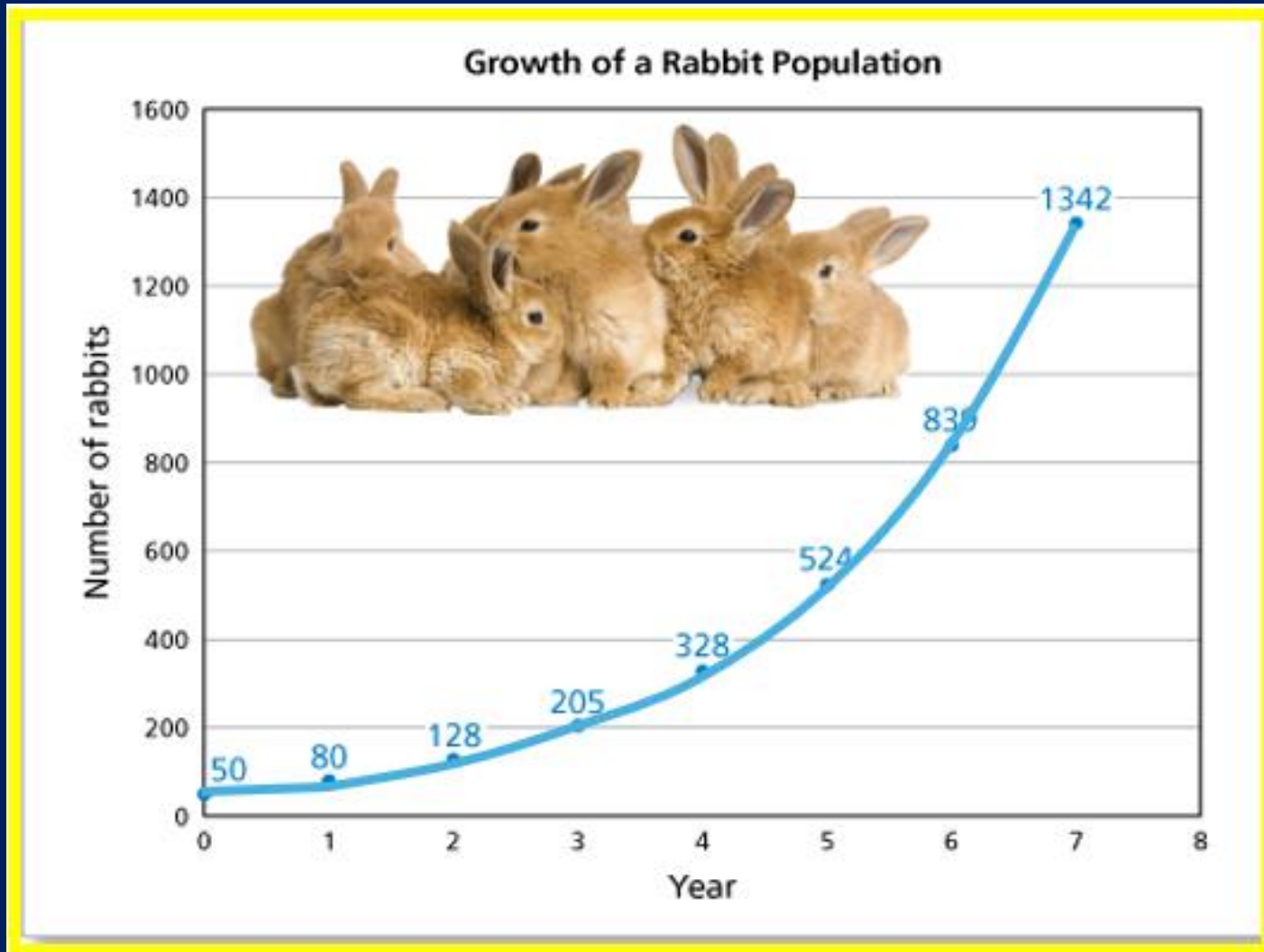


# Population Growth



# Population Growth

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



# Calculating Population Growth

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

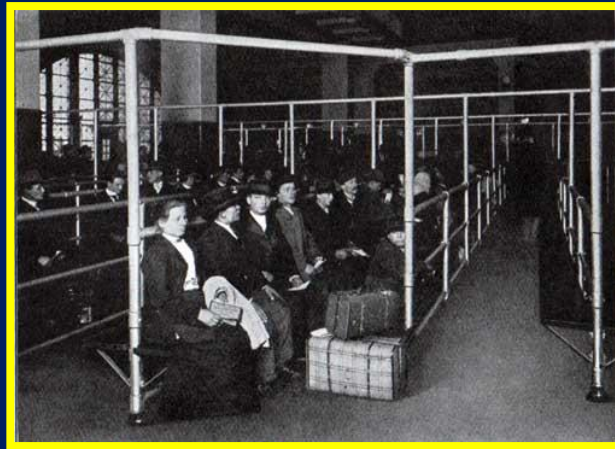
$$\text{Population Growth} = \text{Birth Rate} - \text{Mortality Rate}$$



