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Chapter 5 Review Questions

1. Compare a positive feedback loop with a negative feedback loop. Provide 2 examples of each.

Positive	Negative
directional	stabilizing
Examples: 1. exponential growth 2.	Examples: 1. homeostasis 2. thermostat

2. Earth is an open system for energy and a closed system for matter.
3. Identify 5 ecosystem services and explain why each one would have a huge economic cost if we tried to put a value on it.

Ecosystem service	Economic value
Flood Control	
prevent erosion	
pest control	
pollination	
Oxygen / clean water	

4. Where is the nitrogen sink? Air

5. Draw and label the nitrogen cycle

See drawing

6. Which types of plants have nitrogen fixing bacteria in their roots? legumes
7. Why is nitrogen important to living things? What macromolecules is it found in?
DNA, protein
8. Where is the carbon sink? Sediments under ocean
9. Where is most of the carbon found? Sediments under ocean
10. What are the 2 ways carbon mainly cycles between organisms? photosynthesis & respiration
11. List and describe 3 ways humans are influencing the carbon cycle.
1. Burn Fossil Fuels
 2. Deforestation
 - 3.

12. How is the phosphorus cycle different from the nitrogen cycle? No atm. component
 13. Which soil nutrient is often a limiting factor? Phosphorus Why? found in rocks
 14. Explain how Sulfur Dioxide can contribute to Global cooling.

aerosol that can ~~also~~ cool planet

15. Which of the following are soil nutrients? (circle all that apply)

Water, nitrogen, phosphorus, nitrate, carbon dioxide, potassium, ammonia,
 carbon monoxide, Oxygen, sunlight

16. Wetlands have been described as nature's sponges, filters and nurseries. Describe the important role wetlands play in the function of ecosystems and discuss how they acquired these nicknames.

Role Flood control, ↑ Biodiversity, absorbs nutrients	Discuss Nicknames absorb excess nutrients
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An excess of which nutrients cause eutrophication? Nitrogen & Phosphorus

Describe the process that leads to cultural eutrophication, three methods for controlling cultural eutrophication, and three methods for cleaning up cultural eutrophication.

Process	Control	Clean up
N, P runoff algae bloom plants die decomposers use D.O. Dead zone	Stop N, P runoff clean water	deplete
	Drainage basins	pull weeds

17. What does hypoxia mean? Dead zone, No Oxygen

18. What is a watershed?

Watershed: Land area water falls on

19. What is an Estuary? Ocean meets freshwater

Explain runoff.

What is Net Primary Productivity?

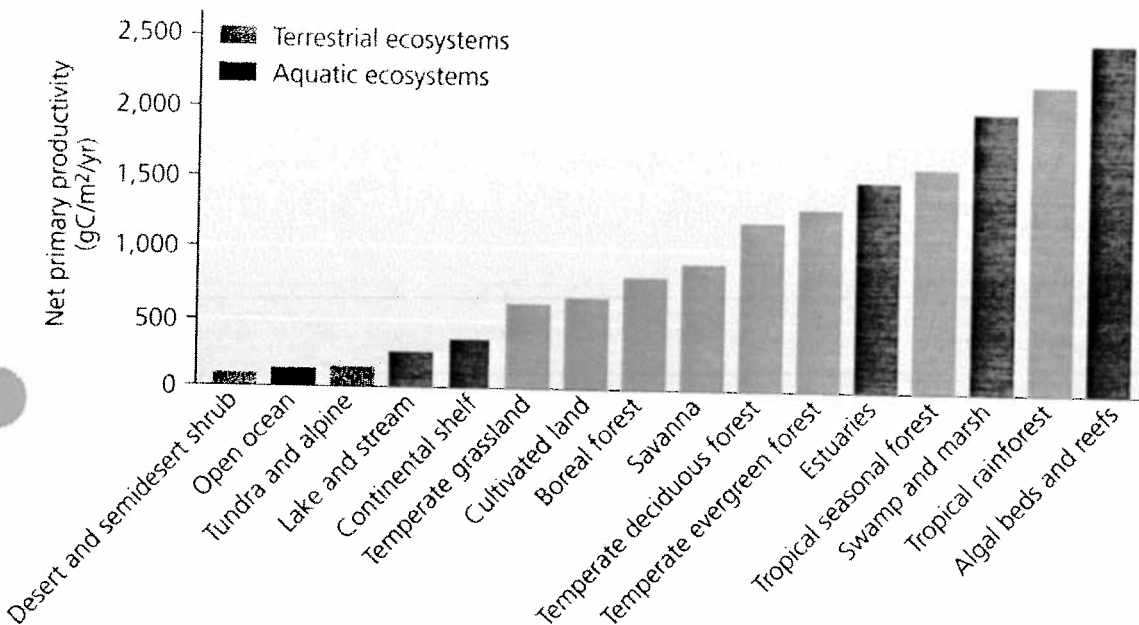
Energy for consumers from plants

20. Which is more valuable, GPP, or NPP? Why?

NPP - food webs

21. Describe a habitat corridor.

connects 2 fragments of habitats



- 3) Overall, it appears that biomes with more available fresh water C.
- A) tend to have less productivity than those without much fresh water
 - B) tend to have about the same productivity as those without much fresh water
 - C) tend to have more productivity than those without much fresh water
 - D) don't differentiate between fresh water as rainfall and fresh water as ice in glaciers
 - E) No real conclusions can be drawn.

3) In some areas, cattle on an open range may compact fragile soils while grazing. This can damage plant roots, leading to fewer, smaller plants, which may in turn cause cattle to graze more and work harder to obtain food.

This is an example of a A.

- A) positive feedback loop
- B) negative feedback loop
- C) homeostatic system
- D) dynamic equilibrium
- E) food web

4) The eutrophication that has taken place in Chesapeake Bay, the Gulf of Mexico, and other locations appears to be due to E.

- A) global warming from human use of fossil fuels
- B) pesticide use along the waterways
- C) heavy metals dumped in the sewage
- D) weather alone, because it is only obvious in the summer
- E) excess nutrients from fertilizers

6) The majority of Earth's fresh water exists A.

- A) in the form of ice
- B) in freshwater lakes, streams, and rivers
- C) in groundwater
- D) in the atmosphere
- E) in the oceans

12) Biodiversity is partially influenced by net primary productivity. Where can the highest terrestrial rates of NPP be found?

- A) tundra
- B) tropical rainforests
- C) deserts
- D) deciduous forests
- E) polar regions

17) Negative feedback processes tend to function within ecosystems to D.

- A) cause further ecological destruction
- B) cause ecological relationships to flourish
- C) cause ecological relationships to disintegrate
- D) stabilize the ecosystem
- E) reinforce harmful changes

19) Humans have dramatically altered the rate of nitrogen fixation into forms usable by autotrophs C.

- A) due to the burning of fossil fuels to meet our energy needs
- B) because of the erosion of farmlands through poor agricultural practices
- C) by producing synthetic fertilizers and applying them to crops, lawns, and parks
- D) by using antibiotics to reduce the numbers of denitrifying bacteria
- E) by selectively removing leguminous plants

15) The largest pool of carbon in the carbon cycle is C.

- A) the ocean
- B) in plants and animals
- C) sedimentary rock
- D) the atmosphere
- E) the hydrosphere