

Population Growth

↑
Sharks



Fish
↓

Clarifying Objective 2.8.3

Explain the effects of uncontrolled population growth on the Earth's resources.

Population Growth

Population growth refers to an increase in the size of a population over time



Population Growth

To calculate population growth, subtract the mortality rate from the birth rate

Population Growth = Birth Rate - Mortality Rate



Population Growth = 10 born – 2 deaths = 8

Population Growth

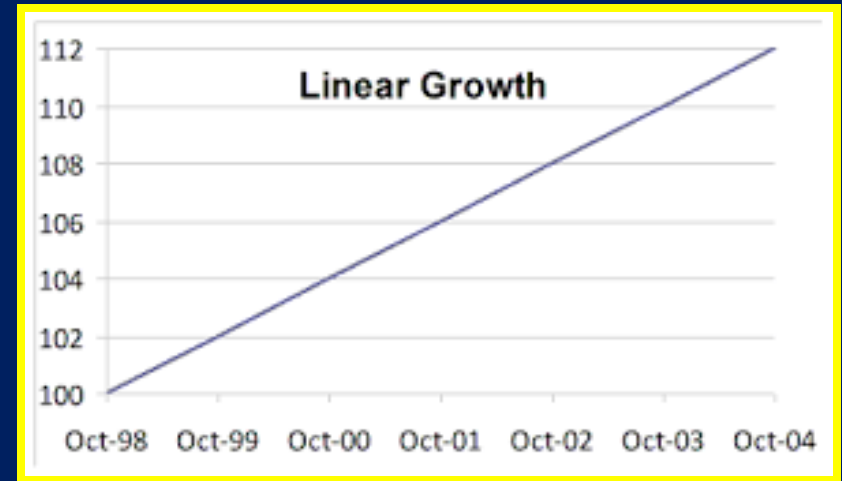
Population growth can also be affected by immigration, individuals moving in, or emigration, individuals moving out.



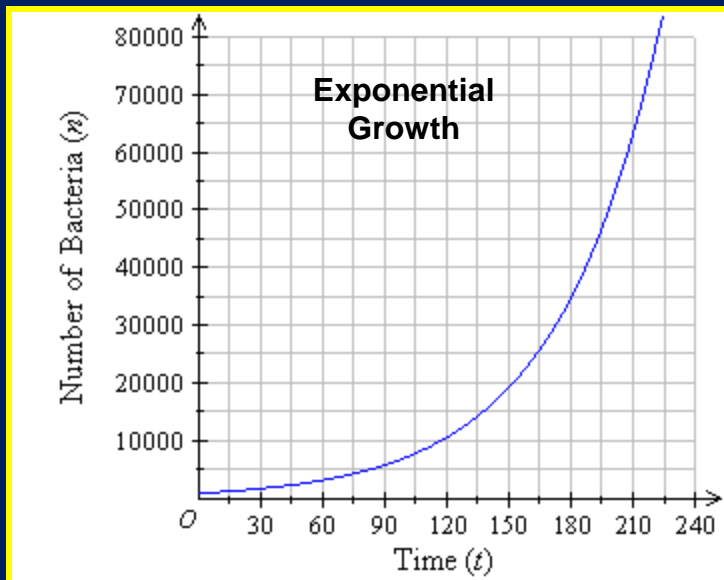
Population Graphs

Graphs are used to analyze population growth

Linear Growth is when the numbers increase steadily by the same amount (2, 4, 6...)

