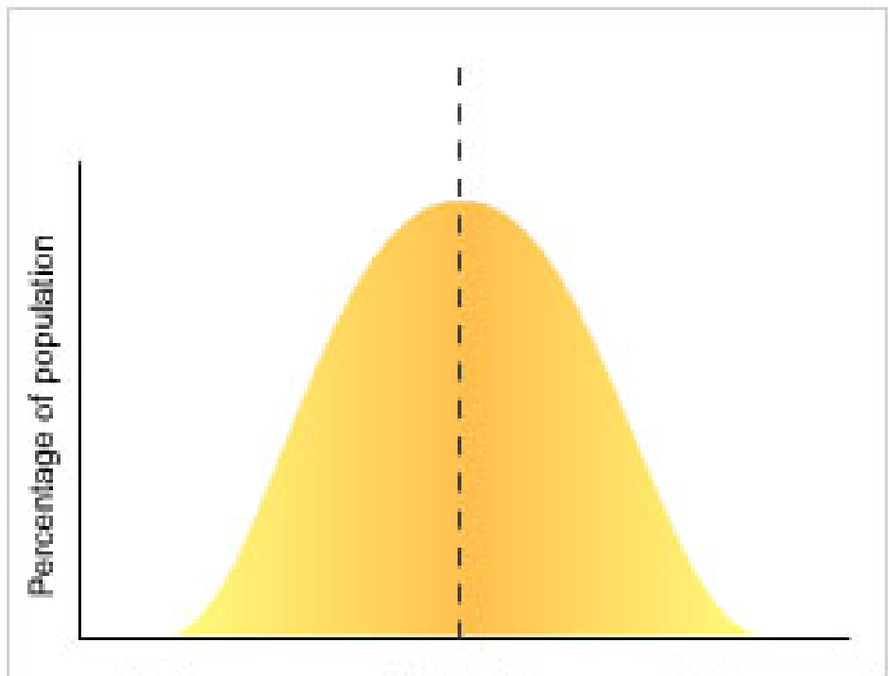
Patterns of Natural Selection

Three types of selection:

