

Name _____ Period _____

Chapter 52: An Introduction to Ecology and the Biosphere

Overview

1. What is *ecology*?
2. Study Figure 52.2. It shows the different levels of the biological hierarchy studied by ecologists. Notice also the different types of questions that might be studied by an ecologist at each level of study. Use this figure to define or explain the following terms:

organismal ecology

population

population ecology

community

community ecology

ecosystem

ecosystem ecology

landscape ecology

biosphere

global ecology

Concept 52.1 Ecology integrates all areas of biological research and informs environmental decision making

3. Contrast the terms *ecology* and *environmentalism*. How does ecology relate to environmentalism?

4. What environmental issue was targeted in Rachel Carson's book, *Silent Spring*? What was the outcome of her efforts?

Concept 52.2 Interactions between organisms and the environment limit the distribution of species

5. What is *biogeography*? What factors determine the distribution of organisms?
6. Read this section carefully to understand different types of experiments and observations that help explain the distribution of species. As you conclude this section, list and describe five examples of *biotic factors*.

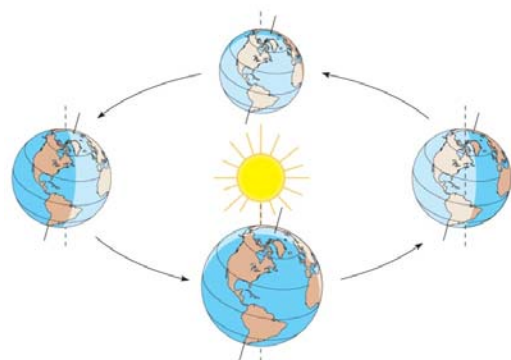
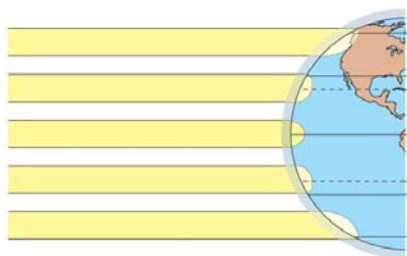
Biotic Factor	Example and Description

7. List five abiotic factors. Include an example and description of each factor's influence on living organisms.

Abiotic Factor	Example and Description

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

9. Study Figure 52.10, which summarizes Earth's climate patterns and how they are formed. Explain how Earth's curvature and axis of rotation influence the amount of sunlight reaching a given area, and how these factors influence the temperature and precipitation in that area.



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10. Let's look at factors that affect climate on a smaller scale. Begin by studying Figure 52.11. Why is the Pacific Northwest so rainy? What causes the Mediterranean climate?

11. Explain the “rain shadow” effect.
12. What effect does elevation have on climate? Why do we say that hiking from Gatlinburg, Tennessee, at 393 meters of elevation in the Smoky Mountains region, to the top of Mount LeConte, at 2010 meters, is like traveling to Canada?

Concept 52.3 Aquatic biomes are diverse and dynamic systems that cover most of Earth

13. What is a *biome*?
14. What is the largest marine biome, and how much of Earth’s surface does it cover?
15. As you read this section and study Figure 52.18, you will encounter a number of new terms. Distinguish between each of the following pairs of terms:

photic/aphotic

benthic/pelagic

oligotrophic/eutrophic

littoral zone/limnetic zone

zooplankton/phytoplankton

neritic/abyssal

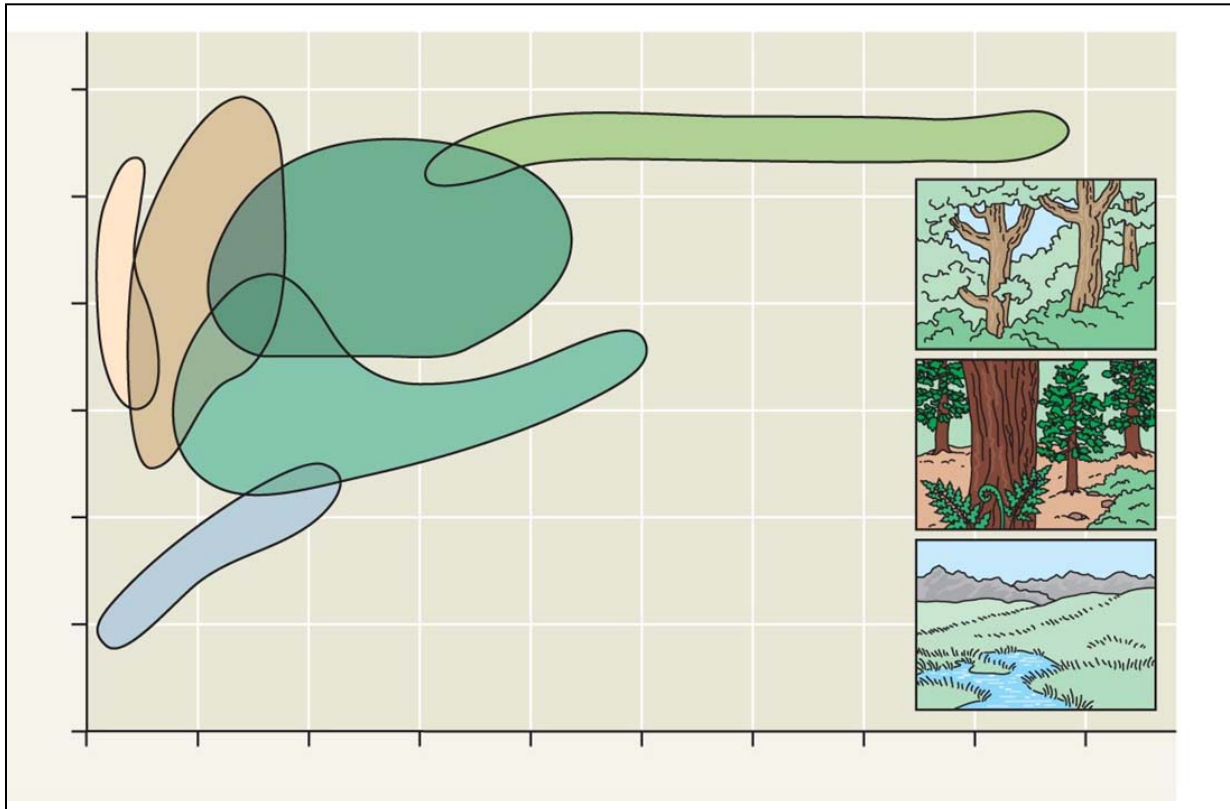
16. The aquatic biomes are listed in the chart. Give a description of the biome below its name, and then complete the other parts of the chart.

Aquatic Biome	Typical Autotrophs	Typical Heterotrophs	Human Impact
<i>Lakes</i>			
<i>Wetlands</i>			
<i>Streams and rivers</i>			
<i>Estuaries</i>			
<i>Intertidal</i>			
<i>Oceanic pelagic</i>			

Concept 52.4 *The structure and distribution of terrestrial biomes are controlled by climate and disturbance*

17. Figure 52.20 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?

18. Label the axes of this figure, and identify each biome shown here. Try to do this based on your understanding of the figure, and then use the text to check your answers. You will use these biomes: *temperate grassland*, *temperate broadleaf forest*, *tropical forest*, *northern coniferous forest*, *desert*, *tundra*.



19. Describe each major terrestrial biome as to rainfall, temperature, location, and representative flora and fauna.

tropical forest

desert

savanna

chaparral

temperate grassland

northern coniferous forest/taiga

temperate broadleaf forest

tundra

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. _____