

June 10, 2008

Americans and Their Forests

Exam 3

Credit:

Definitions	10 @ 2 points =	20 points
Short answer questions	20 @ 3 points	60
Essay	20 points	20
Total		100
Extra credit		5

Please be sure to answer all parts of a question!

I. Definitions (2 points apiece)

Please define the following terms **with reference to forest history**.

1. Slash _____
2. Smokey _____
3. Perishable food _____
4. Beaver _____
5. Chestnut _____
6. Forest mosaic _____
7. Lawn _____
8. Even aged _____
9. Plow line _____
10. Ground fire _____
11. Adirondack Preserve _____

II. Short answer (3 points apiece)

1. Suggest two reasons why Eastern agriculture collapsed in the early 20th century. Please be specific.

a. _____

b. _____

2. Draw a cross section of a modern oak tree that barely survived a severe fire in 1836.

3. We now have more white-tailed deer in the Eastern United States than ever. Suggest three reasons for their unprecedented recent success.

a. _____

b. _____

c. _____

4. Suggest 2 ways forest fragmentation affects plants and animals living in the surviving forest.

a. _____

b. _____

5. Three things essential to fire are carbon compounds, oxygen, and pre-heating. How can this knowledge be used to fight a forest fire?

6. Suggest two important lessons taken from the 1910 Idaho fire.

a. _____

b. _____

7. Is regrowth forest similar to old growth in the eastern United States? Give four important differences.

a. _____

b. _____

c. _____

d. _____

8. If the US Forest Service is the most efficient fire fighting force in the world, why have we been overwhelmed by a series of severe fires in the last 15 years?

9. Through the 19th Century, the timber industry ignored fire. In the 20th Century, they became acutely conscious of it. Given that the frequency of fire was the same in both periods, what caused them to change their views?

10. What type of plants would you find in an agricultural field this many years after abandonment?

1-3 years _____

2 – 8 years _____

10 -100 years _____

40 - ? years _____

11. Where is forest likely to appear first in a post-agricultural landscape? Why?

12. Match each of these eastern animal species with their modern status:

R Increasing rapidly
I Increasing slowly
D Declining

E Extinct
S Stable populations
NA Not applicable

_____ Ruffed grouse

_____ Grey wolf

_____ Coho salmon

_____ White tailed deer

_____ Black bear

_____ Beaver

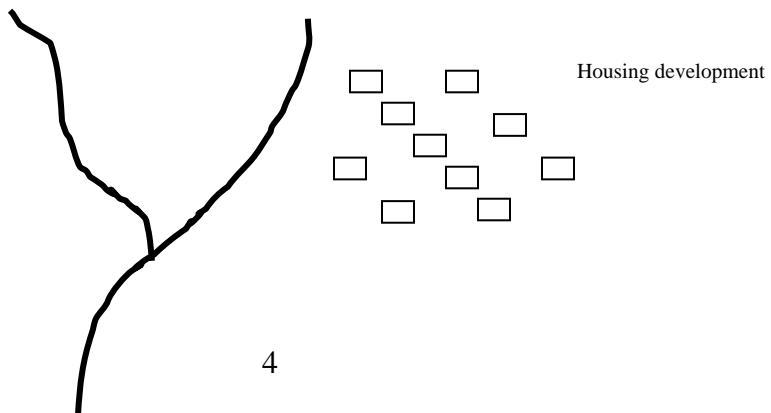
13. The American chestnut disappeared very rapidly from eastern forests because

a. _____

b. _____

c. _____

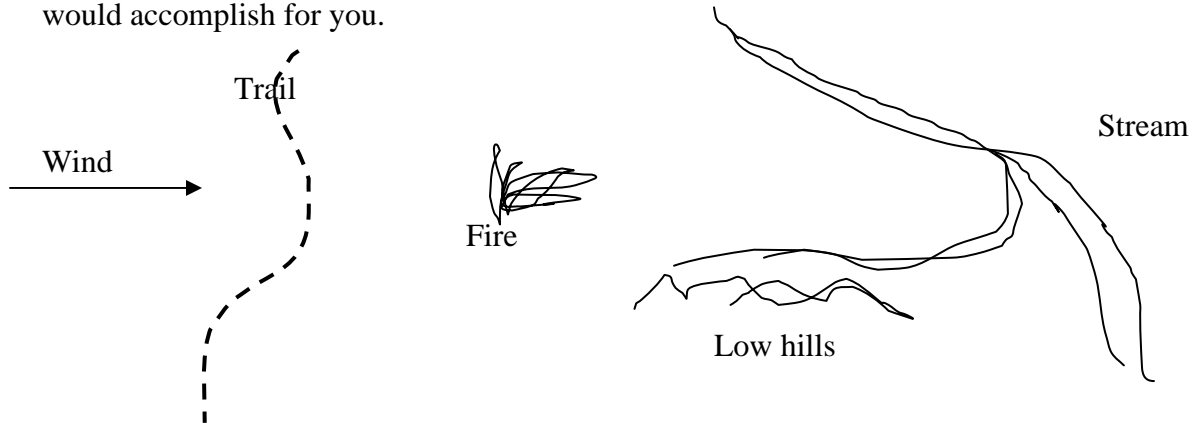
14. Sketch in the locations of regrowth forest on this post-agricultural landscape:



