

March 25, 2015

## Introduction to Ecology

### Outline

- Announcements
  - o No quiz this week!
  - o Exam 3 grades now available on webcourses
  - o Critical Thinking
    - Sue Today, 11:59 pm
  - o Volunteer Extra Credit
    - Saturday march 28<sup>th</sup> 9 am to 11 am
    - Sign-up on discussion board
  - o YouTube Video (20pts)
    - Create 2 minute YouTube video on any topic related to biology
    - April 22, 2015
    - Upload to YouTube
  - o Exams (300)\*
  - o Final exam (100)
  - o Pre-Test (15)
  - o Total (600)
  - o Extra Credit is just added in
  - o \* Drop lowest grade or lowest 2 weekly grades for participation
- What is Ecology?
- Human interactions with environment

## Ecology

- Scientific study of the interactions of organisms with their environment
- 2 major types of Variables:
  - o Biotic: Living part of the environment
    - Interactions with all other living organisms
  - o Abiotic: non-living part of the environment
    - Interactions with physical and chemical factors
      - i.e. quality of water or soil
  - o Clicker Question: How many abiotic variables did you come up with?
    - (No correct solution just a matter of what you found)
    - a) 1-5
    - b) 6-10
    - c) 11-15
    - d) 16-20
    - e) 21+

## Ecologists study multiple levels of organization

- Organism
- Population: all individual organisms that are living in an environment
- Community
  - o All biotic factors in environment
- Ecosystem (get the essence of Ecology at this level)
  - o All biotic + abiotic factors
  - o Landscapes (group of ecosystems; not an official level)
    - Group of ecosystems
- Biosphere: all living places on the world

## Environment and Organisms

- Organisms must tolerate abiotic conditions in their environment
  - o Temperature
  - o Water and Precipitation
  - o Salinity
  - o Soil/Substrate
- Organisms need to obtain things from the environment (relies on environment to provide the following)
  - o Oxygen
  - o Energy sources
  - o Water
  - o Organic and Inorganic Nutrients
    - Carbon
    - Nitrogen and Phosphorus

## Organisms interact with environment

- Two major processes
  - o Recycling of nutrients
    - Producers → Consumers → Decomposers → Producers
    - Nutrients move from Producers to consumers to decomposers
  - o Flow of energy
    - Sun → System → Heat
    - Very general model
    - Energy comes in as sunlight, used up by plants to make sugars which is passed to other organisms, energy is lost through heat (bi-product)