

Name _____ Period _____

Chapter 54: Community Ecology

Concept 54.1 *Community interactions are classified by whether they help, harm, or have no effect on the species involved.*

1. What is a *community*? List six organisms that would be found in your schoolyard community.
2. This section will look at *interspecific* interactions. Be clear on the meaning of the prefix! To begin, distinguish between *intraspecific competition* and *interspecific competition*. Give an example of each.

Type of Competition	Explanation	Example
Intraspecific competition		
Interspecific competition		

3. What is G. F. Gause's *competitive exclusion principle*? Give one example.
4. Define *ecological niche*.
5. Several species of *Anolis* lizards live in the same types of trees and have a similar diet. Discuss *resource partitioning* to explain how interspecific competition is reduced. (Study Figure 54.2.)
6. What is the difference between the *fundamental niche* and the *realized niche*?

7. Study Figure 54.5, and then explain what is meant by *character displacement*. (To do this, you will have to learn or review the difference between *sympatric* populations and *allopatric* populations. You will find this information in Chapter 24.)
8. *Predation* is a term that you probably already know. Can you give examples of some predator-prey combinations as listed below?

Predator	Prey	Example
Animal	Animal	
Animal	Plant	
Fungus	Animal	
Bacteria	Animal	
Fungus	Plant	

9. List three special adaptations that predator species possess for obtaining food.
10. List three ways prey species elude predators.
11. Compare the two types of mimicry.

Type of Mimicry	Description	Example
<i>Batesian</i>		
<i>Müllerian</i>		

12. What is *herbivory*?

13. Did you list any special herbivore adaptations for predation in your response to question 9? Or plant adaptations to avoid herbivory? List two adaptations for each category here.

14. Describe and give an example of each of the following interactions:

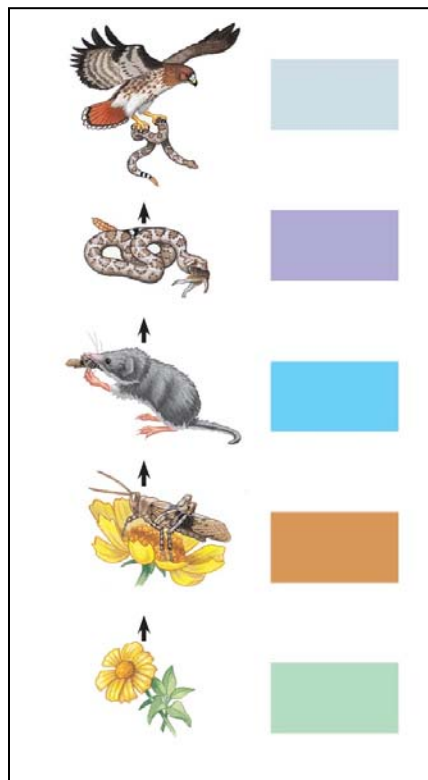
Type of Interaction	Description	Example
<i>symbiosis</i>		
<i>parasitism</i>		
<i>commensalism</i>		
<i>mutualism</i>		

15. Which category above includes the other three? Note that other texts may define this term more narrowly.

16. Your text uses +/- symbols to indicate how interspecific interactions affect survival and reproduction of the two species. Use this notation for each of these interactions.

Type of Interaction	+/, +/–, –/–, +/-0
<i>predation</i>	
<i>commensalism</i>	
<i>mutualism</i>	
<i>parasitism</i>	
<i>interspecific competition</i>	
<i>herbivory</i>	

17. What is *species diversity*? What are its two components? Why is it important?
18. What does an ecologist summarize in a *food web*?
19. Know the levels of trophic structure in food chains. Give a food chain here, including four links that might be found in a prairie community, and tell the level for each organism.
20. Name every organism in the pictured food chain, and give the trophic level in the box.