a. <u>Stabilizing selection</u>

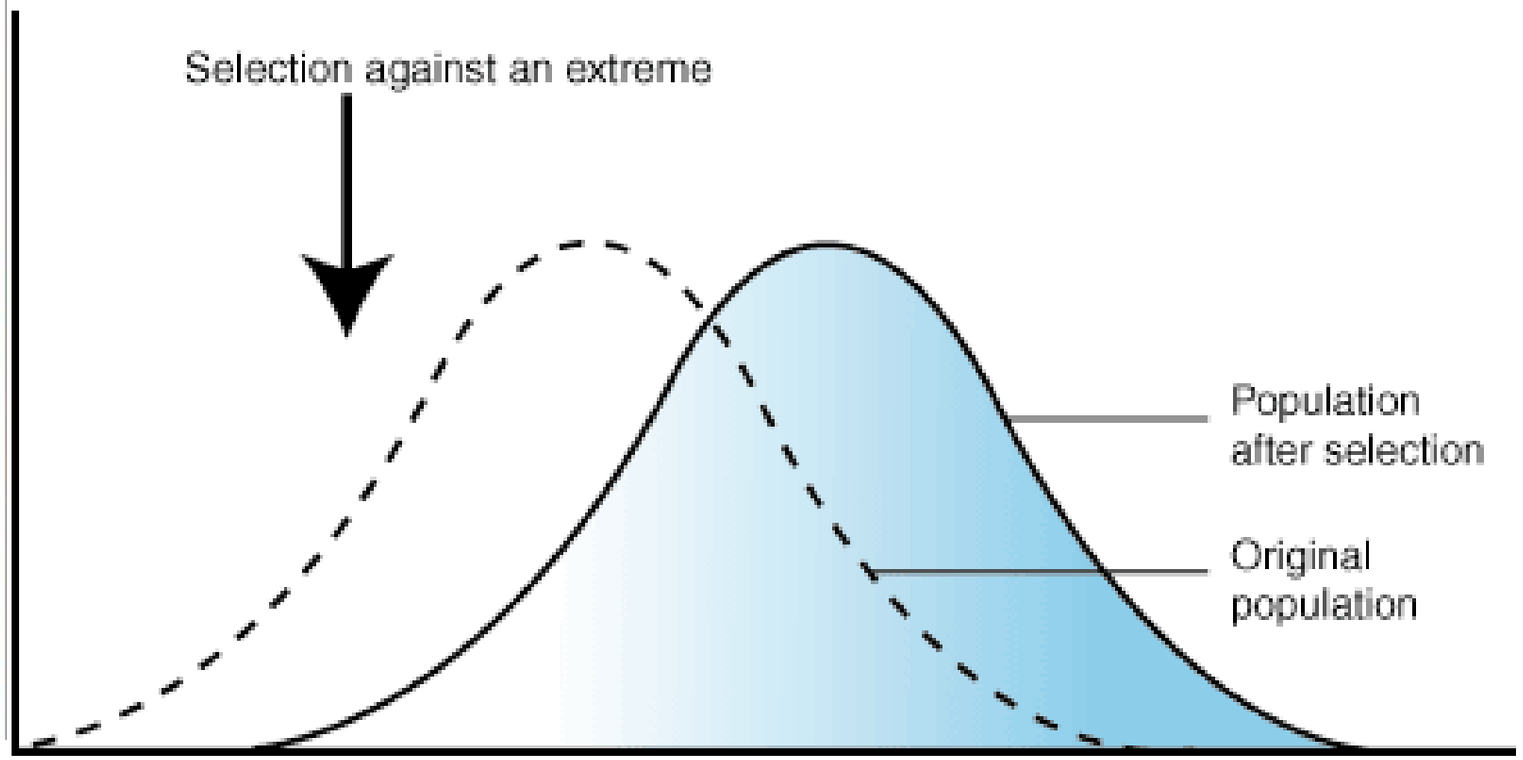
- an intermediate phenotype is selected for
- result is reduction of variation in population
- eg: Natural selection favours intermediate body weight in human babies.



b. Directional selection

- favours the phenotypes at one extreme or another
- results in shifting of phenotypes in that direction
- common when organisms move to a new place difference in environment

