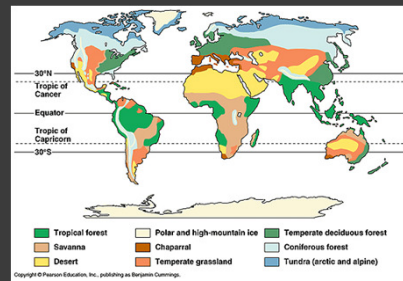


Chapter 15 Biosphere

15.3-15.5

Section 15.3: Biomes



Biomes

Major communities of organisms characterized by the climate and plant life that thrive there

Earth has 6 major biomes



Biomes

Tropical Rainforest



- Hot and wet all year. Annual precipitation >200cm (6+ ft !)
- Located in parts of South and Central America, Southeast Asia, parts of Africa, southern India, and Northeastern Australia
- Soil is thin & poor in nutrients because all the nutrients are tied up in living material.

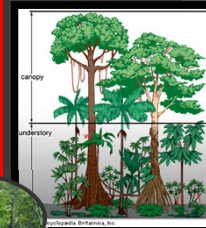
Tropical Rainforest

- Limiting factor is sunlight.
- Contains more species of organisms than any other biome- **high biodiversity.**
- There are more species of reptiles, birds, and amphibians than in any other terrestrial biome.

Tropical Rainforest

Areas in the forest:

- Canopy- dense covering of the tree tops. Precipitation from the leaves provides water for the forests.
- Understory-Beneath the canopy. Dimly lit. Plants have large leaves to attract as much sunlight as possible.
- Forest floor



Tropical Rainforest
Plants of the Rainforest

Bromeliads (tropical flowering plants)




Rafflesia Flower

Tropical Rainforest
Epiphytes: (vines)



Tropical Rainforest
Plants of the Rainforest

Tall Trees



Tropical Rainforest
Animals

Sloth




Jaguar




Tropical Rainforest
Animals

Anteater




Squirrel monkey




Tropical Rainforest
Animals

Army Ants



Toucan



Tropical Rainforest

Animals



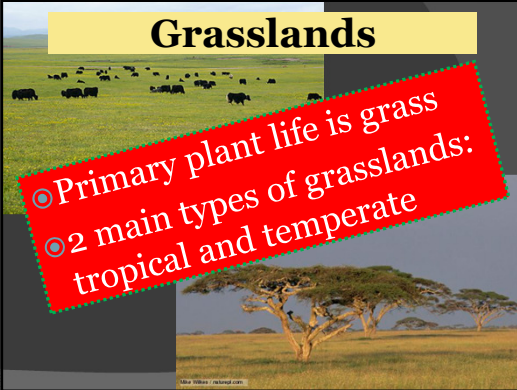
Burmese python



Tree frog


Grasslands

- ⦿ Primary plant life is grass
- ⦿ 2 main types of grasslands: tropical and temperate



Tropical Grasslands

- ⦿ Also known as savannas
- ⦿ Located in eastern Africa, southern Brazil, and northern Australia.
- ⦿ Rainfall is a limiting factor. For 5 months of the year there may be very little (10 cm a month), but during the rainy season rivers & ponds may be replenished


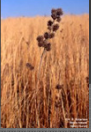



Tropical Grasslands

Aka. Savanna

Plants

- ⦿ Tall perennial grasses, and isolated trees as well as small groves of trees and shrubs resistant to drought and fire.

