Name: _____ Date: _____ Hour: _____

Station: Dispersion Patterns

1. What is a population? _____

   _____

2. One property used to describe a population is dispersion. Define dispersion.

   _____

3. List the three types of dispersion patterns:
   a. _____

   b. _____

   c. _____

4. Name of dispersion pattern: _____

   Describe this pattern: _____

   _____

   Why might organisms arrange themselves in this pattern?
   _____

   _____

   _____

   _____

   Example of this pattern in nature: _____

   _____

   _____

5. Name of dispersion pattern: _____

Describe this pattern: _____

_____

Why might organisms arrange themselves in this pattern? _____

_____

_____

_____

Example of this pattern in nature: _____

_____

_____

6. Name of dispersion pattern: _____

Describe this pattern: _____

_____

Why might organisms arrange themselves in this pattern? _____

_____

_____

_____

Example of this pattern in nature: _____

_____

_____

7. What type of dispersion pattern is seen in human populations? Explain your answer.

_____

_____

Name: _____ Date: _____ Hour: _____

Station: Predator – Prey Relationships

Use the "Predator–Prey Relationships" graph found at this lab station to answer questions 1 – 7.

1. What happens to the lynx population each time there is an increase in the rabbit population?

   _____

2. What happens to the rabbit population each time there is an increase in the lynx population?

   _____

3. Explain the relationship between the number of lynx and the number of rabbits between the years of 1855 and 1900. (This question is asking for an ***explanation*** of the relationship, not a description of the relationship.) _____

   _____

   _____

   _____

4. In what two years did the rabbit population peak? _____

5. List factors that might account for these two peaks in the rabbit population. _____

   _____

   _____

   _____

6. In the two years that show a peak in rabbit population, is there also a corresponding peak in the lynx population? _____

7. In the year 1900, it appears that the lynx population is greater than can be supported by the rabbit population. What explanation can you give for this? _____

   _____

   _____

8. As it turns out, studies of snowshoe rabbit populations in areas where no lynxes are found show the same fluctuations in population cycles. How can you explain this? _____