$$\text{Population Growth} = 10 \text{ born} - 2 \text{ deaths} = 8$$

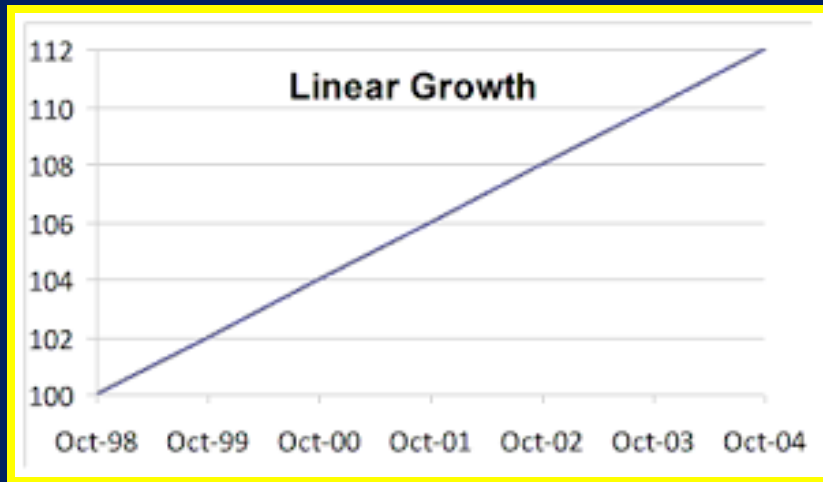
# Immigration & Emigration

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

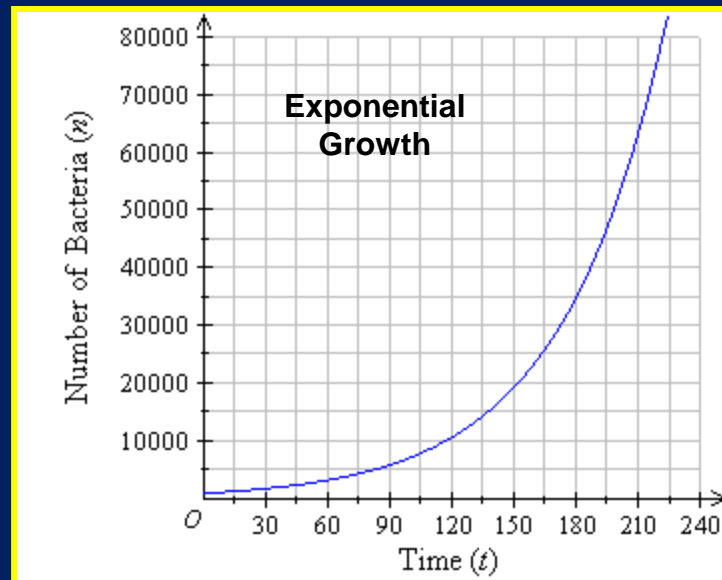


Linear Growth is when the numbers increase steadily by the same amount (2, 4, 6...)

