Southern Plains Prairie Restoration

Project Summary

Grasslands are among the most productive ecosystems on earth and they are the primary ecosystem in the Great Plains; mixed-grass and short-grass prairie are the dominant ecosystems in Southern Plains parks. Many grassland systems have undergone significant changes since first being described by early Europeans. Exotic species invasions, expanding row-crop agriculture, overgrazing, mineral exploration and establishment of woodlots and shelterbelts have all contributed to grassland degradation and significant and ongoing loss of genetic diversity in North American grasslands.

Over the last few decades, prairie restoration and the knowledge of restoration practices and techniques have greatly increased; however, most restoration projects have focused on tall-grass prairie in the eastern plains. The National Park Service (NPS) is undertaking a multi-park restoration project to restore degraded prairie in the southern plains and build internal capacity (partnerships, knowledge, skills, and expertise). The first phase of this project focused on the restoration of short-grass and mixed-grass prairie at five NPS units in three states in partnership with national experts on grassland ecology and restoration from the Ladybird Johnson Wildflower Center. The second phase is underway now and will build on the knowledge and expertise gained from restoration efforts of the first phase and expand to five additional parks.

A Capacity Building Approach

A major emphasis of this project has been to go beyond the initial restoration efforts, and to build a capacity for regional expertise in planning and implementing prairie restoration. We began with an initial training workshop implemented by staff at the Ladybird Johnson Wildflower Center in Austin, Texas. This was followed by a series of park-specific workshops where all of the participating parks attended and developed their restoration plans together with the experts from the Wildflower Center.

The approach taken follows the general guidelines developed by the Society for Ecological Restoration. For each site, a restoration plan was developed by the restoration team described above in conjunction with experts in prairie restoration techniques from the Ladybird Johnson Wildflower Center. The methods generally fall within five phases each of which are described below: (1) Conceptual Planning and Background, (2) Site Assessment, (3) Implementation, (4) Monitoring and Adjustment, and (5) Interpretive and Information Transfer. The process of developing each of the components forms the basis of a restoration plan for each park unit.

NPS

Information transfer between experts and park staff regarding plant identification and monitoring techniques.

Conceptual Planning and Background

The first step in the process is in-depth conceptual planning to examine the primary purpose of the restoration and how that influences the desired outcome and approach toward achieving that outcome. It is at this phase where we consider whether the restoration is based on a cultural context, a temporal reference, ecological function, or other objective. This step is essential for defining site-specific objectives and the criteria by which success can be measured.

Site Assessment

In conjunction with the conceptual planning, we conduct a site assessment to consider in detail the current condition, soil types, potential reference sites for refining site-specific objectives and determining potential local seed sources. At this phase we evaluate how past land use may influence our restoration strategy and whether potential barriers to restoration are still present.

Implementation

Specific implementation procedures depend upon the first two phases, but will also include (1) site preparation, (2) seed collection or purchase, (3) seeding, and (4) post seeding treatment. Each of these components then needs to be scheduled in a logical ecological sequence to help ensure their success.

Monitoring and Adjustment

Monitoring is an essential component of any successful restoration effort. For this project, monitoring has been initiated through previous efforts and will continue throughout.

Restoration is not a one-time effort. It requires periodic maintenance and adjustment to ensure long-term success. For the parks included in the project (PMIS #11978 and #148080), we will evaluate the monitoring data in light of the site-specific objectives and determine adjustments as needed. This could include follow-up exotic weed control and supplemental seeding.

Interpretation and Communications

The transfer of information on this project falls within two broad themes, an interpretation component that focuses on developing the major themes for why we are restoring the prairie and what we hope to achieve. This framework helps to convey a message to a broad audience including, but not limited to, the general public.

The second major component of information transfer is focused on developing and maintaining an institutional knowledge and memory of prairie restoration techniques. This approach will be based on products aimed at documenting the process and development of products that demonstrate such things as the principles upon which the restoration was undertaken, the planning process that was used, and the successes and failures of our efforts. A series of reports will detail each step in the restoration process and case studies from each park.

Project Goals and Objectives

Specific objectives of the project are to:

1. train park staff in applicable restoration techniques;
2. identify reference or desired ecological conditions;
3. assess current conditions at park locations and develop park-specific restoration plans;
4. conduct restoration actions, including soil manipulation, invasive plant control, revegetation and initial operation, and maintenance; and
5. establish an initial monitoring effort that could extend beyond the life of this project that would facilitate evaluation of success and course corrections over time.

