Biology Notes Chapter 4-1 Population Dynamics

I. Populations can be described in different ways

   i. Population density ---The number of organisms within a given area of space.

   ii. Dispersion--- How are organisms distributed within an area

   iii. Growth rate--- What's happening to with the numbers of individuals

II. Population Density

   i. High PD, means many individuals in the space, everyone is crowded together, Low PD, few in the space, individuals are spaced out

   ii. Depends direction on the area being studied.

III. <u>Dispersion</u>-

   i. Even-evenly spaced equal distant from each individual organism

   ii. Clumped-groups gathered together in small chunks

   iii. Random-no set pattern

IV. Members of a population are spaced because of resource availability.

   i. Both biotic and abiotic factors affect how organisms space themselves

V. Population size is controlled by both biotic and abiotic factors

   i. Density independent factors

      1. Natural weather events, human interactions, pollution

   ii. Density dependent factors

      1. Disease, parasites, competition between species, predation

VI. In order to accurately count the numbers within a population scientist must know specific characteristics about the population.

i. The number of births (natality)

ii. The number of deaths (mortality)

iii. The number of individuals moving out (immigration)

iv. The number of individuals moving in (emigration)

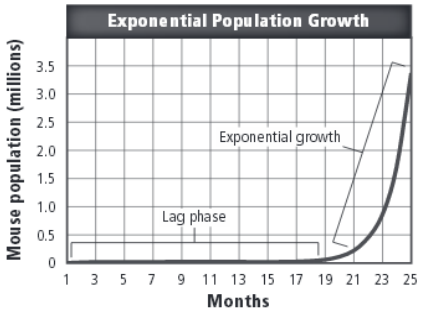
VII. Exponential vs Logistic Growth

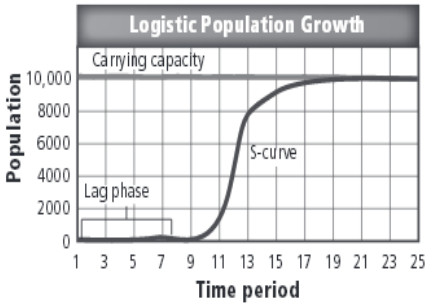
i. During exponential growth the population essentially doubles with every generation

1. The growth rate exceeds the death rate.

ii. During logistical population growth, the population continues to grow until the carrying capacity is reached.

1. Growth rate at first exceeds the death rate, but then levels off as resources such as water, food, etc become scarce.





VIII. Different populations reproduce in certain patterns

i. Several factors such as age for maturity, number of births per reproductive cycle, the average life span, etc

1. R-strategists-reproduce quickly with large number of offspring and spend limited time with offspring.

2. K-strategists-reproduce more slowly, fewer numbers of offspring, spend extended time with offspring.