FULL TITLE OF PROCEEDINGS ABSTRACTED IN THIS ISSUE

Silviculture in Special Places: Proceedings of the 2003 National Silviculture Workshop. Held September 8-11, 2003 in Granby, CO. Published by the Rocky Mountain Research Station, USDA Forest Service, 2150 Centre Ave., Bldg. A, Fort Collins, CO 80526. 2004. http://www.fs.fed.us/rm.

27th Annual Society of Ethnobiology Conference. Living Landscapes: Linking Ethnobiology and Restoration Ecology in the Revival of Native Systems. Held March 24-27, 2004 at the University of California, Davis. Abstracts available online: http://ethnobiology.org/2004/.

GRASSLANDS

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Winter Grazing Increases Native Prairie Grasses in Fescue-Dominated Pastures (Kansas)

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The 13,727-acre (5,555-ha) Kansas Army Ammunition Plant (KSAAP) in southeast Kansas was historically dominated by native bluestem grasses (*Andropogon* spp.) and deciduous forest (Hoover 1997), but now consists of agricultural crops and pastures planted with tall fescue (*Lolium arundinaceum*), an exotic cool-season grass. The fescue-dominated pastures, which are maintained by annual fertilization, provide poor habitat for wildlife compared to native tallgrass prairie (Washburn and others 2000).

We attempted to reduce tall fescue biomass and increase biomass of native warm-season grasses at KSAAP by eliminating nitrogen fertilization and by grazing cattle during the cool-season growing period of tall fescue. Cattle preferentially choose the tender, actively growing fescue shoots for grazing, which should decrease tall fescue biomass over time through repeated defoliation and removal of reproductive structures. Moreover, we predicted that removal of grazing during the warm-season growing period would allow native grass species to increase in biomass. If winter grazing is proven effective in controlling tall fescue and restoring native grass species, it may be a more cost-effective method of restoration than previously used combinations of prescribed burning, herbicide application, and seeding.

Our experimental design consisted of two replicate pastures in each of four treatments: pastures traditionally grazed year-round (YR), and pastures grazed only during the winter for one, two, or four consecutive years (W1, W2, and W4). Cattle were placed in winter-grazed pastures in mid-October and removed in late April. Pastures averaged 234 acres (95 ha) in size, and stocking rates averaged 5.4 acres/animal unit (2.2 ha/animal unit). We collected aboveground biomass samples in early August 2004 from nine 0.25-m^2 sampling quadrats placed within representative areas of each experimental unit in a stratified random sampling design. We clipped the entire contents of each quadrat, sorted each sample to three functional groups (tall fescue, native grasses, and other), dried them for 48 hours at 140° F (60° C), and weighed biomass to the nearest 0.01 gram.

We found that native, warm-season grasses—including big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), and Indiangrass (*Sorghastrum nutans*)—comprised a higher proportion of the biomass in winter-grazed pastures than in pastures grazed year-round (Figure 1). After we arcsine-transformed native grass biomass values to achieve normality, we found that percent biomass of native grasses differed among grazing treatments, with the highest native biomass occurring in the W2 treatment (21.5 ±4.6 percent, mean ±SE). Total average biomass did not differ significantly among grazing treatments. Average fescue biomass per quadrat was 15.1 ±2.8 percent in pastures grazed year-round and 17.8 ±2.3 percent in all

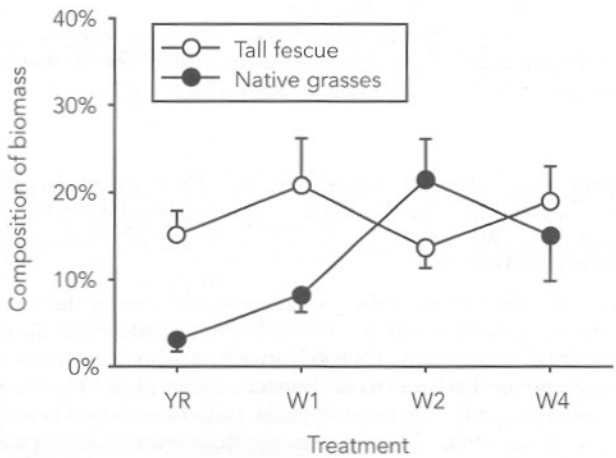

Figure 1. Percent biomass per quadrat of tall fescue (*Lolium arundinaceum*) and native grass species for four grazing treatments (n = two replicates): YR = grazed year-round, W1 = winter-grazed for one year, W2 = winter-grazed for two years, and W4 = winter-grazed for four years. Means ± SE are shown (n = nine quadrats per replicate).

winter-grazed pastures combined. We found no clear trend for changes in the amount of tall fescue biomass in the experimental pastures (Figure 1).

