Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DUE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **ES Unit 8: Biomes & Ecology**

**Essential Standards:**

1.1.4 Explain how incoming solar radiation makes life possible on Earth.

2.7.1 Explain how abiotic and biotic factors interact to create biomes.

2.7.2 Explain why biodiversity is important to the biosphere.

2.7.3 Explain how human activities impact the biosphere.

2.8.3 Explain the effects of uncontrolled population growth on Earth’s resources.

**Unit Reading Material:**

* + - * Digital Textbook: Ch. 5.6, Ch. 8.1-8.8
      * The Habitable Planet **(**<http://www.learner.org/courses/envsci/unit/index.php>)
      * Class notes and handouts

**Students Will Be Able To:**

* Explain how solar energy is transformed into chemical energy through photosynthesis.
* Explain how biotic and abiotic factors determine biome classification.
* Explain biodiversity and compare impacts of biotic and abiotic factors on biodiversity.
* Match soils to biomes & infer relationships between the environment and organisms living in the biome.
* Explain the impact of a loss of biodiversity.
* Explain the effects of human population growth on the plant and animal species of North Carolina.
* Explain the effects of invasive species on terrestrial and aquatic ecosystems.
* Summarize ways to mitigate human impact on the biosphere.
* Explain carrying capacity and infer limiting factors to human population growth (globally and NC specific).

**Vocabulary—Define, know, and be able to apply the following terms:**

1. Photosynthesis\*
2. Cellular Respiration
3. Biotic\*
4. Abiotic\*
5. Biome
6. Ecosystem\*
7. Biodiversity\*
8. Genetic Variation\*
9. Population \*
10. Habitat\*
11. Invasive Species\*
12. Overharvesting\*
13. Carrying Capacity\*
14. Limiting Factors
15. Exponential Growth

**Academic students complete vocabulary with asterisks (\*) only. Honors students complete all 15 words.**

**Study Guide—Answer, know, and understand the following concepts:**

1. Identify which biome(s) fit the following descriptions:
   1. Hottest year-round
   2. Coldest year-round
   3. Highest annual precipitation
   4. Lowest annual precipitation
   5. Distinct wet and dry seasons
   6. Poorest soil quality
   7. Best soil for quality
   8. Mid-west United States
   9. Highest biodiversity
   10. Plants with water-storage adaptations
   11. Animals with heat-retention adaptations
   12. Mainly coniferous trees
2. Differentiate between species, population, and community.
3. Give several examples of abiotic factors affecting biotic factors of an environment.
4. Differentiate between food webs and food chains.
5. Explain the processes of photosynthesis AND cellular respiration.
6. Draw a food chain with at least 4 organisms AND identify each organism’s trophic level.
7. Identify AND describe 4 different niches.
8. Explain the importance of genetic diversity within a species.
9. Explain the importance of species biodiversity within an ecosystem.
10. Identify several methods of introduction of invasive species.
11. Explain why invasive species pose a threat to their non-native ecosystem.
12. Identify 3 invasive species that are a problem in North Carolina AND describe their impacts.
13. Draw a population curve and label: *carrying capacity, exponential growth, logistic growth, biotic potential.*
14. List 4 factors that can impact the size of a population. Indicate if each is density dependent or density independent.
15. Identify several impacts of a growing population on natural resources.

**Supplemental--Do the following as you work through the unit:**

1. Create a chart that includes general climate, soil, plants, and animals for each of the following biomes: *tundra, taiga, temperate deciduous forest, tropical rain forest, hot desert, grassland, and savanna.*