

Appendix A

Name _____ Date _____

ECOLOGICAL PYRAMIDS

INTRODUCTION: The ecological pyramids of numbers, biomass, and energy provide models for ecologists to better understand the workings of an ecosystem.

OBJECTIVES: In the following exercise, you will have the opportunity to see the relationship between the Pyramid of Numbers and the Pyramid of Biomass. You will be able to relate this exercise to actual habitat.

MATERIALS: topographic maps

ASSUMPTIONS:

A. One mountain lion eats approximately 1,125 pounds of venison each year as well as numerous smaller animals. However, the mountain lion will eat only 50% of each deer he/she kills.

B. One deer eats approximately 3,650 pounds of vegetation each year in the form of grasses, nuts and berries.

C. One square mile of deer habitat produces 760 pounds of deer food each year.

PROBLEMS:

1. How many square miles of habitat are needed to support one deer?
2. How many deer are needed to feed one mountain lion for a year if the deer average 150 pounds in weight?
3. How many square miles of deer-lion habitat are needed to support one mountain lion?

PROCEDURES:

1. Using the topographic map, determine how large the area is that the map encompasses.
2. Using the answer from problem #3, determine how large an area of the map this would cover.

QUESTIONS:

1. How large of an area does the map encompass?
2. Does the area needed to support one mountain lion cover:
 - a. only a small part of the map
 - b. half of the map
 - c. exactly the same size as the map
 - d. an area larger than the map
3. What type of habitat does your area cover?
4. What percent of your habitat is forest?
5. What is discontinuous habitat?
6. What effect does this discontinuous habitat have on the deer and mountain lions?
7. How tolerant are deer and mountain lions to human disturbance?