Preserving the Tallgrass Prairie

Establishment of a prairie preserve among the ranchlands of northeastern Oklahoma has been a lengthy, controversial project. Long the dream of conservationists, this re-creation of a vast grassland, mirroring those once covering the West from Canada to Texas, at last is becoming a reality. University of Oklahoma researchers — faculty, staff and students — are playing a major role in this undertaking, lending expertise and dedication to an exhausting survey of both plant and animal life.

A *Sooner Magazine* expedition to the Tallgrass Prairie Preserve near Pawhuska produced the report on the following pages.

Text by Anne Barajas ***Photos by Betsy Baker***

Botany / microbiology graduate students Lynn Francis, left, a Natural Heritage Inventory staff member, and teaching assistant Julie Butler explore the windswept Tallgrass Prairie.

In mapping the vegetation of the prairie preserve, OU scientists will survey the extensive plant life with the aid of color images from a LandSat satellite. Long-term monitoring by satellite and other means is important to effective management of the ecosystem.

Imagine a vast grassland stretching from Canada to southern Texas—a virtual sea of grass with no sign of human life for thousands of miles. The great American prairie was once such a place, where giant grasses reached 10 feet into the air, and hundreds of animal species flourished.

The tallgrass prairie is almost a memory in North America. But this treasure is being restored, thanks in part to researchers at the Oklahoma Natural Heritage Inventory, a unit of the Oklahoma Biological Survey on OU's Norman campus.

Oklahoma's Tallgrass Prairie Preserve is 30,000 acres of native prairie near Pawhuska in Osage County. Although the preserve may not look like a national treasure to the untrained eye, to scientists it is a field of gold.

"On first sight, the prairie doesn't look very diverse," says Lynn Francis, University of Oklahoma graduate student in botany/microbiology surveying the preserve for the Natural Heritage Inventory. "But on closer examination, it's very complex."

In fact, the preserve is home to an estimated 500 plant and 400 animal species—including deer, coyote, bobcats, bats and hundreds of bird species.

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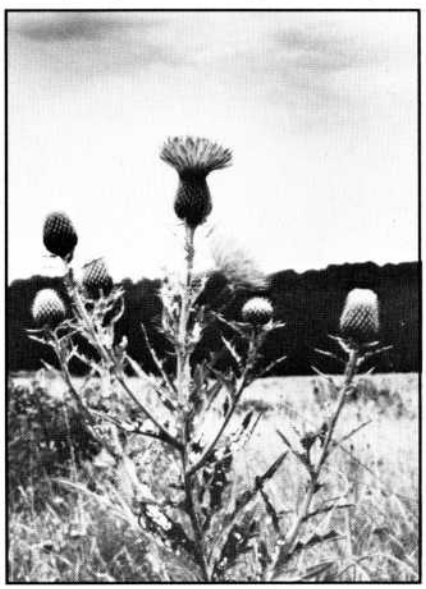

Many of these species will be surveyed by the Natural Heritage Inventory, which develops and maintains a series of databases on Oklahoma's biodiversity, including its rare and endangered animal and plant species. The OU scientists have a grant from The Nature Conservancy—owners of the Tallgrass Prairie Preserve—to inventory the area.

The preserve is the most ambitious project of The Nature Conservancy, a private, non-profit organization dedicated to the preservation and conservation of natural diversity.

Some may question what makes this unpretentious-looking area of Oklahoma special enough to garner the enthusiastic attention of a national conservation organization and a team of trained scientists.

"There is no functioning tallgrass prairie ecosystem left in North America," Francis says. "There are smaller prairie preserves in the United States, but this preserve is most likely to approximate the prairie ecosystem as it used to be."

The tallgrass prairie played an enormous role in North America's development. However, no large area of this landscape has ever been preserved

for study, appreciation and posterity, she adds.

Scientific studies aside, Francis reacted very personally to the Tallgrass Prairie Preserve. "It's really awe-inspiring when you see it for the first time," she says. "It's incredible that the preserve is that big. Oklahoma is fortunate in saving such a large piece of history."

When talking about the Tallgrass Prairie Preserve, large is the operative word. It is the preserve's vastness that presents one of the greatest challenges to OU scientists. Size also is the primary reason why no prairie preserve has existed in Oklahoma until now.

In the mid-1980s, a campaign for a federal prairie preserve in Osage County was launched by environmental concerns. Disagreements with landowners over how large the preserve should be brought the campaign to a halt in 1988. But when Pawhuska's Barnard Ranch was put up for sale in 1989, The Nature Conservancy saw an opportunity for a prairie preserve and seized it.

Inventory, the task facing Prairie Preserve organizers, is no smaller than the preserve itself.

Surveying the preserve's 400 animal species is best done on foot. Among those tackling the job this summer will be William Matthews, an OU associate professor of zoology who works at the University's Biological Station at Lake Texoma.

Students from OU, Oklahoma State University and the University of Central Oklahoma will join the effort. One UCO student is using the project for her master's thesis.

Discovering what vegetation exists on the Prairie Preserve has been a bit more complicated for scientists. Indeed, the work has required the assistance of a higher power—a LandSat satellite.

The satellite takes color images of the preserve from 438 miles above earth. These images, which show types of vegetation—including forests and prairies—will be examined by Francis; her major professor, Scott Collins, OU associate professor of botany/microbiology; and Susan Glenn, a Natural Heritage Inventory biologist who is surveying the imagery project. The images then will be used to construct a vegetation map.

The map will help Prairie Preserve officials plan burning programs. Historically, fire was important in the development of the tallgrass prairie ecosystem in North America. Burning returns nutrients to the soil and eliminates dead vegetation and plants that are not native to the prairie.

"These vegetation maps and satellite images are important to the Prairie Preserve because they can be used for long-term monitoring of the area," says Linda Watson, who serves as coordinator for the Inventory. "Officials can see if they are managing the preserve effectively for the tallgrass prairie ecosystem."

Oklahoma Biological Survey Director Gary Schnell sees the preserve project as a unique research opportunity for scientists and students.

"The prairie preserve provides a valuable natural resource that can be a significant benefit to graduate students and faculty at OU," says Schnell, also a professor of zoology.

"OU's participation through the Biological Survey in studies at the preserve will foster research efforts well into the future. Furthermore, it is important to Oklahomans that we learn more scientifically about one of the most prominent landscape types in the state."

The prairie landscape will gain more public prominence when organizers reintroduce bison to the area, says Tallgrass Prairie Preserve Director Harvey Payne. It has been more than a century since buffalo have roamed Oklahoma's prairies, he notes.

Payne says he and other Nature Conservancy officials have been very appreciative of the assistance of OU scientists and volunteers. "I've been very impressed by the degree of expertise and dedication of the Natural Heritage Inventory. They've done a wonderful job."

With time, Payne hopes the Tallgrass Prairie Preserve will become a popular attraction. Currently, the preserve features scenic drives and an information center that once served as a bunkhouse. Future plans may include blending the best of both worlds of nature and man, with abundant wildlife and such modern amenities as picnic areas and guest lodging—creating a home where both buffalo and people can roam.

At one time giant grasses towering 10 feet into the air were common on the prairies of the Great American West. Today's scientists will examine even the smallest plant species on the Osage County preserve in planning burning programs that will return lost nutrients to the soil and eliminate dead vegetation and plants not native to the tallgrass prairie.