

Sustaining Terrestrial Biodiversity: The Ecosystem Approach Chapter 23

1. Be familiar with the gray wolf case study: historical territory in North America, efforts to eradicate, influence on gene pools of prey species and on vegetation, reintroduction efforts.
2. Land covers about what percent of the earth's surface?
3. Approximately what percent of this (#2 above) is used by humans for livestock, crops, and urban areas?
4. Approximately what percent of U.S. land is used for livestock, crops, and urban areas?
5. Approximately what percent of U.S. land is public land?
6. Identify six types or categories of public lands in the United States and briefly provide the management approach for each; that is, the types of activities permitted on each.
7. Know the number of the following public land areas in the U.S.
 - *National Forests:
 - *National Grasslands:
 - *National Parks: *The "Other" areas managed by the NPS: memorials, battlefields, historic sites, riversseashores, parkways, and trails.
 - *National Wilderness (national recreation areas, monuments, Preservation System Areas:)
 - *National Wildlife Refuges:
8. In short, what is the goal of the sagebrush rebellion?
9. Be familiar with the major goals and suggestions made by the Wise-Use* Movement (the more recent-circa 1988 version of this paradigm.)
10. Describe the takings and property rights movement; the county movement.
11. What is regulatory taking?
12. Who has eminent domain? What does this refer to?
13. Be familiar with the "Livestock and U.S. Public Rangeland" case study.
14. Identify five ways in which forests are economically significant and identify five ways in which forests are ecologically significant.
15. Distinguish between the following: old growth forests, second growth forests, and tree farms.
16. Contrast even-and uneven-aged forest management: be familiar with the advantages and disadvantages of each.
17. Briefly describe each of the following tree harvesting methods: Selective cutting, Shelterwood cutting, Seed-tree cutting, Clear cutting, Strip cutting.
18. Describe four benefits of periodic surface fires.
19. Be familiar with the following regarding U.S. National Forests:
 - o The percentage of the nation that is forested (area):
 - o Number of livestock grazed annually:
 - o Economic value of mineral resources, oil, and natural gas mined annually:
 - o Percentage of the nation's protected wilderness areas contained in national forests.
20. National forests are supposed to be managed based on these two principles:

21. Describe the trend in overall timber harvesting from national forests between 1930 and 1988 and identify three factors which contributed to this trend.
22. If a reduction in the number of trees harvested in the United States is a goal, propose three ways that would likely meet this goal.
23. Some folks/groups mentioned in chapter 23 would like to "improve" (not viewed as an improvement by all) or modify management of U.S. national forests: identify three of these suggestions, such as those on page 603.
24. Describe what a " conservation easement" is?
25. Tropical forests cover approximately what percent of earth's land area?
26. Which type of tropical forest has been most severely altered/affected by human activities?
27. Be familiar with the Madagascar case study.
28. Provide two examples of potential cultural extinction: (two which may very well be closer to this "dead-end point" than many others.)
29. Describe three significant and underlying causes of most tropical deforestation.
30. It is said that the process of altering a forest often begins with this:
31. The neem tree (the "dream neem", as some call it!) has numerous potential applications. Identify four of these potential uses of the neem:
32. Describe four mechanisms or approaches to reducing tropical forest deforestation:
33. Describe the "fuelwood" crisis:
34. Many ecologists question whether some of the U.S. National Parks can actually be managed/should be managed under the principle of *natural regulation*. Explain:
35. Describe four major challenges faced by most of the world's national parks.
36. Provide four suggestions for improving national park management in the U.S.
37. What ecological principle and goals should be utilized in establishing, designing, and managing nature reserves?
38. Be familiar with the Costa Rica case study:
39. Be familiar with figure 23-25 on page 617: 25 Global Biodiversity Hot-Spots.
40. What is gap analysis?
41. What is "wilderness", as it is defined in the Wilderness Act of 1964? The Wilderness Society estimates that a wilderness area should consist of an area at least this size:
42. What does the word "untrammelled" mean? Why did Howard Zahniser choose this word?
43. Why preserve wilderness? -Present three arguments in support of preserving wilderness.
44. Identify the basic steps in ecological restoration:
45. Present an argument in support of ecological restoration:
46. Present an argument opposed to ecological restoration efforts:
47. Describe the commonly used methods in ecological restoration.
48. Forestry: Summary of important forestry information to be familiar with:
 - a. Describe three ways in which forests are ecologically important:
 - b. Describe three ways in which forests are economically important:
 - c. What are the major types of forests?
 - d. In what regions of the world is deforestation occurring at the greatest rate?

