

Definition of Terms



Demographic Terms

Carrying Capacity (K) – This is the total number of allotted spaces for a species in captivity. Unlike ecological carrying capacity, this number is usually predefined and based on space availability and program goals. Ecological carrying capacity is a function of the limitations of natural resources available to the population (i.e., food, refugia, habitat, etc.).

Lambda (λ) or Annual Population Growth Rate – This is the proportional change in population size from one year to the next. Lambda can be based on life-table calculations (the expected lambda) or from observed changes in population size from year to year. A lambda of 1.11 means a 11% per year increase; lambda of .97 means a 3% decline in size per year.

Mean Generation Time (T) – The average time elapsing from reproduction in one generation to the time the next generation reproduces. It is the average age at which females (or males) produces offspring. **It is not the age of first reproduction.** Males and females often have different generation times. For this tool, the average age of reproduction is an appropriate number to use for Generation time input.

Genetic Terms

Gene Diversity (GD) -- The proportional gene diversity (as a proportion of the source population) is the probability that two alleles from the same locus sampled at random from the population will not be identical by descent. Gene diversity is calculated from allele frequencies, and is the heterozygosity expected in progeny produced by random mating, and if the population were in Hardy-Weinberg equilibrium.

Effective Population Size (Inbreeding N_e) – This is measurement of the genetic effectiveness of the population. It is defined as the size of a randomly mating population of constant size with equal sex ratio and a Poisson distribution of family sizes that would (a) result in the same mean rate of inbreeding as that observed in the population, or (b) would result in the same rate of random change in gene frequencies (genetic drift) as observed in the population. These two definitions are identical only if the population is demographically stable (because the rate of inbreeding depends on the distribution of alleles in the parental generation, whereas the rate of gene frequency drift is measured in the current generation).

Effective Population Size / Population Size Ratio (N_e/N) – This is the ratio of the genetic effectiveness of the population to the total population size. It is a performance metric for the management of the captive population.

Founder - An individual obtained from a source population (often the wild) that has no known relationship to any individuals in the derived population except for its own descendants. A founder may be living or dead. Note that if a living animal is unrelated to the captive population and has no descendants within the population, it is a **potential founder** and not a **founder**. It must breed and have descendants to become a founder.