Knowledge-based Learning Outcomes

Upon completion of *Genetic Drift and Bottlenecked Ferrets*, students should be able to:

1. Explain how random sampling error causes evolution by genetic drift (a change in allele frequencies across generations).
2. Contrast the effects of random sampling on both large and small populations.
3. Describe the effects either a founding or bottlenecking event could have on the genetic diversity within a population.
4. Distinguish between actual and effective population size.

Students should also reduce their expression of the following misconceptions:

1. Genetic drift only occurs in small populations.
2. Genetic drift only occurs after an event that reduces the population size.
3. Genetic drift's random nature makes predicting its effects impossible.
4. Genetic drift is directional and leads to greater fitness.
5. Genetic drift is not directional and therefore is not a mechanism of evolution.

Skills-based Learning Outcomes

Upon completion of *Genetic Drift and Bottlenecked Ferrets*, students should be able to:

1. Evaluate how random sampling error across generations will affect genetic variation both within and among populations.
2. Analyze the effects nonrandom mating and unbalanced sex ratios have on a population's effective size.
3. Evaluate the potential of different ferret reserve designs for maintaining genetic diversity in the reserve's ferret population.
4. Design a ferret reserve that optimizes genetic diversity in a simulated population.