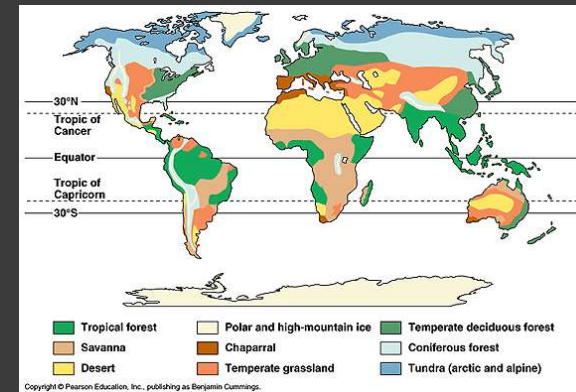


Chapter 15 Biosphere



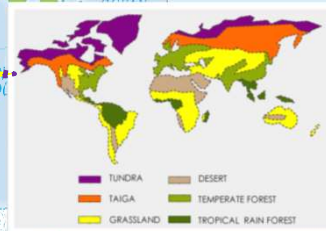
Section 15.3: Biomes



Biomes

- Major communities of organisms
 - Climate and plant life characterize each biome

Earth has 6 major biomes



1. Tropical Rainforest

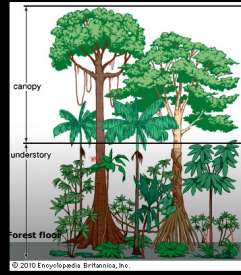
- Near the equator
- Hot and rains all year.
- Limiting factor: sunlight.
- Highest biodiversity**- lots of organisms
- Reptiles, birds, & amphibians



Tropical Rainforest

Levels of the Forest:

1. Canopy- dense covering of the tree tops limit sunlight
2. Understory-Plants have large leaves to attract as much sunlight as possible.
3. Forest floor- Soil is thin & poor in nutrients
*Nutrient are tied up in living material.



Right: an axlot transformed into fertile terra preta
Left: a nutrient poor axlot

Tropical Rainforest

Plants

Epiphytes: (vines)



Tall Trees



Tropical Rainforest

Plants



Bromeliads
(tropical flowering plants)



Rafflesia Flower

Tropical Rainforest

Animals

Sloth



Jaguar



Tropical Rainforest



Anteater

Animals

Squirrel monkey



Tropical Rainforest



Army Ants



Animals



Toucan

Tropical Rainforest



Burmese python

Animals

Tree frog



2. Grasslands



- 2 main types:
- tropical and temperate



Tropical Grasslands






- Also known as savannas
- Located: Africa, Brazil, and Australia.
- Limiting factor is rainfall.

Tropical Grasslands

Aka. Savanna

Plants

- Tall grasses, and isolated small trees
- Plants are resistant to drought and fire.

Tropical Grasslands

Aka. Savanna

Animals



Lions





Baboons


Tropical Grasslands


Aka. Savanna

Animals











Rhinos, giraffes, zebras, and elephants

Temperate Grasslands

- Also known as **plains or prairies**.
- Located: North America, Europe, and South America.
- Warm to hot summers and cold winters.
- Rainfall is moderate and seasonal

Temperate Grasslands

aka. Plains/prairies

Plants


- Grasses, shrubs, purple needlegrass, wild oats, foxtail, ryegrass, and buffalo grass
- Fires are common, but some plants have fire-resistant seeds




Temperate Grasslands

aka. Plains/prairies


Animals







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

3. Desert

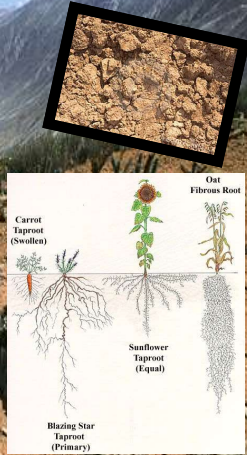


- Very little rainfall
- Very **dry** climate
- Temperatures range from extremely hot days to cold nights.
- Located in Africa, Asia, the Middle East, United States, Mexico, South America, and Australia.

