

Fire Behavior and Ecology
Makeup Exam
February 26, 1981

- (10) 1. A rancher in the True Prairie region seeks your advice about burning a section of little bluestem (Schizachyrium scoparium). He wants to know if he should burn; if so, when and how to burn; and how would he manage the area if he does burn. The area has not been grazed for several years and thus, there is a heavy accumulation of litter.

- (10) 2. In California medusae head is a noxious animal. Can fire be used to contain this species? If so, how?

- (5) 3. What is the successional relationship between medusae head and cheatgrass?
Can fire be used to maintain a stand of cheatgrass?

- (14) 4. What is the effect of fire on the following species of the Southern Desert Grasslands?

Rothrock grama (Bouteloua rothrockii) -

Black grama (Bouteloua eriopoda) -

Burroweed (Haplopappus tenuisectus) -

Fourwing saltbush (Atriplex canescens) -

Winterfat (Eurotia lanata) -

Jumping chollas (Opuntia fulgida) -

Wheeler sotol (Dasyilirion wheeleri) -

(6) 5. It has been well established that following a fire, the soil temperature is increased. What effects can temperature have on an ecosystem during spring months to stimulate plant growth?

(4) 6. Why was it that the pioneers rarely saw mesquite on the High Plains (Shortgrass Prairie), but today it is very prevalent?

(4) 7. Would soil type enter your decision in burning a grassland? On what type of soil would you not burn, if any?

- (6) 8. The response of bunchgrasses to fire is much more closely related to season of burning rather than intensity of burning? Why wouldn't intensity of burning have a significant effect on large bunchgrasses that have a dense crown?

- (16) 9. In the sagebrush-bundhgrass zone what is the effect of fire on the following species?

Thickspike wheatgrass (Agropyron dasystachyum) -

Bluebunch wheatgrass (Agropyron spicatum) -

Idaho fescue (Festuca idahoensis) -

Balsamroot (Balsamorhiza sagittata) -

Bitterbrush (Purshia tridentata) -

Rabbitbrush (Chroothammus sp.) -

Horsebrush (Tetradymia canescens) -

Big sagebrush (Artemisia tridentata) -

(5) 10. Can you give a reason as to why litter build-up would be a problem in Iowa, but not in Idaho, assuming that grazing is not a factor?

(5) 11. What is the principal change in microclimate after fire that affects plant growth?

(5) 12. How would a summer fire (grass is dry) affect the following year's crop of cheatgrass (Bromus tectorum)?

(10) 13. Ecologically, how has the pinyon-juniper zone been able to extend its area so successfully during the past 80 years? What factors have been involved? Where is pinyon-juniper a true climax (based on site, not geographically).