CHAPTER 54
COMMUNITY ECOLOGY

Learning objectives

Interspecific Interactions
1. List the categories of interspecific interactions. Explain how each interaction affects the survival and reproductive success of the two species involved.
2. State the competitive exclusion principle.
3. Define an ecological niche and restate the competitive exclusion principle using the niche concept.
4. Explain how interspecific competition may lead to resource partitioning.
5. Distinguish between fundamental and realized niche.
6. Give specific examples of adaptations of predators and prey.
7. Explain how cryptic coloration and aposematic coloration may aid an animal in avoiding predators.
8. Distinguish between Batesian mimicry and Müllerian mimicry.
9. Describe how predators may use mimicry to obtain prey.
10. Give specific examples of adaptations of herbivores.
11. Distinguish among endoparasites, ectoparasites, and parasitoids.
12. Distinguish among parasitism, mutualism, and commensalism.
13. Explain why it is difficult to classify a symbiotic relationship as commensal.

Community Structure
14. Explain the relationship between species richness and relative abundance and explain how both contribute to species diversity.
15. Distinguish between a food chain and a food web.
16. Describe two ways to simplify food webs.
17. Summarize two hypotheses that explain why food chains are relatively short. Explain the experimental evidence that supports the energetic hypothesis.
18. Explain how dominant and keystone species exert strong control on community structure. Describe an example of each.
19. Explain how a foundation species may facilitate the survival and reproduction of other species.
20. Distinguish between the bottom-up and top-down models of community organization.
21. Describe the successful biomanipulation of Finland’s Lake Vesijärvi.

Disturbance and Community Structure
22. Define stability and disturbance.
23. Describe the intermediate disturbance hypothesis. Explain why moderate levels of disturbance may create conditions that foster greater species diversity than low or high levels of disturbance.
24. Distinguish between primary and secondary succession.
25. Describe how species that arrive early in succession may facilitate, inhibit, or tolerate later arrivals.
26. Describe the biotic and abiotic changes that have occurred during primary succession on glacier moraines in Glacier Bay, Alaska.
27. Describe an example of humans acting as agents of disturbance.

**Biogeographic Factors Affect Community Biodiversity**
28. Explain why species richness declines along an equatorial-polar gradient.
29. Explain the significance of measures of evapotranspiration to species richness.
30. Define the species-area curve.
31. Explain how species richness on islands varies according to island size and distance from the mainland.

**The Effects of Pathogens on Community Ecology**
32. Describe one terrestrial and one marine example of a pathogen that has altered the structure of the community in which it is found.
33. Define a zoonotic pathogen. Explain, with an example, how zoonotic pathogens may be controlled.