

Topography of Grand Canyon National Park (detail)



National Parks: Saving the Natural Heritage of the U.S. and Canada

6.1 Introduction

Imagine standing on the rim of the Grand Canyon. You are looking out at one of the world's most spectacular sights. The canyon is enormous—18 miles across at its widest point. Its colorful walls look like an artist painted them in shades of red, orange, yellow, and green. A mile below, the Colorado River winds like a ribbon along the bottom of the canyon. You feel lucky that this special place is open to anyone who wants to visit it.

The Grand Canyon is available to visit because it is a **national park**. National parks are large areas of land that governments have set aside in order to preserve them in their natural state. Today there are 55 national parks in the United States and 42 in Canada. Most of them were created to protect land and wildlife because of their rarity, beauty, or other qualities. Some parks preserve bits of history as well. Often a single park serves many purposes. Grand Canyon National Park is a good example. Besides the majestic canyon, the park boasts abundant wildlife and plants. It also has ruins of ancient Native American pueblos, or villages.

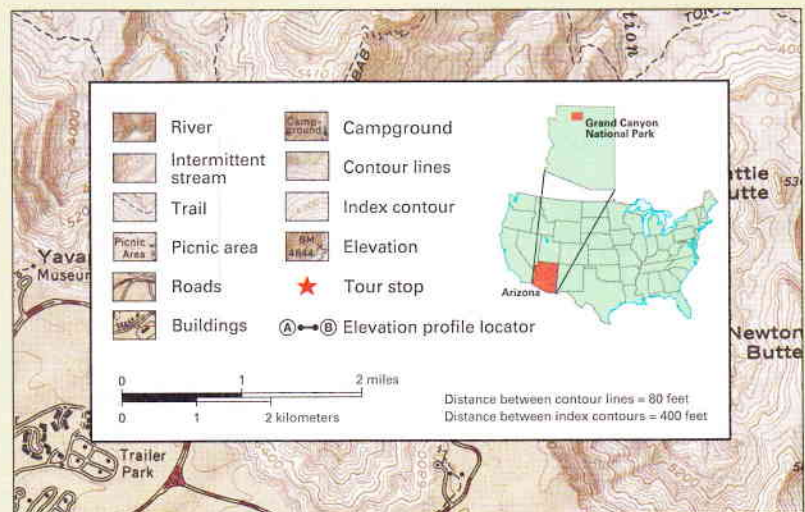
In this chapter, you will explore some of North America's national parks. To do so, you will use **topographic maps**. These are large-scale maps that show the landforms and other surface features of an area, both physical and human. The maps will help you understand the special features of each park.

Essential Question

What features make national parks special and worth preserving?

This map legend is from a topographic map of a national park. This type of map shows a park's topography, or the features on the surface of the land. Some are natural features. Others are created by humans. Keep the symbols on this legend in mind as you try to answer the Essential Question.

Graphic Organizer





Flora in Yellowstone National Park



Fauna in Yellowstone National Park

6.2 The Geographic Setting

When fur trappers explored the Rocky Mountains in the 1800s, they came across a remarkable place. They saw pools of water so hot that they were covered with clouds of steam. They found puddles of boiling mud that sputtered and spattered day and night. They saw springs called **geysers** that threw jets of hot water into the air. Some of the geysers erupted on regular schedules. Others would suddenly blow sky high with no warning. The trappers called this strange landscape “the place where hell bubbles up.” Today we know it as Yellowstone National Park.

At first, people thought the trappers’ stories of boiling springs were just “tall tales.” In 1870, the government sent an expedition to explore the area. It turned out that the tales were all true.

Yellowstone is a unique place. It has about 300 geysers. This is two thirds of all the geysers in the world. It also has more than 10,000 hot springs, mud pots, and steam vents.

Yellowstone Becomes the First National Park In the 1800s, more and more people moved west. As Americans turned wilderness into farms and ranches, some people began to talk about protecting Yellowstone as a public park.

The idea of a national park for the public was new. European cities had public gardens. But no country had ever set aside a large area of wilderness for its citizens to visit and enjoy.

In 1872, Congress passed a law creating Yellowstone National Park. It was the first national park in the world. Over time, Americans created more national parks. The national park movement eventually spread to Canada and other countries.

