Chapter 40 Reading Guide

40.1

1. How did global warming contribute to the reduction in number of the harlequin toad in the Costa Rican rain forest?

2. What kind of questions about the harlequin toad would an ecologist study?

3. What kinds of factors influence where life can exist on land?

4. What kinds of factors influence where life can exist in oceans?

5. Describe how the shape of the Earth contributes to an unequal distribution of the sun's energy.

6. Describe the pattern of global air circulation.

7. What are the significant latitude lines where air is ascending and descending?

8. Why do winds in the tropics blow from east to west?

9. What are four important physical factors in describing climate?

10. How does climate differ from weather?

11. Are climatic conditions biotic or abiotic?

12. What is the cause of the Earth's seasons?

13. Using fig. 40.4, describe how the Earth's tilt causes winter in North America.

14. How does the ocean influence the climate of adjacent coastal regions?

15. Do you think the temperature in Virginia Beach is warmer or cooler because of the ocean?

16. When sitting on a tropical beach on my recent cruise, I noticed that even though the temperature on land was hot, there was always a nice cool breeze coming from the ocean. Explain the science behind this delightful, and very relaxing, phenomenon.

17. Why do mountain ranges near bodies of water often have desert-like conditions on the leeward side?

18. What is a biome?

19. According the 40.7, in what major terrestrial biome would you find Virginia?

20. According to the climograph, which biomes are:
    a. The coldest and driest
    b. The hottest and wettest

c. Driest and hottest

21. Why might some areas with the same average precipitation and same average temperature still harbor very different types of life?

22. How can human disturbances change a community within a biome?

23. What term denotes the boundary between 2 biomes?

24. Fill in the following chart on the terrestrial biomes:

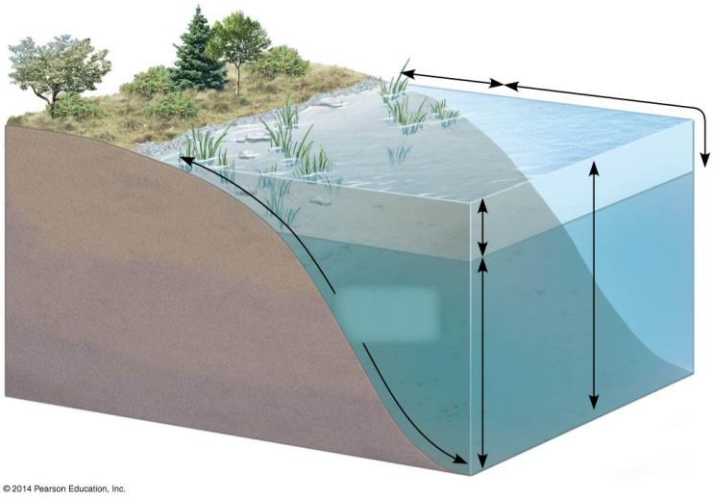
	distribution	climate	plants	animals	Human impact
Tropical forest					
Savanna					
Desert					
Chaparral					
Temperate grassland					
Northern coniferous forest					
Temperate broadleaf forest					
Tundra					

40.2

1. How does the amount of salt in the Atlantic Ocean compare to the amount of salt at Lake Gaston?

2. Why is the health of the ocean so critical in the overall health of the planet?

3. Label the zones in the lake diagram:



4. Fill in the chart on the aquatic biomes:

	Physical and chemical environment	Geological features	organisms	Human impact
Wetlands and estuaries				
Lake				
Streams and rivers				
Intertidal zone				
Coral reef				
Ocean pelagic zone				
Marine benthic zone				

5. What term denotes the layer of abrupt temperature change between warm upper layers and cold deeper waters in oceans and lakes?

6. What are 5 factors that determine where a community will live in an aquatic environment?

40.3

1. What characteristics of organisms contribute to the dispersal of organisms.
2. How are transplant species used to study dispersal?
3. Compare and contrast abiotic and biotic factors.

40.4

1. Compare density and dispersion.
2. Describe or diagram:
    a. Clumped
    b. Uniform
    c. Random

40.6

1. What 3 variables make up an organism's life history?

2. Why do you think that the red deer that gave birth (in the Scotland study) were more likely to die in the next winter?

3. What strategy is most used by plants and animals whose young are likely to die-
    a. Produce high numbers or low numbers of offspring?
    b. Produce large or small offspring?

4. What are some plants and animals that have produce fewer offspring but invest more in their care?

You may use your book and phone to complete this chart:

	K - selection	r-selection
Density dependent selection or density independent selection?		
Number of offspring?		
Amount and length of parental care?		
General size of adult organism?		
General size of offspring?		
Energy used to make offspring- high or low?		
Short or long life expectancy?		

Early or late maturity?		
Number of times each individual reproduces?		
Type I, II, or II on survivorship curves?		

5. Can an organism be density dependent for birth rate, but density independent for death rate?

6. Describe and provide an example for each of these mechanisms that control density-dependent populations:
    a. Competition

    b. Toxic waste

    c. Predation

    d. Territoriality

    e. Disease

    f. Intrinsic factors

7. Predict three factors that influence population density for the deer enclosed in the NASA fence.

8. What factors influence the population density of the moose population on Isle Royale?

9. What caused the two population decreases in the moose population?

10. Does immigration or emigration often increase when a population becomes crowded?

11. What is a metapopulation?

12. Describe the changes in the fritillary butterfly superpopulation in Finland.