Although no ecological restoration can be fully accomplished within a three-year period, the goals of this project are to initiate or continue restoration planning and implementation at the park level to acheive:

- At least 20, and up to 100, acres restored to short-grass prairie from former row crops at Bent's Old Fort NHS.
- At least 35 acres restored to mixed-grass prairie from a Johnson grass-dominated field at Chickasaw NRA, with the potential for an additional 35 acres (70 acres total) if resources permit.
- A 50-acre area restored to prairie that is currently dominated by non-native smooth brome at Fort Larned NHS.
- Initial planning for the eventual restoration of 7,200 acres of degraded bottomland prairie at Lake Meredith NRA, with an initial focus on physical restoration of 50 acres as a pilot effort.
- Planning and continued site preparation for the restoration of 200 acres of prairie at Pecos NHP.
- At least 20 acres restored to short-grass prairie that is currently eroded land at Sand Creek Massacre NHS.
- At least 20 acres of prairie restored at San Antonio Missions NHP that has been degraded or invaded by shrubs.
- At least 80 acres of meadow restored to mixed-grass prairie that is currently dominated by exotic species at Washita Battlefield NHS.

For More Information, Contact:

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Park-specific Restoration Objectives

Bent's Old Fort National Historic Site

The restoration of Bent's Old Fort will evoke an inseparable and reciprocal connection between the natural resources, cultural resources, and people through shared experience and activity and through the healing of the land. The initial restoration site was a 25-acre section of abandoned row crop field. An additional 20-80 acres will be restored. The site will be returned to a mixed-grass prairie which will include previously dominant native species, such as alkaki sacaton and blue grama. Particular emphasis will be placed on bottomlands.

Chickasaw National Recreation Area

Through restoration of tall-grass prairie, Chickasaw can develop its own identity while providing visitors with a sense of place, a real connection to an iconic Oklahoma landscape that many will have never experienced before. The initial restoration site was 45 acres, and an additional 35-70 acres will be restored. The restoration goals for the site are the development of functional tall-grass prairie in the uplands and enhanced woodland health in riparian areas, reflecting the historical climax communities defined for the area.

Fort Larned National Historic Site

The restoration goal is to restore the bluestem-grama prairie landscape by replacing non-native invasive species with native grasses and forbs. Some restoration efforts are underway and an additional 50 acres will be treated with fire to aid restoration efforts.

Lake Meredith National Recreation Area

The initial restoration goal is focused on 50 acres of perennial bottomland prairie. This area has been significantly altered over time, and previous management efforts have removed approximately 200 acres of tamarisk and aerial sprayed another 7,000 acres. Over time, restoration efforts are planned for the entire park.

Lyndon B. Johnson National Historic Site

The park will be restored to a condition similar to that present when the Johnson family and others moved to the area in the 1860s, thus providing an opportunity for visitors to understand human interaction with the landscape, both historically and at present. Historical ecological accuracy is the primary motive for prairie restoration. This will enhance the visitors' sense of place and history and will serve to educate the public about why the Johnson's settled here. Additionally, the restored prairie will provide habitat for local wildlife and will serve as a demonstration of sound restoration techniques for the community.

Pecos National Historical Park

Restoration goals are focused on removing woody vegetation from 200 acres that were historically prairie.

By returning the area to prairie, the park's ecology will be consistent with the historical context of the park and its mission.

San Antonio Mission National Historic Site

Restoration goals focus on restoring existing remnants of four ecosystems (riparian forest, grassland/mixed prairie, thorn scrub, and farmlands) to their former, historical extent on the site. By doing so, the site will present a more accurate historic representation of the setting for the missions and maximize native biodiversity. Three areas totaling 30 acres will be the initial target of this project; an additional 10 acres is already in progress with the experimental removal of exotic plants.

Sand Creek Massacre National Historic Site

The goal of the project is to restore 20 acres of native ecosystems to their mid-1800s state to serve as a living historical demonstration of the landscape that existed during the time of the massacre. The park will restore the ecological landscape to a sustainable condition and to enhance its value as a cultural resource, not only for the Cheyenne and Arapaho communities, but also for all park visitors. The park hopes to reintroduce native wildlife such as prairie chickens, preserve the population of culturally significant cottonwood witness trees, and provide multicultural research opportunities.

Washita Battlefield National Historic Site

The restoration goal is to return the meadow and riparian woodland to a condition similar to that found in 1868, when the Cheyenne encampment of Peace Chief Black Kettle was attacked. Restoration initiated with 62 acres of meadow within the park to a sustainable, functioning prairie ecosystem and is intended to expand to another 80 acres. In addition, the park intends to commemorate its multicultural past by involving members of the community in the restoration process. Such participation will lead the community to a stronger sense of ownership and involvement in the site.