

16 April, 2004 206 Exam 3 Study Guide 2004.DOC

EXAM THREE WILL BE IN LECTURE ON FRIDAY 23 APRIL, 2004.

This list of topics should give you an idea as to the range of material and types of questions we are likely to present on the exam. Please refer to your syllabus, text, readings, and lecture and lab notes for information relevant to the third portion of the course. The exam will cover Chapters 9-14 in your text, several guest speakers (see your syllabus for names and dates), and the extra assigned readings listed in your syllabus. Also fair game are readings and activities assigned for the labs you will have attended through 16 April, 2004.

Likely Exam Format (total of 100 points):

True or false and matching (~30 points)

Really Short Answer or Definitions (one word or sentence) (~40 pts)

Short Answer (a couple of sentences) (~30 pts)

Think about links among the material presented in different parts of the course as you study:

1. What are some of the causes of erosion?
2. What are some pros and cons of pesticide use?
3. Why are some folks wary of GMO's?
4. Give an example of water as a political issue between different countries.
5. Is the perception of the risk of a given activity or environmental issue different between scientists and the general populace?
6. How are weather and climate different? What are the two main determinants of climate?
7. How is ozone both good and bad depending on where it is in the atmosphere?
8. How are global warming and ozone thinning different?
9. Define Hadley cell.
10. What are the four main greenhouse gases?
11. How does increased CO₂ concentration in the atmosphere increase average global temperatures?
12. Discuss the rate of temperature change occurring now on earth, as well as the magnitude. Are either of these unusual in a long-term context?
13. Discuss the relative merits of the prepare vs. prevent approaches to the global warming crisis.
14. What is the Kyoto protocol? How does the box on p.248 of your text inform our discussion of global warming prevention?
15. What country contributes the most to greenhouse gas emissions? What country has the highest per capita production of greenhouse gases?
16. Define rain shadow.
17. How is ozone depleted by CFC's? What are the effects of ozone thinning in the stratosphere?
18. Define photochemical smog, primary air pollution, secondary air pollution.
19. Why are health professionals concerned about particulate matter in the environment?
20. What are some of the sources of indoor air pollution?
21. What proportion of the water on earth is accessible freshwater?
22. Describe two areas of the US where subsidence is a major problem?
23. Define aquifer.
24. What country do you think has the highest per capita water consumption?
25. What proportion of the water used in the US is used for agricultural production?
26. Why does it take so much water to make a car?
27. Define saltwater intrusion.
28. What contributes to groundwater pollution?
29. List three ways that human activities in Sri Lanka are having detrimental effects on their coral reefs. Where is Sri Lanka?
30. What is the potential effect of global warming on the distribution of temperate-adapted species?
31. What does the Levidow 1999 article say about Bt maize and its role in long-term agricultural production?
32. Where do monarch butterflies overwinter and how is their lifecycle possibly affected by Bt Maize.
33. Atrazine has been shown to lead to hermaphroditism in frogs. Should we care?
34. How does the cattle industry practice a form of ecological colonialism according to Rifkin 1992?
35. What are the pros and cons of grazing animals on public lands in the southwest US, or in the tropics?
36. What is the main mission of the local organization Native Seeds/SEARCH?
37. How can cultural and biological diversity be complementary?
38. How could you argue that the green revolution and environmental contamination are related?
39. What is an endocrine disrupter? What effects can they have? Are these effects the same for all life stages of an organism?
40. What is the leading cause of death in the US? In the world?
41. Define bioaccumulation and biomagnification.

42. Who is Rachel Carson and why should you know her name?
43. What is thalidomide and what are some of its negative effects?
44. In the US, what is the major human use of freshwater on the East coast? The West coast?
45. According to Dr. Mangin, what are some of the causes and effects of overfishing? Are there other threats to marine environments? In the Gulf of California, would ecotourism or fish harvesting bring in more money in the long run to local Mexican economies? What has happened to the global cod fishery?
46. Define graywater.
47. How does channelization affect riparian and aquatic ecosystems?
48. Where and why is water moved in California?
49. Define 'Flying Blind' in the context that Theo Colburn uses it.

Mostly from Lab:

50. Why do some Tucsonans want to see the Sweetwater Wetland removed? What is the function of this wetland?
51. Refer to the questions from the modeling lab (population growth rates, island biogeography).
52. What lessons were learned while visiting the Tucson Mountain park and comparing species richness, abundance, and diversity across different transects.
53. Draw a species-area curve.
54. How could you argue that a tree-fall in a forest and a beaver dam in a stream contribute to similar ecological phenomenon?
55. Why is Cienega Creek important enough for Pima County to purchase and protect?
56. What are some of the threats to the San Pedro river. What will be lost if the San Pedro river ceases to be perennial?
57. What is the goal of a landfill over the time span of 50 years? 200 years? Is this goal realistic?
58. On what does Tucson spend most of its waste management budget?
59. Refer to the questions provided in the lab handout from Alana Levine. What is a common item that is thrown away that actually has a healthy recycling market value? Where is the largest post-consumer paper processing plant in the world?
60. Define Greenwashing.
61. What gas does the landfill collect, why do they collect it and what do they do with it?
62. What is the difference between a dump and a landfill?
63. T or F: the landfill makes a profit off recyclables.
64. Consumer choices influence the landfill's ability to sell certain recyclables; how?
65. Average plant mass decreases as one gets farther away from the rivers edge. Why is this so?
66. Why does the logistic curve for population growth reach an asymptote (level off)?
67. T or F: Populations under natural conditions don't grow exponentially.
68. Under the model of Island Biogeography, two islands of equal size but different distances from the mainland will have different equilibrium numbers of species. Why?
69. Mammal diversity is very high in the desert southwest. Give two reasons why scientists think this might be so.
70. Global warming is a potential threat to the Sky Island ecosystems in this area. What is a Sky Island and why are they threatened by global warming?
71. How many bird species have been observed in the San Pedro national wildlife refuge?
 - a) 200
 - b) 40-50
 - c) 350
 - d) 1200
72. In a riparian corridor, diversity is usually highest
 - a) At an intermediate distance from the rivers edge.
 - b) Right next to the river.
 - c) Far from the river where flooding is not a problem.

