NAME:___KEY_____

Quiz 1 **ESR 101 Fall 2009** **October 29, 2009**

A. Vocabulary. *Give a several word definition. [1 point each]:*

1. Wicked problem
   complex information required and poor alignment of shared values, may have no real solution on better and worse options, peoples' values change with new information

2. common pool resource
   simple information requirement for the use of a resource, but poor alignment between individual and community values

3. precautionary principle
   decision standard that states that if you are uncertain you should choose the option that causes the least harm, "better safe than sorry"

4. landscape mosaic
   a pattern of diverse and intermingled patches of plants in an ecosytem

5. detritivores
   a trophic level that feeds off dead and discarded organic material and recycles it for use by the primary producers

6. Haber-Bosch process
   an industrial process for creating ammonia from N2 gas – used for making fertilizer and explosives

7. network connectance
   the degree of linkages with in network, technically the number of links divided by the total number possible

B. Concept multiple choice. *Circle the best answer. [2 points each]:*

8. Which of the following four choices **IS NOT** a basic tenet of scientific adaptive management?
   a. using only direct evidence
   b. changing approaches with time
   c. performing monitoring and research at multiple scales
   d. being sensitive to the individual place
   This question was thrown out because it seemed too tricky.

9. The amount of energy to each trophic level decreases:
   a. is called the "energy pyramid"
   b. is because there are more primary producers than other trophic level
   c. because of a loss of energy at each trophic interaction
   d. a & b
   e. a & c

10. The logistic growth model for a population:
   a. includes positive feedback at low population levels
   b. includes negative feedback at high population levels

c. leads to populations that crash at their carrying capacity
d. a & b
e. a & c

C. Viewer multiple choice. *Circle the best answer. [2 points each]:*

11. The observing of a "likely pattern" for an environmental problem means that:
    a. you have identified one possible set of interactions that could generate that pattern
    b. you have proven the cause of the problem
    c. you have an equation that you will be able to test your data against statistically
    d. you can stop looking for other possible likely patterns

12. The distinguishing characteristic of a positive feedback system is that:
    a. an increase in the input flow leads to an increase in the stock
    b. an increase in the stock promotes an increase in the input flow
    c. an increase in the flow provides a beneficial increase in the stock
    d. an increase in the stock leads to a decrease in the input flow

13. Keystone species are important to ecosystems because:
    a. they always dominate the carbon budget
    b. they form a critical position to connect the arch between energy and material processes
    c. they provide critical base level of energy through primary production
    d. they help structure the entire ecosystem through both of weak and strong interactions

D. Short answer essays *that tie everything together. Use appropriate vocabulary, concepts and insight from one or more perspectives. [3 points each]:*

14. Given that major inputs and outputs for atmospheric CO_2 are uptake and release by terrestrial and marine ecosystems and combustion of fossil fuels; describe how more fossil fuel consumption leads to higher atmospheric CO_2.

    elements that I was looking for were:
    flows of carbon from fossil fuel reservoir or stock
    exceed the current steady state levels in the atmosphere stock
    concentration in the atmosphere increases
    a new balance may form with higher flows in and out

15. Sketch a simple community food web and describe what you'd predict to happen if one of the primary producers was suddenly decreased.

    elements that I was looking for were:
    food web – multiple organisms at each trophic level
    removal of one of the primary producers (plants) leads to a stress on the network
    using the terms predator/prey or competition to describe these relationships
    the overall network compensates by shifting consumption

    When I asked what happened in this "web" if "one of the primary producers" was decreased, it seemed to be a good hint that there were more than one of these.