



City of Boulder
Open Space and Mountain Parks

Grassland Ecosystem Management Plan Executive Summary

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Executive Summary

The grasslands of the City of Boulder’s Open Space and Mountain Parks (OSMP) land system are located where the Central High Plains meet the foothills of the Southern Rocky Mountains. These lands and waters have been acquired as part of a system designed to protect the agricultural, ecological, recreational, and scenic values of one of the most rapidly developing regions in North America.

Over the past decade, OSMP has developed a series of management plans to clarify how the City of Boulder will manage open space properties and provide services, including sustainable natural resource conservation and passive recreation. The Forest Ecosystem Management Plan, which guides the management of OSMP’s forested foothills, was completed in 1999. In 2005, the city council accepted The Visitor Master Plan, which outlines the vision and strategies for providing sustainable recreational activities and facilities. This **Grassland Ecosystem Management Plan (Grassland Plan)** focuses upon the conservation of the 24,000 acres of OSMP lands dominated by mixedgrass and xeric tallgrass prairie (**Figure 1**). The Grassland Plan is intended to provide a framework for on-the-ground management actions, public policies and land and water acquisition priorities to conserve the ecological values of Boulder’s grasslands and ensure on-going agricultural production.

Sidebars: Points of Interest

Sidebars like this appear throughout the document to highlight topics of interest—or share background information.

CHAPTER SUMMARIES

Chapter I Plan Purpose, Scope & Organization

The Grassland Plan will also be an important resource for OSMP’s TSA planning, describing the agricultural and ecological values in the 24,000-acre Grassland Planning Area.

The Grassland Plan is related to other planning documents and policy direction as one of the tools used by OSMP to focus the broad vision provided by the Boulder Valley Comprehensive Plan, the City Charter and OSMP’s own long range management policies. The Grassland Plan provides this focus by recommending practical strategies and measures of success. These strategies will be implemented through the department’s Strategic Operating Plan and annual work plans.

The planning process used to develop the Grassland Plan was adapted from the Conservation Action Planning approach of The Nature Conservancy (2007).

Chapter II Conservation Targets

The Grassland Planning Area (GPA) (**Figure 1**) is known to support more than 800 species of vascular plants, over 400 species of vertebrates and many more species in other, lesser-known groups (e.g., insects, mosses, algae). Rather than attempt to address each part of the grassland system individually, OSMP staff worked with partner agencies, biologists, ecologists, naturalists and other community members to identify the aspects of biological diversity that would best serve as the basis for setting objectives, taking action and measuring success.

These “conservation targets” include the **Mixedgrass Prairie Mosaic** and the **Xeric Tallgrass Prairie**—the two dominant cover types in the GPA.

The **Agricultural Operations** target addresses the long-term sustainability of agriculture on OSMP lands and the conservation of native species dependent upon agricultural operations.

The ecological system centered on the black-tailed prairie dog was also identified as a separate conservation target due to the distinctive ecological conditions and community of animals associated with prairie dogs. This target, **Black-tailed Prairie Dogs and Associates**, was also called out because of the unique challenges of managing a prairie dog-based system in a highly fragmented landscape.

OSMP also identified three targets dependent upon ground or surface water: **Wetlands**—including ponds, **Riparian Areas**—including creeks, and the **Mesic Bluestem Prairie**.

The **White Rocks** cliffs were identified as a target because they support a large number of rare species—well out of proportion to the small size of the area.

Chapter III Assessing Target Viability

OSMP staff determined the viability of targets by first identifying **key attributes** of each target. Key attributes are aspects of the target, which if altered, could result in the improvement, degradation, or loss of the target. These key attributes reflect some aspect of size, structure, composition, landscape context, or an ecological process (e.g., fire, grazing, or flooding). Examples of key ecological attributes include fire frequency, animal species composition, and water quality. Key attributes for Agricultural Operations include the extent of land that is available for agriculture, availability of irrigation water, levels of commodity production, and soil chemistry.

OSMP identified at least one measurable and sensitive indicator for each key attribute so that the status of the key attributes could be assessed. Using the best available information, OSMP staff defined a range of variation for each indicator that described “acceptable” conditions. When indicators for a target are found to be within this range of “acceptable variation”, the target is considered to be successfully “conserved”. Indicators provide OSMP with the ability to assess and rate the viability of the targets, and measure progress toward achieving desired future conditions in the Grassland Planning Area.

The overall viability rating for the Grassland Planning Area is “Fair”—meaning that conditions are generally outside the range of acceptable variation. The viability ratings of Grassland Plan targets vary. Agricultural Operations, Black-tailed Prairie Dog and Associates and the White Rocks Cliffs were rated “Good” or “Very Good”, signifying that key attributes (as measured by indicators) are within the range of acceptable variation. The Mixedgrass Prairie Mosaic, Xeric Tallgrass Prairie, Mesic Bluestem Prairie, and Wetlands were rated “Fair”. A “Fair” rating means that many of the key attributes are outside the range of acceptable variation—but could be restored to a “Good” rating with a reasonable level of effort. The Riparian Areas target was rated “Poor”, a designation suggesting that it is most in need of action and will require significant investments of time and resources to conserve.

Chapter IV Conservation Issues

The purchase of land as open space protects the landscape from “development”—addressing the most significant threat facing agricultural and ecological sustainability. However, the “Fair” rating for the Grassland Planning Area points to additional conservation issues. OSMP examined the severity and scope of issues that affect the conservation targets. The most significant conservation issues were incompatible surrounding land uses, invasive non-native plant and animal species, incompatible recreational uses, incompatible dog management by guardians, incompatible water management/use, incompatible fire management and incompatible agricultural practices.

Chapter V Best Opportunity Areas

A strategic approach to improving conditions in the Grassland Planning Area requires knowing where to find the best opportunities for conserving good conditions, reducing conservation issues, and restoring targets from the impacts of historic activities. OSMP’s overall approach is to maintain good conditions where they exist and to restore selected areas to acceptable condition. The Grassland Plan recommends places where action will best conserve the targets.

Best Opportunities for the Conservation for Black-tailed Prairie Dog and Associates

IN RESPONSE to community interest and the unique ecology of prairie dogs, OSMP gave special attention to developing area-based recommendations for the conservation of the Black-tailed Prairie Dog and Associates target. These recommendations seek to provide areas where the target can be conserved, as well as areas where the values of grasslands and agricultural operations unaffected by prairie dogs are the priority. OSMP developed “Best Opportunity Areas” for conservation and restoration of the other Grassland Plan targets as well.

Chapter VI Conservation Strategies

The Grassland Plan sets 13 conservation objectives that describe specifically, and in measurable terms, what successful implementation of the Grassland Plan means. This chapter also presents and ranks 35 conservation strategies. The highest ranked strategies are those with the greatest benefit, feasibility and least discretionary costs. These objectives and strategies are organized into four strategic initiatives for taking conservation action and two initiatives to support conservation action.

Initiative 1: Large Block Habitat Effectiveness

The focus of this initiative is to improve the conservation value of large habitat blocks so they are more likely to sustain the Grassland Plan targets.

Large blocks of Open Space and Mountain Parks grasslands are more likely than small blocks to be self-sustaining. Larger blocks are more likely to provide a full range of habitat variability, and a wider range of natural disturbances, and therefore more likely to support the habitat needs of a wider range of species—both plant and animal. These areas are also necessary to conserve species requiring large areas. Large habitat blocks also tend to be the OSMP lands most distant from urbanization and represent the best opportunity to conserve

species sensitive to the effects of urbanization. OSMP can take advantage of the potential of large habitat blocks areas by adjusting policies affecting use, changing on-the-ground management and finding opportunities to establish compatible practices on adjacent lands.

Conservation Objective 1.1

By 2019, establish prairie dog, prairie dog commensal and prairie dog predator populations and population distribution within the range of acceptable variation.

Conservation Objective 1.2

By 2019, increase the bird conservation scores to at least 3.9 for the Mixedgrass Prairie Mosaic and Xeric Tallgrass Prairie.

Conservation Objective 1.3

By 2019, increase the frequency of singing male grasshopper sparrows in habitat blocks over 247 acres (100 ha) in the Mixedgrass Prairie Mosaic to 60%.

Initiative 2: Grassland Restoration

This initiative focuses on improving ecological processes and conditions to acceptable levels as defined by the viability indicator ratings for the eight Grassland Plan Targets. These improvements will benefit both ecological viability and agricultural sustainability.

Persistent effects of historic land uses are partially responsible for current unacceptable conditions of grassland targets. The Grassland Plan establishes indicator ratings that describe OSMP's best thinking about acceptable conditions and processes. A small number of high-leverage actions have been identified to return the ecosystems of the Grassland Planning Area to acceptable condition and landscape context.

Restoration objectives and strategies identified under this initiative will be folded into the OSMP Restoration Legacy Program, which is developing projects to address system-wide restoration needs. The Restoration Legacy Project was identified as a high priority initiative during a strategic planning process completed by OSMP in 2007.

In 2009, the Restoration Legacy team identified approximately 50 projects in the Grassland Planning Area. The specific projects will mobilize planting, earthmoving, hydrological modification and fencing to restore native vegetation and habitats. The Legacy Program approach to coordinating restoration on a system-wide basis is one way that the Grassland Plan strategies will be integrated into the department's annual work plan.

Conservation Objective 2.1

By 2019, reduce non-native plant species in Best Opportunity Areas of the Xeric Tallgrass Prairie, Mesic Bluestem Prairie, and Mixedgrass Prairie Mosaic targets to achieve at least a "Good" rating for prevalence.

Conservation Objective 2.2

By 2029, achieve "Good" rating for all vegetation composition and structure indicators in Best Opportunity Areas.