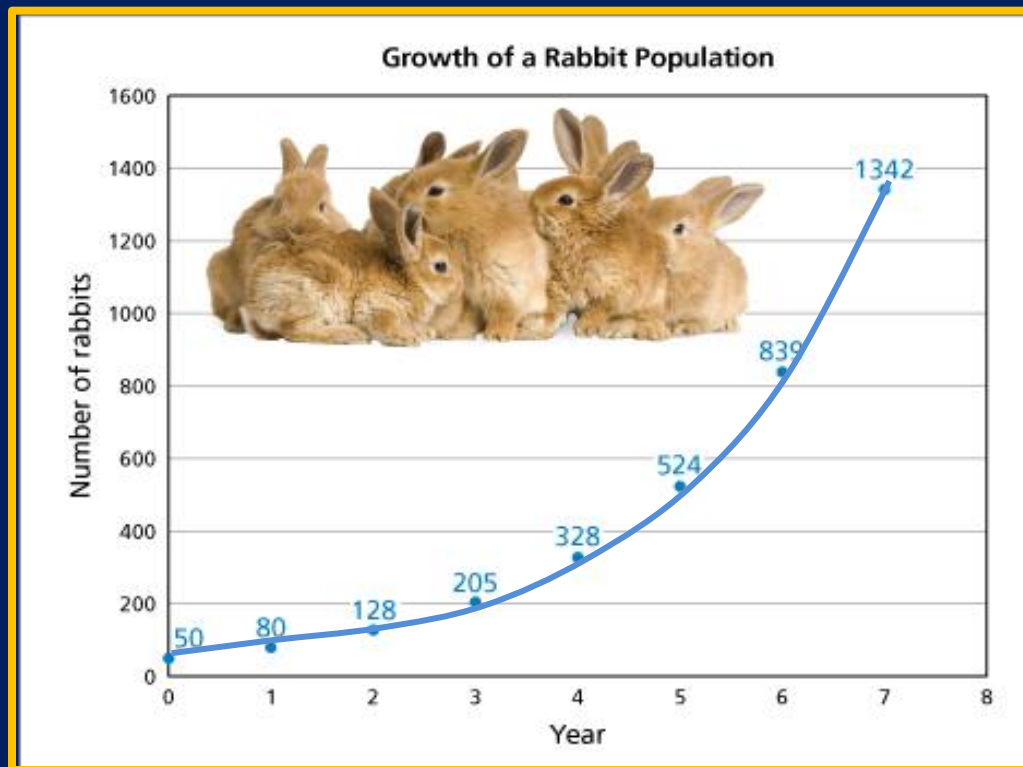


Exponential Growth is when the numbers increase by a larger amount each time (2, 4, 16, 256...)



Population Graphs

Populations tend to increase exponentially in that as populations grow larger they begin increasing faster, provided there are unlimited resources.



Limiting Factors

All ecosystems have a limited amount of resources or factors to support populations



All organisms need water, food, space for habitats, and sanitary conditions.

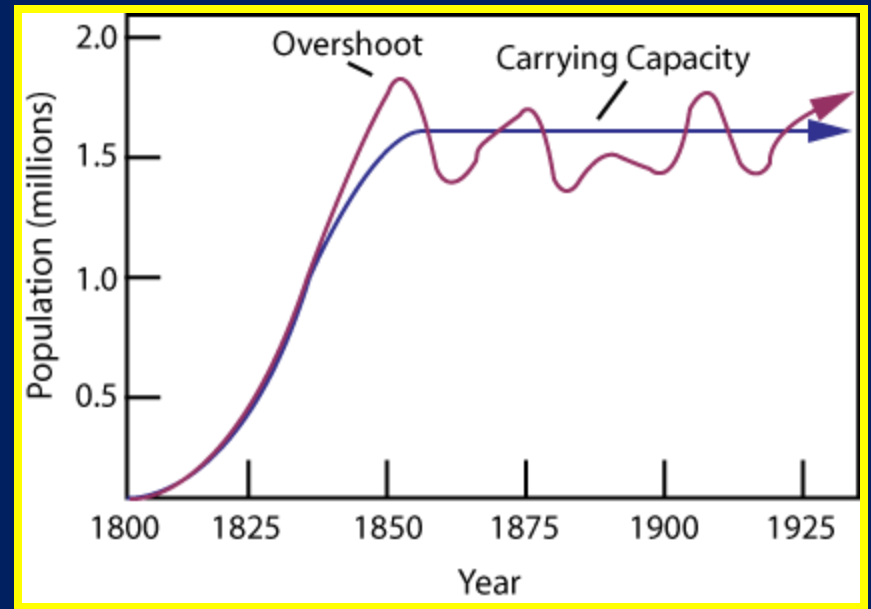
As populations increase, there is more competition for the same resources



