Round: 11B

Figures 1& 2 below illustrate the foraging habits of Oystercatchers, shorebirds found in marine estuaries and coastal lagoons.

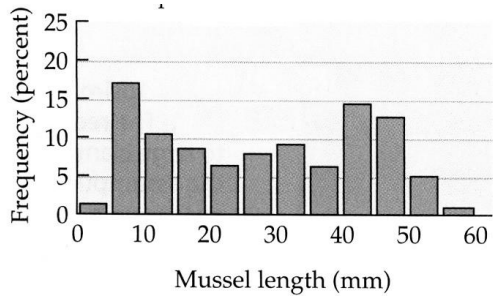

Figure 1: Abundances of Different Size Groups of Mussels

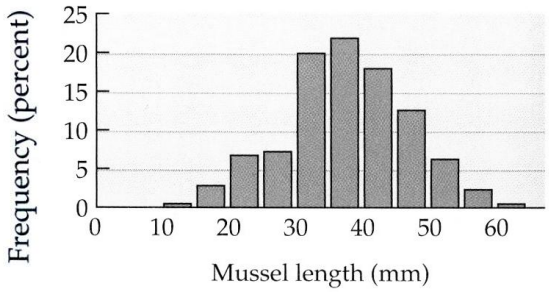

Figure 2: Sizes of Mussels Selected by Foraging Oystercatchers

1. According to Figures 1 & 2, which size mussels (or range of sizes) do the Oystercatchers select most often? (2 pt)

2. Does Oystercatcher selection correspond to the mussel size that is most available? Explain. (3 pts)

3. Assuming the patterns above are driven by Oystercatchers maximizing caloric intake per amount of energy expended, name the theory of animal behavior to which Oystercatcher mussel selection conforms. (2 pts)

4. a. Assume there is a positive relationship between mussel length and caloric value, and that there is a positive relationship between mussel length and handling time for Oystercatchers. In the area provided below, draw a graph that shows the relationship between mussel length, handling time and net energy gain for Oystercatchers on the hunt. Label your axes. (5 pts)

   b. Explain how your graph describes the patterns viewed in Figures 1 & 2. (6 pts)

5. Based on the data presented, what effect does Oystercatcher predation have on mussel population structure? (2 pts)