

## Unit 1

### Population Growth

#### I. Population Growth

- A. Population: a group of organisms of the same species that live in the same area
  - 1. Populations can change by increasing or decreasing
  - A. Bee pop. Can grow fast in the summer
    - Plenty of food
  - Pop. Decreases in the winter—Too cold
- B. Exponential growth
  - 1. Occurs when the rate of a populations growth in each new generation is a multiple of the previous
  - 2. Ex. Bacteria can grow fast
    - Start with 1
    - 20 min → 2
    - 40 min → 4
    - 60 min → 8
  - 3. These calculations depend on no bacteria dying and all reproducing → 100 % growth
  - 4. Not always possible in “real” populations
  - 5. Measured by:

$$\frac{\text{Growth rate} = \text{Change in \# of individual}}{\text{divided by Time Period}}$$
  - 6. Four factors effecting
    - Birth rate: natality
    - Death rate: mortality
    - Immigration: population moving in
    - Emigration: population moving out

- C. Exponential growth meets the real world
  - 1. When a population 1<sup>st</sup> begins it grows fast
    - Plenty of resources (food and space)
    - High birth rate and low death rate
  - 2. Then population increases too much
    - Resources run out
    - Birth rate drops and death rate rises
  - 3. Limiting factor- abiotic or biotic resource that limits a pop.
    - Limits the carrying capacity
      - Amount of individuals in a population that an environment can support over a period of time
      - Keeps a pop. balanced