

## Ecosystems and Biomes ▪ Section Summary

## Biomes and Aquatic Ecosystems

### Key Concepts

- What are the six major biomes on Earth?
- What factors determine the type of biome found in an area?
- What are the two major types of aquatic ecosystems?

A **biome** is a group of ecosystems with similar climates and organisms. **The six major biomes that most ecologists study are the rain forest, desert, grassland, deciduous forest, boreal forest, and tundra. It is mostly the climate conditions—temperature and precipitation—in an area that determine its biome.** The climate limits distribution of plants. In turn, the types of plants determine the kinds of animals that live there.

Tropical rain forests are warm and humid and found near the equator. The tall trees form a leafy roof called a **canopy**. A layer of shorter trees and vines forms an **understory**. Temperate rain forests are found farther north. They also receive a lot of rain but are cooler than tropical rain forests.

A **desert** is an area that receives less than 25 centimeters of rain each year. Deserts have large shifts in temperature during the day. Desert organisms are adapted to the lack of rain and to the extreme temperatures.

Most **grasslands** receive between 25 and 75 centimeters of rain each year and are populated mainly by grasses and other nonwoody plants. Grasslands that are located close to the equator are called **savannas**. Savannas receive as much as 120 centimeters of rain each year.

The trees found in deciduous forests, called **deciduous trees**, shed their leaves and grow new ones each year. These forests receive at least 50 centimeters of rain each year. Temperatures vary during the year. Some of the mammals enter a low-energy state called hibernation in the winter.

Boreal forests contain **coniferous trees**, which produce their seeds in cones and have leaves shaped like needles. Winters are long, very cold, and snowy. Summers are rainy and warm enough to melt all the snow.

The **tundra** is extremely cold and dry, often with no more precipitation than a desert. Most of the soil is frozen all year long. The frozen soil is called **permafrost**. Plants include low-growing mosses, grasses, and shrubs.

There are two types of aquatic ecosystems: freshwater ecosystems and saltwater ecosystems. **Freshwater ecosystems include streams, rivers, ponds, and lakes.** Because water absorbs sunlight, there is only enough light for photosynthesis near the surface. Algae are the most common producers in freshwater ecosystems.

The ocean has different zones. An **estuary** is found where the fresh water of a river meets the salt water of the ocean. Between the highest high-tide line and the lowest low-tide line is the **intertidal zone**. Below the low-tide line is the **neritic zone**, a region of shallow water over the continental shelf. Algae are the producers in most open-ocean food webs. Below the open ocean's surface zone is the deep zone, which is completely dark.