44.3B: Tropical Wet Forest and Savannas

Tropical wet forests are characterized by high precipitation and humidity, while savannas have scattered trees and an extensive dry season.

Learning Objectives

- Recognize the distinguishing characteristics of tropical wet forests and savannas

Key Points

- Tropical wet forests, located near the equator, have temperatures that range from 20°C – 34°C (68°F – 93°F), with little variation in seasonal temperatures.
- The lack of seasonality, constant daily sunlight, ideal temperatures, and high rate of precipitation in tropical wet forests lead to increased plant growth and high species diversity.
- The annual rainfall in tropical wet forests ranges from 125 to 660 cm (50–200 in); there is a high rate of precipitation even in the dry months.
- Savannas, grasslands with scattered trees, are located in Africa, South America, and northern Australia.
- Temperatures in savannas range from 24°C – 29°C (75°F – 84°F), with annual rainfall ranges from 10–40 cm (3.9–15.7 in).
- Because savannas are very dry, trees do not grow as well as they do in other forest biomes and diversity is minimal.
Key Terms

- **deciduous**: of or pertaining to trees which lose their leaves in winter or the dry season
- **biome**: any major regional biological community such as that of forest or desert
- **understory**: the layer of plants that grow in the shade of the canopy of a forest

Tropical Wet Forest

Tropical wet forests, also referred to as tropical rainforests, are found in equatorial regions. The vegetation is characterized by plants with broad leaves that fall off throughout the year. Unlike the trees of deciduous forests, the trees in this biome do not have a seasonal loss of leaves associated with variations in temperature and sunlight; these forests are "evergreen" year-round.

The temperature and sunlight profiles of tropical wet forests are very stable in comparison to that of other terrestrial biomes, with the temperatures ranging from 20°C – 34°C (68°F – 93°F). Compared to other forest biomes, tropical wet forests have little variation in seasonal temperatures. This lack of seasonality leads to year-round plant growth, rather than the seasonal (spring, summer, and fall) growth seen in other biomes. In contrast to other ecosystems, tropical ecosystems do not have long days and short days during the yearly cycle. Instead, a constant daily amount of sunlight (11–12 hrs per day) provides more solar radiation and, thereby, a longer period of time for plant growth.

The annual rainfall in tropical wet forests ranges from 125-660 cm (50–200 in), with some monthly variation. While sunlight and temperature remain fairly consistent, annual rainfall is highly variable. Tropical wet forests have wet months in which there can be more than 30 cm (11–12 in) of precipitation, as well as dry months in which there are fewer than 10 cm (3.5 in) of rainfall. However, the driest month of a tropical wet forest still exceeds the annual rainfall of some other biomes, such as deserts.

Tropical wet forests have high net primary productivity because the annual temperatures and precipitation values in these areas are ideal for plant growth. Therefore, the extensive biomass present in the tropical wet forest leads to plant communities with very high species diversity. Tropical wet forests have more species of trees than any other biome. On average, between 100 and 300 species of trees are present in a single hectare (2.5 acres) of South America. One way...
to visualize this is to compare the distinctive horizontal layers within the tropical wet forest biome. On the forest floor is a sparse layer of plants and decaying plant matter. Above that is an understory of short shrubby foliage. A layer of trees rising above this understory is topped by a closed upper canopy: the uppermost overhead layer of branches and leaves. Some additional trees emerge through this closed upper canopy. These layers provide diverse and complex habitats for the variety of plants, fungi, animals, and other organisms within the tropical wet forests. For instance, epiphytes are plants that grow on other plants. Host plants are typically unharmed. Epiphytes are found throughout tropical wet forest biomes. Many species of animals use the variety of plants and the complex structure of the tropical wet forests for food and shelter. Some organisms live several meters above ground, having adapted to this arboreal lifestyle.

Figure \( \PageIndex{1} \): Tropical wet forests: Tropical wet forests, such as the forests of Madre de Dios near the Amazon River in Peru, have high species diversity.

**Savannas**

Savannas are grasslands with scattered trees located in Africa, South America, and northern Australia. Savannas are hot, tropical areas with temperatures averaging from 24°C – 29°C (75°F – 84°F) and an annual rainfall of 10–40 cm (3.9–15.7 in). They have an extensive dry season. For this reason, forest trees do not grow as well as they do in the tropical wet forest or other forest biomes. As a result, there are relatively few trees within the grasses and forbs (herbaceous flowering plants) that dominate the savanna. Since fire is an important source of disturbance in this biome, plants have evolved well-developed root systems that allow them to quickly re-sprout after a fire.
Savannas: Savannas, such as this one in Taita Hills Wildlife Sanctuary in Kenya, are dominated by grasses.

Animals commonly found in savannas in Africa include the African elephant, lions, gazelles, giraffes, ostriches, and many other mammals, birds, plants and invertebrates. The northern Australian savannas also have many types of plants, animals, insects, and reptiles, including marsupials (kangaroos and wallabies), bats, and rodents. In addition to the native animals such as foxes and Patagonian maras (rabbit-like rodents), savannas in South America are commonly used for grazing domestic livestock, such as sheep, goats, and cattle because of their open grasslands and herbaceous layer of plants.