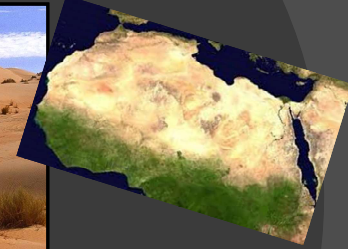


Desert

- 4 types: hot, semiarid, coastal, & cold
- Soils are rich in minerals but poor in organic material (humus).
- 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:
drier than desert
in US**



Desert

Plants: cacti



Barrel cacti



Saguaro cactus



Desert

Animals



Roadrunner,
snakes,
kangaroo
rats,
scorpions,
lizards



4. Temperate Deciduous Forests

- Located in Eastern US and Europe
- Average Rainfall
- Cold to moderate winters and hot summers.
- Soils are fertile or rich in humus (organic matter).



Temperate Deciduous Forests

- 4 distinct seasons
- High humidity
- Habitat for many types of fungi, bacteria, and decomposers.



Temperate Deciduous Forests

Conifers



Pine



Plants

Deciduous trees

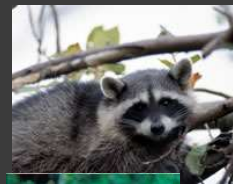


Maple, oak, hickory

Dominant tree species may be **deciduous** (shed their leaves in fall).

Temperate Deciduous Forests

Animals



Deer, raccoons, skunks, black bears, squirrels

Northwestern Coniferous Forest

aka. Temperate Rainforest

- Fall, Winter, Spring
- Mild temperature
- Lots of rainfall
- Located: Northwestern US & Canada
- Soil is rocky & acidic




5. Northwestern Coniferous Forest

Redwood



Plants

- Coniferous trees
 - Evergreens; do not shed leaves
- Mosses, lichens and ferns

Pine, Spruce






Northwestern Coniferous Forest

Animals

- Bears
- Deer
- Elk
- Beavers
- Owls







6. Taiga

- Also known as the boreal forest
- It is the largest terrestrial biome.
- Located: Alaska, Canada, and Russia.
- Located below the tundra.
- Long cold winters and short summers




Taiga

- Humidity is high
- Rainfall is moderate during summers.
- Soils are acidic and poor in nutrients.

Acidic Soil

Taiga

Plants

- Mainly coniferous trees. (evergreens)
- Do not shed their leaves

- **Birch (Some)**
They are deciduous

Taiga

Animals

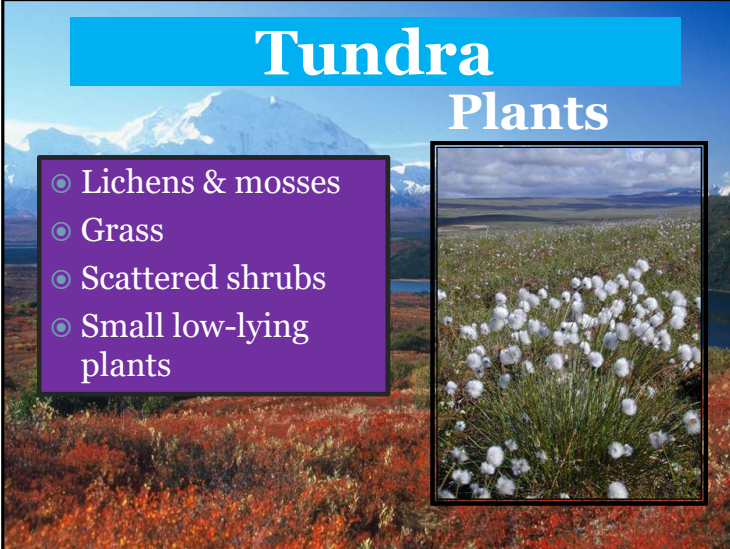
Moose, snowshoe rabbits, wolves, beavers, lynx

7. Tundra

- First biome south of the north pole.
- Short summers (2 months); Long winters (10 months)
- Low rainfall
- Soils are poor and low in nutrients.
- The subsoil is permanently frozen in a layer called the permafrost.