_____

_____

_____

9. Define the following terms (use your book):
   a) Predation: _____

   _____

   b) Predator: _____

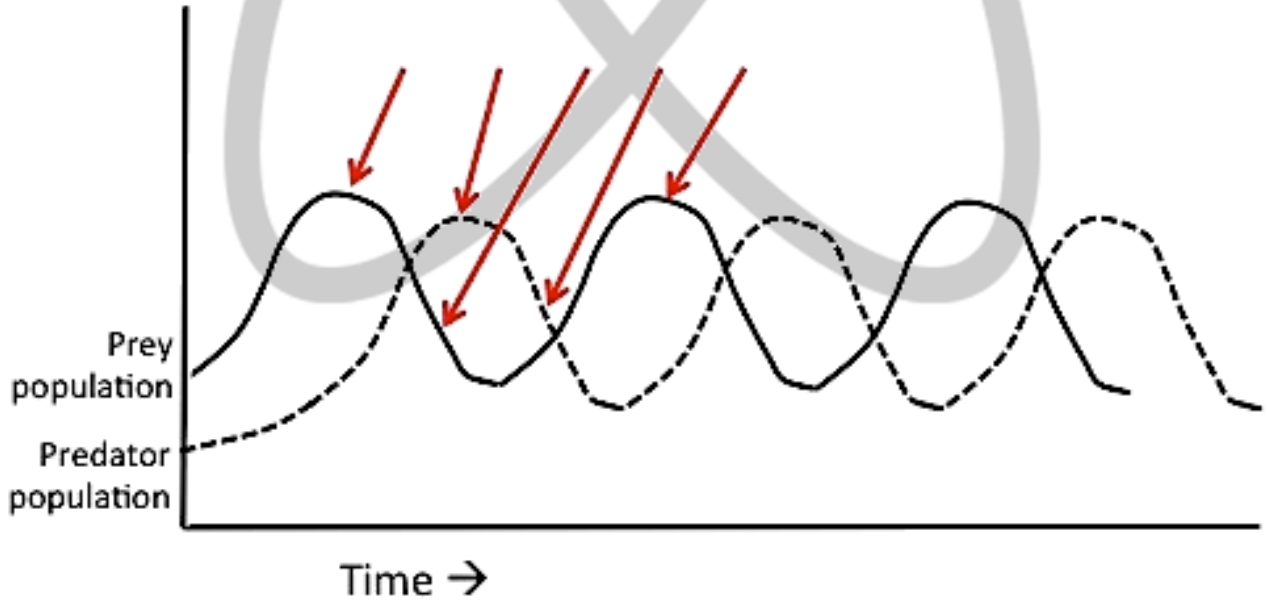
   c) Prey: _____

10. Predation is one example of a "limiting factor." What is a limiting factor? _____

_____

11. Read each lettered statement below. Each lettered statement corresponds to one of the arrows seen on the graph below. Write the correct letter at the end of each arrow to show what is happening to the populations of predators and prey at each point.

(a) Prey population rises due to a decline in predator population.
(b) Predator population rises due to increase in prey population.
(c) Prey population falls due to increase in predation.
(d) Predator population falls due to decline in prey population.
(e) Prey population rises.



Name: _____ Date: _____ Hour: _____

Station: Population Density

1. Define the term "population density." _____

   _____

2. Count the number of each wildflower and record the data below.

Wildflower A	Wildflower B	Wildflower C

3. Calculate the area of the space that is being counted. Show your calculation in the space below. (Area = Length X Width)

4. Determine the population density of each species. To determine population density, divide the number of plants by the area (Population Density = (Number of organisms)/ Area). Be sure to include units with your answer.

Wildflower A	Wildflower B	Wildflower C

5. What type of dispersion pattern is seen in each wildflower species? Give an explanation for the dispersion pattern seen in each species.

   Wildflower A: _____

   _____

   Wildflower B: _____

   _____

   Wildflower C: _____

   _____

6. Is there any evidence that one wildflower might be affecting the growth of another? Explain.

   _____

_____

7. How is wildflower B affected by the growth of wildflowers A and C? _____

_____

_____

8. Divide the grid into four equal squares. Calculate the area of the one of the smaller squares.

9. Calculate the population density of wildflower B in only the top left square.

10. The dispersion patter of a population sometimes depends on the scale in which the population is observed. When looking at only the top left square, what dispersion pattern is seen in wildflower B? Is this different than the answer you gave in question 5? _____

_____

_____

11. List several factors that might explain the difference in growing locations between wildflowers B and C. _____

_____

_____

12. If the scientist returned to the field at a different time of the year, would the population densities be the same? Explain. _____