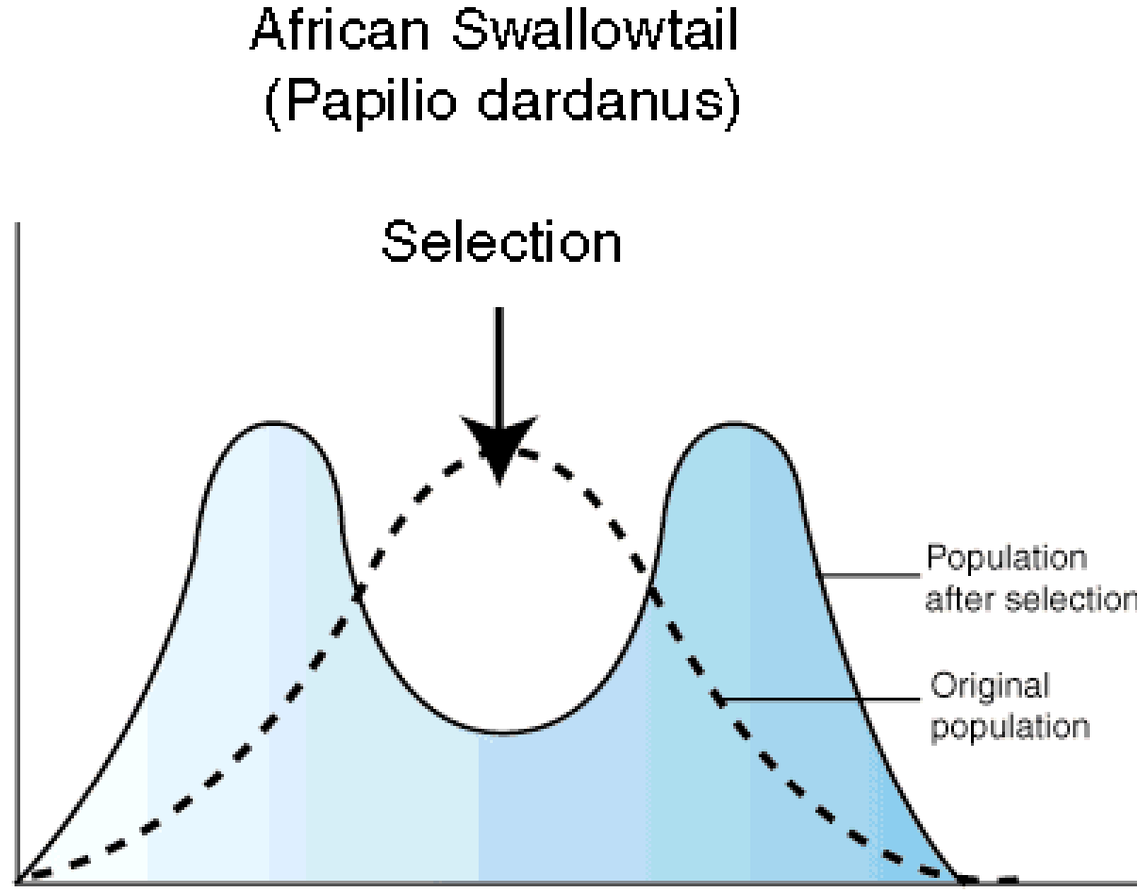
eg: peppered moths are darkest in industrialized areas

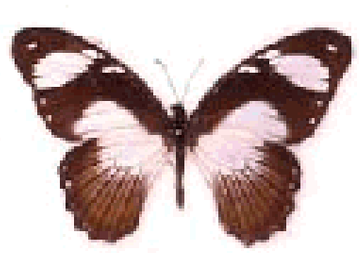


c. Disruptive selection

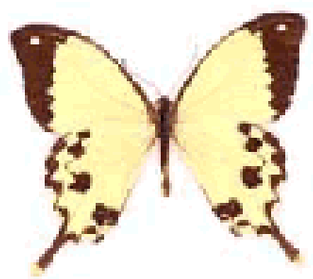
- extreme phenotypes are favoured
- intermediate phenotypes may be eliminated from population

eg: In the African swallowtail butterfly, females have extreme variations from the normal type to avoid predators.





Female mimics an unpalatable species



Male or Female is palatable and does not mimic any unpalatable species

Female mimi a different unpalatable species

Sexual Selection

- males compete for chance to mate with a female
- results in sexual dimorphism (males & females look different)

sexual selection

- males have different reproductive success
- results from females selecting different males or from males out-competing others

eg: manes in lions, antlers in moose, tail feathers in peacock, bizarre mating rituals of bedbugs..

sexual selection

sexual selection

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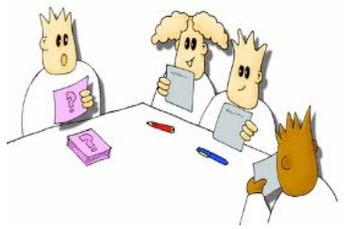


Practice with Selection!

