

# Ecological Restoration

Volume 24 Number 1 ■ March 2006

Published for the University of Wisconsin–Madison Arboretum



New Nature in The Netherlands

Tropical Forest Restoration: An Interview with Lynn Carpenter

Assessing the National Estuarine Research Reserve System

Restoring Natural Capital: A Workshop Report

Revisiting and Restoring Leopold's Rio Gavilan Watershed

Making Way for Terns: Restoration at Great Gull Island

FULL TITLE OF PROCEEDINGS ABSTRACTED IN THIS ISSUE

**Proceedings of Lake Champlain in the New Millennium: Spring Symposium.** Held May 20-23, 2002 in St. Jean, Québec. Published in 2004 in *Lake Champlain: Partnerships and Research in the New Millennium*. Kluwer Academic/Plenum Publishers, 233 Spring St., New York, NY 10013.

**Proceedings of the 18th North American Prairie Conference: Promoting Prairie.** Held June 23-27, 2002 in Kirksville, Missouri. Published in 2003 by Truman State University Press, 100 E. Normal

St., Kirksville, MO 63501, 660/785-7336, [tsup@truman.edu](mailto:tsup@truman.edu), <http://tsup.truman.edu/>.

**3rd Biennial CALFED Science Conference: A Summary for Managers and Scientists.** Held October 4-6, 2004 in Sacramento, California. Published in 2005 in *Getting Results: Integrating Science and Management to Achieve System-Level Responses*. CALFED Science Program, California Bay-Delta Authority, 650 Capitol Mall, 5th Fl., Sacramento, CA 95814, 916/445-5511, <http://science.calwater.ca.gov>.

GRASSLANDS

1

**Managing for Grassland Diversity: A Study on Grazing-Fire Interactions in the Flint Hills (Kansas)**

Marva L. Weigelt, *Homestead Ranch, Rt. 1, Box 35, Matfield Green, KS 66862; [prairiehawk@wheatstate.com](mailto:prairiehawk@wheatstate.com), [www.republicof-grass.com](http://www.republicof-grass.com)*

Traditional range management and, in many cases, range research, have long focused on beef production with little consideration given to the long-term sustainability and diversity of native prairie rangelands. As an alternative, a landowner, in collaboration with government agencies and a non-profit, launched the Homestead Range Renewal Initiative (HRRRI) on part of the 4,000-acre (1,619-ha) Homestead Ranch in the Flint Hills—the last large expanse of tallgrass prairie in North America. The initiative is implementing new practices that attempt to mimic as closely as possible the pre-European-settlement patterns of random burning and grazing in order to create a shifting mosaic of burned, unburned, grazed, and ungrazed areas.

In the Flint Hills, the effect of broad-scale annual spring pasture burning on wildlife—especially birds—is an issue of concern. In spring 2005, for example, our visual survey of an 80-mi<sup>2</sup> (207-km<sup>2</sup>) area surrounding the HRRRI study site revealed that more than 90 percent of available grassland had been burned by May 1, leaving minimal cover for small mammals and ground-nesting birds during a critical time in their breeding season. We also noted that intensive grazing by a popular stocking system that doubles the number of head recommended per acre during a shortened season (late April to mid- to late-July), left minimal habitat cover until late in the season.

Jane Koger, who has owned Homestead Ranch since 1979, recognized the value of preserving tallgrass prairie habitat, but knew first-hand how resistant many cattle ranchers are to chang-

ing practices based solely on ecological considerations. She felt it was important to test research assumptions made by Sam Fuhlen-dorf (Fuhlen-dorf and Engle 2002, 2004), a rangeland ecologist at Oklahoma State University, on a working cattle ranch using ranch staff rather than research professionals. The initiative's multifaceted program—including patch-burn grazing of 2,900 acres (1,173 ha), fence removal to create larger pastures, reseeding of native plants on 40 acres (6 ha) of previously cultivated land, and



Figure 1. Jane Koger, owner of the Homestead Ranch, stands at a fixed photo point in an unburned section of a pasture on the HRRRI experimental site. Photo by Marva Weigelt

management of invasive trees—simultaneously considers biological diversity and grazing productivity. If this approach proves to be a successful and economically feasible model, it could encourage other cattle ranchers to preserve tallgrass prairie.

In spring 2004, the first year of our seven-year experimental program, we burned two-thirds of each pasture. In subsequent years, one-third of each pasture is burned annually in spring on a rotational basis. When feasible, we will conduct late-summer burns to control invasive trees and increase the mosaic effect. We are also using three separate 960-acre (388-ha) pastures to test three cattle-grazing scenarios: 1) double-stock: 433 stockers (600-lb average weight) at 250 lbs/acre (April-July), 2) full-season: 224 stockers (600-lb average weight) at 135 lbs/acre (April-October), and 3) year round: 50 cow/calf pairs at 10.4 acres/head (year-round). We derived stocking rates from soil, range site, and condition calculations for these specific pastures.