- e. In what specific tropical regions of the world is tropical deforestation occurring at the greatest rate?
- f. What are the major types of forest management? Describe the major characteristics of each of the following:
1. Short- versus Long-Rotation Cycles
 2. Even-Aged Management and Uneven-Aged Management (Industrial Forestry)
- g. What are the major tree harvesting methods? Describe the major characteristics of each of the following:
1. Selective Cutting
 2. Shelterwood Cutting
 3. Seed-Tree Cutting
 4. Clear-Cutting
 5. Strip-Cutting
 6. Whole-Tree Harvesting
- h. Discuss the effects of pathogens, insects, and other introduced species on forests:
- i. Describe an approach for protecting forests from over-harvesting and other damage, while maintaining the manufacturing/consumer need/demand for forest products.
- j. Propose two methods of meeting economic needs (jobs & goods) and preserving the integrity of forest areas (Biodiversity & Ecological Dynamics).
- k. Describe three Specific ways to reduce the need to harvest trees:
1. Fire Ecology :
 1. Describe the significant effects of fire on Forested areas.
 2. Discuss the ecological significance of fires in forested areas.
 3. Describe each: Surface fires, Ground Fires, and Crown Fires:
 4. Fire Management Policies: Pros and Cons of each:
 1. "Let-it-Burn"* Policy (*unless fire threatens human life, Park facilities, private property, or endangered wildlife.)
 2. Fire suppression: all fires are put out as quickly as possible
 5. Air Pollution and Climate Change: Potential Threats to Forest Health
 1. acid deposition: Coal Combustion \rightarrow $SO_2 + O_2 \rightarrow SO_3 + H_2O \rightarrow H_2SO_4$
 2. Increasing Tropospheric O_3 Levels
 3. Synergistic effects of Multiple Air, Water, and Soil Pollutants
 4. Potentially Shifting Climate Belts; particularly in mid-latitude regions
Climate Belts would likely shift toward earth's poles; (100-150 kilometers = 60-90 miles for every one $^{\circ}C$ or 1.8 F° ; this would equate to approximately 150 meters = 500 feet)
- m. What are the two principles on which U.S. Forests are managed?
- n. Describe the "fuelwood crisis"; Where is it occurring; Propose a remedy for this environmental challenge/problem:
- o. Discuss the major causes of tropical deforestation:

p. Describe four approaches which could potentially reduce tropical deforestation: (pages 609-610)

q. Describe the major ecological principles and goals that stand out in establishing and managing sustainable nature reserves (both forested reserves and others): (Pages 615-616)

Significant terminology and other items:

1. Multiple-Use lands
2. National Forest System
3. National Resource Lands
4. Bureau of Land Management
5. Moderately-Restricted use lands
6. National Wildlife Refuges
7. Restricted-Use Lands
8. National Park System
9. National Wilderness Preservation System
10. Sagebrush Rebellion
11. Wise-Use Movement
12. Takings and Property Rights Movement
13. Regulatory and Physical Taking
14. Eminent Domain
15. Even- and Uneven-aged Management
16. Rotation Cycles
17. Industrial Forestry
18. Selective Cutting
19. Shelterwood Cutting
20. Seed-Tree Cutting
21. Clear-Cutting and Strip-Cutting
22. Bark Beetles, Spruce Budworm, Gypsy Moth, Hemlock, Woolly Adelgid
23. Surface Fires, Crown Fires, Ground Fires
24. Sustainable Yield and Multiple-Use
25. Kenaf
26. Neem Tree
27. Conservation Easements
28. Debt-for-Nature Swaps
29. Natural Regulation
30. Species-Area Curve
31. Intermediate Disturbance Hypothesis
32. Theory of Island Biogeography
33. Buffer Zones
34. Gap Analysis
35. Wilderness Recovery Areas

36. Ecological restoration
37. Artificial Ecosystems
38. Wangari Maathai
39. Chico Mendes
40. Wendell Berry