1. Label the three types of selection illustrated by the graphs below.

a _____

b _____

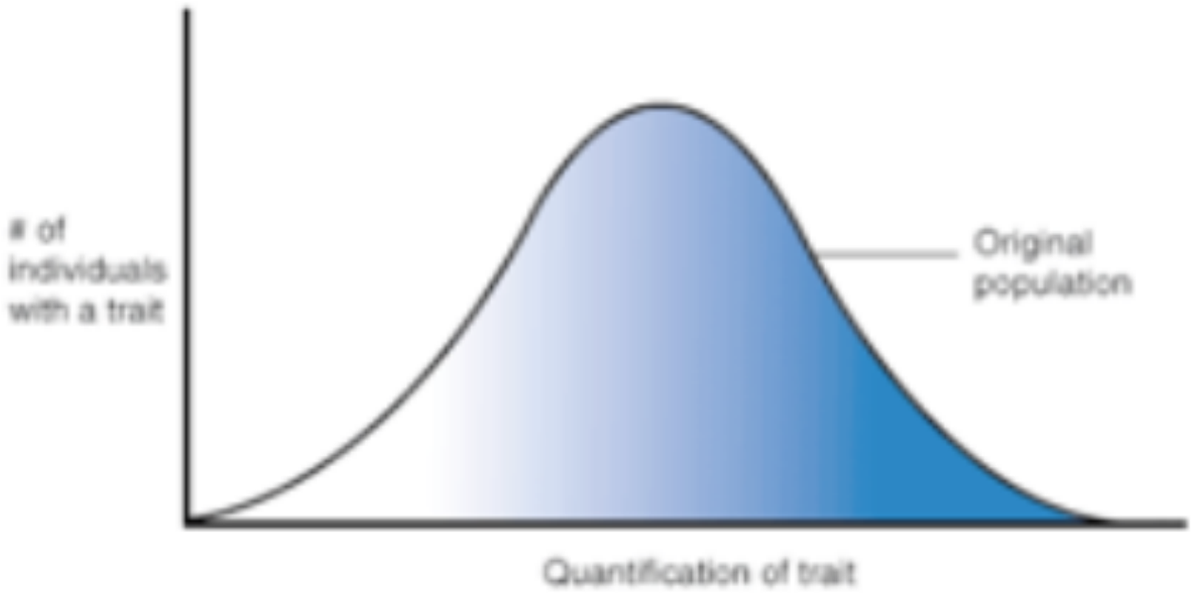
c _____

3. The occurrence of large or small beak sizes among seed crackers in the absence of medium- sized beaks is an example of

a. directional selection.
b. stabilizing selection.
c. disruptive selection.
d. none of the above.

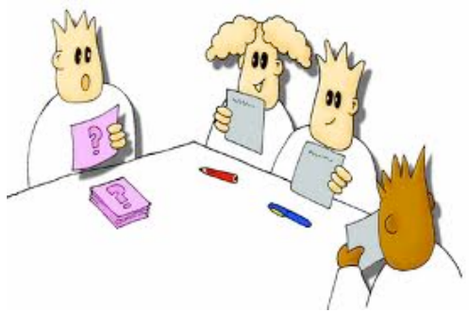
7. If a cow develops a preference for eating white four o'clock flowers and ignoring pink and red four o'clock flowers, what type of selection is being demonstrated? Sketch a graph of the curve with labeled axis to demonstrate the selection.
NB: The colour of four o'clock flowers is determined by incomplete dominance… of course!

8. A population of birds, with various size beaks, eats seeds. Small seeds can be eaten by birds with small beaks. Larger, thicker seeds can only be eaten by birds with larger, thicker beaks. Suppose there is a shortage of small seeds but that there are still many large seeds.



a. Sketch the curve to the right and then draw a new curve on the graph below to show how the distribution of beak sizes might change as a result of selection in this new environment.

Use the graph above to answer the following questions:
b. Which birds in this population have the highest fitness?
c. Explain how **natural selection** could lead to the change you predicted.



1. Which type of selection is represented below. Explain.

a. The golden tree frog is the most poisonous frog in the world.

b. The low weight weaver birds starve to death when resources are low and high weight weaver birds are subjected to predation

c. Small male dragonflies can out fly females compared to large males but are unable to subdue her. Large males are slower fliers.

d. The black bellied seed cracker feeds on two types of sedges. One has large hard seed the other has soft smaller seeds.

e. The sloth is a slow moving mammal.

Speciation