Carrying Capacity

Therefore, any ecosystem can only support a certain amount of individuals

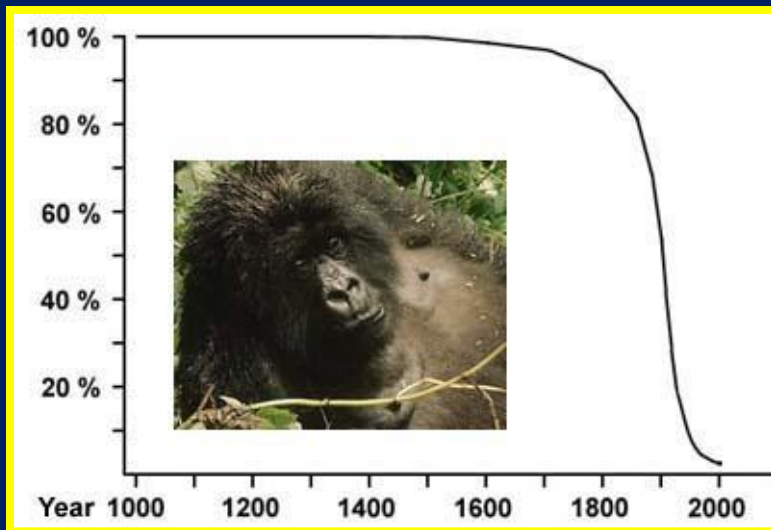
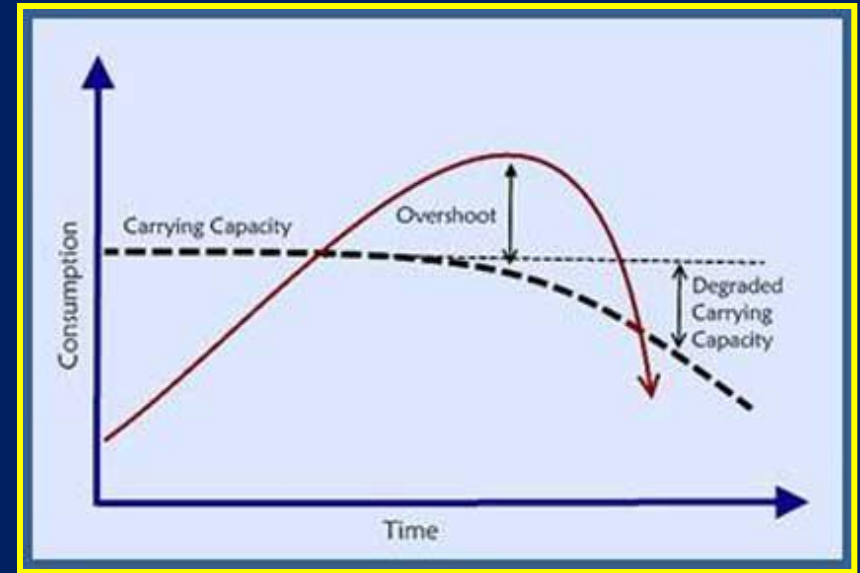
Carrying Capacity refers to the maximum number of individuals an ecosystem can support



Overtime, the population balances out near the carrying capacity. (dynamic equilibrium)

Population Crash

If a population does overshoot the carrying capacity, the population will crash.



If the population size goes below a critical number, it will not be able to revive its population and is classified as endangered.

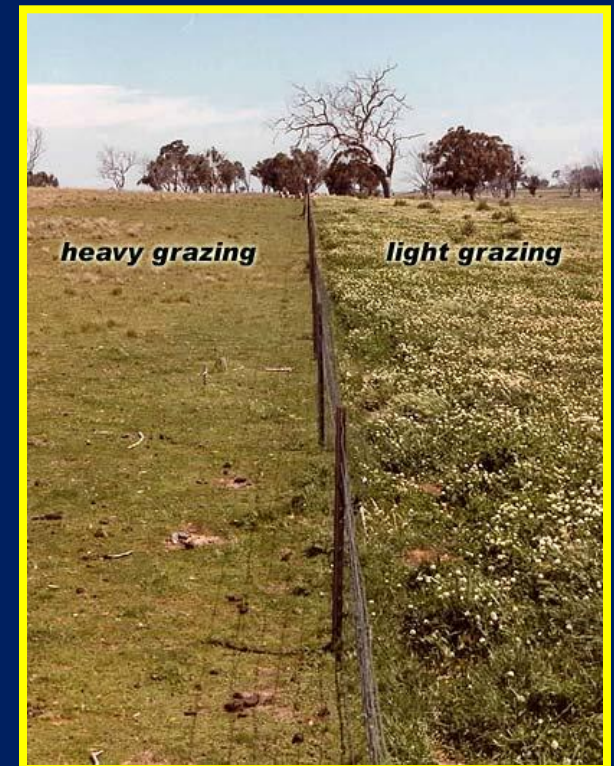
Competition

Competition between species that compete for the same resources can also affect population growth



