Name _____ Class _____ Date _____

Analyzing Ecological Relationships

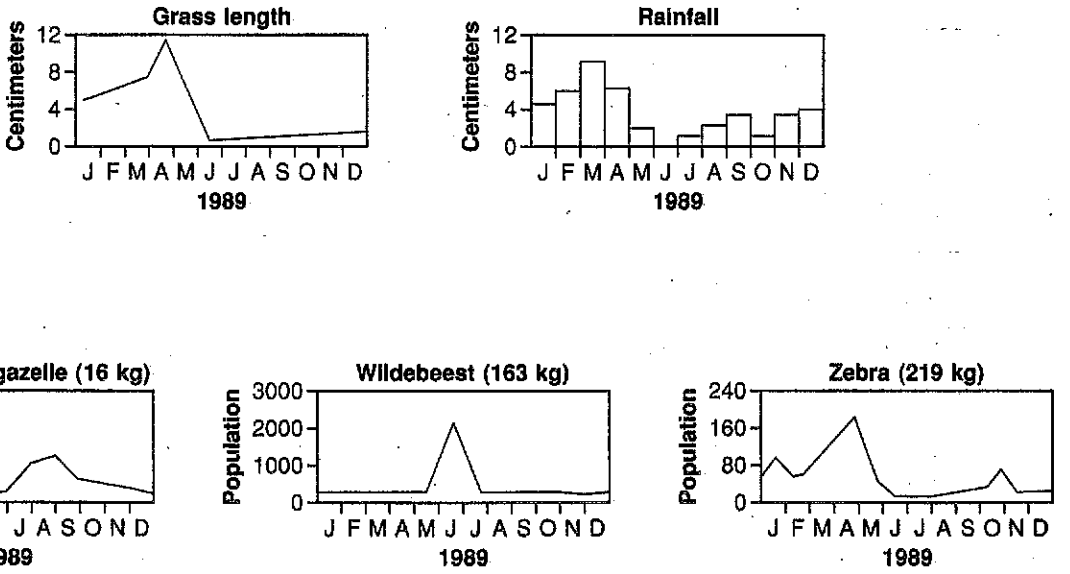
Populations in communities interact with one another in many ways. Herbivores, for example, not only compete with one another for food and space, but they also depend upon one another. In this activity, you will analyze the interdependency of the herbivores of the Serengeti Plain of East Africa.

The Serengeti Plain contains the most spectacular concentrations of large mammals found anywhere in the world. A million wildebeests, 600,000 Thomson's gazelles, 200,000 zebras, and undetermined numbers of 20 other species of grazing animals occupy this grassland. African lions and other carnivores prey upon these grazers.

The dominant grazers of the Serengeti Plain are migratory. They move in response to rainfall and to the growth of the grasses. The grazers do not always compete with one another for food. In fact, some species of grazing animals help to increase the food supplies of other species.

Examine Figure 1 which shows the relationships between rainfall, the length of the grasses, and the populations of zebras, wildebeests, and Thomson's gazelles on the Serengeti Plain during one year.

Figure 1



1. Which animals appear in the area first after the rains begin?

2. Which animals follow next?

3. Which animals are the last to return to the area after the rains begin?

4. How is this pattern of grazing beneficial to all three species?

5. Using the graphs, explain why rainfall has such an effect on population sizes.

6. Which population reaches its highest point when rainfall is at its lowest point?

7. Which population has more than one peak?

8. How are the masses of the different species related to the patterns shown in the graphs?

When zebras graze in a particular area, that area seems to become an especially rich food source for wildebeests. The same area, after the wildebeests have grazed there, seems to become an ideal food source for Thomson's gazelles. To test this apparent pattern, an ecologist performed an experiment. He fenced off areas of grass to prevent the wildebeests from grazing in them. When gazelles approached the area, the ecologist removed the fences. The gazelles fed mostly in areas where wildebeests had previously grazed and avoided areas in which the wildebeests had not grazed.

9. Predict what would happen to the wildebeests if the zebras disappeared.

10. Predict what would happen to Thomson's gazelles if the zebras disappeared.