Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Fred and Theresa Holtzclaw

AP Biology

Chapter 40-Population Ecology and the Distribution of Organisms

***40.1 Earth’s climate influences the distribution of terrestrial biomes***

1) Define the terms:

a. ecology

b. microclimate

8. What is *climate*? What abiotic factors are its components?

9) What is a *biome*?

14) Figure 10.1 on page 278 in the Review Book shows a *climograph* for some major biomes in North America. What two abiotic factors shown here are most important in determining the distribution of the biome?

***40.2 Aquatic biomes are diverse and dynamic systems that cover most of Earth***

11) Identify factors that are significant to organism distribution and abundance in a lake.

13) What is the difference between a lake that is oligotrophic and one that is eutrophic? (see p. 850 in your text)

***40.3 Interactions between organisms and the environment limit the distribution of species***

4) Define the following terms and give 3 examples for each.

a. abiotic:

examples:

b. Biotic:

examples:

***40.4 Biotic and Abiotic factors affect population density, dispersion, and demographics***

1) What two pieces of data are needed to mathematically determine *density*?

2) What is the difference between density and *dispersion*?

3) Try the following problem.

*A population ecologist wished to determine the size of a population of white-footed deer mice, Peromyscus leucopus, in a 1-hectare field. Her first trapping yielded 80 mice, all of which were marked with a dab of purple hair dye on the back of the neck. Two weeks later, the trapping was repeated. This time 75 mice were trapped, out of which 48 of the mice were marked. Using the formula below, what is the population of mice in the field?* ***Show all Work!!!***



4) Label the dispersion pattern shown by each population in the figure below. Second, and most important, what do the dispersion patterns tell us about the population and its interactions?

7) Compare the survival strategies of species and give an example of each type. 

Type I

Type II

Type III

***40.5 The exponential model describes population growth in an idealized, unlimited environment***

14) What are two examples of conditions that might lead to *exponential population growth* in natural populations?

15) What is *carrying capacity*?

17) In the *logistic population growth* model, the per capita rate of increase approaches zero as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is reached.

19) Explain why the exponential growth curve produces a “J-shaped” curve instead of a straight line.



21) Label the graph illustrating the two models of population growth.

22) What happens to a population when the number of individuals approaches carrying capacity?

***40.6 Population dynamics are influenced strongly by life history traits and population density***

24) Compare K-selected to r-selected species. Give examples of each.

K-selected:

r-Selected:

25) Compare and contrast these two terms and list some examples:

**density-independent regulation**

**density-dependent regulation**