Parks Protect Special Places for Future Generations National parks have been created to protect many different places. Some parks preserve unique landforms and bodies of water. Others protect unusual **flora**, or plant life. Some provide homes for rare **fauna**, or animal life. And some preserve historic reminders of the past.

The movement to set aside special places as parks was led by people called **conservationists**. Probably the best-known American conservationist is John Muir. Muir was born in Scotland, and his family moved to the United States when he was 11. As a young man, he suffered an injury that left him temporarily blind. When his sight returned, he vowed to turn his eyes to nature. He walked across much of the American West. On that journey, he fell in love with the West’s plains, mountains, and forests.

Muir spent most of his life trying to preserve beautiful wild places as parks. “Everybody needs beauty as well as bread,” he wrote, “places to play in and pray in, where nature may heal and give strength to body and soul alike.” Today many people remember him as “The Father of the National Parks.” In this chapter, you will learn more about the special features of several national parks.

► Geoterms

conservationist someone who works to protect the beauty and natural resources of the environment from destruction or pollution

fauna all the animal life in a particular region

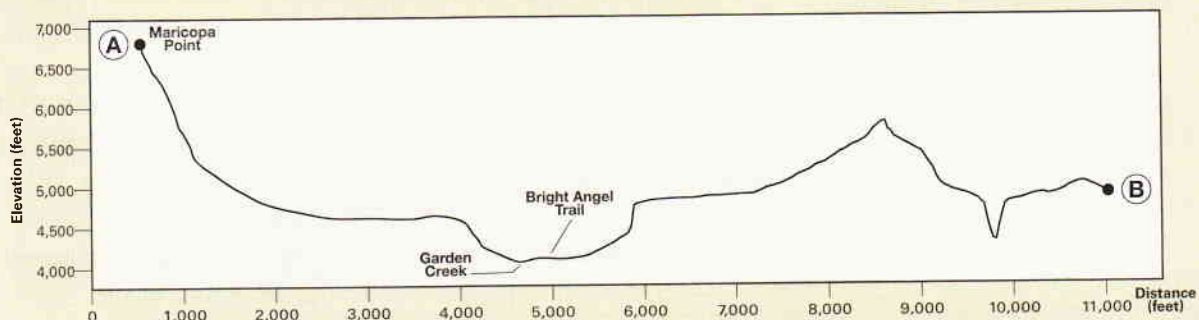
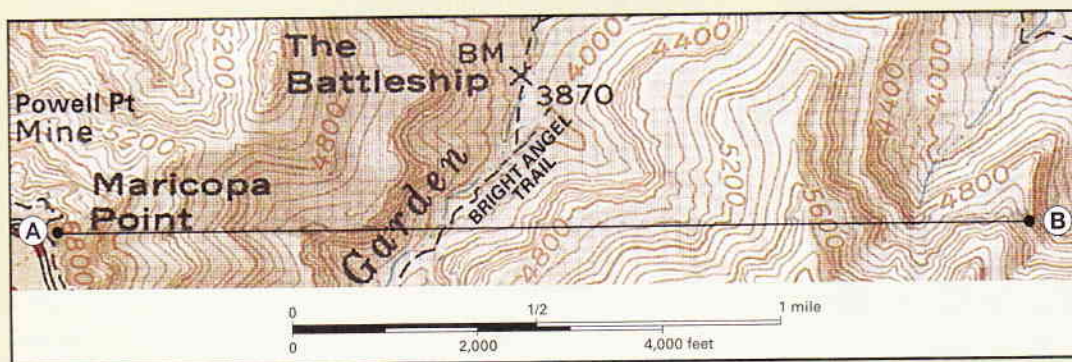
flora all the plant life in a particular region

topographic map a map that uses elevation lines and symbols to show a region's physical and human features. These features may include hills, valleys, rivers, lakes, roads, trails, and buildings.



Three Views of the Grand Canyon

This photograph looks out over the Grand Canyon from near Maricopa Point on the West Rim. The ship-shaped rock formation at its center is known as the Battleship. The section of topographic map below the photo shows this same feature. It also shows Bright Angel Trail, which leads down Garden Creek to the canyon floor. The elevation profile below the map shows this same area from a different point of view. It traces changes in elevation from Maricopa Point to a ridge near Pipe Spring.





