**Unit 1: Ecology** Chapter 13: Principles of Ecology

Study Guide Chapter 14: Interactions in Ecosystems

What Do I Need To Know? Chapter 15: The Biosphere

 Chapter 16: Human Impact on Ecosystems

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| **SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment.***a. Plan and carry out investigations and analyze data to support explanations about factors affecting biodiversity and populations in ecosystems.* *b. Develop and use models to analyze the cycling of matter and flow of energy within ecosystems through the processes of photosynthesis and respiration.* * *Arranging components on a food web according to energy flow*
* *Comparing the quantity of energy in the steps of an energy pyramid*
* *Explaining the need for cycling of major biochemical elements (C, O, N, P, and H)*

*c. Construct an argument to predict the impact of human activity on the environment**d. Design a solution to reduce the impact of a human activity on the environment.* *e. Construct explanations that predict an organism’s ability to survive within changing environmental limits (e.g., temperature, pH, drought, fire)* |
| **Vocabulary**

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| * Abiotic Factor
* Biosphere
* Biotic Factor
* Carnivore
* Carrying Capacity
* Commensalism
* Community
* Competition
* Consumer
* Decomposer
 | * Ecology
* Ecosystem
* Energy Pyramid
* Exponential Growth
* Food Chain
* Food Web
* Habitat
* Herbivore
* Host
 | * Limiting Factor
* Mutualism
* Niche
* Omnivore
* Parasite
* Parasitism
* Photosynthesis
* Pioneer Species
* Population
 | * Predation
* Predator
* Prey
* Primary Succession
* Producer
* Secondary Succession
* Species
* Symbiosis
* Transpiration
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1. What is a niche? Give an example.
2. What is a population? Give an example.
3. What is a community? Give an example.
4. What is an ecosystem? Give an example.
5. What is a biome? Give an example.
6. What is a biotic factor? Give an example.
7. What is an abiotic factor? Give an example.
8. If 1 giraffe is in individual species, what would a group of 15 giraffes be referred to as?

 1. Compare and contrast a niche and a habitat.
2. Describe the three types of symbiosis and give at least one example for each.

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| **Type** | **Description** | **Example** |
| Mutualism |  |  |
| Commensalism |  |  |
| Parasitism |  |  |

1. What is the primary source of all energy?
2. What is a producer/autotroph? Give an example.
3. What is a consumer/heterotroph? Give an example.
4. What are types of decomposers and the role they play in the environment?
5. What do the levels on the trophic pyramid represent?
6. Define biomass.
7. Explain the 10% energy rule. (how much energy is available at each succeeding level in an energy pyramid).

1. Using the picture in #17, label the trophic levels in an energy pyramid.
2. Explain why energy flow is one-directional.
3. Explain how nutrients(H2O, C, N and P) are recycled. Give examples with each explanation.
4. Carbon dioxide is a trace gas that has existed in our atmosphere for billions of years. Scientists were not around then to measure the small amounts of CO2, but past CO2 levels can be accuratelymeasured by using ice core samples from glaciers. The gas was trapped in the glaciers as the glaciers formed. The CO2 levels are measured in parts per million. Carbon dioxide is released to the atmosphere when fossil fuels and other hydrocarbons are burned. Also, carbon dioxide is released through animal cellular respiration and decomposition of living things. Recently, the highest levels of carbon dioxide on record have been observed. What effect will carbon dioxide have on temperature? See the following graphs to analyze some scientists’ findings from the 1800’s through the year 2000.

What conclusion might be drawn when analyzing the two graphs below.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_1. Explain the process of global warming, be sure to include how it is different from the Greenhouse Effect.
2. Describe the relationship between plants and nitrogen fixing bacteria.
3. What is nitrogen fixation and why is nitrogen fixation an important process?
4. How is a keystone species important different from an indicator species? Give an example of each.
5. What is the difference between biomagnification and eutrophication?
6. How do habitat fragmentation and invasive species threaten biodiversity?

 1. What is the difference between renewable and nonrenewable resources? Give 2 examples of each.
2. What is the difference between primary and secondary succession?
3. What is a pioneer species? Which succession would you find them in? Give an example.

 1. What causes competition?
2. What is spatial distribution?
3. Draw a logistic model of population growth graph. What does it represent?

 1. What is carrying capacity?
2. Draw an exponential model of population growth graph. What does it represent?

 1. What does zero population growth mean? Draw what it might look like on a graph.
2. How is an organism’s range of tolerance affected by pH or temperature?
3. What is a limiting factor? Give an example.
4. What is the difference between density-dependent & density-independent limiting factors? Give examples of each.
5. What are the differences between an r-strategist and k-strategist reproductive patterns?

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