Tropical Grasslands

Aka. Savanna

Animals



Lions






Baboons



Tropical Grasslands

Aka. Savanna

Animals




Rhinos, giraffes, zebras, and elephants

Temperate Grasslands


- Temperate grasslands are also known as **plains or prairies**.
- Located in central Asia, North America, Australia and central Europe, and plateaus of South America.
- Warm to hot summers and cold winters.
- Rainfall is moderate and seasonal (20-35 in per year).
- Fires are common, but some plants have fire-resistant seeds



Temperate Grasslands aka. Plains/prairies


Plants

Grasses, shrubs, purple needlegrass, wild oats, foxtail, ryegrass, and buffalo grass



Temperate Grasslands aka. Plains/prairies

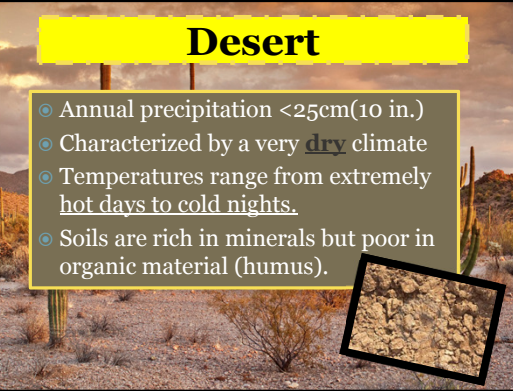
Animals



Prairie dogs, buffalo, prairie falcon, antelopes, rabbits, wolves, bears

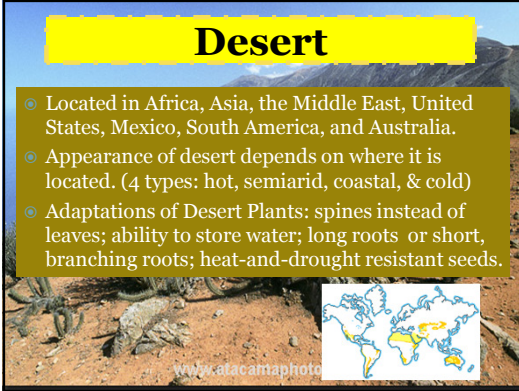
Desert

- Annual precipitation <25cm(10 in.)
- Characterized by a very **dry** climate
- Temperatures range from extremely **hot days to cold nights**.
- Soils are rich in minerals but poor in organic material (humus).



Desert

- Located in Africa, Asia, the Middle East, United States, Mexico, South America, and Australia.
- Appearance of desert depends on where it is located. (4 types: hot, semiarid, coastal, & cold)
- Adaptations of Desert Plants: spines instead of leaves; ability to store water; long roots or short, branching roots; heat-and-drought resistant seeds.



Desert



Saharan Desert: dryer than desert in US



Desert

Plants: cacti



Barrel cacti



Saguaro cactus




Desert

Animals









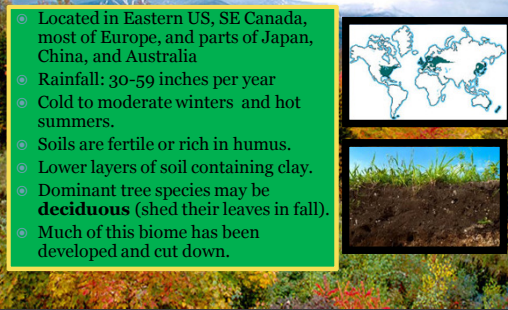



Roadrunner,
snakes,
kangaroo
rats,
scorpions,
lizards

Temperate Deciduous Forests

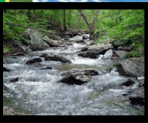
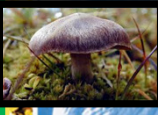
- ◉ Located in Eastern US, SE Canada, most of Europe, and parts of Japan, China, and Australia
- ◉ Rainfall: 30-59 inches per year
- ◉ Cold to moderate winters and hot summers.
- ◉ Soils are fertile or rich in humus.
- ◉ Lower layers of soil containing clay.
- ◉ Dominant tree species may be **deciduous** (shed their leaves in fall).
- ◉ Much of this biome has been developed and cut down.