Sperry Glacier



Mountain goat



Lake Ellen Wilson

6.3 Waterton-Glacier International Peace Park

About 10,000 years ago, huge **glaciers** covered the tops of the Rocky Mountains and slid down their slopes. A glacier is a large, slow-moving mass of ice. Because of their enormous size and weight, glaciers act like bulldozers. They scrape and reshape the land as they move. Almost everywhere you look in Waterton-Glacier International Peace Park, you can see strange and wonderful shapes carved by glaciers.

Two Parks into One Waterton-Glacier International Peace Park unites two parks, one on each side of the border that divides the United States and Canada. This area was once home to Kootenai and Blackfoot Indians. Both tribes fished the mountain rivers and hunted herds of buffalo. During the 1800s, European settlers arrived. The newcomers began clearing land for farms and ranches. In 1895, the Blackfoot sold their homeland to the United States.

By that time, many people in both the United States and Canada wanted to protect some wilderness areas as parks. In 1895, Canada set aside the Waterton Lakes area as a park. In 1910, the U.S. Congress created Glacier National Park. The two countries joined the parks in 1932 to create the world's first international park. It was called a peace park in honor of the long friendship between the two countries.

Natural Attractions and History Waterton-Glacier park is notable for a number of physical and human features. To begin with, the park straddles the **Continental Divide**. The Continental Divide is a ridgeline along a chain of mountains stretching from Mexico to Canada and Alaska. Rivers on the west side of the divide run toward the Pacific Ocean. Rivers on the east side flow toward the Atlantic Ocean and the Gulf of Mexico.

One of the most popular things to do in Glacier is to drive along Going-to-the-Sun Road. This highway links a valley on the east side of the divide and a valley on the west side. Along the drive, the road climbs through a spectacular mountain pass.

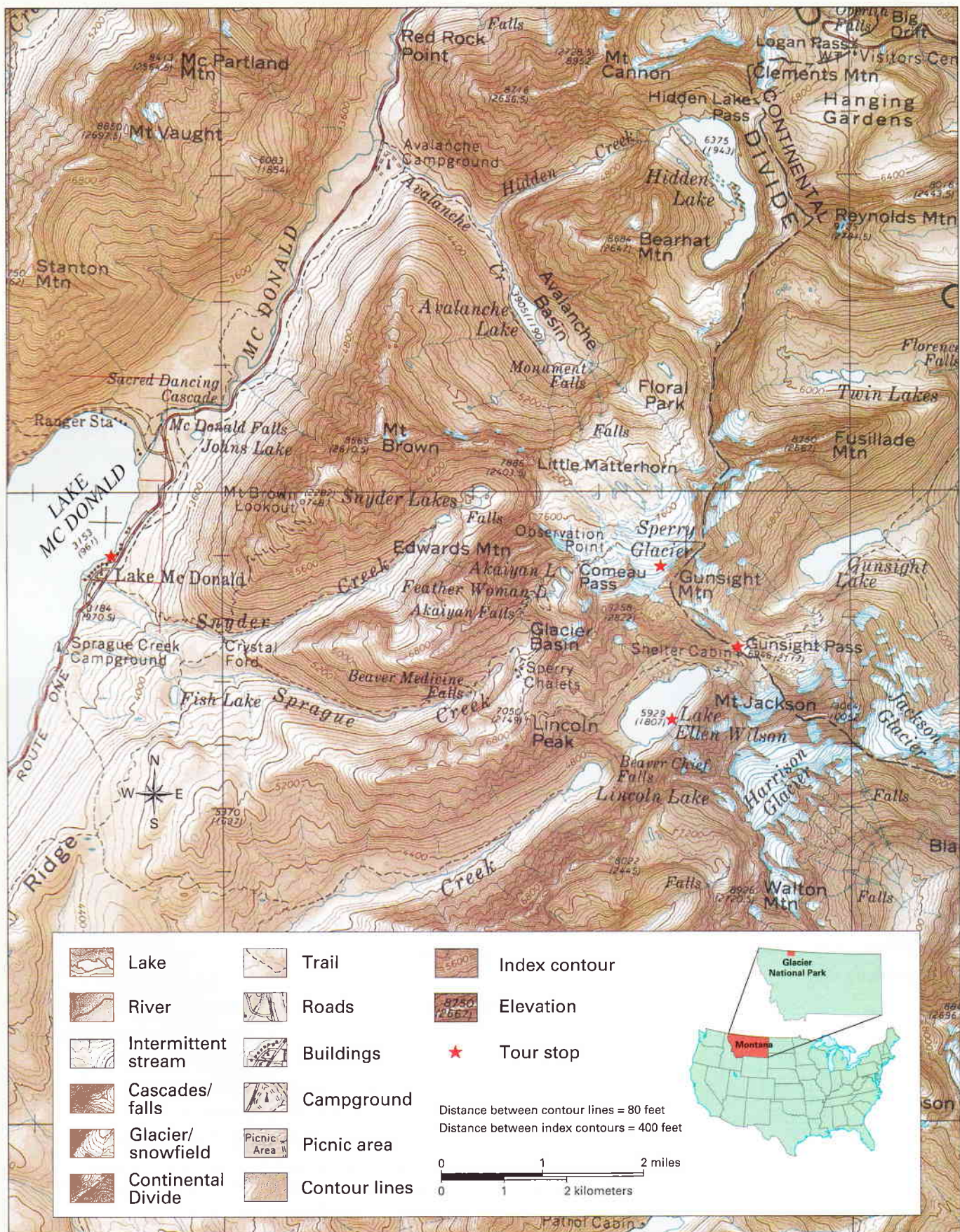
Driving the highway is a good way to experience the different **climates** on each side of the divide. On the west side, the weather is mild, with a lot of rainfall. Here you see cedar and hemlock forests, like those along the Pacific coast. On the east side, the climate is colder and drier. Forests of spruce, fir, and pine are common.

