SECTION A, BIOLOGICAL SCIENCES

Subsection Botany

Effect of Mowing on a Relict Tall Grass Prairie

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Much work has been done on patterns of retrogression of prairies as responses to grazing, burning, and cultivation; however, although the basic changes are understood on the effect of mowing tall grass prairies, few data are available which show the magnitude of these changes. This paper will discuss the changes which took place in a formerly relict tall grass prairie after three seasons of mowing.

The area studied was, from all available evidence and history, an approximately two-acre relict tall grass prairie located three miles north and one-half mile east of Stillwater, Payne County, Oklahoma.

The relict prairie was sampled during the summer of 1962 with an inclined point transect (Levy and Madden, 1932; Crockett, 1964). Fifteen hundred points were taken. The prairie was mowed for hay in both July and September of 1963 and also in July of 1964 and 1965. It was sampled again, using the same technique, in September of 1965.

Results indicate that, in the relict state, the prairie had a basal cover of 7.9% with *Andropogon scoparius*[1] and *Andropogon gerardi* the dominant species (Table I). *Sorghastrum nutans* was of secondary importance. Forbs, of which only three species were contacted, provided only 2.6% of the composition. Frequency data indicate a rather uniform distribution of species. Mulch was very heavy, reaching a depth of three inches over much of the area.

In 1965, after three seasons of mowing, the mulch had been removed over most of the area and was less than one-half inch thick at its deepest point. The basal area had increased to 17.2% with the same species being dominant and with only small changes in their relative composition. Forbs, principally *Aster ericoides,* did show some increase in cover and number. No evidence of invasion by any annual or perennial plants was observed, even though the site was surrounded by weedy areas.

While herbage yields were not determined, it is believed that the increase in basal cover would result in a corresponding increase in herbage. Results indicate that mowing, unlike other forms of disturbance, does not result in invasions, but merely results in sizeable increases in the cover of the already established species.

Literature Cited

Crockett, J. J. 1964. Influence of soils and parent materials on grasslands of the Wichita Mountains Wildlife Refuge, Oklahoma. Ecology 45:326-335.

Levy, E. B. and E. A. Madden. 1933. The point method of pasture analysis. New Zealand J. Agric. 46:267-279.

Waterfall, U. T. 1960. Keys to the flora of Oklahoma. Oklahoma State University, Stillwater, Oklahoma. 243 p.

[1]Botanical nomenclature follows Waterfall (1960).

TABLE I. VEGETATIONAL COMPARISON, IN PER CENT, OF TALL GRASS PRAIRIE BEFORE AND AFTER MOWING.

Component	Basal Area		Relative Composition		Frequency		Relative Frequency	
	1962	1965	1962	1965	1962	1965	1962	1965
Bare	12.6	41.5						
Mulch	79.5	41.3						
Andropogon scoparius	3.2	5.9	40.9	34.1	24.1	39.3	38.5	31.4
Andropogon gerardi	2.8	5.4	35.7	31.2	21.4	35.3	34.1	28.2
Sorghastrum nutans	0.5	1.6	6.1	9.3	4.8	14.0	7.7	11.2
Eragrostis spectabilis	0.2	0.7	2.6	4.1	2.1	5.3	3.3	4.2
Spenopholis obtusata	0.3	0.7	3.5	4.1	2.8	6.0	4.4	4.8
Cyperaceae	0.3	0.2	3.5	1.2	1.4	2.0	2.2	1.6
Other grasses	0.4[a]	0.9[c]	5.2	5.1	4.2	8.0	6.3	6.4
Forbs	0.2[a]	1.9[c]	2.6	11.0	2.1	15.3	3.3	12.2
Totals	100.0	100.1	100.0	100.0	62.9	125.2	100.1	99.8
Actual Basal Area	7.9	17.2						