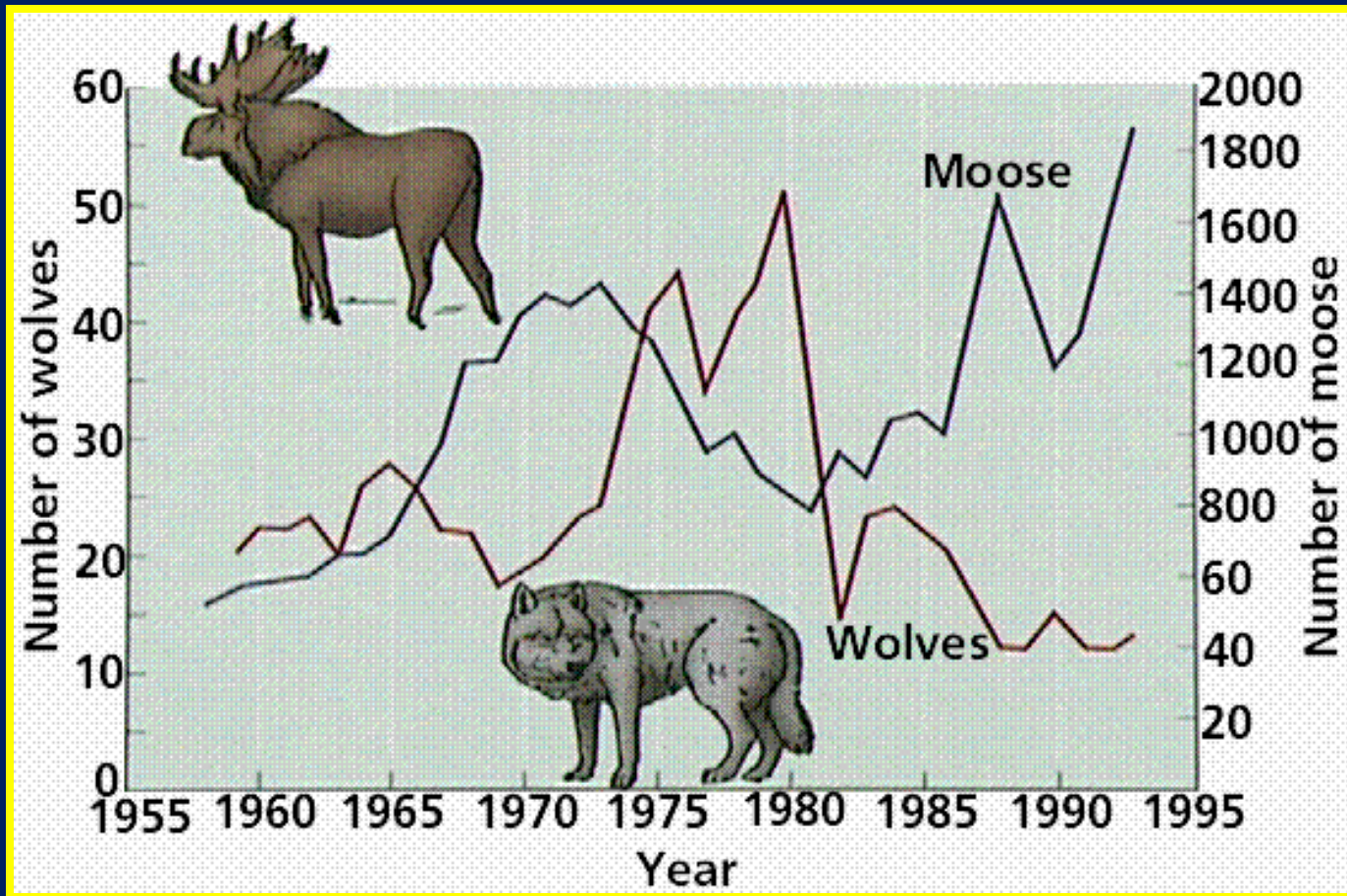
Competition

Competition can lower the carrying capacity as resources are used up faster than they can be replenished.



Predator - Prey

Predator – Prey relationships also affect population growth



Predator - Prey

If the predators do not keep the prey population in balance, the carrying capacity is exceeded and the prey may starve due to overgrazing or disease.

