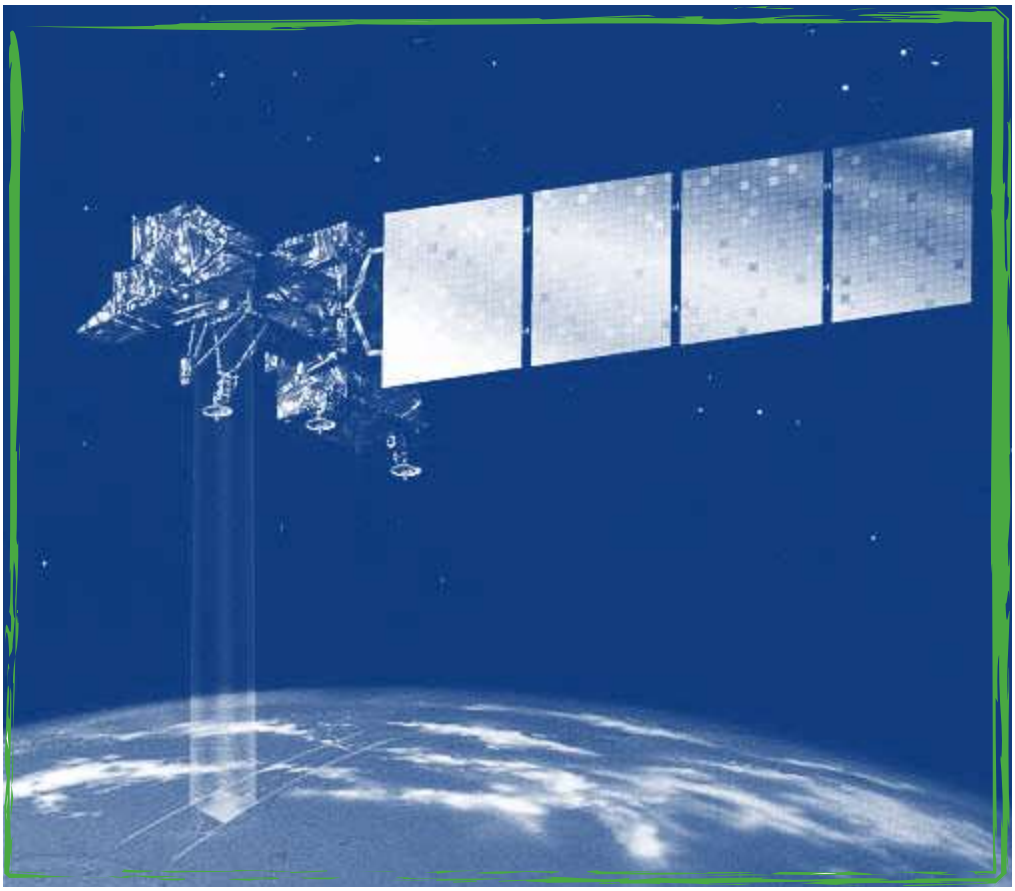


Figure 1. Landsat satellite orbiting Earth. Photo courtesy of NASA

USGS geographers also do research within ecosystems themselves. One place these geographers are studying is the Everglades. This is a large wetland area running through the middle of south Florida. Wetlands are areas of land that are sometimes covered by water, and often they are beside areas of water. Wetlands provide many ecosystem services to people including clean water, clean air, and natural places for many animals and plants to live.

Figure 2. Dr. Bill Labiosa helps people think about the different effects that decisions have on alligators in the Everglades. Unless you are a scientist studying alligators, remember not to get close to an alligator!

Because the Everglades provides a variety of ecosystem services, it is important to make good decisions about how it is managed. USGS geographers have created a computer program that uses maps to help get the most out of the ecosystem services provided by the Everglades (**figures 2**, **3**, and **4**).

Figure 3. Dr. Dianna Hogan studies the way people use land in the Everglades, and how that affects the ecosystem services they receive. She especially likes to study plants and animals. This Double-crested Cormorant (next to Dr. Hogan) catches fish in the Everglades using its hooked bill.

Figure 4. Mr. David Strong provides the computer and GIS (Geographic Information System) computer program that allows the scientists to answer their questions. Here, Mr. Strong works on his computer from the trunk of his car.

As you read this *Natural Inquirer*, think about geography and how it helps people to better understand and protect our planet. As you read each article, identify which of the following geography questions the article is describing:

- How do maps and images help us better understand the environment?
- How do life forms behave in their own environment?
- How do life forms behave differently in different environments?
- How do life forms move from one place to another?
- How do life forms change the environment?
- How do people change the environment and how does that affect other life forms?
- How are places different?
- How are different places similar?