Our preliminary results are encouraging because they suggest that winter grazing by cattle in tall fescue-dominated pastures may help increase native, warm-season grass biomass. Presently, we cannot conclude whether this grazing treatment has any effect on tall fescue biomass since gains in native grasses appear to be due to reductions in forbs and woody plants. While the proportion of native-to-fescue biomass decreased from W2 to W4 pastures (Figure 1), this change may be negligible due to overlap in tall fescue and native grass biomass values within the W4 pastures. Alternatively, proportional differences in the pre-treatment plant community may have affected our observed results, and winter grazing may have reduced an initially high fescue-to-native biomass ratio within the W4 pastures. During 2005, we plan to continue researching winter grazing as a potential restoration technique to clarify these observed patterns. We will also evaluate how this treatment affects density and productivity of breeding grassland bird populations.

Acknowledgments

We are grateful for assistance from D. Hartnett, J. Blair, C. Deurmyer, C. Blocksome, M. Goode, K. Kosciuch, and J. Nooker. This project has received financial and logistical support from the Department of Defense; Kansas Department of Wildlife and Parks; Prairie Biotic Research, Inc.; Kansas Ornithological Society; Kansas Army Ammunition Plant; Kansas Cooperative Fish and Wildlife Research Unit; and the Division of Biology at Kansas State University.

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Listening to California's Grasslands and Their Stewards. 2004. Hayes, G., Elkhorn Slough National Estuarine Research Reserve, 1700 Elkhorn Rd., Watsonville, CA 95076, grey@elkhornslough.org. **Fremontia** 32(3):12-16.

Hayes relates the history of the coastal grasslands—one of the top ten most endangered ecosystems in the United States—and some of the people who strive to care for it. Though Native Americans were the first to manage these grasslands and to cultivate many of its plants, ranches and dairy operations and, more recently, public parks have formed new variations of the ecosystem. These, in turn, are threatened by development, erosion, invasive weeds, shrubs, and trees. Today, preservation of coastal prairie remnants and grassland restoration require combinations of prescribed fire, grazing, mowing, and weed removal. According to Hayes, a tentative list of grassland stewardship principles includes 1) honoring traditional ecological knowledge, 2) studying the character of each of the diverse grassland ecosystems, and 3) including a wide array of people in stewardship projects.

WOODLANDS

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Using Thinning as a Fire Surrogate Improves Native Plant Diversity in Pine Rockland Habitat (Florida)

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Periodic fire is considered crucial for maintaining the diverse rare plant species and communities found in the pine rockland ecosystems of south Florida (Snyder and others 1990). This globally endangered ecosystem, which is characterized by a limestone substrate, shallow sandy soils, mean annual rainfall of 64 inches (163 cm), south Florida slash pine (*Pinus elliottii* var. *densa*) and saw palmetto (*Serenoa repens*), occurs on only about 2,273 acres (920 ha) outside of Everglades National Park (USFWS 1999). Unfortunately, most of these remnants have not experienced fire for decades.

Because many remnant pine rocklands in Miami-Dade County are small and enmeshed in the urban landscape, the introduction of fire raises public concern about threats to structures, smoke-induced health problems, and personal safety. As a result, land managers often use thinning as a fire surrogate, although it is extremely labor intensive and more expensive than conducting controlled burns. Since little is known about whether thinning treatments replicate the ecological service of fire and maintain a healthy diverse understory community in the pine rockland, our research addressed whether thinning and duff removal influenced vegetation structure and pine rockland plant community composition.

We randomly placed ten 15-m x 30-m plots (four thinned, four control, and two reference) within a 32.9-acre (13.3-ha) pine rockland fragment that had a variable fire history. We established the reference plots in an area where fire had occurred within the past 15 years (J. Klein pers. comm.) and that supported populations of the federally endangered plant, Small's milkwort (*Polygala smallii*). Comparing the thinned and control plots containing dense thickets of south Florida slash pine and saw palmetto to the reference plots enabled us to test the effects of manual thinning on vegetation structure and composition.

In March 2002, crews cut 30 percent of the small pines (0.8- to 4-inch or 2- to 10-cm diameter) to the ground using a chainsaw, cut and treated 20 percent of palm stumps with a 20-percent solution of Garlon 4 (triclopyr), and removed about 85 percent of the forest litter from the thinned plots at a total cost of $22,730/acre ($56,1431/ha). One month prior to treatment, we sampled percent cover of vegetation and abundance of species of interest in three 2.5-m x 10-m subplots within each plot. We resampled the plots two months after the thinning treatment and again one year later. During each sampling period, we mea-