

BIOMES AND ECOSYSTEMS



What is a biome?

- A biome is a group of land ecosystems with similar climates and organisms



**There are 6 major land biomes and
2 major water ecosystems?**

**LAND (6): RAINFORESTS, DESERTS,
GRASSLANDS, DECIDUOUS FORESTS, BOREAL
FORESTS, & TUNDRA**

**WATER (2): FRESHWATER & MARINE
ECOSYSTEMS**

- An area's biome is determined mostly by its climate (temperature and precipitation)



RAIN FORESTS

- There are 2 main types of rain forests: Temperate Rain Forests and Tropical Rain Forests.



TEMPERATE RAIN FORESTS

- “Temperate”= having moderate temperatures.
- Northwestern coast of U.S. is a temperate rain forest.
- Receives more than 300 cm of rain per year.
- Huge trees: Cedars, Redwoods, Douglas Firs.



TROPICAL RAIN FORESTS

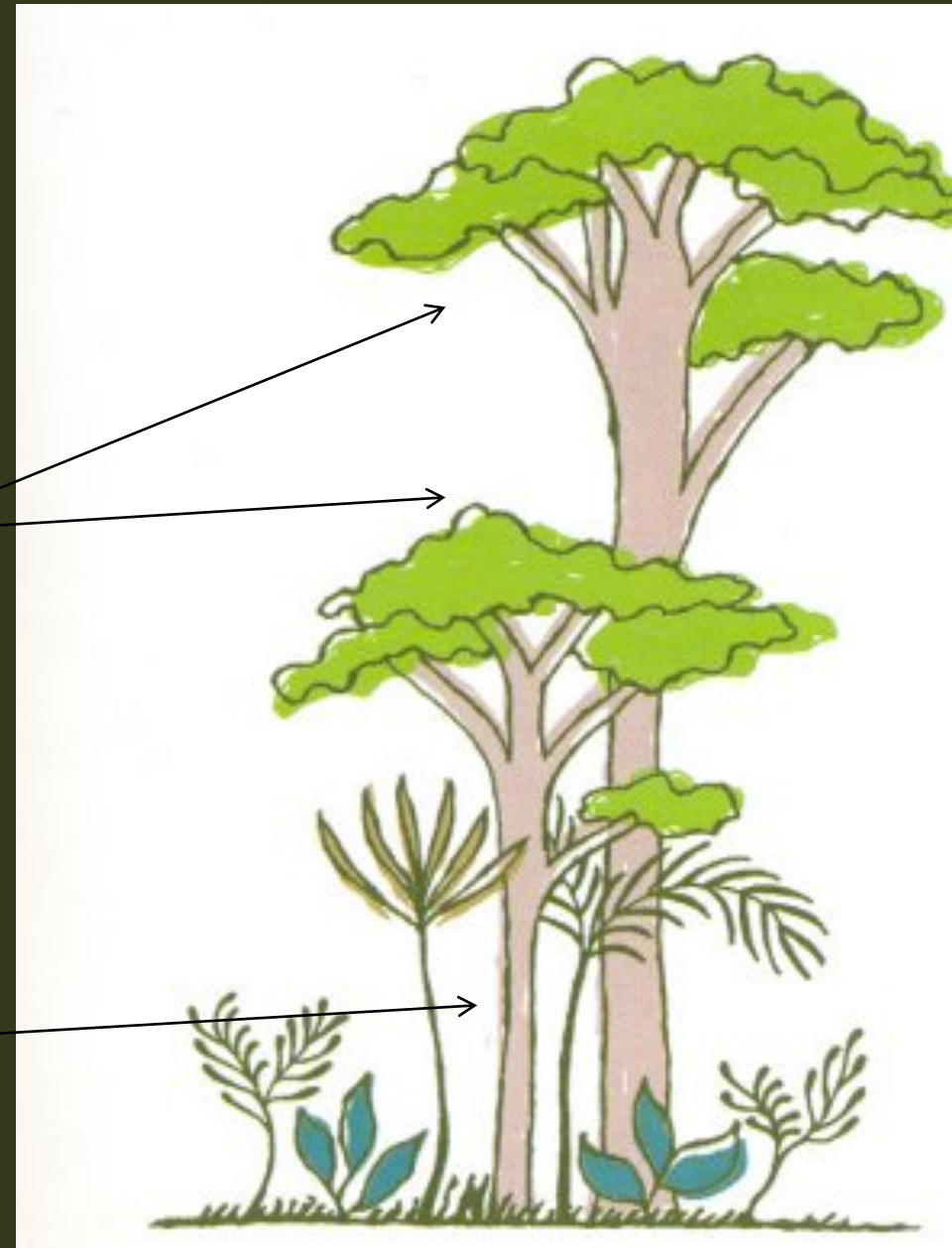
- Found in regions close to the equator
- Warm and humid all year long.
- Lots of precipitation.
- Diverse plant growth.



