

**Fire Behavior and Ecology**  
**Exam No. 1 - February 21, 1977**

- (10) 1. Why has the use of fire in the management of our National Forests been such a slow process even though most of our forests evolved with fire?
- (10) 2. What was the Leopold Report and what has resulted from it?
- (10) 3. Before 1880 no mesquite plants, except near water holes, were noticeable by scouts on the High Plains. Today most native ranges on the High Plains have numerous mesquite plants about 6 ft tall? How do you explain this paradox?

(10) 4. In March of 1976 a fire burned 6 sections near Odessa, Texas. The plant composition of the range was 40% tobosagrass, 20% vine-mesquite, 15% Arizona cottontop and 35% buffalograss. Precipitation was average 6 months prior to the burn and 20% above average for 3 months after the burn. You have been called in as a consultant to assess damages and estimate a fair market value loss for the ranchers who were affected. What kind of a settlement in Dollars/acre would you assess for the ranchers and why? Assume that grazing leases are worth \$2.50/year. No fences were affected.

(10) 5. For the problem above, what kind of a settlement would you have estimated per acre if this same fire had occurred during a very dry year such as 1971 or 1974?

(10) 6. A rancher in West Texas has 10 sections of land with green mesquite trees about 8 ft tall and an excellent understory of buffalograss. He wants to burn it to get rid of the mesquite because labor costs to gather livestock are high and chemicals will leave the mesquite standing. What would be your advice to him to achieve some mortality and have the fire consume the mesquite wood?

(10) 7. How does fire generally affect the following species in the Southern Desert Grassland?

a. Cane cholla -

b. Barrell cactus -

c. Lehmann lovegrass -

d. Santo Rita threawn -

e. Black Grama -

- (10) 8. In the Northern Desert Shrub-Grassland (Sagebrush-grass) you have a plant community with 10% bitterbrush, occasional plants of horsebrush and rabbitbrush, 40% of dense, thick Basin big sagebrush, 30% bluebunch wheatgrass (*Agropyron spicatum*), 10% Idaho fescue, and 10% balsamroot, lupine, and other desirable forbs. This is primarily a spring-fall range for sheep and sagegrouse and an important winter range for deer. What would be the pro's and con's of using fire as a management tool and should you take any special precautions?
- (10) 9. Water is in short supply in California and will likely remain this way for 2 or 3 years hence. At the same time many homes in the California chaparral zone need to be protected from potential wildfires that can no longer be protected by the "Green-belt" program because water is being rationed. As a consultant, would you have any suggestions as to how these people might use prescribed fire in the chaparral zone to protect their homes?

- (10) 10. In western Nevada the Indians have complained bitterly to the BLM for many years about their chaining and burning practices that have destroyed their source of pinyon nuts. So in 1970 the BLM initiated a new range improvement practice in this area in which they dozed the individual juniper trees in piles and burned them. The pinyon trees were left unharmed and the area was seeded to grasses. Today, young juniper trees (2 to 3 ft tall) are invading the area. The BLM wants to kill the young trees with fire, but preserve the large highly flammable pinyon trees. Can you provide any suggestions as to how they might do this?