Temperate Deciduous Forests

- ◉ Climate makes this biome a good habitat for many plants and animals.
- ◉ High humidity
- ◉ 4 distinct seasons
- ◉ Contains many ponds and streams
- ◉ Habitat for many types of fungi, bacteria, and decomposers.
- ◉ Main vegetation: trees such as oaks, beeches, & maples, as well as shrubs, lichens, mosses



Temperate Deciduous Forests



Plants

Conifers



Pine

Deciduous trees



Temperate Deciduous Forests

Animals









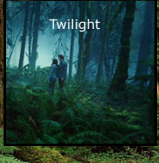


Deer,
raccoons,
skunks,
black bears,
squirrels



Northwestern Coniferous Forest

aka. Temperate Rainforest

- Fall, Winter, Spring: temperature is mild with abundant precipitation (98 inches per year)
- Summers are cool & dry
- Soil is rocky & acidic
- Sometimes called the temperate rain forest because of the amount of rain and lush evergreens.


Northwestern Coniferous Forest

- Contains coniferous trees (evergreens; do not shed leaves) which retain their needles all year
- Mosses, lichens and ferns are found on forest floor
- Located along the pacific coast of northwestern US and Canada and from northern California to Alaska




Northwestern Coniferous Forest


Redwood





Plants



Spruce



Northwestern Coniferous Forest

Animals

- Bears
- Deer
- Elk
- Beavers
- Owls


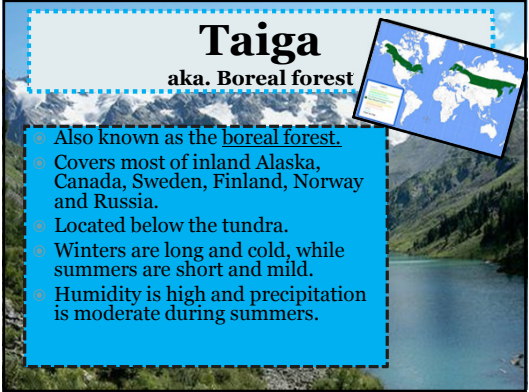





Taiga

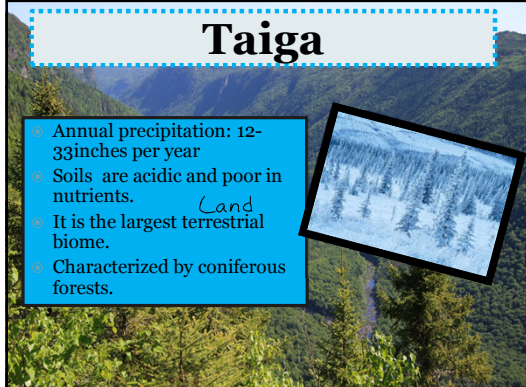
aka. Boreal forest

- Also known as the boreal forest.
- Covers most of inland Alaska, Canada, Sweden, Finland, Norway and Russia.
- Located below the tundra.
- Winters are long and cold, while summers are short and mild.
- Humidity is high and precipitation is moderate during summers.

Taiga



- Annual precipitation: 12-33 inches per year
- Soils are acidic and poor in nutrients.
- It is the largest ^{Land} terrestrial biome.
- Characterized by coniferous forests.



Taiga






Plants

- **Spruce and Fir.**
They are evergreens
- **Birch**
They are deciduous

Taiga




Animals

Moose, snowshoe rabbits, wolves, beavers, lynx

Tundra


- First biome south of the north pole.
- Characterized by low precipitation and strong winds. Annual precipitation is < 5 inches per year.
- Soils are poor and low in nutrients.
- The subsoil is permanently frozen in a layer called the permafrost.
- Short summers (6-10 weeks); Long winters (10 months)