# Population Graphs

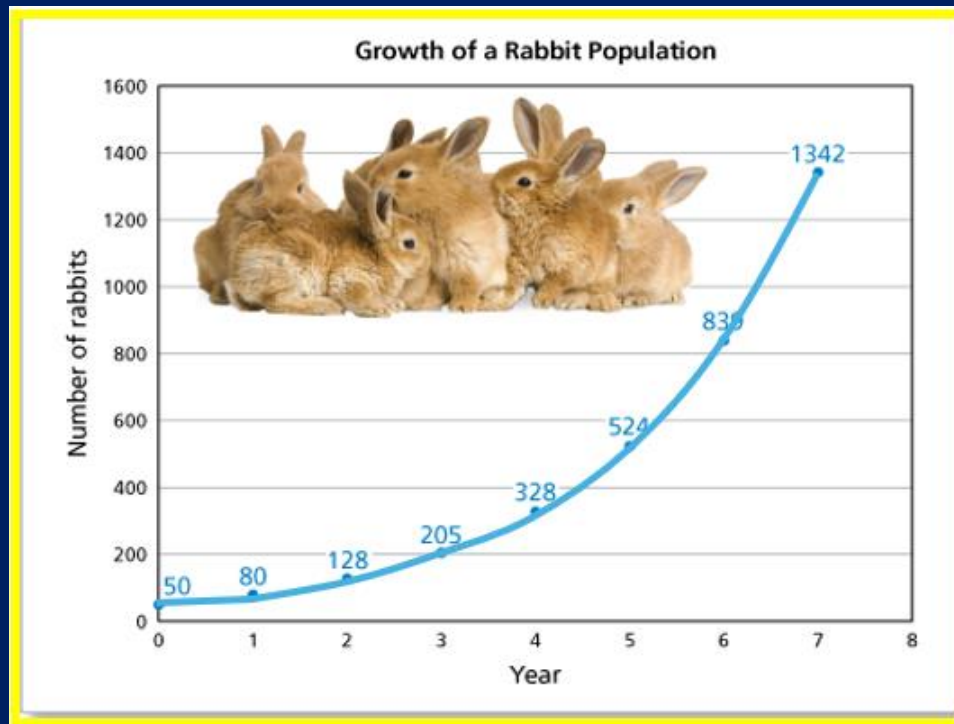
Exponential Growth is when the numbers increase by a larger amount each time.

(2, 4, 16, 256...)



# Population Graphs

Populations tend to increase exponentially in that as populations grow larger, they begin increasing faster.



# Limiting Factors

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



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



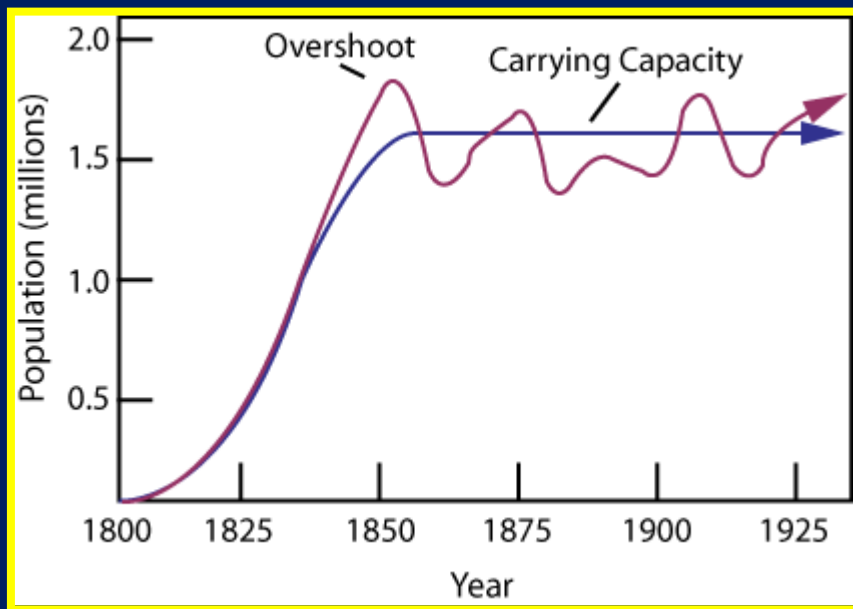
# Limiting Factors

As populations grow larger, there is more competition for the limited resources.



