**APES Study Guide**

**Unit 3: LIFE ON EARTH (PART II) – BIODIVERSITY & EVOLUTION**

*The third unit of APES will continue our study of ecology. It will focus on biodiversity, species interactions and evolution.*

**Textbook Reference:**

Chapter 4 – Biodiversity and Evolution

Chapter 5 – Biodiversity, Species Interactions, and Population Control

**Vocabulary:**

*Directions: Review key vocabulary, words may appear in quizzes and/or tests. You are not required to write the definitions but are encouraged to review them online*

Chapter 4

adaptation

adaptive trait

background extinction

biological diversity

biological evolution

differential reproduction

ecological niche

endemic species

extinction

fossils

foundation species

generalist species

geographic isolation

indicator species

keystone species

mass extinction

mutations

native species

natural selection

niche

nonnative species

reproductive isolation

specialist species

speciation

species

species diversity

theory of evolution

Chapter 5

age structure

carrying capacity

coevolution

commensalism

ecological succession

environmental resistance

inertia

interspecific competition

limiting factor

limiting factor principle

mutualism

parasitism

persistence

population

population crash

population density

predation

predator-prey relationship

primary ecological succession

range of tolerance

resilience

resource partitioning

secondary ecological succession

**Study Guide Questions (SGQ):**

*Directions:**Answer in complete sentences in your composition books. (must be handwritten)*

Chapter 4

1. What are the four major components of biodiversity (biological diversity)?
2. What is the importance of biodiversity?
3. Summarize the theory of evolution.
4. Explain how mutations, natural selection, geographic isolation, genetic drift, and migration contribute to biological evolution.
5. Distinguish between geographic isolation and reproductive isolation and explain how they can lead to the formation of a new species.
6. Distinguish between artificial selection and genetic engineering and give an example of each.
7. What is species diversity? Distinguish between species richness and species evenness and give an example of each.
8. Summarize and explain the theory of island biogeography.
9. What is an ecological niche? Distinguish between specialist species and generalist species and give an example of each.
10. Biological diversity is one of the most important indicators of the health of an ecosystem. List and describe several environmental factors that affect diversity, and state whether each factor tends to increase or decrease biological diversity.
11. Distinguish among native, nonnative and indicator species and give an example of each type.
12. Distinguish between keystone and foundation species. Describe the role of some sharks as keystone species.

Chapter 5

1. Define interspecific competition, predation, parasitism, mutalism, and commensalism and give an example of each. Explain how each of these species interactions can affect the population sizes of species in ecosystems.
2. Describe and give an example of resource partitioning and explain how it can increase species diversity.
3. Distinguish between a predator and a prey species and give an example of each. What is a predator– prey relationship?
4. Describe three ways in which prey species can avoid their predators and three ways in which predators can increase their chances of feeding on their prey.
5. Define and give an example of coevolution.
6. Describe four variables that govern changes in population size and write an equation showing how they interact.
7. What is a population’s age structure and what are three major age groups called?
8. Distinguish between the environmental resistance and the carrying capacity of an environment, and use these concepts to explain why there are always limits to population growth in nature.
9. Define and give an example of a population crash.
10. Explain why humans are not exempt from nature’s population controls. Describe the exploding white-tailed deer population problem in the United States and discuss options for dealing with it.
11. Describe two different reproductive strategies that can enhance the long-term survival of a species.
12. Define population density and explain how it can affect the size of some but not all populations.
13. Distinguish between primary ecological succession and secondary ecological succession and give an example of each.
14. Explain why succession does not follow a predictable path.

**Case Studies:**

*Directions: For each of the following reading answer the following:*

1. *What is the author's main idea? Support with two specific examples.*
2. *Summarize the case study in three sentences.*
3. *What ecological lesson can we learn from the case study?*
4. *What is your opinion? Do you agree or disagree?*

Chapter 4

1. Why Should We Protect Sharks – page 80
2. Changing the Genetic Traits of Population – page 92
3. Species Richness on Islands – page 94
4. Coackroaches: Nature’s Ultimate Survivors – page 96
5. Why Are Amphibians Vanishing – pages 97-98
6. The American Alligator – A Keystone Species That Almost Went Extinct – pages 99-100

Chapter 5

1. The Southern Sea Otter – page 104
2. Threats to Kelp Forests – page 108
3. Why Do California Sea Otters Face an Uncertain Future? – page 114
4. How Do Species Replace One Another in Ecological Succession? – page 121