Tundra

Plants


- Lichens & mosses
- Grass
- Scattered shrubs
- Small low-lying plants



Tundra

Animals



snowy owl, arctic fox, reindeer, polar bear

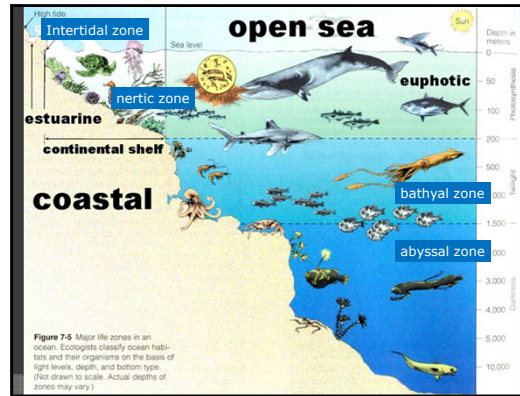
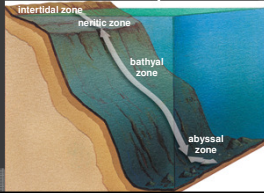
Section: 15.4 Marine Ecosystems



Marine Ecosystems

The ocean is divided into different zones.

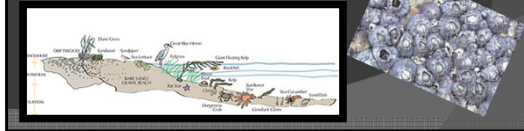
- Zones are determined by their distance from the shore line & water depths
- intertidal zone
- neritic zone
- bathyal zone
- abyssal zone



Marine Ecosystems

Intertidal Zone

- Strip of land between low & high tide
- Organisms here must tolerate changes in temperature, amount of moisture, and salinity



Intertidal Organisms:

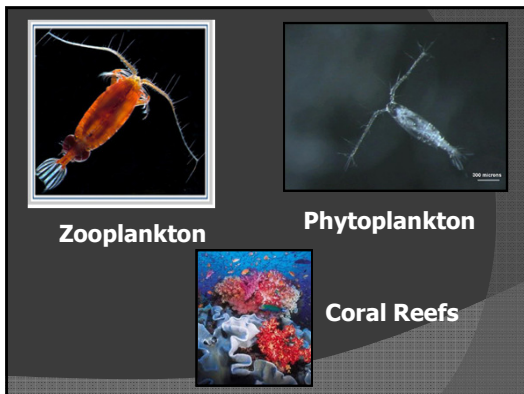


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Marine Ecosystems

Neritic Zone

- Extends from intertidal zone to continental shelf
- May be a few cm at low tide to more than 200 meters deep
- Contains more biomass than the rest of the ocean
- Contains zooplankton & phytoplankton
- **Phytoplankton provide most of the oxygen on Earth through photosynthesis
- Coral reefs also found





Marine Ecosystems

Bathyal Zone

- Extends from the neritic zone to the base of the continental shelf
- 200-2000 meters
- Murky due to accumulation of silt
- Contains burrowing animals & fish adapted to high pressure

Marine Ecosystems

Abyssal Zone

- Below 2000 meters & in complete darkness
- Contains chemosynthetic organisms

Marine Ecosystems

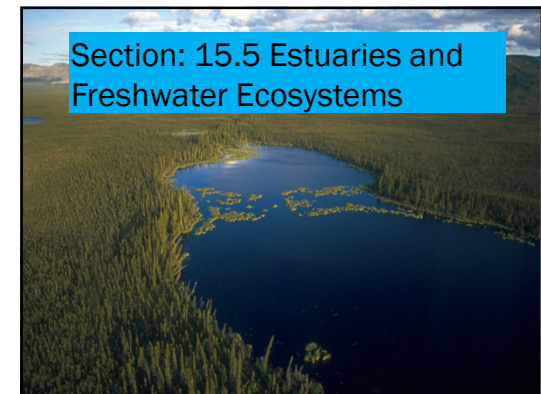
Coral Reefs

- Corals are animals that have a mutualistic relationship with algae
- Located in the neritic zone
- Found in tropical climates
- Home to numerous species of corals, fish, sponges, sea urchins & more

Marine Ecosystems

Kelp Forests

- Exists in cold, nutrient-rich water
- Large community of kelp (seaweed)
- Provide habitat & food sources to many marine species



