

Grazed Glades Can Grow Good Grass

ROBERT F. BUTTERY

Range Conservationist, Central States Forest Experiment Station, Forest Service, U.S. Department of Agriculture, Columbia, Missouri¹ now on Kalamath National Forest, Yreka, California.

The glades, southwest Missouri's only natural grasslands, have been overused by livestock for many years, and herbage production is far below what it should be. How much herbage can the glades produce? How fast do glade ranges recover from abuse? What is the reaction of glades to complete protection from grazing? Some answers to these questions were found by sampling the vegetation inside and outside two exclosures located on the glades.

These small areas, fenced to exclude livestock, are the Lizard Pen Exclosure, established in 1938, and the Caney Tower Exclosure, established in 1956. Both are about 1 acre in size and are located on typical glade range on the Ava District of the Missouri National Forest in Taney County, Missouri.

¹Maintained in cooperation with the School of Forestry, University of Missouri Agricultural Experiment Station, Columbia, Missouri.

Ocular estimates of herbage production and composition were made inside and outside the exclosures at the end of the growing season in 1956, 1957, and 1958. In 1959 production and composition were estimated out-

side and sampled inside by clipping, sorting to species, and weighing the herbaceous vegetation on eight randomly located, 2.4-square-foot quadrats in each exclosure.

Observations in the Caney Tower Exclosure show that under complete protection, glade ranges recover quickly from abuse and are capable of producing nearly seven times as much herbage as they now produce (Figure 1).

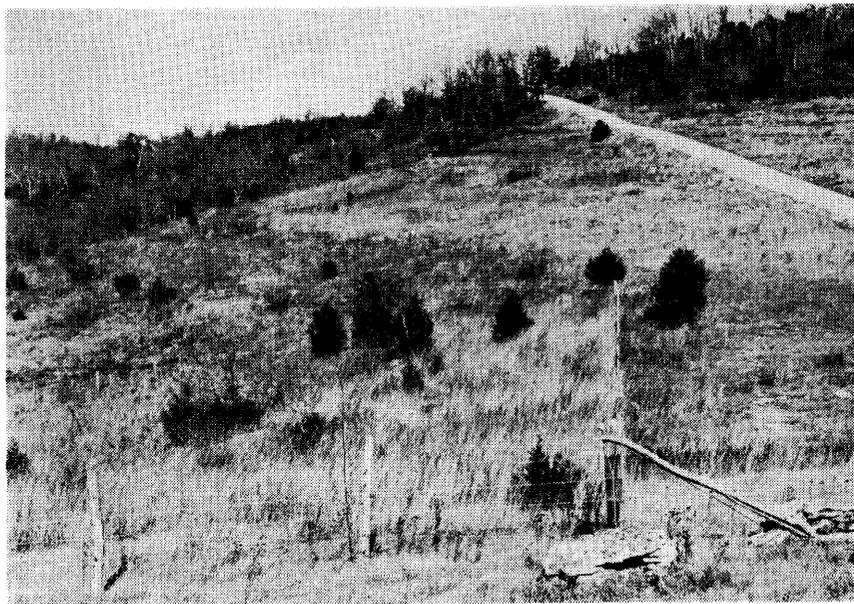


FIGURE 1. Caney Tower Exclosure 4 years after fencing. Herbage production inside is about 2,800 pounds (oven-dry) per acre and only about 400 pounds per acre outside.

Table 1. Herbage production and percent composition by oven-dry weight, Caney Tower and Lizzard Pen Enclosures, 1959

Species	Caney Tower		Lizzard Pen	
	4 years protection		21 years protection	
	Lbs./acre	Percent	Lbs./acre	Percent
Little bluestem	1,555	56	1,000	46
Big bluestem	465	17	260	12
Indiangrass	310	11	665	31
Switchgrass	30	1	10	1
Baldgrass	220	8	70	3
Panicgrass	0	0	15	1
Sedges	0	0	40	2
Forbs	195	7	90	4
Total	2,775	100	2,150	100

After one growing season of protection there was very little difference in herbage production and composition inside and outside the enclosure. However, by the end of the fourth growing season herbage production inside the enclosure had increased to 2,775 pounds per acre, an increase of nearly 600 percent in only 4 years. Baldgrass, (*Sporobolus neglectus* Nash.) which had been the dominant species, had decreased to only 8 percent of the total production while little bluestem had increased from almost nothing to 56 percent.

Big bluestem (*Andropogon gerardi* Vitman) and Indiangrass, (*Sorghastrum nutans* (L) Nash.) had increased from a trace to 17 percent and 11 percent, respectively.

In 1956, as now, the glades outside the enclosures were producing about 400 pounds of oven-dry herbage per acre, mostly the less desirable baldgrass and black-eyed susan (*Rudbeckia hirta* L.) with a scattering of the more desirable little bluestem (*Andropogon scoparius* Michx.) and Indiangrass (Table 1).

Herbage production in the

nearby Lizzard Pen Enclosure probably reached a peak 5 or 6 years after fencing, but production decreased about 25 percent over the years. Such a decrease is typical of the reaction of any grassland area where the old herbage is not removed periodically. After 21 years of complete protection, herbage production has stabilized, because of continued complete protection, at about 2,150 pounds per acre, 23 percent less than production in the Caney Tower Enclosure. The greatest difference was in production of little and big bluestem, but the significance of this difference was offset to some extent by greater Indiangrass production in the Lizzard Pen Enclosure.

Many of southwest Missouri's glade ranges in poor condition could contribute more to the forage resource of the region if they were given 3 or 4 years of complete protection from grazing and moderately stocked thereafter. Complete recovery would probably not be obtained after only 3 or 4 years, but the range should continue to improve under moderate grazing.