Study Guide for Lecture Exam 2

In preparation for the next exam – read through the textbook, your notes and be able to complete the following. You may bring a page of notes, front and back.

Chapter 4

1. What is the Golden Toad story?
2. Define species.
3. Distinguish among the following roles played by species and give one example of each:
   a. foundation species
   b. nonnative species
   c. indicator species
   d. keystone species
4. Compare Genetic, Ecosystem and function diversity.
5. Why should you thank insects?
7. Be able to explain evidence that supports evolution.
8. What is the Peppered Moth story?
9. Describe tectonic plates and global drift.
10. Explain how speciation may occur, note geographic and reproductive isolation.
11. Explain what artificial selection is.
12. Explain what extinction is, and give 2 examples of recently extinct organisms from human activity (within recorded history).
13. Define niche and habitat, compare them as well.
14. Explain the competitive exclusion principle.
15. Compare niche types; generalist, specialist native and nonnative.
16. Give an example of niche partitioning.

Chapter 5

1. Why should we care about Sea Otters, give a few reasons.
2. Define the following terms in regard to population interactions:
   a. Predation - prey
   b. interspecific competition
   c. intraspecific competition
3. Give examples of how prey organism may attempt to avoid predation.
4. Give examples of how organisms can avoid competition while living in the same location.
5. Compare the different types of symbiosis: commensalism, parasitism, and mutualism and give examples of each.
12. Give strategies on “how to be a successful predator”.
13. Explain why we need sharks and wolves.
14. Compare Batesian vs Müllerian mimicry, give examples.
15. Define **coevolution** and give an example.
16. Describe limiting factors that affect carrying capacity:
   a. density-dependent
   b. density-independent
17. Compare J and S growth curves, not the phases of each.
18. Define overshoot, carrying capacity and dieback.
19. Distinguish between r and K selected reproductive patterns. Give an example of each.
20. Give example of human population diebacks in history.

Chapter 6
1. About how many people are on earth now (within half a billion).
2. Define Total fertility rate, give replacement rate.
3. Explain what is involved in population size changes (BR + I) – (DR + E).
4. What is the “baby boom”? When about was it in the US?
5. Give a few factors that affect birth rates.
6. From a graph on population demographics you could identify an expanding, stable or declining population growth.
7. Give a couple ways to slow population growth.
8. Be able to list a couple ways urbanization is good and also how bad.

Chapter 7
1. Distinguish between weather and climate.
2. Define **greenhouse effect**. Name greenhouse gases. State the significance of the greenhouse effect.
3. Compare the biodiversity and stratification in the three major kinds of forests.
4. Evaluate the significance of the ecological contributions of the oceans currents and climate.
5. Briefly describe the characteristics and ecological significance of coral reefs.
6. Describe environmental and economic problems of coral reefs.
7. Recognize the following biomes from a description:
   a. arctic tundra
   b. coniferous forest
   c. deciduous forest
   d. grassland
   e. chaparral
   f. desert
   g. tropical rain forest
   h. alpine tundra
   i. marine
   j. fresh water
8. Describe how temperature and rainfall effect biome types.
9. Explain how altitude and latitude relate to biomes.
10. Explain the importance of estuaries.
11. Identify the CA and Gulf streams from a ocean current map.
12. Explain how global air circulation works, note where forests and deserts generally occur. Also note where air tends to rise and where
13. Define the following terms:
   - phytoplankton
   - zooplankton
   - nekton
   - bentos

14. Define **eutrophication**.

15. Be able to list 3 ways humans have impacted biomes on earth

Chapter 10
1. Give how much of agriculture is certified organic.
2. Define organophosphate and give an example.
3. Compare industrialized and organic agriculture.
4. What are the two main food issues on earth, and where do they occur?
   - Note issues with Vitamin A; iron; iodine and protein deficiencies
4. Define monoculture vs polyculture
5. Compare subsistence, intensive subsistence and industrial agriculture.
5. Define the Green Revolution.
6. List advantages to “buying local” for your food.
7. What is a “Franken Food”? What is a GMF?
8. Be able to list a few projected advantages and disadvantages of GMFs; note about Golden Rice and BT corn.
9. How can we protect crops from pests more sustainably?
10. Describe IPM.
11. Explain the Pesticide Treadmill.
12. What is persistence and biomagnification regarding pesticides.
13. What can you do to reduce exposure to pesticides.
14. What did Rachel Carson publish about pesticides?
15. What are alternatives to pesticides.
16. How can we reduce soil erosion and restore soil fertility?
17. Be able to list concerns with antibiotics and hormones in food.

Conquest of the Parasites film
1. Guinea worm
2. Define vector and host.
3. Give the vector for: Malaria and sleeping sickness.
4. Describe the life cycle of Bilharzia.
5. Describe how common and where Ascaris and Tapeworms live.
6. Give two diseases from filarial worms.
7. Explain why parasites may still be an issue for years to come.

Insect Film:
1. How many different species of insects have been named to date?
2. How important is the “Cotton boll weevil” relative to pesticide use?
3. What pesticide was developed during World War II that became a very important agricultural insecticide.
4. Who was Rachel Carson and what did she do?
5. The use of pesticides for insect control often causes greater pest problems. Discuss two different ways that greater pest problems can come about.
6. What is meant by the phrase “the pesticide treadmill”?
7. How did the Tobacco bud worm problem force cotton farmers to get off the pesticide treadmill?
8. How did the cotton growers like Ray Sawyer get off the pesticide treadmill? How did they avoid pesticide use?
9. Describe how the Pear psylla (related to aphids) can be controlled without the use of a pesticide?
10. How are Red scale insects in the Fillmore Citrus groves controlled without the use of a pesticide?
11. How can juvenile molting hormone be used to control some insects?
12. Why are hormone control methods not widely used at this time?