

Chapter 16-2, Pages 397-399
Evolution as Genetic Change
Students will

- A) Summarize how natural selection affects single gene traits.**
- B) List and summarize the three ways natural selection affects polygenic traits**
- C) Define genetic drift, identify 2 ways it occurs, and summarize how it affects biodiversity.**
- D) List 5 conditions required to maintain genetic equilibrium.**

B) List and summarize the three ways natural selection affects polygenic traits

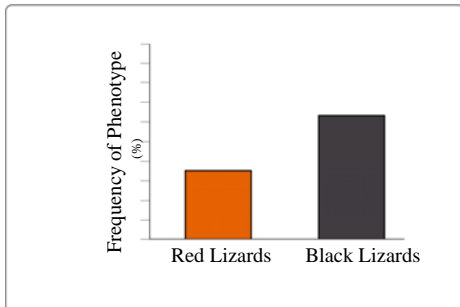
- _____ Selection
- Individuals at _____ = higher fitness
- Shifts curve to the _____
- Shifts curve to the _____

Example:
 Which type of beak would survive best if food became scarce?



A) Summarize how natural selection affects single gene traits.

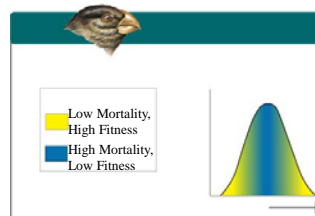
If a grassland developed into a forest over a hundred years, predict the change to this lizard population.



B) List and summarize the three ways natural selection affects polygenic traits

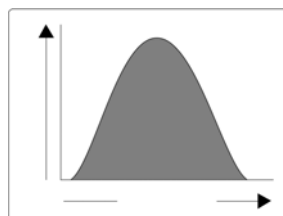
- _____
- Individuals at _____ = _____ fitness
- Shifts curve to the _____ and _____, creates _____

Example: Which type of beak would survive best if food available included small and large



B) List and summarize the three ways natural selection affects polygenic traits

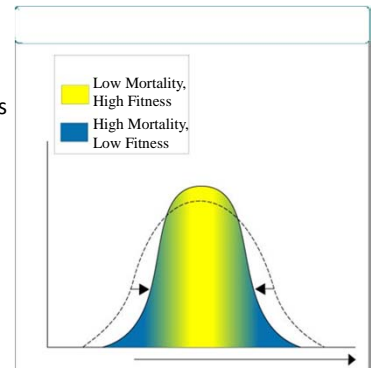
- _____ = trait controlled by _____
- 3 Types of selection
 - 1) _____
 - 2) _____
 - 3) _____



B) List and summarize the three ways natural selection affects polygenic traits

- _____ Selection
- Individuals in the _____ = _____ fitness
- Shifts curve to the _____ = _____ the peak

Example: What would happen to the graph if every baby born this year weighed 6-8 pounds?



Identify the type of selection for polygenic traits, given the scenario for a year.

1. For birth weight, all babies born weigh below 5 pounds
2. For height, everyone is less than 4 ft or taller than 6 ft
3. For tests, everyone scores 60-70%%
4. For beaks, fish are the only food

D) List 5 conditions required to maintain genetic equilibrium.

- How are allele frequencies kept constant = Genetic Equilibrium?

⊙ Hardy-Weinberg Principle = 5 conditions

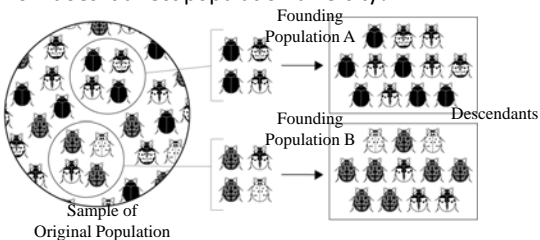
- ⊙ 1. _____ Population
- ⊙ 2. _____ = no _____ relations
- ⊙ 3. No _____ or _____ of population
- ⊙ 4. No _____
- ⊙ 5. No _____

⊙ Is this possible?

⊙ _____

C) Define genetic drift, identify 2 ways it occurs, and summarize how it affects biodiversity.

- What is genetic drift?
- How does it happen?
- How does it affect population diversity?



Understanding Check

- 1. Why does natural selection act on phenotype instead of genotype?
- 2. List three ways that natural selection can affect polygenic traits.
- 3. How does genetic drift affect biodiversity?
- 4. What are two causes of genetic drift?
- 5. List three of the five conditions required to maintain genetic equilibrium.

C) Define genetic drift, identify 2 ways it occurs, and summarize how it affects biodiversity.

- What happens to the size of a bottle from the bottom to the top?
- What do you think a population bottleneck is?



How does it happen?

1)

2)

How does it affect population diversity?

An example of a bottleneck:

Northern elephant seals have reduced genetic variation probably because of a population bottleneck humans inflicted on them in the 1890s. Reduced to about 20 by 1900, now over 30,000 exist. They still bear the marks with less diversity.

