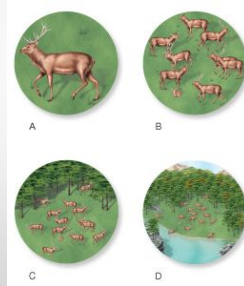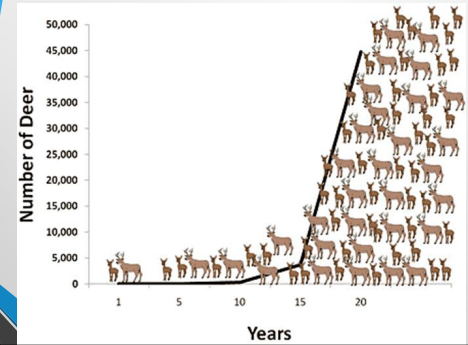# Population Growth

Unit 8

Population Size

- . . . number of individuals of the same species living in the same place at the same time

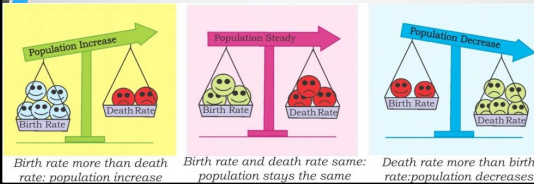- Size proportional to resource needs
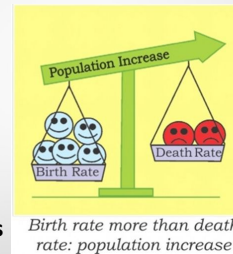

A   B
C   D

Population Graphs

Change in Population Size

- Increases: births & immigration (individuals move into an area)

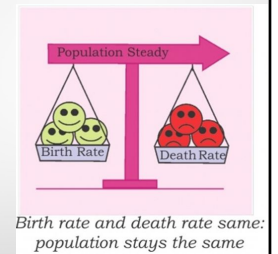- Decreases: death & emigration (individuals move out of an area)

Birth rate more than death rate: population increase   Birth rate and death rate same: population stays the same   Death rate more than birth rate: population decreases

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Population Growth

- More births/immigration than deaths/emigration

- Positive slope

- Need more resources

Birth rate more than death rate: population increase

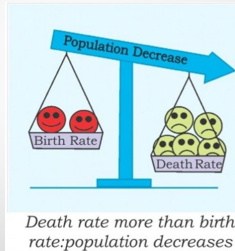## Steady Population

- Equal births/immigration and deaths/emigration

- No/flat slope

- No change in resource needs

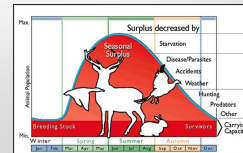Birth rate and death rate same: population stays the same

Population Decline

- Fewer births/immigration than deaths/emigration
- Negative slope
- Need fewer resources

Death rate more than birth rate: population decreases

Limits on Population Growth

- Biotic Potential: maximum biological ability of an individual or population to reproduce (think rabbits vs. people)
- Limiting factors: environmental constraint on population size

Limiting Factors

Determine the carrying capacity of a population

- Examples:
  - Disease
  - Predation
  - Food Resources
  - Habitat Size
  - Competition

Limiting Factors: Density Dependent

Using the reading/notes sheet provided . . .
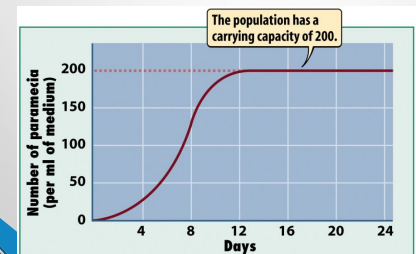
- Describe
- Examples

Limiting Factors: Density Independent

Using the reading/notes sheet provided . . .

- Describe
- Examples

Carrying Capacity

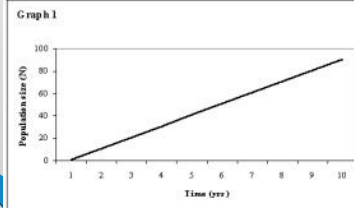- Maximum sustainable (steady) population

The population has a carrying capacity of 200.

Population Growth

- Three population growth curves :
  - Linear Growth
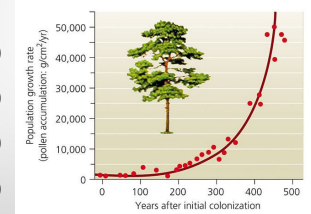 - Exponential Growth
  - S-Curve

1. Linear Growth

- Population increases at the same speed over time
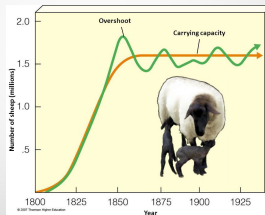- Example: 40 individuals every 3 years

Graph 1

2. Exponential Growth

- Population increases at an ever-faster pace
- Example:
  - 250 yrs = 5,000
  - 60 yrs = +5,000
  - 40 yrs = +5,000
  - 30 yrs = +5,000

S-Curve

- NO population can grow forever
  - At some point resources run out
  - Population reaches carrying capacity
- Example: population hovers around 1.6 million

- Growth type:
- Carrying capacity:
- Peak population:
- Area of population decline: