Name _____ Date _____ Period _____

HONORS BIOLOGY – PROBLEM SET

CHAPTER 36: POPULATION ECOLOGY
CHAPTER 37: COMMUNITIES AND ECOSYSTEMS
CHAPTER 38: CONSERVATION BIOLOGY

1. At what point does zero population growth occur? [1 point]

2. What is the cause of acid rain? Why is it more accurately considered "air" pollution rather than a form of "water" pollution? [1 point]

3. A fisheries biologist studied a population of cichlids in a small African lake. He found that the fish lived only in scattered reed beds that accounted for a small part of the area of the lake. He caught 185 fish, tagged them, and released them. Two days later, he netted 208 fish and found that 35 of them were tagged. Answer the following questions: [2 points]

   a. Approximately how many cichlids are in the lake? Show your work.
   b. What is the dispersion pattern of the fish? Explain your choice.

4. For each of the following situations, state the following: [4 points]

   - the type of species interaction (commensalism, predation, competition, mutualism)
   - the math symbols used to represent that species interaction

   a. A sea star enjoys a lovely dinner of raw salt-water mussels.
   b. Corals provide dinoflagellates (algae) with shelter. The dinoflagellates, in turn, provide the coral with sugars made during photosynthesis.
   c. In a laboratory experiment, a scientist grew two species of paramecia in the same petri dish. There was only enough for one of them to flourish. As a result, *Paramecium caudatum* died quickly, but *Paramecium aurelia* survived.
   d. As an army ant colony travels on the forest floor, they stir up various flying insect species. As the insects flee from the army ants, the birds following the ants catch the fleeing insects. The birds benefit while the army ants are unaffected.

5. Interpret the meaning of the graph of the right. The graph shows the growth of a paramecium population over 15 days. Provide a minimum of 6 clear facts describing all of the phases of the graph. [2 points]