21. According to the *energetic hypothesis*, why are food chains limited in length? How much energy is typically transferred to each higher level?
22. What is a *dominant species*? For the area where you live, what would be considered a dominant tree species?

23. How is a *keystone species* different from a dominant species?
24. Name one keystone species, and explain the effect its removal has on the ecosystem.
25. Explain *facilitator* or *foundation species* and give an example.

You may omit bottom-up and top-down controls.

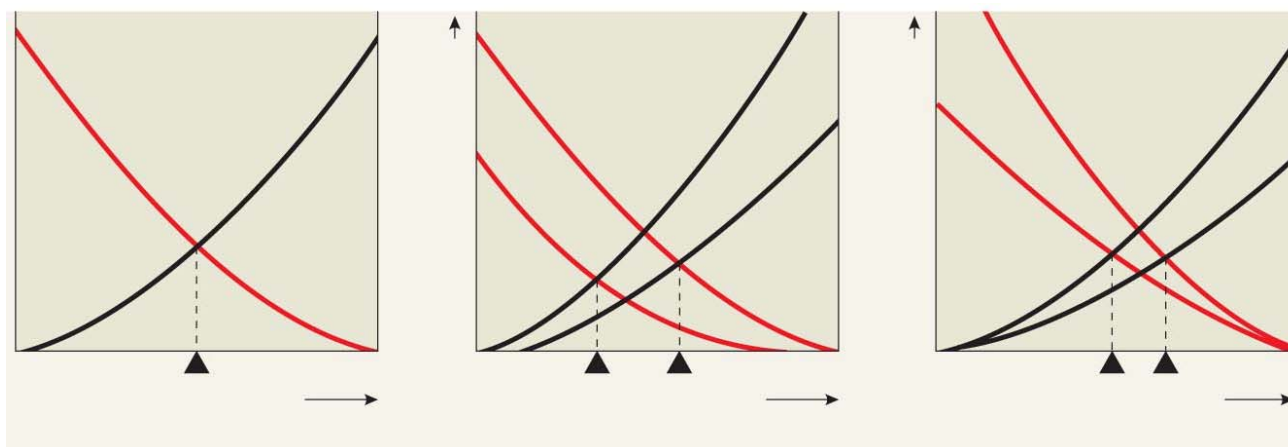
Concept 54.2 Disturbance influences species diversity and composition

26. What is the *intermediate disturbance hypothesis*? Give an example of a disturbance event, and explain the effect it has on the community.
27. *Ecological succession* is the changes in species that occupy an area after a disturbance. What is the difference between *primary succession* and *secondary succession*?

Concept 54.3 Biogeographic factors affect community biodiversity

28. Explain *latitudinal gradients* in terms of species richness. Where is species richness greatest?
29. There are probably two key factors in latitudinal gradients. List and explain both here, and put a star next to the one that is probably the primary cause of the latitudinal difference in biodiversity.
30. Explain what is demonstrated by a *species-area* curve.

31. Renowned American ecologists Robert MacArthur and E. O. Wilson developed a model of *island biogeography*. While the model can be demonstrated with islands, any isolated habitat represents an island. What are the two factors that determine the number of species on the island?
32. What two physical features of the island affect immigration and extinction rates?
33. Why do small islands have lower immigration rates? Higher extinction rates?
34. Closer islands have _____ extinction rates and _____ immigration rates.
35. What is the *island equilibrium model*?
36. Use this model to describe how an island's size and distance from the mainland affect the island's species richness.
37. Label this figure to show immigration, extinction, island size, and equilibrium. Then explain what each figure shows.



Concept 54.4 Community ecology is useful for understanding pathogen life cycles and controlling human disease

38. Let's pull a couple of ideas from this section: What is a *pathogen*?
39. What is a *zoonotic pathogen*? List three examples.
40. What is a *vector*? List three examples.

Testing Your Knowledge: Self-Quiz Answers

Now you should be ready to test your knowledge. Place your answers here:

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____