

Chapter 3 Reading Guide

Ecosystem Ecology

Reversing the Deforestation of Haiti

For each of the following questions, write out – in your own handwriting- the answers to each question. Your answers should be legible and completed with full thoughts and sentences. Turn in your answers on the day of the unit exam for bonus points.

1. Explain the positive feedback loop at play in Haiti and how human effort may reverse this cycle.

Key Ideas: (p 28)

2. List the basic components of an ecosystem.
3. Describe how energy flows through an ecosystem.
4. Describe how carbon, nitrogen and phosphorus cycle within ecosystems.
5. Explain how ecosystems respond to natural and anthropogenic disturbances.
6. Discuss the values of ecosystems and how humans depend on them.

From the reading:

7. What is the value to an environmental scientist of defining the boundaries of an ecosystem? Give examples in your response.
8. Draw a terrestrial food web with at least four different food chains within it. Include those organism that return nutrients to the beginning of the cycle. List all of the producers and consumers with their appropriate titles.
9. Why are there fewer apex predators in an ecosystem than any other trophic level? Explain clearly.
10. What is the difference between the way in which C, N & P move through an ecosystem and the way in which energy moves through that same ecosystem. Use GPP and NPP in your response.

11. **Water cycle:** look at the following web sites and answer the accompanying questions.

<http://www.teachersdomain.org/resource/ess05.sci.ess.watcyc.hydrocycle/>

- a. Define all the “-ations” of the water cycle, especially “transpiration” (& run off, even though it’s not an -ation)

<http://www.waterfootprint.org/?page=files/home>

- a. What are the major ways humanity uses water?
- b. How much of all of the world’s water are we (humans) using?
- c. What is your family’s water footprint?
- d. How are we disrupting this cycle?

12. Carbon cycle: look at the following web sites and answer the accompanying questions.

http://www.windows.ucar.edu/earth/climate/carbon_cycle.html

- a. *Play the carbon cycle game.*
- b. *Write the starred questions and your answers.*

13. Nitrogen Cycle: look at the following web sites and answer the accompanying questions.

http://bcs.whfreeman.com/WebPub/Biology/hillis1e/Animated%20Tutorials/at4602/at_4602_nitrogen_cycle.html

<http://www.pbslearningmedia.org/resource/lsp07.sci.life.eco.nitrogen/the-nitrogen-cycle/>

This is the one you'll have to work to memorize.

- a. *Know the whole cycle, including the names and formulas of all of the nitrogen compounds.*
- b. *Know the names of the steps, and where/how those steps happen (for example, nitrogen fixation happens in nodules on the roots of plants by the action of certain bacteria).*

To see how anthropogenic factors that affect the nitrogen cycle watch: look at the following web sites and answer the accompanying questions.

http://www.youtube.com/watch?v=5cj0JK_sipg

and this:

http://bcs.whfreeman.com/WebPub/Biology/hillis1e/Animated%20Tutorials/at4602/at_4602_nitrogen_cycle.html

- c. *How much nitrogen (and phosphorus) enters the Gulf of Mexico each year?*
- d. *What are dead zones, and how do they happen?*

14. Phosphorus cycle: look at the following web site and answer the accompanying questions.

<http://www.sumanasinc.com/webcontent/animations/content/phosphorouscycle.html>

- a. *How is this cycle different from the other three?*
- b. *How are humans disrupting it? (By the way, this question is **ALWAYS** on the AP Exam...)*

15. List and describe various anthropogenic disturbances to ecosystems. How do these compare to natural disturbances?

16. Outline the hypothesis, results and conclusions of the Hubbard Brook watershed experiment. This is gold for the AP exam.

17. Compare and contrast the terms resistance and resilience. Apply them both to the Eagle creek watershed we visited on our salmon field trip.

18. Are intact ecosystems more valuable for their intrinsic or instrumental value? Explain with supporting details and examples.