# Carrying Capacity

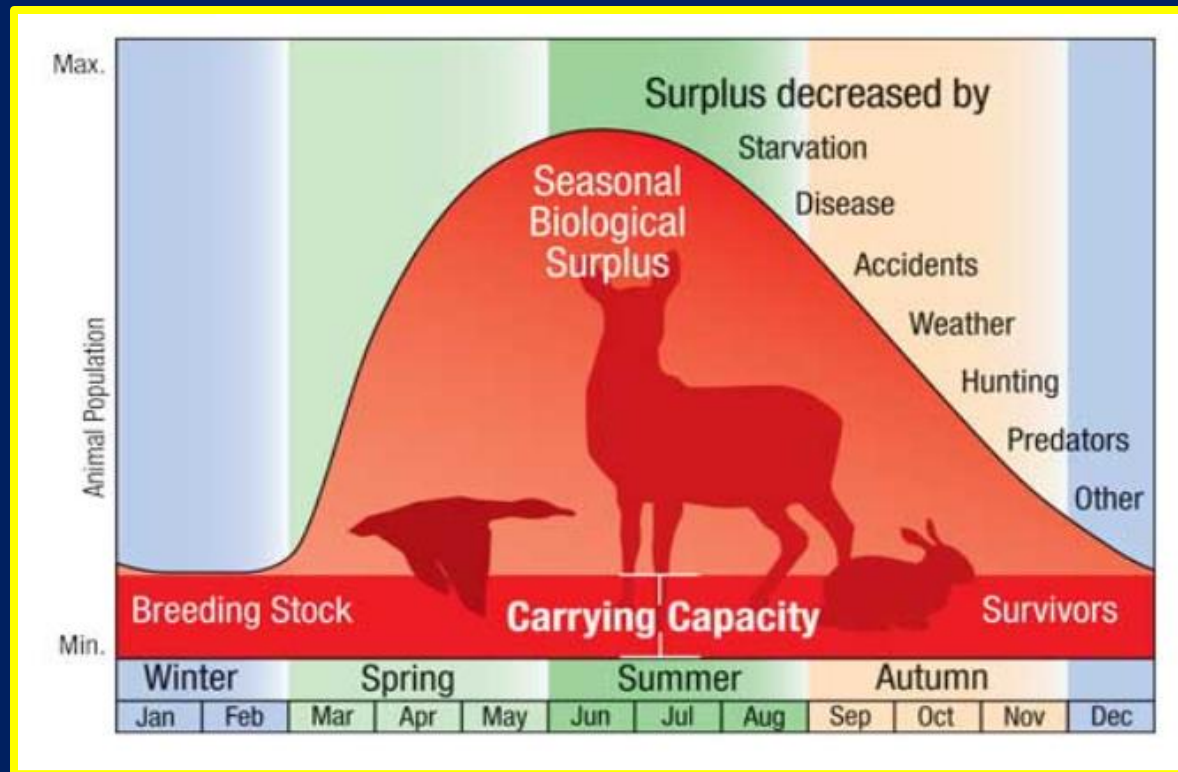
Therefore, any ecosystem can only support a certain amount of individuals



