Populations and Communities
Chapter 48
48-1 Population Growth

• Population – a group of organisms that all belong to the same species and live in a given area.

• Almost any organism provided with ideal conditions for growth and reproduction will experience a rapid increase in its population.
Exponential Growth Curve

- The larger a population grows the faster it will grow; unless something acts to slow that growth.
Logistic Growth

- Populations go through growth stages
  - Initially they grow slowly (I)
  - Then grows rapidly (II)
    - Few animals are dying
  - Growth slows (III)
    - But birthrate still exceeds deathrate
  - What is happening at (IV)?
    - (Steady State)
Carrying Capacity

• Biological Carrying Capacity
  – Number of organisms able to be supported in an ecosystem

• Cultural Carrying Capacity
  – Number of organisms society is willing to let exist
Factors Effecting Carrying Capacity

- Lack of food
  - Nutrients for maintenance and growth
- Space
  - Area to feed in
- Lack of water
  - Necessary for everyday life
- Loss of habitat
  - Without cover nothing feels safe
Review Quiz

- A kind of growth curve shown in the picture below is a...
• Once a population goes over a steady state it is said to over its ____________________.
Carrying Capacity
• Several factors will affect the carrying capacity of an ecosystem. Name three.
  - __________
  - __________
  - __________
• Lack of food, lack of water, death rate exceeds birth rate, loss of habitat and loss of cover.
48-2
Factors That Control Population Growth
Limiting Factors

• Density-dependant
  • Affect large populations
  – Examples
    • Competition for available resources
    • Overcrowding
    • Predation
      – Predator - Prey
    • Parasitism
      – Host lives
      – Examples
      » Fleas, ticks, tapeworm
Total World Population

http://www.worldmapper.org/display.php?selected=2
Density of the World Population

http://www.mapofworld.com/world-population-density.htm#
Density-Independent Limiting Factors

• Natural Disasters
  – Weather Related
    • Ice-storm
    • Snowstorm
    • Dry/hot weather
    • Rain
    • Hurricanes
    • Tornadoes
48-3 Interactions Within and Between Communities
Symbiosis

• A relationship between two organisms where one of the organisms benefits

• Sym = together  Bio = life

• Commensalism
• Mutualism
• Parasitism
Commensalism

• One benefits while the other is unharmed

   — Examples
     • Sea anemone and shrimp
     • Orchid and tropical tree
     • Sharks and Remoras
     • Birds nesting in trees
Mutualism

- Both organisms benefit

  - Termite and Protista
  - Sea Anemone and Clownfish
  - Human and $[B^{12}]$ Bacterium in intestines
  - Ants and Acacia trees
Parasitism

• One benefits; the other harmed
  – Most don’t kill their host
    – Flea and dog / cat
  – Tick and mammal
  – Leech and fish / human
  – Lamprey and fish
Quiz

• What is the main difference between density dependent and density independent limiting factors?

• Name two density dependent limiting factors.

• What is a symbiotic relationship?

• Name a type of Symbiotic relationship and give two examples?