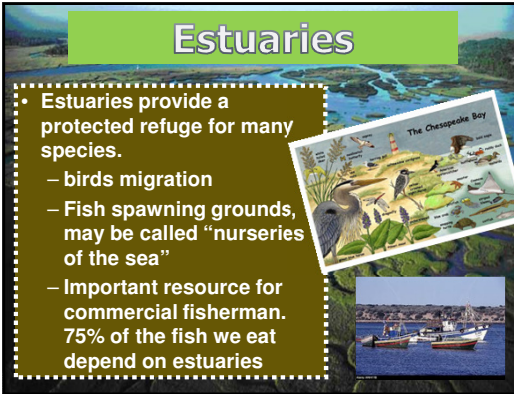
Estuaries

- An estuary is a partially enclosed body of water that forms where a river meets an ocean.
 - mixture of fresh water with salt water
 - Highly productive ecosystems
 - Ex.: Chesapeake Bay, Louisiana bayous



Estuaries

- Estuaries provide a protected refuge for many species.
 - birds migration
 - Fish spawning grounds, may be called “nurseries of the sea”
 - Important resource for commercial fisherman. 75% of the fish we eat depend on estuaries



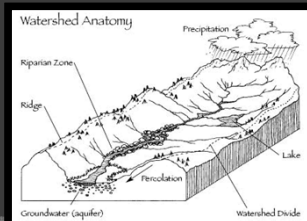
Estuaries

- Estuaries may provide a habitat for many endangered and threatened species.
 - ex. brown pelicans, Morro Bay kangaroo rat
- Estuaries are primarily threatened by land development.



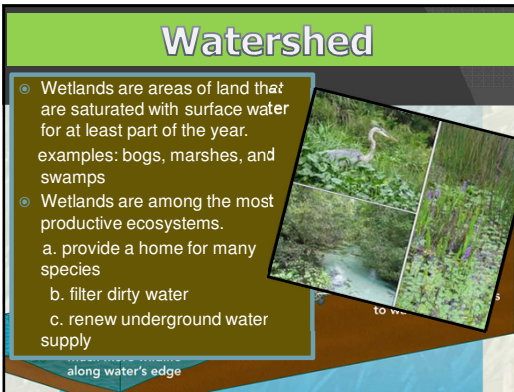
Watershed

- A watershed is a region of land that drains into a body of water.



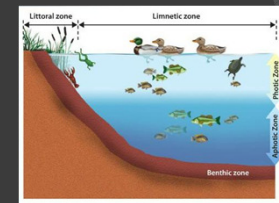
Watershed

- Wetlands are areas of land that are saturated with surface water for at least part of the year. examples: bogs, marshes, and swamps
- Wetlands are among the most productive ecosystems.
 - provide a home for many species
 - filter dirty water
 - renew underground water supply



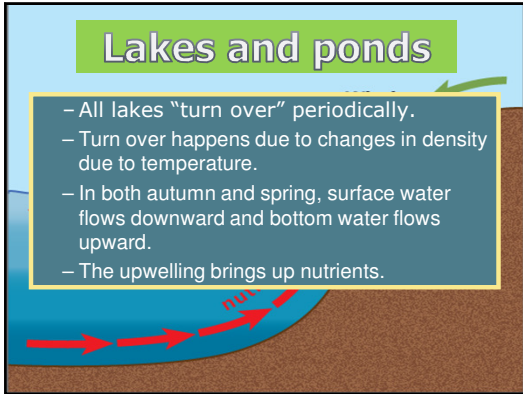
Lakes and ponds

- Lakes & ponds are divided into three zones.
 - littoral zone: shoreline
 - limnetic zone: open water
 - benthic zone: lake or pond bottom



Lakes and ponds

- All lakes "turn over" periodically.
- Turn over happens due to changes in density due to temperature.
- In both autumn and spring, surface water flows downward and bottom water flows upward.
- The upwelling brings up nutrients.



Lake Trivia

- Largest Lake in USA:
Lake Superior 350 miles
- Crater Lake: In Oregon,
Depth is 1,949 ft
- Largest Lake in GA:
Clarks Hill Lake 65 miles