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

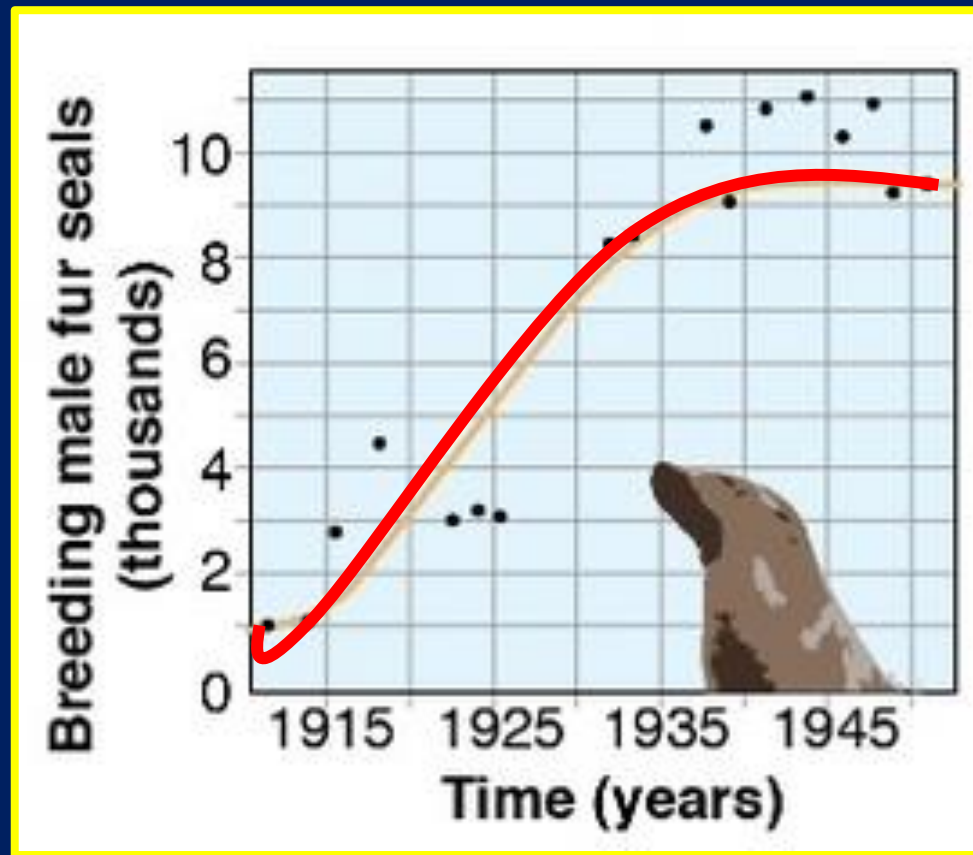
# Carrying Capacity

When populations overshoot the carrying capacity, members of the population begin dying out.



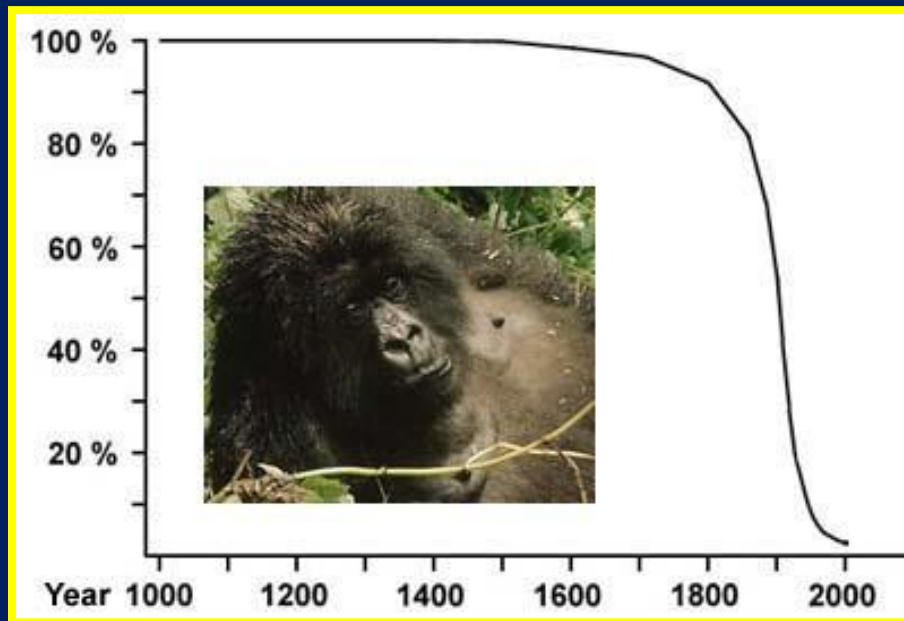
# Stabilized Population

Overtime, healthy populations stabilize out around the carrying capacity.