As you might expect, glaciers are one of the park's main features. In fact, Glacier is home to 50 glaciers. It is unusual to find glaciers so far south in the Rocky Mountains.

Waterton Lakes park is famous for its rich diversity of fauna and flora. Here you might see bighorn sheep, moose, black bears, and wolves. The park protects prairie grasslands, mountain forests, and more than 900 types of wildflowers.

The park is also rich in history. Waterton Lakes has two national historic sites. One site is the first oil well in western Canada. The other is the Prince of Wales Hotel, which opened on July 25, 1927.

Topography of Waterton-Glacier International Peace Park (detail)





Sand dunes



Green Gables house



Red sandstone cliffs

6.4 Prince Edward Island National Park

It was broad daylight when Anne awoke and sat up in bed.... For a moment she could not remember where she was. First came a delightful thrill, as something very pleasant; then a horrible remembrance. This was Green Gables and they didn't want her because she wasn't a boy!

Maybe you recognize this scene. It is from *Anne of Green Gables*, a novel about an orphan named Anne Shirley. At about the age of 11, Anne came to live with an elderly couple in Green Gables, a house on Prince Edward Island in Canada.

The book's author, Lucy Maud Montgomery, knew the island well, because she had grown up there. A local farm gave her the inspiration for the house she called Green Gables. Today, Green Gables house is just one of the attractions that brings visitors from all over the world to Prince Edward Island National Park.

A Fragile Island Environment Prince Edward Island has a fragile environment. On its north shore, ocean waves have carved cliffs into the red sandstone. Forests of beech, sugar maple, yellow birch, and red oak were once found on the island. Today there are evergreens such as fir, spruce, and tamarack.

More than a thousand years before Europeans reached North America, the Micmac Indians lived on Prince Edward Island. They called the island Epekwitk, which means "resting on the waves."

Between about 1720 and 1911, French and then English settlers made Prince Edward Island their home. In their eagerness to build homes and make a living, the settlers cleared the forest from more than half the island. They cut down trees for farming, exporting timber, and shipbuilding. In 1937, the Canadian government created Prince Edward Island National Park to protect and preserve the delicate environment of a portion of the island.

Old Settlements and Moving Dunes Visitors come to Prince Edward Island National Park to explore its natural and historical heritage. At Green Gables they can see how people lived on the island in the late 1800s. They can wander through old homes of early settlers.

Visitors to the park can also spot many types of birds and rare plants. There are marshes, woods, and sandy beaches to explore. Migrating sand dunes draw visitors to the park's north shore. A dune is a hill of sand that has been piled up by the wind. A migrating sand dune is one that moves. On Prince Edward Island, the winds are slowly driving the dunes from the edge of the beach inland.

Seeing the dunes move, over a period of months and years, is like watching nature playing a game of leapfrog. The island's migrating dunes have covered up parts of forests, killing the trees. As they move on, they reveal a "skeleton forest" of trees that were previously buried.

