

Chapter 57 – Dynamics of Ecosystems



1. How does the definition of ecosystems expand on the concept of the community?

2. Contrast the movement of energy and nutrients within ecosystems.

3. Why is it essential that elements move through biogeochemical cycles in the ecosystem?

4. For each of the nutrient cycles identify these key components:

| | Carbon | Nitrogen | Phosphorus | Water |
|-----------------------------------------------|---------------|-----------------|-------------------|--------------|
| What is the abiotic reservoir? | | | | |
| How nutrient enters the food chain. | | | | |
| How nutrient returns to the reservoir. | | | | |

5. What is meant by breaking the water cycle? What is the impact of this situation?

6. What are the major processes that move carbon through the ecosystem?

7. What is the impact of combustion on the carbon cycle?

8. Identify the role of each of the following in the nitrogen cycle:

a. **Nitrogen fixation** _____

b. **Ammonification** _____

c. **Nitrification** _____

d. **Denitrification** _____

9. Define the following energy budget terms:

a. **Primary productivity** _____

b. **Gross primary productivity** _____

c. **Net primary productivity** _____

10. Briefly describe each of the key **trophic levels** within a food chain:

a. _____

b. _____

c. _____

d. _____

e. _____

11. What does a food web show that isn't indicated by a food chain?

12. Which ecosystems have the highest productivity per unit area?

13. What factors do you think contribute to such high productivity?

14. Why do you think the open ocean is so low in productivity?

15. What is **secondary productivity**?
