Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_\_ DUE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **ES9 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
      * Class notes and handouts
      * The Habitable Planet **(**<http://www.learner.org/courses/envsci/unit/index.php>)

**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. Biome
2. Ecosystem
3. Habitat
4. Symbiotic Relationship
5. Biodiversity
6. Genetic Variation
7. Invasive Species
8. Carrying Capacity
9. Limiting Factor

**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. Poorest soil quality
   4. Best soil quality for plants
   5. Mid-west United States
   6. Highest biodiversity
   7. Mainly coniferous trees
   8. Highest annual precipitation
   9. Lowest annual precipitation
   10. Distinct wet and dry seasons
   11. Plants w/water-storage adaptations
   12. Animals w/heating adaptations
2. Give 3 examples of abiotic factors AND describe how each one can affect biotic factors in an ecosystem.
3. Differentiate between species, population, and community.
4. Explain the following processes including the roles of sugar, water, oxygen, and carbon dioxide:
   1. Photosynthesis
   2. Cellular Respiration
5. Draw a food chain of at least 4 organisms:
6. Identify each organism’s trophic level
7. Identify the amount of energy transferred between levels
8. Differentiate between food webs and food chains, including the advantage(s) of each compared to the other.
9. Differentiate between biomagnification and bioaccumulation of pollutants.
10. Habitat vs. Niche
11. Differentiate between habitat and niche.
12. Identify the habitat and niche of a tree.
13. Identify the habitat and niche of a bear.
14. Describe each of the following niches:
15. Commensalist
16. Mutualist
17. Parasite
18. Producer
19. Consumer
20. Decomposer
21. Autotroph
22. Heterotroph
23. Explain the importance of genetic diversity within a population.
24. Explain the importance of species richness within an ecosystem.
25. List 3 invasive species and . . .
26. Identify each species’ method of introduction
27. Describe the impact of each species on the environment
28. Explain why invasive species pose a threat to their non-native ecosystem.
29. Draw a logistic growth curve (s-curve) for a population and label: *carrying capacity, exponential growth, biotic potential (fastest rate of reproduction),* and *equal rate of births & deaths.*
30. Explain why a population’s size cannot stay above carrying capacity for long.
31. List 4 factors that can impact the size of a population AND list if each is density-dependent or density-independent.

**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.*

**Unit 8—Ecology—Calendar**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|  |  | 11/26 | 11/27 | 11/28 | 11/29 | 11/30 |
|  |  | Biomes  Ecosystem Structures | **No School** | **No School** | **No School** |  |
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| 12/1 | 12/2 | 12/3 | 12/4 | 12/5 | 12/6 | 12/7 |
|  | Energy Transfer within Ecosystems | Habitats & Niches | Biodiversity | Population Growth | Invasive Species  Formal Lab |  |
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| 12/8 | 12/9 | 12/10 |  |  |  |  |
|  | **Unit 8 Sheet DUE**  Review | **Unit 8 TEST**  Formal Lab |  |  |  |  |

**Unit 8 TEST Analysis**

1. My test grade was \_\_\_\_\_\_\_\_\_%.
2. I am \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with this grade because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. I studied all/most/some/a few/no days this unit (circle one).
4. I studied by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. I asked for help at \_\_\_\_ SMART lunches.
6. I missed the following questions:

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| Question # | Question Topic | Study Guide #/Notes | I missed this question because . . . |
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**Unit 8—Biomes & Ecology—Outline**

**Day 1—**Biomes; Ecosystem Structures

**Day 2—**Energy Transfer within Ecosystems

**Day 3—**Habitats & Niches

**Day 4—**Biodiversity

**Day 5—**Population Growth

**Day 6—**Population Growth; Invasive Species

**Day 7—Unit 8 Sheet Due;** Review

**Day 8—Unit 8 TEST; Work on Formal Lab Report**

**Unit 8 TEST Analysis**

1. My test grade was \_\_\_\_\_\_\_\_\_%.
2. I am \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with this grade because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
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