Topography of Prince Edward Island National Park





Half Dome



El Capitan



Yosemite Falls

6.5 Yosemite National Park

High in the Sierra Mountains of California is a valley called Yosemite. It was a favorite camping site of the conservationist John Muir. One night in the late 1800s, a fierce thunderstorm hit the valley. Legend has it that Muir climbed to the top of a tall Douglas fir tree to watch as lightning forked across the dark sky. Muir could easily have been killed as he swayed in the howling winds. Luckily, he survived to see his beloved camping ground become Yosemite National Park.

A Gold Rush, Miners, and Tourists The first people in Yosemite were Miwok Indians. They roamed the valley for thousands of years before Europeans arrived. The park was named after a Miwok tribe.

In 1849, Europeans discovered gold in the foothills of the Sierra Nevada. Thousands of miners rushed in, hoping to get rich. In their eagerness to find gold, they cleared forests. They polluted streams and rivers. They hunted animals for food until many were in danger of disappearing. The miners also killed Miwok who did not flee the area.

Meanwhile, word spread about the beauty of Yosemite Valley. Tourist began to visit. They came on foot, on horseback, and by stagecoach. People built hotels. They planted orchards.

Led by John Muir, conservationists appealed to Congress to protect the valley and the land around it. In 1890, Congress agreed to create Yosemite National Park. It was the nation's third national park.

Granite Domes and Giant Trees Rounded mountains and tall, pointy rock towers circle Yosemite Valley. Millions of years of glacial activity created these amazing rock walls.

One of the most famous features rising above the valley floor is called Half Dome. Once it was a huge granite mountain with a rounded top. Long, long ago, a moving glacier sliced the mountain in two. The ice left just half of the dome behind, with a sheer 2,200-foot cliff.

El Capitan is a favorite wall for experienced rock climbers. This 3,600-foot-high block of granite forms the north wall of the valley. Climbers from all over the world come to Yosemite to climb "The Captain." A few climb the incredibly steep cliff in less than 24 hours. Others take a week or two to make their way to the top.

Yosemite Falls is one of the most photographed attractions in the park. It is really three connected waterfalls. Together, they drop almost 2,500 feet from the valley's rim to its floor. Yosemite Falls is the highest waterfall in North America and the among the tallest in the world.

The park's fauna includes California bighorn sheep, coyotes, golden eagles, and black bears. Among its flora is the mariposa lily, a white flower that resembles a butterfly. The park also boasts groves of sequoia trees. Giant sequoias can be up to 30 feet around and more than 300 feet tall. They are the largest of all trees on Earth. They are also among the oldest living things. A tree known as Grizzly Giant in Yosemite's Mariposa Grove is believed to be at least 2,700 years old.

Topography of Yosemite National Park (detail)

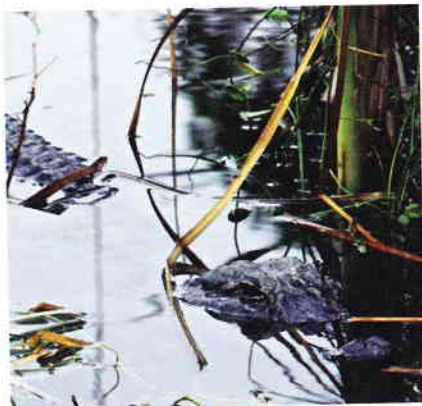




Mt. McKinley



Polar bears at Wapusk Park



Alligator in Everglades Park

6.6 Peaks, Bears, and a Water Wilderness

You have read about two national parks and one international park in North America. There are many other parks to explore in the United States and Canada. Each has its own special attractions. Here is a sampling of three very different national parks.

Denali National Park Alaska's Denali National Park is home to Mt. McKinley. More than 20,000 feet tall, Mt. McKinley is the highest mountain in North America. The mountain was originally called Denali, an Indian word meaning "The Great One" or "The High One." It was renamed for President William McKinley in 1896.

Mt. McKinley is not the only mountain in Denali. The park includes other impressive mountains in the Alaska Range. Glaciers cover many of the tallest peaks.

Cars are not allowed in most of the park. Instead, visitors tour Denali in big green park buses. The bus drivers are very good at spotting wildlife. On a good summer day, visitors might see grizzly bears, moose, caribou, beaver, and bald eagles.