- **Trees in the rain forest form several layers...**

Canopy: A leafy roof formed by the tallest trees.

Understory: A second layer of shorter trees and vines.



- **Understory** plants grow well in the shade formed by the canopy, but the forest floor is nearly dark and only a few plants live there.



DESERTS

- **Desert = An area that receives less than 25 cm of rain per year.**
- **Some deserts receive NO precipitation at all during one year.**
- **Deserts often undergo large shifts in temperature during the course of a day.**



The scorching **Namib** desert in Africa cools rapidly after the sun goes down.



The **Gobi** desert in central Asia is cooler and even experiences freezing temperatures in the winter.

- Organisms that live in the desert must be adapted to the lack of rain and extreme temperatures.



- Saguaro Cactus: Stem expands to store water.
- Gila monster spends weeks in its cool, underground burrows.
- Many other organisms are only active at night when it is cooler.

GRASSLANDS

- Grassland (prairie)=
An area that is populated mostly by grasses and other non-woody plants.
- Receive 25 to 75 cm of rain per year.
- Fires and droughts are common.



Savanna: Grassland that is located closer to the equator than prairies.



- Savannas can receive as much as 120 cm of rain per year.
- In addition to grass, scattered shrubs and small trees can grow in the savanna.

- Grasslands are home to many of the largest animals on Earth.

- Examples:



- Grazing by these large herbivores helps to maintain these grasslands.

DECIDUOUS FOREST

- Deciduous trees= Trees that shed their leaves and grow new ones each year (Oaks, Maples...)
- Receive enough rain to support the growth of trees and other plants (at least 50 cm per year).
- Growing season is 5 to 6 months long.



BOREAL FOREST (*taiga*)

- Mostly contains coniferous trees (trees that produce their seeds in cones and have leaves shaped like needles). Ex. Fir, Spruce, Hemlock...
- Very cold winters (a lot of snow).
- Warm and rainy summers.



TUNDRA

- Tundra = Extremely cold and dry biome.
- Usually receives NO more precipitation than a desert biome.
- Most soil is frozen all year long (permafrost)
- During summer, the top layer of soil thaws, but the rest remains frozen.





- Because rainwater cannot soak into the permafrost, there are many shallow ponds and marshy areas of the tundra during the summer



Tundra Plants and Animals



WOLF



POLAR BEAR



REINDEER



**ARCTIC
FOX**



ARCTIC HARE

FRESHWATER ECOSYSTEMS

- Freshwater ecosystems include streams, rivers, ponds and lakes.



Rivers and Streams

- Animals adapt to the stream/river's current (hooks and suckers to cling to rocks, streamline bodies).
- Few -plants or algae can grow because of the strong currents.
- Animals rely on seeds and leaves to fall in the water as food.



River/Stream Organisms



Ponds and Lakes

- Bodies of standing or still freshwater.
- Lakes are larger and deeper than ponds.
- Ponds: Shallow enough for sunlight to hit bottom (allowing plants to grow there).
- Lakes (and large ponds): Too deep for plants to grow on the bottom, so algae grows and floats on top of water.

Pond/Lake Organisms



MARINE ECOSYSTEMS

- Marine ecosystems include estuaries, intertidal zones, neritic zones, and the open ocean.



- **Estuary:** Where freshwater of a river meets saltwater of the ocean.



Intertidal Zone: The area between the highest high tide line and the lowest low tide line.

- Organisms here must be able to survive the pounding waves, water level changes, and temperature changes
- Ex. (barnacles, starfish, snails, clams....)



Neritic Zone: The area below the low tide line which extends over the continental shelf.

- Sunlight passes through this zone, so photosynthesis can occur (plants can grow).
- Many living things.
- Coral reefs may form in water is warm.



Open Ocean: Separated into two zones:

- Surface Zone: The first few hundred meters deep of the ocean (where light penetrates).
- Deep Zone: Below the surface zone (totally dark and home to many BIZZARE organisms).

