

April 6, 2015

Ecosystems: Part 2

Announcements

- Critical thinking #5 Due Today 11:59 pm
- Quiz 8 now available
  - Due Sunday, April 12, 11:59 pm
- Volunteer Extra Credit day: April 11<sup>th</sup>
  - Biology field research center
  - 12pm-2 pm
  - Sign-up on discussion board

Ecosystems

- 2 General Types
  - Aquatic
    - Characterized by abiotic conditions
      - Marine
      - Freshwater
  - Terrestrial
    - Characterized by major vegetation

Freshwater Ecosystems

- Freshwater Ecosystems
  - Large amount of reliance on by humans
  - All water bodies with salinity of less than 0.5 ppt fall into freshwater ecosystems
  - Freshwater divided into two categories

- Standing water= lakes, ponds
- Flowing water= rivers, streams
- o Freshwater ecosystems cover less than 1% of Earth's surface but are relatively diverse
  - Contain 6% of Global biodiversity
  - Threatened because of our reliance on the freshwater ecosystem

### Trophic Structure of Freshwater Ecosystems

- Base of food chain= phytoplankton in euphotic zone
- Nitrogen and Phosphorus are limiting nutrients
- Distance from shore and water depth determine organism diversity
- Limnetic zone: open water area divided into
  - o Euphotic zone: light penetrates enough for photosynthesis
  - o Aphotic zone: light does not penetrate enough for photosynthesis
- Littoral zone: where water meets the land, shallow area right by the land
- Benthic zone: sediment area (dirt filled) small fish and other organisms can hide in this area

### Plankton

- Phytoplankton ( at the base of food chain)
  - o Primary producers
  - o Green Algae, protists, and bacteria
    - Anything that is photosynthetic is grouped here
  - o Photosynthetic protists, bacteria
- Zooplankton (zoo =animal)

- o Stays small throughout life cycle
- o Consumes phytoplankton and is thus the primary consumer
- o Water flea
- o Seed shrimp
- o Copepod larva algae
- o copepod
- o Non-photosynthetic protozoans, larvae of invertebrates and fish

### Freshwater Ecosystems

- 3 Types of Plants
  - o Emergent plants
    - Located close to shore
  - o Floating plants
    - Roots extend straight into water and float there
    - Adaptations in leaves to allow them to float (air pockets in leaves)
  - o Submerged plants
    - Stay completely underwater
    - Rooted into benthic zone

### Freshwater Ecosystems: lakes and Ponds (Standing water)

- Organism distribution
  - o Water depth
  - o Distance from shore
  - o Important for standing water
- Littoral Zone (high diversity)