Wapusk National Park Wapusk National Park is Canada's 37th national park. The name Wapusk is a Cree Indian word that means "white bear." It's a good name for this park. Wapusk National Park was created to protect one of the world's largest known polar bear denning areas. A denning area is place where mother bears give birth to their cubs each spring.

Wapusk is not an easy park to visit. It is located in northern Manitoba, far from any road. Much of the park is **tundra**. The ground freezes hard in winter. In summer, it becomes a swamp.

The park is home to beluga whales, hundreds of thousands of birds, and a wide variety of wildflowers. But its most important animals are bears. Every year, about 190 pregnant polar bears come to the park to dig dens in the damp earth. Here they give birth to their cubs.

Everglades National Park A tall, long-necked bird called a great egret stands with one leg drawn up in the shallow water of a river. On the bank, an alligator is sunning itself. Nothing moves. Suddenly, with a flip of its tail, the alligator slides into the water. The egret flies off in a rush. Then everything is still again in Everglades National Park.

Everglades National Park spans the southern tip of the Florida peninsula. It is the only North American preserve with a **humid subtropical** climate. A preserve is an area where animals are protected from hunting. Summers here are hot and rainy, while winters are mild.

Everglades contains many different environments. It has ponds, rivers, and swamps. It also has saw-grass prairies and pineland forests. These environments support a great variety of birds and animals. The park is known for its large wading birds, like the spoonbill, the wood stork, the great blue heron, and the egret. It is also the only place in the world where alligators and crocodiles live near one another.



6.7 Beginning to Think Globally

As you have read, the United States was the first country in the world to set aside wilderness areas as national parks. The idea of protecting land in parks soon spread to Canada. People from all over the world come to both countries to visit national parks. Some of these parks are known for their scenic beauty. Others are visited for their flora and fauna.

Threats to National Parks The United States has led the movement to preserve wilderness areas. However, putting land in a park does not guarantee that it will be preserved from harm.

Many parks face threats from outside their boundaries. Air pollution, for example, drifts into parks from other areas. Great Smoky Mountains National Park spans Tennessee and North Carolina. Air pollution from nearby power plants is harming plants and wildlife there.

Local development can also hurt parks. Water levels are dropping in the Everglades because people are taking too much water away from the rivers that feed the park. The water that does reach the park is often polluted with **sewage** and **toxic waste**.

Loving Parks to Death Popular parks are also in danger of being loved to death. Large numbers of visitors are hard on parks. Their cars cause pollution. Their feet wear away fragile soil. Careless campers sometimes litter areas with trash or start fires.

Parks rich in natural resources face other threats. People eager to use those resources may pressure governments to open parks to farming, logging, mining, or oil drilling.

Around the world, lands set aside for parks or wildlife face similar threats. Think about these threats as you look at preserved land around the world in the next section.

Air Quality in the Great Smokies

Air pollution is a major problem in many national parks. These images are of Great Smoky Mountains National Park on a clear and a polluted day. Factories and cars outside parks create pollution that is carried by wind over the parks. The resulting haze and smog can destroy the beautiful views that people come to see. Air pollution can also harm a park's flora and fauna.

6.8 Global Connections

The map shows amounts of land preserved for parks and wildlife around the world. Some of these areas are preserved as national parks. Some are protected as national forests or wilderness areas. Some are set aside as special preserves for rare or unique flora and fauna.

What problems make it hard for countries to set land aside for parks? In many countries, the cost of creating parks may be a problem. Poor countries may decide they are better off spending their money on things their citizens need more than parks. If a country lacks schools, parks may look like a luxury it cannot afford.

What challenges do countries face in managing lands already set aside? Often the biggest challenge is finding the right balance between preserving and using land. Some people argue that preserved land should be closed to all uses. They believe this is the best way to protect special places. Others feel just as strongly that people should be able to use and enjoy protected lands. They believe that this the best way to build public support for parks. Balancing these two views is not easy.

Has the world done a good job of setting aside unique lands for preservation? Thousands of special areas have been preserved around the world. Still, many people think we can and must do better. The world is getting more crowded year by year, they argue. Unless we act now to protect more land, many other special places may be lost forever.

Protected Lands Around the World, 2003





Source: World Resources Institute, EarthTrends: The Environmental Information Portal, earthtrends.wri.org.