~Jessie Cable, 22 March 2004:

73. How are breast cancer in human females, decreased genitalia in male alligators, and reduced sperm count in human males linked?
74. What are endocrine disruptors and give an example of one.
75. Where might endocrine disruptors be found?
76. What are clues found in the animal kingdom throughout the past 50 years that hint at endocrine disruptors in the environment?
77. Where has human male fertility declined the greatest in the world?
78. What is a pesticide?

79. Describe alternatives to pesticide use.
80. Define Integrated Pest Management (IPM).

~Allyson Wheelock, 24 March 2004:

81. See your notes!

~Chuck Price, 26 March 2004:

82. What is anthropocentrism and why does it perhaps hinder conservation efforts? How could you argue to an anthropocentrist that conservation is extremely important? How do the ideas of instrumental vs. intrinsic value enter into this debate?
83. How are shallow and deep ecology different?
84. What can you do? What have you changed this semester already? What do you plan to do later?

~Tom Swetnam, 29 March 2004:

85. What is dendrochronology? How does it inform our knowledge of past climate (including drought, fire, etc.)?
86. Were large-scale fires common in the 1700s? How were these fires different than the fires we have had in the past few years?
87. Why did Andrew Douglass originally begin looking at tree rings in the late 1800s?
88. Why are there fewer records of fire over the last 100 years in the trees in the southwest?
89. Are we in a drought now? When was the previous drought?
90. How does the movement of people into forested areas complicate attempts to restore more natural fire regimes?
91. The human population in Arizona has grown by 120% since 1970. What implications does this have for forest health and biodiversity?

~Katrin Mangin, 09 April 2004:

92. What is meant by the concept in marine conservation of "shifting baselines"? Define the concept and provide an example.
93. List two environmental problems associated with salmon farming.
94. What is shrimp trawling and what two environmental problems associated with shrimp trawling in the Gulf of California?
95. Cans of tuna are sometimes labelled as "dolphin safe". What does this mean?
96. Are the ways that tuna is caught using "dolphin safe" methods more or less damaging to the marine environment. Explain your answer.
97. How are "eagle pie" and "lion steak" analogous to what is served every day on seafood menus in the United States?

~Bill Matter, 12 April 2004:

98. Define limnology?
99. How is "flowtic" a useful memory tool?
100. Is a shallow lake more productive than a deep lake? Why?
101. What are edaphic factors?
102. Distinguish between eutrophication and cultural eutrophication.
103. Why do we have reservoirs? What are some of the negative environmental effects of reservoirs?
104. What are "instream flow requirements"?
105. If you were to write a scratch and sniff exam for this third of the course, what would you be sure to include?
106. What is a watershed?
107. How are lakes formed?
108. What factors determine the richness and productivity of a given lake?
109. Can eutrophication be a natural process?
110. What are some of the biggest threats to lotic systems?

~Alana Levine, 14 April 2004:

111. What was the Mobro Barge Incident?
112. What percentage of the solid waste produced in the US is considered Municipal Solid Waste (MSW)?
113. How has the per capita production of solid waste changed in the last 40 years?
114. What is solid waste?
115. Reduce, Reuse, Recycle - what do these terms mean and are there implications for focusing on one as opposed to thinking about the others? Why should we do any of them?
116. Distinguish between primary and secondary recycling?
117. How should we deal with hazardous wastes?
118. What is the US recycling rate?

Rob Robichaux, 16 April 2004:

119. Define adaptive radiation?

120. How did this lecture relate to the lab you did on island biogeography?

121. What does monophyletic mean?

122. Why do you think the silverswords that Dr. Robichaux described are so diverse in form and microhabitat?

123. Which genes are evolving more quickly in the Hawaiian silverswords as compared to their mainland Tarweed relatives?

124. Is it useful/important to include children in conservation biology projects? Why or why not?

125. What are the threats to silverswords in Hawaii?

126. Why so much effort to increase the number of founders used for reintroduction breeding programs?

127. If Loihi seamount erupts at rates comparable to Kilauea and Mauna Loa (active volcanoes on Hawaiian islands), it will reach sea level in a few tens of thousands of years. Why did Dr. Robichaux use the phrase "preparing for Loihi?"

128. Don't forget to study material from the lectures coming up on 19 and 21 April.

Have a Good Weekend!