Conservation Objective 2.3

By 2019, increase fire frequency so that 50% of Upland Grassland Complex and Mesic

Bluestem Prairie Best Opportunity Areas will have burned within the acceptable fire return interval.

Initiative 3: Aquatic Systems Management

This initiative focuses on wetlands, riparian areas, creeks and ponds.

Aquatic systems on OSMP lands support biodiversity well out of proportion to their relatively small size. These same areas are also identified as having low viability and high level of conservation issues.

Conservation Objective 3.1

By 2019, evaluate and restore riparian hydrology in Best Opportunity Areas.

Conservation Objective 3.2

By 2019, evaluate and restore wetland, riparian and aquatic habitat in Best Opportunity Areas.

Conservation Objective 3.3

By 2015, increase by three (3) the number of bullfrog-free ponds on OSMP-managed lands supporting northern leopard frogs.

Conservation Objective 3.4

Prevent an increase in the extent and diversity of aquatic nuisance species in the Grassland Planning Area.

Conservation Objective 3.5

By 2019, reduce the undesignated trail density in northern leopard frog habitat blocks to at most 13.4 ft/ac (10 m/ha).

Initiative 4: Agro-Ecosystems

This initiative focuses on sustaining agricultural uses while integrating agricultural and ecological conservation objectives.

Agriculture has played an important and dynamic role in shaping the Grassland Planning Area and providing services for people in the Boulder Valley. OSMP staff has adjusted and will continue to adjust agricultural management in response to changing markets and interests of local agricultural producers.

When and where biodiversity conservation objectives and agricultural management goals conflict, OSMP has worked to develop compatible management strategies. The Grassland Plan identifies specific opportunities to continue balancing and blending agricultural and ecological management.

Conservation Objective 4.1

Continue agricultural operations on OSMP lands to address the Charter Purposes of OSMP.

Conservation Objective 4.2

Establish or continue agricultural management practices that support habitat for Ute ladies-tresses orchid, bobolinks and other species of conservation concern.

Initiative 5: Monitoring (see Chapter VII)

Initiative 6: Capacity Building

This initiative is intended to attract external funding sources for Grassland Conservation.

Full implementation of the Grassland Plan would require significantly greater capacity than is available with current funding and staffing. The following strategies were identified to attract additional capacity and funding.

Strategies

- Evaluate current staffing and funding allocations to address capacity needs and meet Grassland Plan priorities--make changes as appropriate
- Fund staff training and service contracts to increase expertise available to implement Grassland Plan strategies. When is it more cost-effective, expertise can be provided by consultants and contractors
- Establish an Open Space and Mountain Parks foundation to sponsor private fundraising for implementing priority Grassland Plan projects
- Pursue grants as appropriate to fund implementation of Grassland Plan strategies
- Work with volunteers and community groups as appropriate to support the implementation of any Grassland Plan strategies
- Work with other land management agencies and universities to address the research agenda in Chapter VII
- Leverage value of OSMP-owned housing to encourage needed monitoring, research or stewardship
- Establish a Grassland Plan Capital Improvement Program (CIP), or add Grassland Plan Implementation to the Strategic Operating Plan

Chapter VII Monitoring

The objective of this initiative is to implement “vital signs” monitoring of the Grassland Plan targets by OSMP staff, researchers and volunteers.

OSMP has outlined a variety of strategies to achieve its conservation objectives. Monitoring the effectiveness of the highest priority strategies will allow staff to repeat effective strategies elsewhere and refine or abandon ineffective strategies. Tracking the presence and, in some cases, abundance of threats like non-native plant and animal species will help OSMP allocate resources appropriately to conserve the Grassland Plan targets.

Monitoring also affords OSMP the means to keep track of target occurrences in good condition and to provide early warnings of potential conservation issues. Responding early is easier and less expensive than trying to improve degraded conditions later.

Monitoring Objectives

- Evaluate the effectiveness of specific strategies in achieving OSMP's conservation objectives
- Track current status and trends of conservation issues affecting the conservation targets
- Track the current status and trends of the conservation targets' viability
- Establish specific indicators and acceptable ranges of variation to fill information gaps

Monitoring of target viability, conservation issues and strategy effectiveness is at the heart of the adaptive management framework upon which the Grassland Plan is based.

Chapter VIII
Implementation

The Grassland Plan will be implemented by facility improvements, the development of new programs and policies, integration with other planning efforts, especially TSA planning, and coordinated management activities on the ground. Coordinated management will be enhanced by focusing on Implementation Areas that share similarity of vegetation, agricultural characteristics and landscape context. Developing the phasing and funding of specific projects will be part of the initial implementation of the plan.

The Grassland Plan describes three funding scenarios consistent with the city's business plan model. The "Fiscally Constrained" scenario includes strategies, programs and projects that are currently funded. The "Action Plan" scenario includes the next level of projects that could be undertaken as funding becomes available for restoration or enhancement of community services. The "Vision Plan" scenario includes funding for the full range of identified projects. Capacity building measures are identified to narrow the funding gap between the fiscally constrained and vision plan scenarios.