# Population Crash

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



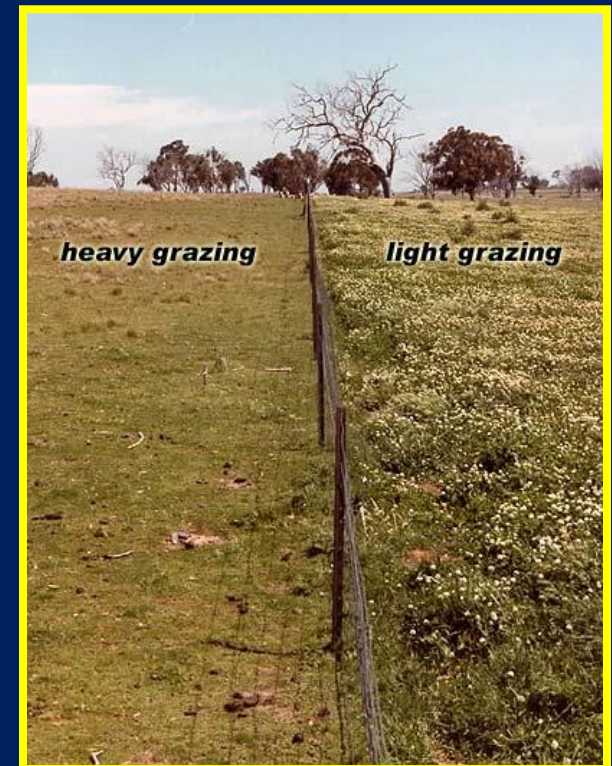
# Competition

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



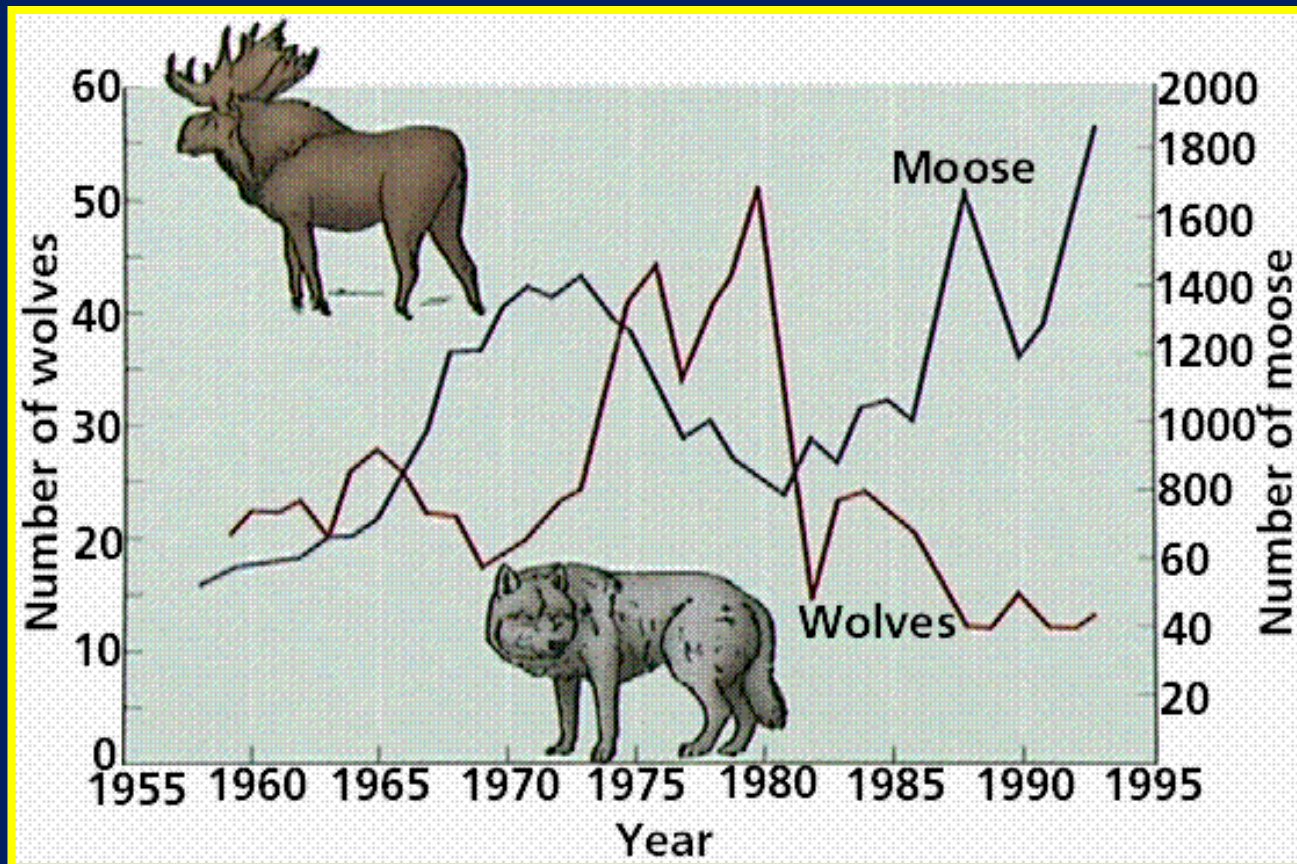
# Competition

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



