

Forest Biomes

Chapter 6, Section 2

Forest Biomes

- Forest Biomes:
 - widespread and most diverse
 - Exist where temperatures are mild - hot and rainfall is plentiful
 - Three main forest biomes:
 - Tropical
 - Temperate
 - Coniferous

Tropical Rain Forest

- Located in a belt around the equator
 - Help regulate the worlds climate
 - Play vital roles in Carbon, Nitrogen, and Oxygen cycles
 - Since climate is warm and wet it is ideal for a wide variety of plants and animals.
 - Decomposers break down dead organisms and return nutrients to soil. These nutrients are quickly absorbed by plants so the soil does not have many nutrients. Soil runoff is as pure as water!

Four Layers of the Rain Forest

1. Emergent Layer

- Tallest layer, trees reach 60-70m
- Trees absorb the most light and emerge into direct sunlight
- Eagles, bats, monkeys, snakes live here

2. Upper Canopy

- Primary layer, can grow to > 30m
- Dense layer that absorbs up to 95% of the sunlight
- Plants called epiphytes (ex: orchid) live here

Four Layers of the Rain Forest

3. Lower Canopy

- Receives less light than the upper canopy

Most animals that live in the rainforest live in the canopy because they depend on the flowers and fruits that grow there.

4. Understory

- Receives very little light
- Plants and shrubs adapted to shade grow there, only to about 3.5m tall.
- Herbs with flat leaves capture sunlight on the forest floor.

Additional Info About Rain Forests

- Species Diversity
 - Tropical rain forest has the greatest amount of species diversity (including people)
 - They cover less than 7% of Earth's land surface, but contain 50% of all plant and animal species in the world!
 - Many organisms have adaptations to help them survive in the rain forest.
- Threats to Rain Forests
 - Amount of land RF take up is down from 20 to 7%.
 - Acres are cleared every day for logging, agriculture or oil exploration causing habitat destruction.

Temperate Forests

- Temperate Rain Forest
 - Occurs in N. America, Australia, New Zealand
 - Large amounts of precipitation
 - High humidity and moderate temperatures
 - North American TRF is located in Pacific NW.
 - Branches + trunks are covered in mosses and lichens
 - Forest floor is covered in ferns.
 - Evergreen trees dominate the forest.
 - Location close to the Pacific ocean prevents freezing.
 - Ocean wind meets Olympia mountains producing rainfall and keeping forest cool and moist.

Temperate Forests

- Temperate Deciduous Forest
 - Generally located between 30-50° north latitude
 - Extreme range in in temperatures over a year
 - Below freezing to 95°F
 - Experience a change of seasons
 - Growing season of only 4-6 months with trees losing leaves in the fall
 - Receive 75 - 125 cm of precipitation annually
 - Rain and snow help decompose dead organic matter making soil rich in nutrients.

Plants in the Temperate Deciduous Forest

- Grow in layers
 - Canopy: Tall trees like maple oak and birch
 - Understory: receives more light than a rainforest and has small trees and shrubs
 - Forest floor: covered with herbs, ferns and mosses.
- Adapted to survive seasonal change
 - Leaves are shed in fall/winter
 - Seeds, bulbs and underground stems are insulated in the winter by soil and germinate in the spring

Animals in the Temperate Deciduous Forest

- Adapted to use the forest plants for food and shelter
 - Squirrels eat nuts, seed and fruits in the trees
 - Bears eat leaves and berries
 - Grasshoppers eat almost all vegetation
 - Deer and other herbivores eat leaves.
 - Birds nest in the canopy, but are migratory and leave in the winter to go south for warmth and food.
 - Animals that are not migratory reduce their activity so that they require less food for energy.

The Taiga

- Northern coniferous forest that stretches across the Northern Hemisphere just below the Arctic Circle
- Winters are 6-10 months with temperatures from below freezing to -20°C
- Forest floor is dark and has little vegetation
- Trees have barren trunks with green tops
- Growing season can be as short as 50 days
- Plant growth is abundant during summer months because of constant daylight and more precipitation

Plants in The Taiga

- Conifers

- Trees that have seeds that develop in cones.
- Do not shed their needle-shaped leaves which help them survive harsh winters.
- Leaves have waxy coating that helps them retain water for when the ground is frozen.
- Pointed (cone like) shape helps the tree shed snow in winter so that it does not become weighted down.
- Conifer needles make soil acidic and most plants can't grow in acidic soil, so there are few plants on the forest floor.
- Soil form slowly because the climate and the acidity of the fallen leaves slow decomposition.

Animals in The Taiga

- Lakes and swamps attract birds that feed on insects and fish in the summer.
- Birds migrate south in the winter.
- Year-round residents like shrews and rodents burrow underground. The snow insulates them.
- Moose and snowshoe hares eat any vegetation they can find.
- Some animals like snowshoe hares have adapted to avoid predation by shedding their brown summer fur and growing white fur in the winter.