

## Unit 7 Review

1. Define the following terms:

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| <ul style="list-style-type: none"> <li>a. Organism</li> <li>b. Population</li> <li>c. Community</li> <li>d. Ecosystem</li> <li>e. Distribution</li> </ul> | <ul style="list-style-type: none"> <li>f. Carrying capacity (K)</li> <li>g. Symbiosis</li> <li>h. Keystone species</li> <li>i. Succession</li> <li>j. Niche</li> </ul> |
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2. What are the factors that could affect population growth?

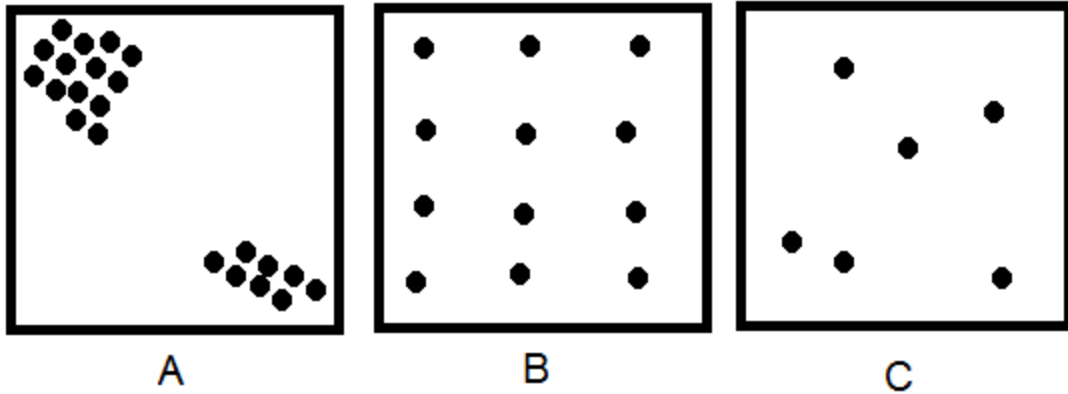
3. Decide which relationships below are mutualistic, commensalistic, parasitic, predator/prey, or competitive.

	<b>ECOLOGICAL RELATIONSHIP</b>
a. Organism 1 lives in close contact with organism 2. Organism 1 benefits from this relationship, because it is able to get food and shelter. However, if organism 1 was removed from the system, it would not affect organism 2 in any way.	
b. Organism 1 kills and feeds on organism 2.	
c. Organism 1 lives on organism 2, feeding on its blood. Organism 1 benefits, because it has shelter and a food source. Organism 2 is harmed.	
d. Organism 1 and 2 are of the same species living in the same habitat. They are both males of reproductive age and are about to enter the breeding season.	
e. Organism 1 lives inside of organism 2. Organism 1 benefits, because it has a source of food and shelter. Organism 2 also benefits, because organism 1 helps to produce vitamins.	

4. What is the main difference between the starting points of primary succession and secondary succession?



5. Label the picture of the species distribution type in the table below. Then, include an example of an organism that has this type of distribution.



DISTRIBUTION TYPE	EXAMPLE
A.	
B.	
C.	

6. Draw a figure in which the population grows exponentially and logistically.



7. Which of the following statements about “pioneer” species in succession communities is false?

- A. They are often mosses or lichens.
- B. They are usually opportunists and are able to colonize areas quickly.
- C. They will usually not be a part of climax communities.
- D. They consist of a wide variety and diversity of species.

8. Given what you know about species interactions and distributions, which of these is correct? You would expect to see lower species diversity:

- A. on a coral reef than in the open ocean
- B. In the tropics than in the tundra
- C. In a community without keystone predators than in one with keystone predators
- D. In the grasslands than in the desert

9. Give an example of a habitat that would be the basis for:

- a) primary succession
- b) secondary succession

**Use the following information to answer questions 10-14:** Hawaiian squid, *Euprymna scolopes*: Most nocturnal creatures cast shadows under the bright Hawaiian moonlight and are easy prey to predatory fish. This type of squid can shine light downwards to match the moonlight and avoid casting a shadow thereby decreasing predation. To provide squid for your studies, you maintain a large, self-supporting squid tank. Surprisingly, your tank-raised squid are not luminous. In fact, the glow seen in free living squid is due to a species of bacteria, *Vibrio fischeri*, that live in a specialized light organ within the squid. When juvenile squid hatch, ambient water enters the light organ. *V. fischeri* and the many other bacterial species in this ambient water also enter the light organ and colonize it. All the bacteria initially flourish in this nutrient rich environment, but after 10 hours, only *V. fischeri* remain in the light organ.

10. Fill in the blank. The interaction between *V. fischeri* and the other bacterial species initially colonizing the light organ can best be described as \_\_\_\_\_.

11. Fill in the blank. The interaction between the squid and *V. fischeri* can best be described as \_\_\_\_\_.

12. Is the light organ of the squid the fundamental niche of *V. fischeri*. Why, or why not?

13. Is the light organ of the squid the realized niche of *V. fischeri*. Why, or why not?

14. The interaction between the squid and *V. fischeri* is dynamic. *V. fischeri* are only luminescent when the density of cells is near carrying capacity, yet when nutrients become limiting, luminescence ceases. To overcome this problem, the squid expel 90-95% of the *V. fischeri* from the light organ as each new day begins. By the following evening, the bacteria that remained have repopulated the light organ and it is once again fully functional. Using this information, graph the *V. fischeri* population within the light organ of a squid over several days. Indicate carrying capacity on the graph.