15. The purpose of smokejumping is to get to a fire _____ to minimize its _____ when you fight it.

Stream

16. Indicate on the map where you would start a back fire. Explain what this back fire would accomplish for you.



17. Which tree species are you likely to encounter in the regrowth eastern forest?

_____ White oak

_____ American chestnut

_____ Beech

_____ Douglas fir

_____ Tulip poplar

_____ Longleaf pine

18. Why (according to William Greeley, chief forester 1920-1932) should fires be stopped before they reach 10 acres (“Aggressive Initial Attack”)?

a. _____

b. _____

19. USFS fire suppression in the early and mid 20th century was how effective stopping fires (check one)?

_____ No effect at all – how could a major ecosystem process such as fire be stopped by man?

_____ Marginally effective, cutting fires around campsites and villages.

_____ Marginally effective, but especially in Kansas and Nebraska.

_____ Phenomenally effective, reducing the natural occurrence of fire ca. 90%.

20. How can we begin to reduce the threat of severe wildfire in the American West?

a. _____

b. _____

c. _____

III. Essay (20 points)

Please write a 1-2 page essay on **one** of the following topics. Be sure to address all parts of the question.

1. Americans still have a love-hate relationship with forest. Discuss how these emotions are played out in modern suburbia. Please be specific.

2. We now have more Eastern forest at any time in the last 200 years, but paradoxically the region also supports the largest human population ever. Explain the reasons for this situation in the context of forest history. Please be specific.

3. How has 80-90 years of fire suppression changed forests of the American West? Can we return to the pre-suppression condition? What obstacles stand in our way? Please be specific.

Answers

I. Definitions

1. Dead limbs and tops left over after cutting. Dries and burns easily.

2. Bear trademark of US Forest Service

3. Had to be grown near eastern cities, so prevented forest regrowth.

4. An eastern forest animal slowly returning as forest returns.

5. Important eastern forest tree wiped out by a fungus in the early 20th century.

6. The patchwork of forest ages created by abandonment from agriculture.

7. Large bird, thought extinct, which was recently rediscovered in regrowth forest in Arkansas/Louisiana.
8. Age-homogeneous forest arising after abandonment from agriculture.
9. A green moat designed to keep creepy forest away from your home.
10. A low, cool fire burning through the leaf litter and fallen wood on the forest floor.
11. A large park in upstate New York – birthplace of wildland fire fighting.

II. Short answer

1.
 - a. end of wartime purchase of farm produce by the government
 - b. inability of farms to compete with industrial wages
 - c. switch to cars make pastures unnecessary for horses
 - d. refrigeration allows produce to be shipped from distant regions
 - e. good roads “ “ “ “ “ “
2. Tree trunk showing annual rings and severe scarring, followed by healing around the wound.
3.
 - a. intentional reintroduction from Michigan
 - b. lawn is good food
 - c. preference for old field habitat, which is very common
 - d. no natural predators
 - e. hunting is impossible in suburbs
4.
 - a. edge effects
 - b. reduced forest size cannot accommodate large home ranges
 - c. many negative effects in forest streams (silt, variation in flow, dissolved O₂)
5. – fight fire at night when the air is cooler
 - burn away accumulated fuel with back fires
 - spray water on the fire to absorb heat
6.
 - a. communication with fire crews is essential
 - b. fires should be fought early before they become large
 - c. individual rangers cannot stop a fire
7. Regrowth has
 - a. even age distribution
 - b. species-poor
 - c. no American Chestnut, mountain lions, wolves
 - d. too many deer

- e. highly fragmented
 - f. long, thin strips of forest
8. Unnatural accumulation of fuel in the twentieth century.
 9. In the 19th Century they bought forests just before cutting them. In the 20th Century, they bought forest well ahead of cutting, exposing them to the risk of fire while they got around to cutting.
 10. 1-3 years: short lived agricultural weeds, e.g. dock, ragweed, lambs quarters
 - 2-8 years: longer-lived perennial herbs, e.g. goldenrod, milkweed
 - 10 – 100 years: light-requiring tree species, e.g. tulip poplar, red maple
 - 40 - ? years: shade-tolerant tree species, e.g. oaks, hickory, beech
 11. Steep slopes, rocky hill tops, areas of poor soil, swamps – because they are of low agricultural quality.
 12.

D ruffed grouse	E grey wolf
NA salmon	R deer
I bear	I beaver
 13.
 - a. high density allowed rapid spread of disease
 - b. dispersal of airborne spores
 - c. dispersal of insect-borne spores
 - d. lack of natural resistance to the fungus
 14. Narrow strips along the road or stream.
 15. quickly, size
 16. The backfire would be started downwind of the major fire on the left bank of the stream. It would clear away fuel, thereby creating a large firebreak.
 17. oak, beech, tulip poplar
 18. Small fires are cheaper and easier to put out than large ones.
 19. Phenomenally effective
 20. a. reduce fuel by prescribed burning

- b. let natural fires burn
- c. prevent building in fire-prone areas.

III. Essay

1. Love-hate

Love: trees in yards, desire to live in the countryside, animal watching, kids playing in the woods, price of houses next to forest.

Hate: raking leaves, planting lawn, green moat, cleaning up the “jungle”, white paint, straight lines in architecture

2. Forest vs. population

Both forest and suburbia have grown at the expense of agricultural land. The “forest” is highly fragmented, not resembling the pre-settlement forest in many respects. In the future, suburbia will probably cause the decline of forest.

3. Fire suppression

Consequences

- Loss of meadows
- Tying up nutrients
- No regeneration of important tree species
- Spread of disease
- Major fires

Obstacles

- Release of CO₂
- Severe fires
- Wildland urban conflict