# Predator - Prey

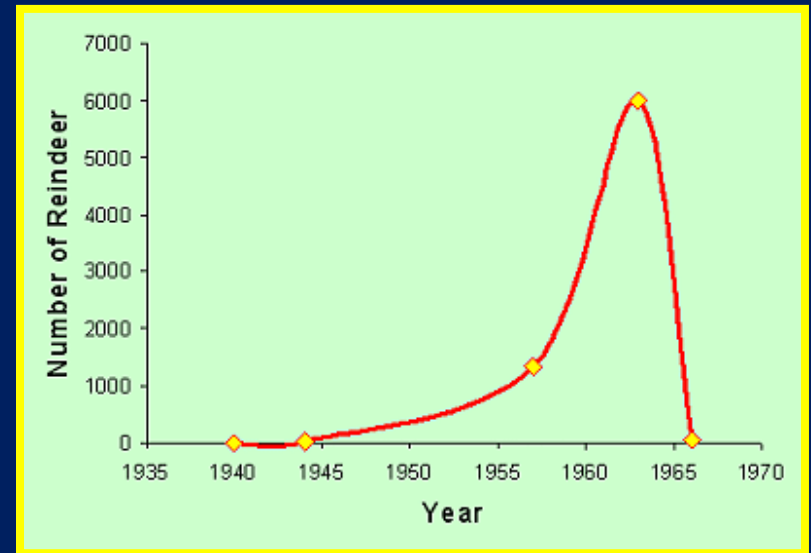
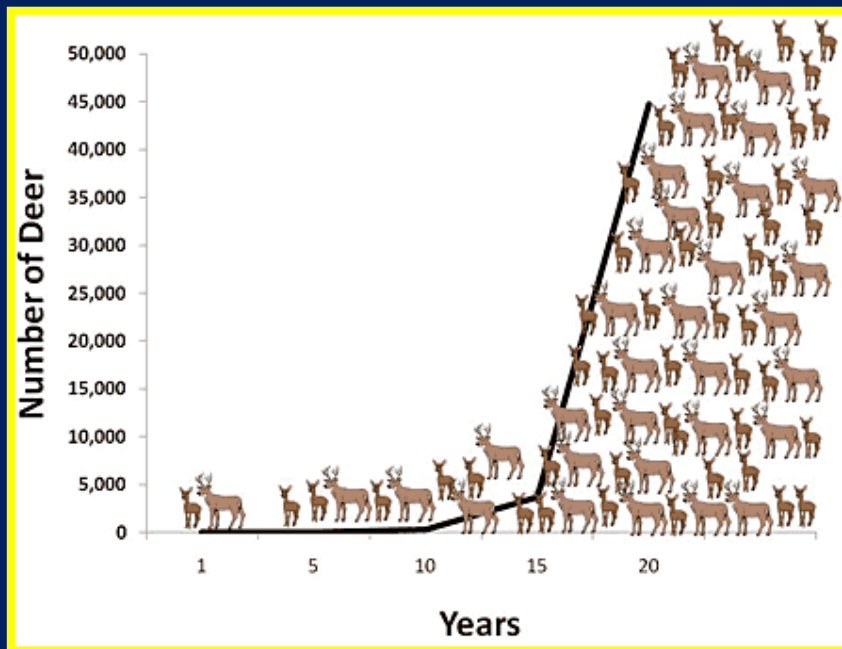
Predator – Prey relationships also affect population growth





# 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.



# The End