_____

13. Describe the most likely method of seed dispersal in Wildflowers A and C. Explain.
Wildflower A: _____

_____

Wildflower C: _____

_____

14. What factors might restrict the spread of a population into a new area? _____

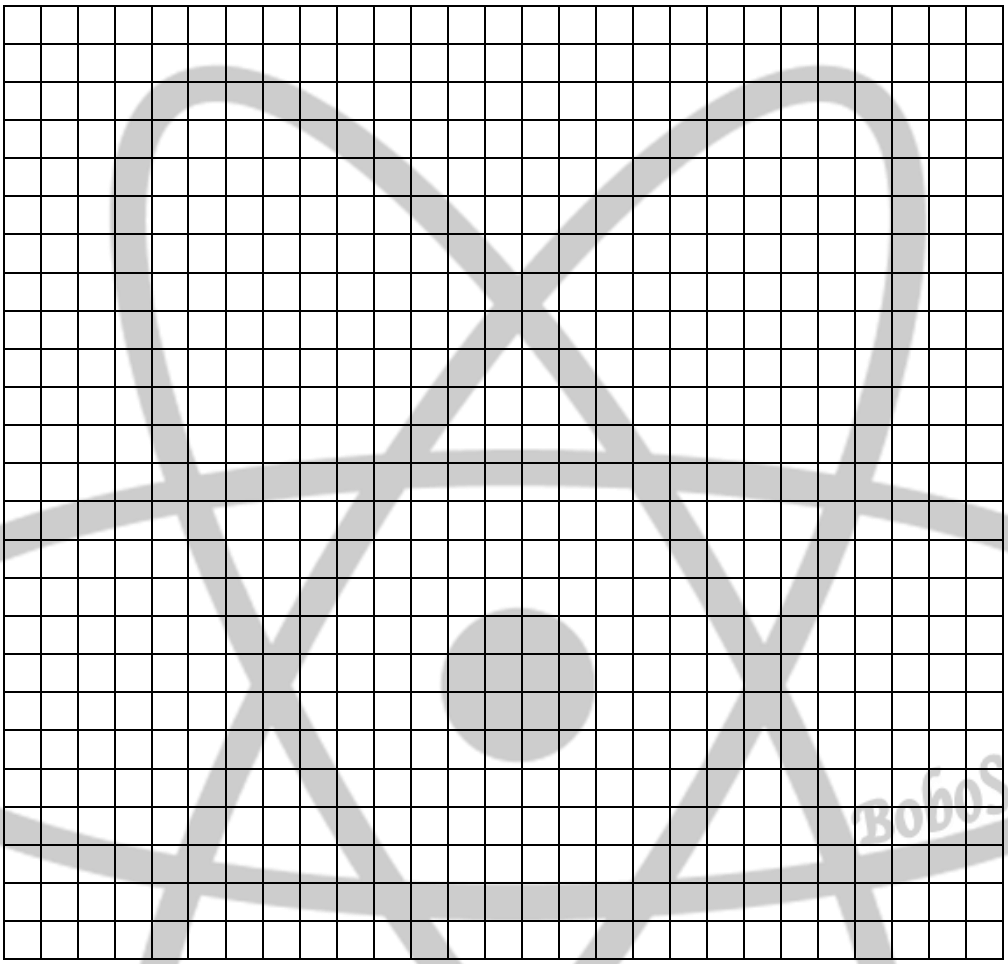
_____

_____

Name: _____ Date: _____ Hour: _____

Station: Carrying Capacity

1. Plot the population study data on the graph below.



2. What was the size of the population in 1911? _____

   What was the peak size of the population in 1937? _____

   What was the average annual increase in population size between 1911 and 1937?

   _____

3. By 1950, only 8 reindeer remained on the island. What was the average annual decrease between 1938 and 1950?

   _____

4. What factors could account for the exponential growth seen between the years of 1911 and 1937?

   _____

_____

_____

5. What factors could account for the rapid decrease in population after 1937? _____

_____

_____

6. Define the following terms:
   a) Growth rate: _____
   b) Carrying capacity: _____

   _____

7. Did the reindeer exceed the carrying capacity? How do you know? _____

_____

8. List the four processes that determine the size of a population. _____

_____

9. Referring to question 8, which two processes increase the size of a population?

_____

10. Referring to question 8, which two processes decrease the size of a population?

_____

11. Referring to question 8, which two factors did not affect the reindeer population? Explain.

_____

_____

12. Can you determine the carrying capacity for the reindeer population on St. Paul Island? Why or why not?
_____

_____

13. Why do you suppose the population continued to decrease until only 8 individuals were left?

_____

_____

14. If some of the remaining 8 reindeer were males and some were females, what do you predict would happen to the population over the next few years? _____

_____

_____

15. What do you suppose might have happened if a natural predator had been introduced to the island?
_____

_____

Name: _____ Date: _____ Hour: _____

Station: Ecosystem Builder

Directions: Be sure to follow the individual directions, and name each level.

Draw an example of the smallest level

Draw an example of the next level up from the smallest.

Draw an example of the second largest level of an ecosystem.

Draw an example of the largest level of an ecosystem. Make sure that you include 3 biotic and 3 abiotic factors.