Tundra Plants

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



Tundra

Animals




**snowy owl,
arctic fox,
reindeer,
polar bear**

8. Chaparral

- Temperate shrubland
- Moderately dry, coastal climate, with little or no rain in summer
- Located in coastal Mediterranean areas
- Fires are common and necessary here; leaves of plants contain oils that promote burning
- Threatened by human development

Plants of the Chaparral

- Plants are low-lying, evergreen shrubs and small trees; Ex: rosemary, sage, lavender, olive trees



Animals of the Chaparral

- Quail
- lizards
- chipmunks
- mule deer
- Many are camouflage



Section: 15.4 Marine Ecosystems

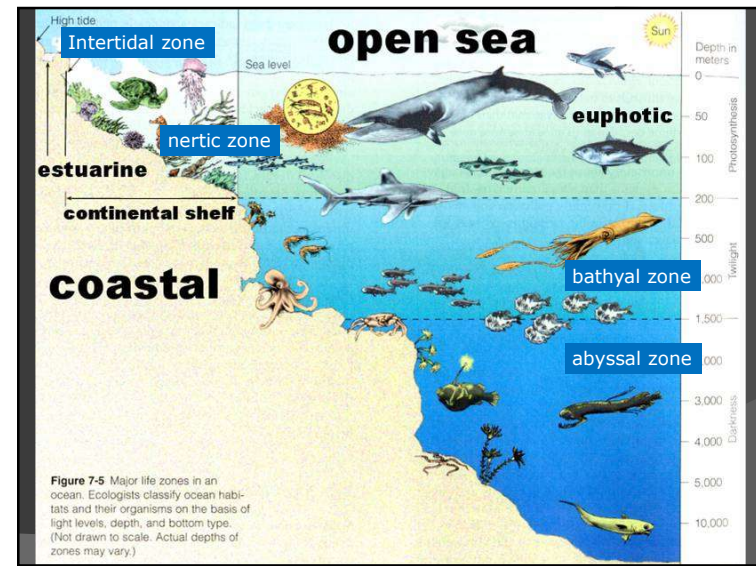
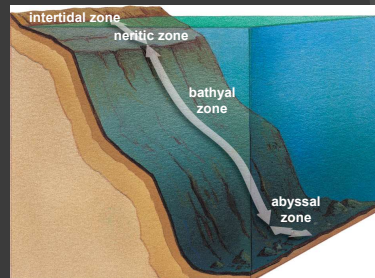


Marine Ecosystems

The ocean is divided into different zones.

- Zones are determined by their distance from the shore line & water depths

Draw/label this image



Marine Ecosystems

Intertidal Zone




- Coastal area
- Organisms here must tolerate changes in temperature, water amount, and salinity




Intertidal Organisms:



Crab



Star Fish






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Sea anemones





Marine Ecosystems

Neritic Zone

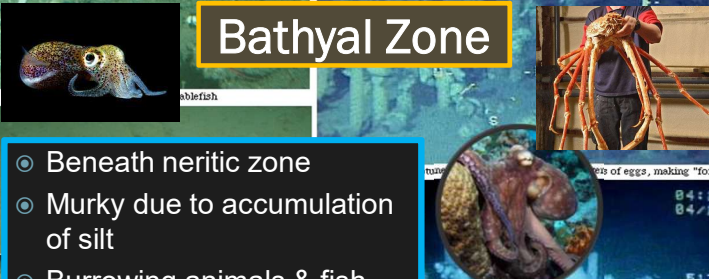
- Highest biodiversity
- Contain Coral reefs
- Contains zooplankton & phytoplankton

