CH 13 – Principals of Ecology

1. **Ecology – The study of interactions between living things and their environment**
2. **Levels of organization**
   1. **Organism – individual living thing**
   2. **Species – organisms that can breed and produce viable (can also successfully reproduce) offspring**
   3. **Population – a group of animals of the same species that live in the same area**
   4. **Community – all the populations of different species that live in the same area**
   5. **Ecosystem – all the living and non-living parts of an environment(biotic and abiotic factors); the organisms & the soil, water, weather, etc..**
   6. **Biome – a major regional or global community of organisms, characterized by climate conditions and plant communities that live there**
3. **Biotic and Abiotic Factors**
   1. **Biotic factors – all the living organisms in an ecosystem; - plants, animals, bacteria, fungi, etc..**
   2. **Abiotic factors – all non-living factors in an ecosystem; - moisture, sunlight, temperature, soil, wind, etc…**
   3. **Biodiversity – the assortment of living things in an ecosystem; the more different species in an ecosystem, the higher the biodiversity**
   4. **Keystone species – a species that impacts many other organisms in the community; removing this species greatly effects the food web of an ecosystem. Ex: mangrove trees – roots provide a habitat for many species of baby fish that use them as a nursery. Also maintain the physical integrity of coastal shorelines.**
4. **Energy in Ecosystems**
   1. **Producers (autotrophs)Auto – self; troph – feeding ; organisms that can make their own food.**
      1. **Photo-autotrophs – use energy from sunlight to make their own food; plants; photosynthesis**
      2. **Chemo-autotrophs – use energy from chemical reactions to make food; bacteria(some); chemosynthesis**
   2. **Consumers (heterotrophs) hetero – other – get energy by eating other organisms**
5. **Food Chains and Food Webs**
   1. **Food chain – a sequence that links species by their feeding relationships to show energy flow in an ecosystem; linear relationship**
   2. **Food web – a complex network of interconnected and overlapping food chains**
   3. **Types of consumers**
      1. **Herbivores – eat only plants**
      2. **Carnivores – eat only animals**
      3. **Omnivores – eat plants and animals**
      4. **Detritovores – eat detritus(dead organic matter)**
      5. **Decomposer – type of detritovore; break down organic matter into simpler compounds; return vital nutrients back into the environment, making them available to the ecosystem once again; fungi and bacteria are examples.**
   4. **Specialist – consumer that eats only one type (or a small variety)of food source; ex. Panda Bears**
   5. **Generalist – eats a variety of foods; ex. Raccoons.**
   6. **Trophic levels**
      1. **Producers – the autotrophs**
      2. **Primary consumers – herbivores; first level consumers in a food chain**
      3. **Secondary consumers – carnivores that eat herbivores**
      4. **Tertiary consumers – eat secondary consumers**
      5. **(organisms can be listed at more than 1 trophic level depending on what they are consuming in that particular instance.)**
6. **Pyramid models**
   1. **All pyramids have the same orientation of organisms, with the producers being the largest trophic level and found at the bottom. Above the producers are the primary consumers, then the secondary consumers, and so on.**
   2. **Each level must be smaller than the one below it, or the ecosystem will not be sustainable.**
   3. **Three major pyramids:**
      1. **Energy pyramid – shows the available energy at each trophic level; only 10% of the energy at each level is made available to the one above it, the rest is given off as heat**
      2. **Biomass pyramid – shows the biomass of each trophic level in an ecosystem.**
      3. **Pyramid of numbers – shows the actual number of organisms in an ecosystem at each trophic level.**