



Zoo Matchmaker – Model Assumptions

For the entire model:

1. The population size is always 12-24 animals. Each generation removes the previously breeding animals from the population and starts over again with adding offspring to the new generation.
2. Only members of the current breeding generation can breed with each other.
3. Each pairing always yields 3 offspring. They are balanced by sex so that each generation ends up with an equal number of males and females.
4. All offspring survive to reproduce and breed successfully.

For the disease resistance scenario:

1. The hypothetical distemper resistant gene is recessive.
2. Each offspring is independently and randomly assigned a genotype based on the Punnett square probabilities.

For the genetic diversity scenario:

1. Kinships (shared genes) are only calculated within the current two generations. Previous generations are rolled out of the calculations.
2. The values shown for shared genes and amount related are based on a different calculation than what is typical for textbooks. Whereas traditional discussions of relatedness discuss the percentage chance that one individual will share a specific allele with a related individual (e.g. one man would have a 50% chance of sharing any individual allele with his brother), the inbreeding coefficient used by this program tracks the percent chance that two related individuals would pass identical alleles to their offspring (e.g. a brother and sister pairing would have a 25% chance of each passing on identical alleles to their offspring).