**Phytoplankton provide most of the oxygen on Earth through photosynthesis







Marine Ecosystems

Bathyal Zone




- Beneath neritic zone
- Murky due to accumulation of silt
- Burrowing animals & fish adapted to high pressure



The Shelf: 0 to 250m depth
Bathyal Zone: 250-2000 m depth

Marine Ecosystems

Abyssal Zone

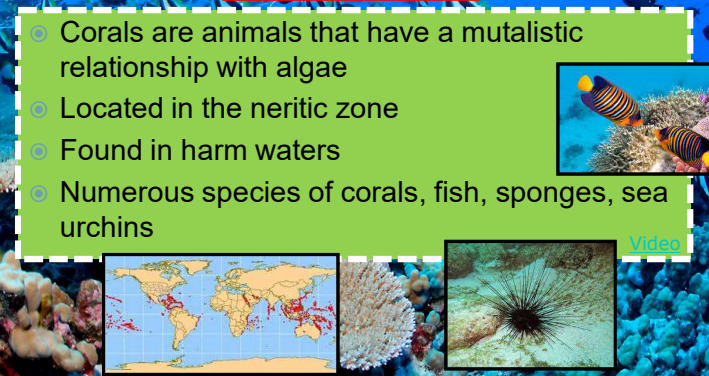


- Bottom of the ocean & complete darkness
- Contains chemosynthetic organisms

Video

Marine Ecosystems

Coral Reefs




- Corals are animals that have a mutualistic relationship with algae
- Located in the neritic zone
- Found in warm waters
- Numerous species of corals, fish, sponges, sea urchins

Video

Marine Ecosystems

Kelp Forests



- Large community of kelp (seaweed)
- Located in the neritic zone
- Found in cold water
- Habitat & food sources to many marine species

Section: 15.5 Estuaries and Freshwater Ecosystems



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

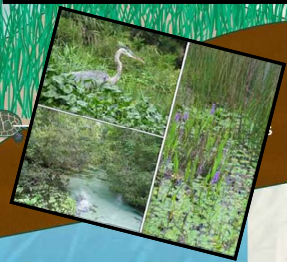
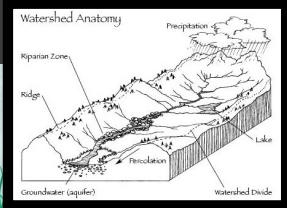
- Estuaries may provide a habitat for many endangered and threatened species.
 - ex. brown pelicans, Morro Bay kangaroo rat
- Estuaries are primarily threatened by land development.



Watershed

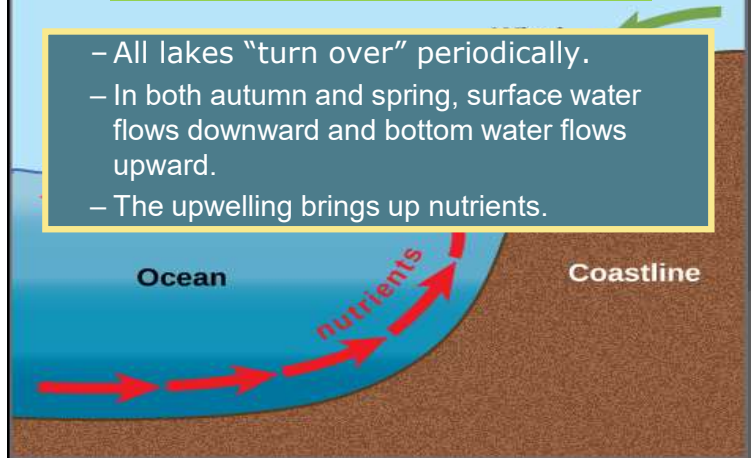
• A watershed is a region of land that drains into a body of water.

- Wetlands are areas of land that are saturated with surface water for at least part of the year.
 - Ex: bogs, marshes, and swamps



Lakes and ponds

- All lakes "turn over" periodically.
- 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

