

### **MIDTERM 2 Review Sheet**

This review sheet is a guide to the type of questions I will ask on the exam. The purpose of this review sheet is to point out the most important topics so that you may focus your studying. Be sure to use specific data, accurate information, correct terminology, and concrete examples.

#### **Topics and Information Covered by this Midterm**

- Lectures 13-22
- Biomes and Forest Resources: Ch. 5 and 10
- Environmental Economics: Ch. 24
- Biodiversity Crisis: Ch. 4 and 11
- Aquatic Diversity and Wetland Restoration: Ch. 6 and 12
- Videos: *Kilowatt Ours* and *Natural Connections*

#### **Typical Questions on Forest Resources**

- What are biomes and what two factors result in the location of biomes at particular latitudes around the earth?
- Name a biome that has been significantly altered by human activity and describe how it has been changed.
- How much of the earth's terrestrial surface supports rainforest and what percent of the earth's biodiversity is estimated to be there?
- What are three ecosystem services provided by forests? How does forest loss negatively affect humans?
- What amount of the world's forests are in old growth, secondary growth, and plantations? What are the 5 countries with the greatest amount of the world's forests?
- How much rainforest has been cut worldwide and why is this occurring?
- Some say that the history of the world is a history of forest destruction. Explain what they mean.
- What percent of U.S. forests were logged by the 1890s? What measures did we take to protect forests and how has that changed the situation since 1890?
- What methods are being used to make naturally-functioning, uncut rainforests valuable to people?
- What are old growth forests and how much currently remains worldwide and in the US? Why are old growth forests so important to people and species?
- How do subsidies for the forest industry affect forest preservation in the U.S.?
- What measures do we need to take to ensure sustainable forest use?

#### **Typical Questions on Environmental Economics**

- The U.S. capitalist economic system is based on a free market approach to goods and services. Often though, the free market system has "failures". What is a free market "failure" and what is the government's role in correcting these problems?
- Define subsidy and give three examples of US government subsidies. On average, how much does each citizen pay in subsidies each year?
- Define externality and give an example.
- What is full cost pricing?
- From an economic standpoint, what must we do as a society to move our economy toward sustainability?

### Typical Questions on Biodiversity and Species Extinction

- Most ecologists believe we are experiencing a mass extinction event. When was the last such event and what caused that event?
- How does the current extinction crisis differ from the last major mass extinction event?
- There is no doubt that extinction is a natural process. Define “background rate of extinction”. What is the estimate of this rate? How much greater is the current rate of species loss?
- Define “extirpation” and give an example.
- If extinction is natural, why are we worried about the current extinction crisis?
- Why should we care about protecting species? What do they do for us?
- Define “biodiversity” and discuss why protecting biodiversity is important. What are the estimates for the number of species on earth? What ecosystems contain most of the world’s biodiversity?
- What are the specific causes of species extinction?
- What is DDT? Describe the effects it had on the bald eagle, which resulted in our national symbol being an endangered species (include bioaccumulation). What is the status of the bald eagle today?
- What is the Theory of Island Biogeography and what are its two primary findings? What is its relevance to endemic species?
- Why are non-native invasive species a threat to terrestrial and aquatic biodiversity? Give an example of the impact of one non-native species on native biodiversity.
- What is the primary law protecting species in the U.S.? What agency has jurisdiction over “listed” species? List two species that have been helped by this law and describe how.
- What are biodiversity hotspots and why is it so important to protect them?
- It is said that California is an “island”. How can that be and why is this important to California’s status as a biodiversity hotspot?
- Ecologists say that, “Extinction is forever”. From an evolutionary standpoint, why is this the case?
- Why are there so many endemic species on islands?
- Give an example of evolution in action.
- If new species are evolving naturally, why should we worry that human activities are causing some species to become extinct?
- What is so unique about the western burrowing owl?
- What species does the burrowing owl depend upon for its survival?
- What has been happening to the California populations of this species and especially in the Bay Area? What can be done to protect the burrowing owl in California?

### Typical Questions on Aquatic Diversity and Wetlands Restoration

- What are the major centers of aquatic biodiversity?
- Define “ecosystem services” and describe 3 provided by aquatic habitats.
- How many known fish species are there and how many species live in coastal waters?
- Give four reasons aquatic biodiversity is threatened.
- What is overfishing and why is it occurring? What percent of commercially valuable species are affected and what can be done to protect commercially valuable species?

- What is eutrophication and how does it affect fish and other aquatic life?
- What is “by-catch”, what species are affected, and how much of commercial catches is wasted in this way?
- Describe commercial bottom trawling and its effect on the world’s oceans.
- How did the plastic “island” the size of Texas in the Pacific gyre get there?
- What is the Tragedy of the Commons and how does it relate to fisheries?
- Why are protected marine reserves so important?
- Describe what you know about the Monterey Bay Aquarium’s Seafood Watch card and its importance.
- What percent of U.S. wetlands have been destroyed? What percent of California’s original wetlands are gone?
- What are the causes of wetland loss in the San Francisco Bay Area?
- Name three ecosystem services of wetlands.
- What is ecological restoration and what is the role of this activity in the protection of biodiversity?
- What is the role of restoration in the San Francisco Bay and how much restoration is expected to occur in the future?
- Describe the ecological succession of a tidal salt marsh.

### Typical Questions on from the Videos

- According to *Kilowatt Ours*:
  - What is mountain top mining and what are the environmental effects?
  - How are pollutants from coal burning and other sources affecting children?
  - Is nuclear power the answer to our fossil fuel burning problems?
  - What are 4 easy things we can do to become more energy efficient?
- *Natural Connections* provides lots of good information on the current extinction crisis from some of the world’s most famous and well-respected ecologists. The video also presents these ecologists’ ethical views on nature. What are some of those views?  
Specifically:
  - What is Bob Paine’s view on whether putting a dollar sign on nature can save it?
  - What is Jerry Franklin’s mission in life and why?
  - What does E.O. Wilson say about our responsibility toward creation?