Focus Questions
Ecological Principles an Biodiversity
Chapters 3-5
APES

Focus Questions

Chapter 3
- Describe the four components of Earth's life support system and explain how they interact. (3-2)
- Describe the three factors that sustain life on Earth and explain how they interact. (3-2)
- Explain the notion of range of tolerance and provide examples of factors that show this trend. (3-3)
- Explain limiting factors and provide multiple, specific examples. (3-3)
- Draw an original example food web including decomposers, detritivores, producers, and all levels of consumers. (3-4)
- Explain how energy is passed through an ecosystem and at what approximate rate. (3-4)
- Examine which ecosystems have the highest NPP and lowest NPP and explain why. (3-4)
- Draw a simplified versions of the following cycles: hydrologic, carbon, nitrogen, phosphorus, and sulfur. (3-5)

Chapter 4
- Explain the different types of biodiversity. (4-1)
- Explain the mechanism by which organisms change over time. (4-2)
- Explain the process of antibacterial resistance in evolutionary terms. (4-2)
- Describe how geological and climate changes that can impact evolution. (4-3)
- Describe the most common mechanisms of speciation providing specific examples. (4-4)
- Describe the two ways humans have been able to change the genetic makeup of populations. (4-4)
- Explain why species diversity is important to an ecosystem and how it is measured. (4-5)
- Describe and provide examples of the following categories of species: generalist, specialist, native, non-native, indicator, keystone and foundation. (4-6)

Chapter 5
- Provide examples of each of the five major ways species interact. (5-1)
- Explain what will put two species into competition with each other. (5-1)
- Explain the ways competition can be reduced between species. (5-2)
- Describe the advantages and disadvantages of the different dispersion patters. (5-3)
- What factors influences population change? (5-3)
- Explain the different models of population growth and the factors that cause them to be observed. (5-3)
- Explain the advantages and disadvantages the two different reproductive patterns. (5-3)
- Explain how genetic diversity can impact population size. (5-3)
- Explain why white-tailed deer populations have increased so dramatically in the United States. (5-3)

Key Terms

Chapter 3
abiotic (p. 57)
aerobic respiration (p. 59)
anaerobic respiration (p. 59)
aquatic life zones (p. 56)
atmosphere (p. 54)
autotrophs (p. 58)
biological community (p. 53)
biomass (p. 62)
biomes (p. 55)
biosphere (p. 53)
biotic (p. 57)
carbon cycle (p. 67)
carnivores (p. 59)
chemosynthesis (p. 59)
community (p. 53)
consumers (p. 59)
decomposers (p. 59)
detritivores (p. 59)
distribution (p. 53)
ecological efficiency (p. 62)
ecology (p. 52)
ecosystem (p. 53)
fermentation (p. 59)
food chain (p. 61)
food web (p. 62)
genetic diversity (p. 53)
gross primary productivity (GPP) (p. 64)
habitat (p. 53)
herbivores (p. 59)
hydrologic (water) cycles (p. 65)
hydrosphere (p. 55)
limiting factor (p. 58)
limiting factor principle (p. 58)
natural greenhouse effect (p. 56)
net primary productivity (NPP) (p. 64)
nitrogen cycle (p. 68)
nutrient (biogeochemical) cycles (p. 65)
omnivores (p. 59)
photosynthesis (p. 58)
population (p. 52)
primary consumers (p. 59)
producers (p. 58)
pyramid of energy flow (p. 62)
range of tolerance (p. 57)
secondary consumers (p. 59)
species (p. 51)
stratosphere (p. 54)
sulfur cycle (p. 70)
third and higher level consumers (p. 59)
trophic level (p. 58)
troposphere (p. 54)

Chapter 4

adaptation (p. 82)
adaptive trait (p. 82)
background extinction (p. 87)
biological evolution (p. 80)
differential reproduction (p. 82)
ecological niche (p. 91)
endemic species (p. 87)
extinction (p. 87)
fossils (p. 81)
gene splicing (p. 88)
generalist species (p. 91)
geographic isolation (p. 86)
mass extinction (p. 88)
mutations (p. 82)
niche (p. 91)
reproductive isolation (p. 86)
specialist species (p. 92)
speciation (p. 86)

Chapter 5

commensalism (p. 101)
ecological succession (p. 115)
inertia (p. 119)
interspecific competition (p. 101)
mutualism (p. 101)
nonnative species (p. 145)
parasitism (p. 101)
persistence (p. 119)
predation (p. 101)
primary succession (p. 115)
resilience (p. 119)
resource partitioning (p. 107)
secondary succession (p. 115)