In May 2005, we conducted our second spring-breeding bird survey within eight survey points on burned and unburned areas of the study site. We observed an increase in eastern meadowlark (*Sturnella magna*), grasshopper sparrow (*Ammodramus sava-narum*), and greater prairie chicken (*Tympanuchus cupido*). Most heartening was the first-time appearance of Henslow's sparrow (*Ammodramus henslowii*). This habitat specialist is a unique harbinger of prairie integrity because it requires unburned, lightly grazed, non-woody native prairie. Other monitoring activities include fixed-point photography at six locations in each of the three pastures (two sample points in each of three burn sectors per pasture in May, July, and September), cattle production rate data collection, and other photography and mapping. Although conclusive data will not be available until we complete the last phase of the study in 2010, our preliminary findings are encouraging.

A project advisory team meets regularly to assist in planning, monitoring, and implementation of HRRRI. The team was expanded in 2005 to include Jim Lauer, a 14-year-old youth partner who will help carry the legacy we are building into the future.

## ACKNOWLEDGMENTS

The HRRRI team members include Jane Koger and Marva Weigelt, Homestead Ranch; Jim Minnerath of the U.S. Fish & Wildlife Service; Brian Obermeyer, The Nature Conservancy; Gay Spencer, Natural Resources Conservation Service; Leigh Ann Crofoot, Chase County rancher; and Jim Lauer, Chase County Youth Partner. Cost sharing for the project has been provided by the U.S. Fish & Wildlife Service, The Nature Conservancy, and a 2004 producer grant from the USDA Sustainable Agriculture Research & Education (SARE) program.

## REFERENCES

- Fuhlendorf, S.D. and D. Engle. 2001. Restoring heterogeneity on rangelands: Ecosystem management based on evolutionary grazing patterns. *BioScience* 51:625-632.
- . 2004. Application of fire-grazing interaction to restore a shifting mosaic on tallgrass prairie. *Journal of Applied Ecology*. 41:604-614.

## 2

### FROM: Proceedings of the 18th North American Prairie Conference

**Restoration of a Prairie-Savanna Mosaic in Northern Missouri.** Hartman, G.W., Missouri Dept. of Conservation Research Center, 1110 S. College Ave., Columbia, MO 65201. Pp. 54-57.

Hartman presents the results of vegetation surveys before and after three prescribed spring burns between 1996 and 1999 on 1,198 acres (485 ha) of Missouri's Union Ridge Conservation Area. The site had been used for grazing and cool-season grass production for 100 years. After the burns, native grass and forb diversity increased 71 percent. Native species increased 236 percent, while exotic species increased 58 percent. Most changes occurred on ridges and exposed slopes. Shrubs, especially *Rubus* species such as raspberry, increased 192 percent. Woody seedling density increased, especially shingle oak (*Quercus imbricaria*); although fire-sensitive species, such as elm (*Ulmus* spp.) and mulberry (*Morus* spp.), were nearly eliminated. Hartman cautions that the annual spring fires allowed reed canarygrass (*Phalaris arundinacea*) and Chinese lespedeza (*Lespedeza cuneata* or *L. sericea*) to expand.

### 2.1

**Effects of Small Herbivores on a Grassland Undergoing Restoration.** Murphy, M., South Atlantic Fishery Management Council, Charleston, SC 29407; M. Stokes, T. Cummins and B. Legg. Pp. 100-110.

These researchers measured the effects of prairie voles (*Microtus ochrogaster*) on the vegetation of a degraded grassland near Louisville, Kentucky. Restoration treatments on 9.9 acres (4 ha) during 2000 and 2001 included spring burns, herbicide applications, and mowing. The site was divided into three control plots and six fenced plots—three with moles and three without. Seeding with three native grasses and two forbs was done May-June 2000. Summer and fall sampling during both years showed no significant differences in the rate of biomass change among plots. However, forb cover increased relative to grasses in the plots that excluded voles. The authors caution that low rainfall and shallow, rocky soil may have influenced the results more than biotic factors.

### 2.2

**Spring Haying as an Alternative to Spring Burning on a Reconstructed Roadside Prairie.** Tix, D., Plant Biology Dept., University of Minnesota, 1445 Gortner Ave., St. Paul, MN 55108-1095; and I. Charvat. Pp. 58-62.

Tix and Charvat compare the effects of burning or mowing to 2 inches (5 cm), and raking on a wet/mesic tallgrass prairie along a highway near Shakopee, Minnesota. Fifteen plots were treated in April 2000 and sampled the following June, and in July 2001. Burning resulted in about twice as many native warm-season grasses as native forbs, while haying produced roughly equal forbs and grasses. Bergamot (*Monarda fistulosa*), the only forb present in all plots, accounted for most of the native forbs. Spiderwort (*Tradescantia ohioensis*) increased strongly after burning. The authors conclude that, when compared to post-forb-emergence spring burns, spring haying favors forb species over warm-season grasses. However, this study indicates that species of low conservation value (such as bergamot) may receive the most benefit.

## 3

### FROM: 3rd Biennial CALFED Science Conference

### 3.1

**Restoring and Managing California's Native Grasslands.** Wirka, J., Audubon California. Pp. 52-53.

Wirka pairs recent findings in several research areas with management implications for restoring rare grasslands in California. For example,