Patterns of Natural Selection

1. On a separate piece of paper use pages 398-399 in your textbook to describe the three mechanisms of natural selection (disruptive, direction, stabilizing). For each type include the definition, describe an example and draw the graph.

2. Write the type of selection (disruptive, direction, stabilizing) that is described in the example. Draw the change in population on the graph to the right.

    a. _____ Starlings produce an average of five eggs in each clutch. If there are more than five, the parents cannot adequately feed the young. If there are fewer than five, predators may destroy the entire clutch. As a result, five eggs becomes the most common clutch size.
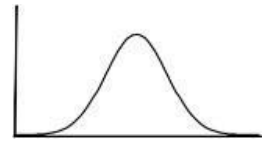
    b. _____ Black rabbits (BB) and white rabbits (bb) are both able to survive because they can camouflage into the white and black rocks in their environment. However, the intermediate gray rabbits (Bb) do not survive. This results in only white and black rabbits
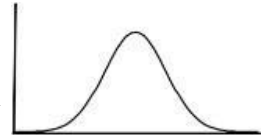
    c. _____ A population of Madagascar hissing cockroaches lives in a woodpile. The cockroaches are eaten by lizards. Because the lizards have small heads, the lizards are unable to eat the very largest adult cockroaches, and instead prey upon small and medium   sized adults. Over time, only the large headed lizards survive.
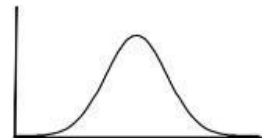
    d. Come up with your own example. State the type of selection and describe your example. Draw it on the graph.
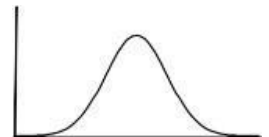
3. The data below is a specific population of spiny cacti, which is originally in genetic equilibrium. A road is built quite close to the study site, which keeps away the treacherous and parasitic insects, but with the road comes the tourists. In many desert areas of the United States, passing cactus lovers like to pick up a souvenir cactus to take home with them after a day-trip out into the desert. This is a serious problem in some areas because the tourists always take the better looking cacti, and these happen to be the ones with the middle-spine-numbers. Years of collecting have left their toll on the roadside cacti.

Original Population	
Number of Cactus	Number of Spines
4	71
12	82
25	95
13	106
8	113
4	122
2	130

Current Population (Yrs later)	
Number of cactus	Number of Spines
10	72
22	80
5	93
12	108
14	110
9	120
4	129

    a. On a separate sheet of paper - create a graph of both the original population of cacti and the current population. Use one color for the original population and another for current population.

    b. What type of selection does this graph represent? _____

    c. How do you know?

    d. What could be done to get the population back into genetic equilibrium?